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UNEP-WCMC **technical report**

Report on Standing Committee recommendations to suspend trade that were made more than two years ago through the Review of Significant Trade

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Executive Summary and Recommendations

This report provides updated accounts for taxa that have been subject to trade suspensions established through the CITES Review of Significant Trade (RST) for more than two years. It aims to assist the Standing Committee, in consultation with the CITES Secretariat and the Chairman of the Animals or Plants Committee, in determining if appropriate measures are required to address the situation.

To assist the Secretariat, Standing Committee and AC and PC Chairs with the requirement of paragraph v) of Resolution Conf. 12.8 (Rev. CoP13), UNEP-WCMC was asked to compile reviews for taxa that have been subject to trade suspensions for more than two years on the basis of recommendations formulated through the RST. This report provides an overview of the conservation and trade status for 95such species/country combinations. Range States were consulted and were asked to provide an update on the conservation and protection status of the relevant species within their country, as well as trade information, management actions and progress on implementing the AC/PC recommendations.

Recommendations to the Standing Committee:

- The **removal of trade suspensions may be warranted for 55 specific taxa/range State combinations** on the basis of either no anticipated trade or the suspension now being obsolete given other CITES processes outside of the Review of Significant Trade that have imposed zero export quotas on the relevant species (Table 1).

- The **retention of the current trade suspensions may be appropriate for the remaining 40 specific taxa/range State combinations**. This is largely on the basis that it is unclear whether the relevant range States intend to export the species or address the relevant Animals Committee or Plants Committee recommendations, and insufficient information is available to demonstrate that exports of the species would be non-detrimental to the survival of the species in compliance with Article IV (Table 2). **Unless otherwise stated, the AC/PC recommendations that were previously formulated are considered to remain appropriate.**

In addition, based on the species accounts, the following additional findings may be appropriate for the Standing Committee to consider further:

1. Range States frequently highlighted the lack of funding available in order to achieve significant progress in addressing the recommended actions. Current trade suspensions have been in place for more than ten years for nine countries (Democratic Republic of Congo, Haiti, Lao People's Democratic Republic, Madagascar, Mali, Mozambique, Solomon Islands, Togo, and the United Republic of Tanzania), with several having been in place for longer than twenty years. Further financial or technical support may be required to assist Parties in responding to AC/PC recommendations, particularly with undertaking surveys and developing adaptive management measures in order to inform non-detriment findings.

   Whilst it is clear that some Parties have made attempts to seek funding or work with other organisations to address relevant AC/PC recommendations (e.g. Mozambique, United Republic of Tanzania, Viet Nam), lack of capacity may hinder some Parties efforts to develop clear plans to respond to the recommendations or formulate funding proposals where needed.

2. Five Parties that are subject to recommendations to suspend trade for one or more taxa have not provided a CITES annual report since 2010 (Guinea, Kazakhstan, Niger, Solomon Islands and Sudan). In accordance with Resolution Conf. 11.16 (Rev. CoP16), the Standing Committee may be required to determine whether these Parties have failed to provide, for three consecutive years and without having provided adequate justification, annual reports required under Article VIII paragraph 7 (a) of the Convention within the deadline (or any extended deadline).

3. Trade in wild-sourced specimens for several species was reported from range States during the period for which there was a Standing Committee recommendation to suspend trade, either by the exporting Party or by countries of import. The relevant taxa were: *Hippopotamus amphibius, Balearica pavonina, Poicephalus robustus, Malacochersus tornieri, Corucia zebrata, Phelsuma modesta* and *Strombus gigas*. To address non-compliance with trade suspensions (and particularly to address persistence of such trade over several years), it is suggested that mechanisms to monitor non-compliance could be pursued in order to inform the Secretariat at either the point at which annual reports are entered into the CITES Trade Database, or through an annual evaluation of non-compliance.

4. Of the Parties currently subject to a recommendation to suspend trade that has been in place for longer than two years, eight have legislation considered to be in Category 3 (believed generally not to meet the requirements for the implementation of CITES) under the CITES National Legislation Project, nine have legislation that is Category 2 (believed generally not to meet all of the requirements for the implementation of CITES), and four have legislation that is Category 1 (legislation that is believed generally to meet the requirements for implementation of CITES) (Table 3). Five of the range States under review in this report have been identified through the CITES legislation project as priority countries (Belize, Kazakhstan, Mozambique, Rwanda and the United Republic of Tanzania)[1].

Table 3: National Legislation category assigned to countries under review.

Category 1	Category 2	Category 3	No category
Legislation that is believed generally to meet the requirements for implementation of CITES	Legislation that is believed generally not to meet all of the requirements for the implementation of CITES	Legislation that is believed generally not to meet the requirements for the implementation of CITES	Not assessed or Non-Party
4 Parties: Equatorial Guinea, Madagascar, Russian Federation, Viet Nam	9 Parties: Benin, Democratic Republic of the Congo, Guinea, Kazakhstan, Mali, Mozambique, Sudan, Togo, United Republic of Tanzania	8 Parties: Belize, Comoros, Côte d'Ivoire, Grenada, Lao People's Democratic Republic, Niger, Rwanda, Solomon Islands	1 Party Not assessed: Bahrain 2 Non-Parties: Haiti, South Sudan.

Source: https://cites.org/eng/legislation

5. Interpretation of the scope of recommendations to suspend trade as a result of the Review of Significant Trade process (i.e. exactly what the suspension covers) appears to vary amongst Parties. Suspensions relate to specimens covered by Article IV of the Convention. It is recommended that further guidance on the scope of suspensions is provided to Parties, through either notifications communicating suspensions, or on the CITES website[2] for species-specific suspensions where the basis is "significant trade".

[1] https://cites.org/eng/CITES_UNEP_support_strengthening_of_wildlife_laws
[2] https://www.cites.org/eng/resources/ref/suspend.php

Table 1: Taxa/range State combinations for which removal of suspension may be appropriate.

Species	Range state	IUCN	Summary	Recommendation
Falconiformes				
Falconidae				
Falco cherrug (Saker Falcon) Suspension valid from: 22 January 2007	Bahrain	EN	The species was previously reported as a scarce passage-migrant in Bahrain. The CITES Authorities of Bahrain no longer consider Bahrain to be a range State for the species given that no records of occurrence have been reported in the country in the past five years. Capture of wild specimens is prohibited in the country. Low level trade, mostly in captive-bred birds, has been reported 2004-2013, with no trade in wild-sourced specimens since 2006. No exports of the species have been permitted since Bahrain became a Party to CITES in 2012. Given that there is no international trade in wild-sourced specimens anticipated, the removal of the suspension may be warranted.	Removal of suspension may be warranted - no anticipated trade
Gruiformes				
Gruidae				
Balearica regulorum (Grey Crowned Crane) Suspension valid from: 2 May 2013	Rwanda	EN	Small and declining population, of c. 300-500 individuals. Previous anecdotal evidence of unreported/illegal trade but no trade reported since Rwanda became a Party in 1981. Reported to be protected nationally. Domestic trade and illegal trade remain a threat. Community programmes are addressing awareness and efforts have been made to acquire captive specimens for release to the wild. Given that there is no international trade in wild-sourced specimens anticipated, the removal of the suspension may be warranted.	Removal of suspension may be warranted - no anticipated trade
Squamata				
Chamaeleonidae				
Calumma amber Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species restricted to mid-altitude humid forest at a single site in the north. Small area of occurrence estimated at 385 km^2. Considered to be common and population stable. No trade reported since the genus listing. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma ambreense Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species occurring in mid-altitude humid forest of Montagne d'Ambre in the north and possibly a few other locations. Small area of occurrence of 385 km^2. Considered to be common and population stable. Very low level of trade 2004-2013 (one body, purpose S, reported by country of import). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma capuroni (Madagascar Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, restricted to montane forests at a single site in the south-east. Very small area of occurrence of 78 km^2. No information on population size, but presumed to be stable in the absence of ongoing threats. Very low level of trade 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Andohahela National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma cucullatum (Hooded Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, found at numerous locations in the east and north-east. Considered to be uncommon, with loss and degradation of humid forest habitat the main threat. Very low level of trade in bodies 2004-2013 (all purpose S, reported by countries of import). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within several protected areas and species is nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

Species	Range state	IUCN	Summary	Recommendation
Calumma furcifer (Fork-nose Chameleon) Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, restricted to mid-elevation forests in the east, with area of occurrence of 582 km^2. Locally common, but with a fragmented and declining population. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within one protected areas and species is nationally protected (collection requires authorization from CITES Authorities). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma guibei (Guibe's Chameleon) Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species, occurring in the north at one site in the north-west, although also reported from one site in the north-east. Reported as common, with a stable population trend. Low level of trade in bodies 2004-2013 (all purpose S, reported by countries of import only). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within one protected area and species is nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma hafahafa (Bizarre-nosed Chameleon) Suspension valid from: 20 January 1995	Madagascar	CR	Endemic species, restricted to the northwest, with small area of occurrence thought to be less than 5 km^2. Described as uncommon; categorized as Critically Endangered on the basis of a restricted distribution, population decline and fragmentation and ongoing habitat loss. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Not known from any protected areas. Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma hilleniusi Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, occurring in central and southeast Madagascar. Extent of occurrence estimated at 820 km^2. Described as reasonably common, but with a declining population. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within three strict protected area, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma jejy (Marojejy Peak Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, restricted to a single site in the north, with very small area of occurrence of 20 km^2. Reportedly not abundant, but with stable population trend. Habitat loss through fire considered a potential threat given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Reported to occur only within one national park, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma linota (Maroantsetra Chameleon) Suspension valid from: 20 January 1995	Madagascar	-	Endemic species, restricted to a single site in the northeast. No information on population size, trends or threats located. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma peltierorum (Peltiers' Chameleon) Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species, restricted to two known locations in the north. Reported to be uncommon, but with stable population trend. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within two protected areas, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

Species	Range state	IUCN	Summary	Recommendation
Calumma peyrierasi (Brygoo's Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, restricted to a single site in the northeast, with very small area of occurrence of 10 km^2. No information on population size or trends located. Habitat loss through fire considered a potential threat given limited distribution. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma tarzan Suspension valid from: 20 January 1995	Madagascar	CR	Recently described endemic species (therefore not considered at AC25). Recorded only from fragments of lowland moist forest in two localities central eastern Madagascar. Categorized as Critically Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. No reported trade 2004-2013. Not reported from any existing protected areas. Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Calumma tsaratananense (Tsaratanan Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, restricted to a single site in the north, with an area of occurrence of <100 km^2, and potentially only 6km^2. Reported to be locally common, with stable population trend. Habitat loss through fire considered a potential threat given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within one protected area, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma tsycorne (Blunt-nosed Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, occurring in the south-east. Reported to be common in one location. Population considered severely fragmented, with trend unknown. Deforestation for agriculture considered the main threat. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within protected areas, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma vatosoa Suspension valid from: 20 January 1995	Madagascar	DD	Endemic species occurring in the north-east; species known only form a single specimen. Unknown population range, size or trends. Habitat loss and fire considered threats given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Not reported from any protected area, although range may extend into one national park. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
Calumma vohibola Suspension valid from: 20 January 1995	Madagascar	EN	Recently described endemic species (therefore not considered at AC25). Recorded only from fragments of lowland and littoral forest from localities within 60 km of the central eastern coast, with area of occurrence of around 441 km^2. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Unknown population size, but considered declining. No reported trade 2004-2013. Reported from one protected area, which may be the species stronghold. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade

Species	Range state	IUCN	Summary	Recommendation
Furcifer angeli (Angel's Chameleon) Suspension valid from: 20 January 1995	Madagascar	LC	Endemic species, occurring in the northwest, with a large estimated extent of occurrence (over 31,000 km^2) and with viable area for the species estimated at 3919 km^2. Reported as abundant within and outside of protected areas, and apparently tolerant of some habitat degradation. Population size estimated at >979,000 (based on density extrapolations) and considered stable. Very low level of trade in bodies 2004-2013 (all purpose S). Reported to occur within four protected areas; almost half of the population considered to occur within these protected areas. Nationally protected (collection requires authorization from CITES Authorities). Quota of 150 specimens proposed which is considered to represent 0.06% of the population in the intended collection area of the Sofia Region. Madagascar appears to have complied with the AC recommendations, and removal of the suspension may be warranted.	Suspension may no longer be appropriate - AC Recommendations completed and NDF in place
Furcifer balteatus (Angel's Chameleon) Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, occurring in the central and far southeast, with an extent of occurrence estimated at 1971 km^2. Reported to be rare, with a declining and severely fragmented population. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Very low level of trade in specimens 2004-2013 (all purpose S). Illegal trade considered a threat. Reported to occur within two protected areas. Nationally protected (collection requires authorization from CITES Authorities). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Furcifer belalandaensis (Belalanda Chameleon) Suspension valid from: 20 January 1995	Madagascar	CR	Endemic species, restricted to two locations in the southwest and with very small extent of occurrence estimated at 4km^2. Population considered small and decreasing. Categorized as Critically Endangered on the basis of extremely restricted distribution, ongoing habitat loss (the main threat). Very low level of trade in wild-sourced bodies 2004-2013 (all purpose S). Some (limited) illegal collection. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Reported to occur from one reserve, which is not a strictly protected area. Nationally protected (collection requires authorization from CITES Authorities).Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Furcifer monoceras (One-horned Chameleon) Suspension valid from: 20 January 1995	Madagascar	-	The need for taxonomic revision has been identified. The species is considered a junior synonym of *F. rhinoceratus*; AC28 supported this nomenclature change. A trade suspension is not in place for *F. rhinoceratus* and there has been no commercial trade since 2001 indicating that trade is not anticipated. No reported trade 2004-2013 in *F. monoceras*. Endemic species, known only from the holotype from Betsako bei Mojunga in the north-west. Unknown population range, size or trends, and no known specific threats. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Furcifer nicosiai Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, restricted to a single site in the west, but may potentially occur further north, with estimated area of occurrence of <1566 km^2. Reported to be uncommon, with a declining population trend. Habitat loss, degradation and fragmentation considered the main threat. Very low level of trade in specimens 2004-2013 (all purpose S). Occurs within the Parc National de Tsingy, the only confirmed location, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Furcifer timoni Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species, occurring only in the primary forest of Montagne d'Ambre in the north. Small area of occurrence estimated at 385 km^2. No information on population size, but presumed to be stable in the absence of ongoing threats. No reported trade 2004-2013. Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade

Species	Range state	IUCN	Summary	Recommendation
Furcifer tuzetae (Ambiky Chameleon) Suspension valid from: 20 January 1995	Madagascar	DD	Endemic species, known only from a single specimen collected in Andrenalamivola in the southwest. Information on population size and trends unknown, but likely to be severely fragmented and declining given loss of dry forest habitat. Very low level of trade 2004-2013 (one body, purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Not known to occur within any protected areas. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Sauria				
Gekkonidae				
Phelsuma comorensis (Comoro Day Gecko) Suspension valid from: 22 August 2008	Comoros	LC	*Phelsuma comorensis:* Endemic and restricted to one area in the north of Grand Comoro. Adapted to a range of habitats, including urban environments and plantations. No estimates of population size or density exist, but no indications of decline as a result of previous trade levels (although some recovery could have taken place since last reported trade in 2004). Reported to be locally abundant in 2008 and 2010. Observed to be numerous in 2015, indicating the population is very substantial and likely at least in the hundreds of thousands. No management or monitoring of the population is in place, and non-detriment findings have not been formulated. However, Comoros implemented a voluntary moratorium on trade of reptiles and there appears to be no intention to resume trade in this species. Should Comoros wish to resume trade, a cautious export quota should be established. Given the abundance of the species, some offtake is likely to be sustainable, and the AC22 recommendations (of 2006) requiring a comprehensive national assessment and a population monitoring programme may now be considered to be unnecessary. The concerns that led to the original suspension no longer appear appropriate, and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma v-nigra (Boettger's Day Gecko) Suspension valid from: 22 August 2008	Comoros	LC	*Phelsuma v-nigra*: Endemic and present on the three islands of the Comoros. Adapted to a range of habitats, including urban environments, plantations and degraded forests. No estimates of population size or density, but previous level of exploitation was not expected to have a significant impact of the species. Reported to be widespread and locally abundant on Grand Comoro in 2007. Observed to be numerous in 2015, indicating the population is very substantial and likely at least in the hundreds of thousands. No management or monitoring of the population is in place, and no non-detriment findings have not been formulated. However, Comoros implemented a voluntary moratorium on trade of reptiles and there appears to be no intention to resume trade in this species. Should Comoros wish to resume trade, a cautious export quota should be established. Given the abundance of the species, some offtake is likely to be sustainable, and the AC22 recommendations (of 2006) requiring a comprehensive national assessment and a population monitoring programme may now be considered to be unnecessary. The concerns that led to the original suspension no longer appear appropriate, and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma abbotti (Abbott's Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	Reported to be widespread in the north and northwest. No estimates of population size or densities, but presumed large population and stable population trend. Reported to be common in forests and anthropogenically disturbed habitats in 2005-2006, and abundant in similar habitats in 2006-2007. The population in the country was not considered at risk in 2011. Low level of trade in bodies and specimens 2004-2013 (all purpose S). Occurs in a number of protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 350 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

Species	Range state	IUCN	Summary	Recommendation
Phelsuma antanosy (Antanosy Day Gecko) Suspension valid from: 20 January 1995	Madagascar	CR	Endemic species with only three subpopulations restricted to a small area in the southeast. Very small area of occurrence of 16 km^2 and area of occupancy of between 1-9 km^2. Population size estimated at 5000-10 000 individuals. Population considered to be severely fragmented and declining. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Occurs within areas being developed and managed as New Protected Areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma barbouri (Barbour's Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	Endemic species, occurring at high elevation sites in the central highlands, with an area of occurrence of 526 km^2. No information on the population status or trends, but presumed abundant within its restricted distribution. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma berghofi Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species, occurring in the southeast. Known only from three locations, with an estimated area of occurrence of 1985 km^2. Considered common in *Ravenala madagascariensis,* but the population densities and trend are unknown. Very low level of trade 2004-2013 (one body, purpose S, reported by country of import). Harvesting for illegal trade was reported to pose a low-level threat to the species. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma breviceps Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, occurring in coastal areas in the south and southwest, with an area of occurrence of 9272 km^2. Reported to be encountered infrequently. The population was considered to be severely fragmented and declining. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 50 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
Phelsuma cepediana (Mauritius Greater Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	Introduced to Madagascar, but no evidence that the population remains. No reported trade 2004-2013. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma dubia (Bright-eyed Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	The status of the species is in need of revision. Species occurrence was confirmed from sites in the north and west. Inhabits forests and anthropogenic habitats, including buildings, banana and palm plantations. Reported as common and locally abundant throughout most of its range, with stable population trend. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Reported to be "very popular" among reptile hobbyists. No conservation measures in place. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 200 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

Species	Range state	IUCN	Summary	Recommendation
Phelsuma flavigularis (Yellow-throated Day Gecko) Suspension valid from: 20 January 1995	Madagascar	EN	Species known only from its type locality in the east, with a small area of occurrence of 380 km^2. No information on the population status or trends but considered likely both declining and severely fragmented. Very low level of trade 2004-2013 (one wild-sourced body, purpose S). May be of interest in the international pet trade but this was not considered to pose a major threat. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma guttata (Speckled Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	Endemic species, occurring in the east and northeast, with an area of occurrence of 30 863 km^2. The species was considered common in suitable habitat, however, the population was considered likely both declining and severely fragmented. The main threat to the species was reported to be the loss of humid forest, although it was considered probably tolerant to moderate levels of habitat disturbance. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). The species was reported to occur in a number of protected areas and sites under conservation management. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 200 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
Phelsuma hielscheri Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species, occurring in the west and southwest, with an area of occurrence of 8700 km^2. Local population densities were reported to be dependent on the availability of screw palms (*Pandanus*) and the main threat to the species was reported to be the exploitation of these plants. The population was considered to be likely both declining and severely fragmented. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma kely Suspension valid from: 20 January 1995	Madagascar	DD	Endemic species, known only from around Lac Ampitambe. Categorised as Data Deficient on the basis that it is very poorly known and there is no information on its distribution, population status or threats. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma klemmeri Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, with isolated populations known only from two locations (Ampasindava peninsula and around Mandrozo Lake), with an area of occurrence of 955 km^2. Reported to be widespread in the Ampasindava peninsula, although absent in suitable habitat in at least one area, and known only from two specimens from around Mandrozo Lake. No reported trade 2004-2013. However, reported to be “highly attractive” and potentially in high demand in the pet trade. Mandrozo Lake has been proposed as a new protected area and conservation measures were reported to be in place in the Ampasindava peninsula. Based on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma malamakibo Suspension valid from: 20 January 1995	Madagascar	NT	Endemic species, known only from a few sites in the in the Andohahela reserve in the southeast, with an area of occurrence of 837 km^2. Reported to be locally abundant at high altitudes; population trend unknown. Very low level of trade 2004-2013 (one wild-sourced body, purpose S). The species was reported to occur within the Andohahela National Park, however, the park was reported to be under pressure from human activity. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated

Species	Range state	IUCN	Summary	Recommendation
Phelsuma masohoala Suspension valid from: 20 January 1995	Madagascar	CR	Endemic species, known only from Cap Est on the Masoala peninsula in the northeast, with an area of occurrence presumed less than 100 km^2. Reported to be known only from the holotype and two museum specimens of unknown origin. It has not been observed since the early 1990s and no population information is available. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma modesta (Modest Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	Endemic species, occurring in the south, with an area of occurrence of 25 500 km^2. Categorised as Least Concern due to its wide distribution, tolerance of a broad range of habitats, and large, stable population. Reported as common in villages. Four live individuals were exported for commercial purposes in 2004 (following the suspension), and very low level of trade in bodies 2004-2013 (all purpose S). No management measures reported. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 300 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
Phelsuma mutabilis (Thick-tailed Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	One of the most widespread *Phelsuma* species in Madagascar, occurring throughout most of the western and southern coastal areas, and in inland locations. Considered highly adaptable to different habitat types. Reported to be collected for the pet trade, although considered unlikely to be undergoing significant population declines as a result. No information on the population status or trends, although sometimes found in high densities in villages. Very low level of trade in bodies, skins and specimens 2004-2013 (all purpose S). The species distribution was reported to coincide with protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 500 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
Phelsuma pronki (Pronk's Day Gecko) Suspension valid from: 20 January 1995	Madagascar	CR	Occurs in isolated fragments of the eastern rainforest bordering the central highlands in the Andramasina region, with a small area of occurrence of less than 100 km^2. Reported to be known only from a few individuals. Categorised as Critically Endangered due to the severe habitat loss occurring within its range and harvesting for the international pet trade was reported to have resulted in population declines in recent years. Commercial collectors reported the species to be very rare and the population in severe decline. Very low level of trade 2004-2013 (one wild-sourced body, purpose S). Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma pusilla (Dwarf Day Gecko) Suspension valid from: 20 January 1995	Madagascar	LC	The taxonomy of the species is in need of revision. Endemic species, widespread in the east with an area of occurrence of 75 500km^2. Reported to be tolerant of a broad range of habitats. Presumed large population, which appears stable. The species was reported to be common, although the subspecies *P. p. hallmani* was described as rare. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Reported to occur within several protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 450 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

Species	Range state	IUCN	Summary	Recommendation
Phelsuma roesleri Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, known only from a single location in the north. Its extent of occurrence was estimated at 147 km^2, but its area of occupancy was thought to be considerably more restricted due to its reliance on *Pandanus* plants. No information on the population status or trends. No reported trade 2004-2013. Occurs within the Réserve Spéciale d'Ankarana, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma seippi (Seipp's Day Gecko) Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, occurring in the northwest, with an area of occurrence of 3713 km^2. Reported to be regularly encountered in bamboo forest, and found in relatively high numbers where *Ravenala madagascariensis* was present. Widespread on the Ampasindava peninsula and more abundant than on Nosy Be. However, the population was presumed to be severely fragmented. Very low level of trade 2004-2013 (one wild-sourced body, purpose S, reported by country of import). The species was reported to occur within Resérve Naturele Intégrale Lokobe and Manongarivo Special Reserve, where collection is prohibited. Based on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
Phelsuma serraticauda (Fan-tailed Day Gecko) Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, occurring on the coast in the east and northeast, with an area of occurrence of 4464 km^2. The species was reported to be common on coconut trees, although the population was presumed to be severely fragmented and may be subject to localised declines. A continuing decline in the number of mature individuals was reported due to collection for the pet trade. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). The species may occur in Mananara-Nord protected area. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
Phelsuma standingi (Banded Day Gecko) Suspension valid from: 20 January 1995	Madagascar	VU	Known only from five locations in the arid southwest in the Toliara region, with an area of occurrence of 17 130 km^2. No specific population data for the species, but numbers declined in the 1990s due to heavy collection for the international pet trade. No reported trade 2004-2013. Not known to occur in any protected areas. Madagascar has proposed a quota (no more than 100 specimens). Two experts consider the proposed quota to be non-detrimental. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
Phelsuma vanheygeni Suspension valid from: 20 January 1995	Madagascar	EN	Endemic species, occurring in the northwest. Reported from three locations on the Ampasindava peninsula, although may occur more widely in the region in suitable habitats. No information on the population status or trends. No reported trade 2004-2013. Low levels of illegal trade in the species may occur. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated

Species	Range state	IUCN	Summary	Recommendation
Testudines				
Geoemydidae				
Cuora galbinifrons (Indochinese Box Turtle) Suspension valid from: 27 July 2009	Lao People's Democratic Republic	CR	Global population severely depleted and assessed as Critically Endangered, with collection for trade the primary threat. Overexploitation for food and medicine considered the main threats in Lao PDR. No trade reported by Lao PDR 2004-2013, although 1500 live ranched individuals from Lao PDR were reported by an import country in 2006. Fully protected in the country although hunting documented within national parks. Zero quota established for all range States for this species with adoption of Prop.32 at CoP16, therefore the trade suspension appears no longer warranted.	Suspension appears no longer warranted – zero quota established through other CITES process
Heosemys annandalii (Yellow-headed Temple Turtle) Suspension valid from: 7 September 2012	Lao People's Democratic Republic	EN	Globally Endangered with a declining population. Restricted distribution in southern Lao PDR Republic, with no population estimates available, but populations considered greatly reduced. Threatened by overharvesting for domestic consumption and domestic/international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade is permitted. No trade reported by Lao PDR (first CITES annual report was submitted in 2006), however two importers reported imports of 25,000 live ranched and 1000 live, wild-sourced individuals from Lao PDR. No information to indicate the existence of any ranching facilities within the country. Zero quota established for wild-sourced specimens from all range States for this species with adoption of Prop.32 at CoP16, therefore the trade suspension appears no longer warranted.	Suspension appears no longer warranted – zero quota established through other CITES process
Acipenseriformes				
Acipenseridae				
Huso huso (Beluga Sturgeon) Suspension valid from: 2 May 2013	Kazakhstan	CR	Categorized as Critically Endangered (CR) globally as a consequence of overfishing and loss of spawning sites. Natural spawning sites remain in the Ural River. It is unclear if the status of the species is improving. Illegal trade remains a threat. Relatively high level of international trade reported in wild-sourced caviar 2004-2010; trade in meat was also reported. However, commercial fishing reported to be prohibited since 2010, and no trade reported since then. Since 2011, no export quotas for wild-sourced sturgeon products from Kazakhstan were communicated to the Secretariat; therefore, in line with Resolution Conf. 12.7 (Rev. CoP16), zero quotas were published for all such products. Based on on-going CITES measures for the management of sturgeons of shared-stocks and the intention not to harvest or export in 2015 or 2016, the removal of the suspension may be warranted.	Suspension may no longer be appropriate – zero quota established through other CITES process
	Russian Federation	CR	Spawning sites have been disrupted by dams (Volga River) in Russian Federation with drastic declines observed. It is unclear if the status of the species is improving. Population of Sea of Azov consists of entirely hatchery-raised fish. Illegal trade remains a threat. Relatively high level of international trade reported in wild-sourced caviar 2004-2010. However, commercial fishing reported to be prohibited since 2010, and no trade reported since then. Since 2011, no export quotas for wild-sourced sturgeon products from Russian Federation were communicated to the Secretariat; therefore, in line with Resolution Conf. 12.7 (Rev. CoP16), zero quotas were published for all such products. Based on on-going CITES measures for the management of sturgeons of shared-stocks and the intention not to harvest or export in 2015 or 2016, the removal of the suspension may be warranted.	Removal of suspension appears to be warranted

Table 2: Taxa/range State combinations for which current trade suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Cetartiodactyla				
Hippopotamidae				
Hippopotamus amphibius (Hippopotamus) Suspension valid from: 7 September 2012	Mozambique	VU	Populations size of c. 3,000 individuals, and thought to be declining overall, with contraction of distribution within the country and local extirpations. Poaching considered the main threat. High levels of trade in some years in tusks, teeth, skulls and trophies. Hunting quota appears to be just below the level of sustainable offtake. Occurs in a number of protected areas yet level of protection unknown. Mozambique has made efforts to address the AC recommendation on the requirement for a national survey, but it is unclear if surveys have taken place or how the results of these provide a basis for non-detriment findings. Support to assist Mozambique conduct a population study may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Gruiformes				
Gruidae				
Balearica pavonina (Black Crowned Crane) Suspension valid from: 2 May 2013	Guinea	VU	Population is small and fragmented (estimated at 200 individuals or less in 2004), with an unknown population trend. Apparently protected, but commercial exports were reported in 2008 (and by countries of import in 2010-2012). Illegal trade remains a threat. No further information on management measures or the basis for making non-detriment findings has been made available, and the concerns that led to the original suspension have not been addressed. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	Sudan	VU	Relatively high population for Sudan of c. 23,000 individuals, but with declines reported (possibly with some local extirpations). Low level of trade reported in wild specimens from Sudan 2004-2013 (with provenance of specimens in trade unknown). Exports may have occurred following the recommendation to suspend trade in 2013; however no annual reports have been submitted since 2010. Unreported trade was previously noted as a concern, and illegal trade remains a threat. No information provided to demonstrate Article IV properly applied. However, efforts to undertake surveys and monitoring of the species have been made, but appear limited through lack of funding and the current political instability. Support to assist Sudan in further assessing the species distribution and identification of priority areas for future management were identified as priorities by the CITES Authorities. It is unclear if the country intends to export the species. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	South Sudan	VU	South Sudan seceded from Sudan on 9 July 2011. The status of the species in South Sudan is unknown. The country is not a Party to CITES, and does not appear to have designated a scientific institution capable of advising that an export is not detrimental to the survival of the species. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Balearica regulorum (Grey Crowned Crane) Suspension valid from: 2 May 2013	Tanzania	EN	Widespread in the country, but nowhere numerous and with a population declining "significantly" from c. 20,000 in the 1980s to possibly no more than c. 1000 individuals (based on estimates in 2015). Low levels of trade reported 2004-2013, all for zoos. Previous anecdotal evidence to suggest unreported trade had occurred, and illegal trade continues to be a threat. The 2012 AC recommendation for a precautionary export quota of 50 specimens is supported by Tanzania, but may no longer be appropriate give the population declines. Support to assist Tanzania to conduct a population study and non-detriment finding may be merited; however given the species unfavourable status and threats, the suspension may still be appropriate.	Suspension may still be appropriate
Psittaciformes				
Psittacidae				
Agapornis fischeri (Fischer's Lovebird) Suspension valid from: 20 April 1993	Tanzania	NT	Estimated population size of this endemic species is c. 290,000 – one million individuals in 1997, and reported to be declining, however in some areas, populations have increased and are considered healthy, with the species being eradicated locally as a pest. No trade reported from Tanzania 2004-2013 during the period of the suspension. Given the large population size, offtake in some locations is likely to be sustainable. Support to assist Tanzania to conduct a population study and non-detriment finding and implement a regular monitoring programme may be merited. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Coracopsis vasa (Vasa Parrot) Suspension valid from: 20 January 1995	Madagascar	LC	Global population considered to be declining, although reported to be widespread and common in Madagascar. Regarded to be an agricultural pest in some areas and often killed as such. Locally consumed, although not clear if this is through targeted harvest or pest birds that are being eaten. No trade reported during the period of the suspension. Demand for the species appears to be low. Until a cautious export quota is established and further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Poicephalus robustus (Cape Parrot) Suspension valid from: 9 July 2001	Democratic Republic of the Congo	LC	Occurrence reported in the south and east of the country, where breeding has been confirmed, however status is poorly known. No trade from the DRC was reported 2004-2013. The Standing Committee recommended withdrawal of the trade suspension if a cautious export quota was established; no response to this recommendation appears to have been received. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	Mali	LC	Known from only one record in the country and its occurrence in Mali has been questioned. Mali has reported exports of the species in 2004, 2005 and 2010 but it has not provided information on the distribution and abundance of the species in its country nor justified the basis for the quantities in trade, as recommended by the Standing Committee. Details of protection or management within the country are unknown. Until further information is provided to confirm occurrence within the country and demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	Togo	LC	Known from only one record in the country and its occurrence in Togo has been questioned. Togo has reported exports of the species in 2012 but it has not provided information on the distribution and abundance of the species in its country nor justified the basis for the quantities in trade, as recommended by the Standing Committee. Details of protection or management within the country are unknown. Until further information is provided to confirm occurrence within the country and demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Psittacus erithacus (Grey Parrot) Suspension valid from: 22 August 2008	Equatorial Guinea	VU	Globally Vulnerable, with an estimated population size in Western Africa of c. 40,000-100,000 birds but with a declining trend. No population figures available for Equatorial Guinea, however some populations appear to be increasing locally. Harvesting for trade is the main threat, along with deforestation and harvest for bushmeat. No commercial trade reported after 2006 or following the trade suspension in 2008. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Sauria				
Agamidae				
Uromastyx dispar Suspension valid from: 22 August 2008	Mali	-	No information on the species population size, trend, threats or management available for Mali. Trade in wild-sourced specimens occurred in 2009 and 2010 following the suspension, although subsequent trade reported only in captive-sources. It is unclear if the country intends to address the AC recommendations and export wild-sourced specimens of the species. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Chamaeleonidae				
Furcifer labordi (Labord's Chameleon) Suspension valid from: 20 January 1995	Madagascar	VU	Endemic species occurring in the west and southwest, with an extent of occurrence estimated at over 16,000 km^2. Densities of individuals vary between sites, but the population considered to be fragmented and declining overall. Habitat loss considered to be the main threat. Very low level of trade in specimens 2004-2013 (all purpose S). Illegal trade was also reported. Reported from two protected areas and two under development. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species, although written confirmation of this has not been received from the Madagascan Management Authority. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
Chamaeleo africanus (African Chameleon) Suspension valid from: 7 September 2012	Niger	LC	Virtually no information on the distribution, conservation status or management of the species in Niger was located. International trade levels were moderate during the years 2004-2010, but no reported trade since 2010. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Trioceros feae (Bioko Montane Chameleon) Suspension valid from: 7 September 2012	Equatorial Guinea	NT	Endemic to Bioko Island of Equatorial Guinea with a restricted distribution of less than 1000 km^2 and considered Near Threatened. One author suggested the population density was high and the population stable. However, little survey data is available, the species is not legally protected, and no management measures appear to be in place. Whilst Equatorial Guinea have not reported any exports of the species, imports from the country were reported consistently until the trade suspension entered into force. One expert suggested some trade in *T. feae* may be misdescribed and represents other species. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Cordylidae				
Cordylus mossambicus (Mozambique Girdled Lizard) Suspension valid from: 7 September 2012	Mozambique	-	Restricted to Mozambique and Zimbabwe. The distribution, population status and trends remain unknown within Mozambique and the management of the species in the country is unclear. The genus more broadly has been affected by over-collection due to the pet trade across its range. Trade appears to have increased prior to the CITES suspension coming into force in 2012. Mozambique has made efforts to address the AC recommendation on the requirement for a national status assessment, but it is unclear if surveys have taken place or how the results of these provide a basis for non-detriment findings. Support to assist Mozambique to conduct a population study may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Cordylus tropidosternum (East African Spiny-tailed Lizard) Suspension valid from: 10 August 2001	Mozambique	-	No information on the species population size, trend or management available for Mozambique. The genus more broadly has been affected by over-collection due to the pet trade across its range. No export quotas published by Mozambique since 2001. Illegal trade in the species persists globally. It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Gekkonidae				
Phelsuma borai Suspension valid from: 20 January 1995	Madagascar	DD	The species is known only from a single specimen and photographs, although records of *Phelsuma mutabilis* from north-western Madagascar may refer to *P. borai.* No reported trade 2004-2013. The species was reported to have been found within a National Park. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
Phelsuma gouldi Suspension valid from: 20 January 1995	Madagascar	DD	Endemic species, known only from Anja Reserve on the central high plateau in the south, although it was noted that records of *P. mutabilis* from central Madagascar may represent *P. gouldi.* The species is categorised as Data Deficient on the basis that it is known only from the holotype and photographs from the same location. Considered rare; only two individuals recorded since the species original description. No reported trade 2004-2013. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
Phelsuma hoeschi Suspension valid from: 20 January 1995	Madagascar	DD	Endemic species, occurring in the east. Reported to be known from artificial habitats. The species was categorised as Data Deficient on the basis that its taxonomy is uncertain, and little is known about its distribution, population status and threats. No reported trade 2004-2013. Not known to occur in any protected areas. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
Phelsuma ravenala Suspension valid from: 20 January 1995	Madagascar	LC	Recently described species, noted to be widespread in eastern Madagascar, with an area of occurrence of 3573 km^2. Found only in anthropogenic habitats. Reported to be locally abundant on *Ravenala madagascariensis* (traveller's palm) throughout its range and the population trend considered stable. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012), however, the species was considered a candidate for potential future trade. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, and a cautious export quota is established, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Scincidae				
Corucia zebrata (Prehensile-tailed Skink) Suspension valid from: 9 July 2001	Solomon Islands	-	No national population estimate available, although high densities reported on Ugi island with a population range of 841-18,500 (large range owing to difficulties in estimating numbers) and with no concern relating to this population noted. However, anecdotal evidence of depletions in other areas close to human settlement. Local consumption and habitat loss and fragmentation considered threats; trade also thought to have affected populations. Over 800 wild-sourced specimens reported in trade by importers 2004-2009; all occurred during the period of the trade suspension. The species has low fecundity. No apparent management measures for the species in place. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Serpentes				
Elapidae				
Naja spp. (Cobra spp.) Suspension valid from: 30 April 2004	Lao People's Democratic Republic	VU LC VU	***N. atra*** – Globally Vulnerable and declining. Occurrence in Lao PDR uncertain and no information on population status or trends identified for Lao PDR. The only trade reported in 2004-2013 was in confiscated/seized specimens. ***N. kaouthia:*** – Globally Least Concern and declining, with localized depletions but common throughout most of range. No information on population status or trends identified for Lao PDR, although described as potentially at risk in the country. The only trade reported in 2004-2013 was in confiscated/seized specimens. ***N. siamensis:*** Globally Vulnerable and declining. No information on population status or trends identified for Lao PDR, although described as potentially at risk in the country. No trade reported 2004-2013. No apparent management measures for *Naja* species are in place. It is unclear if the country intends to export the species or address the AC recommendations. Trade in *Naja naja*, which does not occur in the country, indicates issues with misidentification of *Naja* taxa and illegal trade noted to be of concern. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Testudines				
Geoemydidae				
Heosemys grandis (Giant Asian Pond Turtle) Suspension valid from: 7 September 2012	Lao People's Democratic Republic	VU	Reported to occur in central and southern Lao PDR, with little information on population status. Reported in 1999 as 'Potentially at Risk' in the country, but localised depletions or even extirpation suspected in one protected area. Threatened by overharvesting for domestic consumption and international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade in wild-sourced specimens is permitted. Lao PDR reported exports of 10,000 ranched individuals in 2008 only (first annual report was submitted in 2006), however countries of import reported substantially higher trade levels 2004-2013 (36,500 ranched, 6500 wild-sourced and 2100 captive-bred individuals). Management measures, including the basis for making non-detriment findings, and the impact of trade on wild populations, are not known. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Testudinidae				
Malacochersus tornieri (Pancake Tortoise) Suspension valid from: 20 April 1993. Amended 20 June 1998 to allow for export of quotas of ranched or captive bred specimens.	Tanzania	VU	A low fecundity species with a restricted distribution in United Republic of Tanzania, with no estimates of population size or trend. Considered to have become threatened throughout the country due to intensive collection, and illegal trade persists. Trade predominantly in captive-produced specimens (source F). However, 50 live wild-sourced specimens reported exported in 2009, with 300 specimens reported by countries of import. Unclear if the species is currently protected in the country. Tanzania has indicated that trade in wild-sourced specimens is not anticipated; however, given that exports have been reported in the past five years, the trade suspension may still be appropriate.	Suspension may still be appropriate
*Stigmochelys pardalis (*Leopard Tortoise) Suspension valid from: 9 July 2001	Democratic Republic of the Congo	-	Unclear distribution, population size or trend for DR Congo, but provisionally considered to be of Least Concern within the country. Threats include collection for trade and habitat fragmentation leading to smaller, non-viable populations. No trade reported 2004-2013 during the period of the suspension. Previously DRC reported 3150 live specimens exported (wild-sourced and source unreported) in 1995-1999; with 900 live wild-sourced specimens reported by countries of import over the same period. No information on protection or management within the country located. It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Syngnathiformes				
Syngnathidae				
Hippocampus kuda (Spotted Seahorse) Suspension valid from: 2 May 2013	Viet Nam	VU	Nationally Endangered with 'significant' declines reported. By-catch and localised overharvest were considered threats, and illegal trade also reported. High levels of international trade 2005-2013, particularly in 2005-2007. Viet Nam published a quota of 77,000 and 60,000 captive-bred specimens in 2011 and 2012, respectively. The country confirmed that trade in wild specimens would not be permitted until a non-detriment finding had been made. Progress in addressing a number of the AC recommendations has been achieved; an Action Plan lays out the next steps required to work towards non-detriment-findings. Support to assist Viet Nam in complying with the remaining AC recommendations may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Scorpiones				
Scorpionidae				
Pandinus imperator (Emperor Scorpion) Suspension valid from: 2 May 2013	Benin	-	Status in Benin is unclear; considered abundant by exporters but reported to be threatened by over-collection by some authors. Possibly erroneous use of source codes and one author expressing doubts that either captive breeding or ranching are properly developed in the country. Relatively high quotas and levels of trade from the country prior to the import suspension (in total over 35,000 ranched specimens reported in trade by Benin and countries of import 2004-2012). It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	Togo	-	Status in Togo unclear, but apparently common. High quotas and levels of trade in ranched and wild-sourced specimens from the country reported prior to the import suspension (with quotas apparently exceeded). It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Littorinimorpha				
Strombidae				
Strombus gigas (Queen Conch) Suspension valid from: 12 May 2006	Grenada	-	No stock assessment has been undertaken and no estimates of abundance are available in Grenada. Grenada reported exports of 12,973 kg from 2009-2011, following the trade suspension in 2006. Overfishing considered a major cause for declines within the species range, and its biology was considered to make it particularly vulnerable to overfishing. A large majority of the harvest was reported to consist of juveniles. Management measures in Grenada include restrictions on size and weight and a closed fishing season, but implementation of a management plan is lacking and enforcement problems were identified. However, the country reported that it intends to carry out an independent, national fisheries *S. gigas* stock assessment. Until further information is provided in line with the draft format and guidelines for NDF assessments for *S. gigas* proposed at AC28, incorporating the status of stocks and addressing the AC recommendations and considering recommendations arising from the 2nd CFMC/OSPESCA/WECAFC/CRFM working group meeting on Queen Conch, the suspension may still be appropriate.	Suspension may still be warranted
	Haiti	-	Surveys in 2007 and 2009 found low densities, with populations composed mostly of juveniles. Stocks appeared to be declining. Densities of mature adults were considered below the critical level required to ensure successful reproduction, however, recruitment of juveniles was reportedly still taking place. Harvests continue, but increasingly involve banned methods (hookah and scuba); no accurate catch data is available. Overfishing (including poaching) was considered to be a major cause of population decline exacerbated by degradation of habitat. From 2005-2007, wild-sourced trade in S. gigas products was reported, following the suspension in 2006. Illegal trade, evidenced through seizure data, persists. Although some progress on addressing the AC recommendations has been made and management measures are in place, enforcement of fishing regulations was reported to be very poor or non-existent. The cost of implementation and enforcement was considered to be a significant issue for Haiti. Haiti stated a national moratorium was established, but it is unclear what this covers or the date of its entry. International trade appears to be occurring in the absence of a clear non-detriment finding. Until further information is provided in line with the draft format and guidelines for NDF assessments for *S. gigas* proposed at AC28, incorporating the status of stocks and addressing the AC recommendations and considering recommendations arising from the 2nd CFMC/OSPESCA/WECAFC/CRFM working group meeting on Queen Conch, the suspension may still be appropriate.	Suspension may still be warranted
Lepidoptera				
Papilionodae				

Species	Range state	IUCN	Summary	Recommendation
Ornithoptera urvillianus (Common Birdwing) and *Ornithoptera victoriae* (Queen Victoria's Birdwing) Suspension valid from: 20 January 1995	Solomon Islands	-	***Ornithoptera priamus (O. urvillianus)*:** Widespread in Solomon Islands but no information on population size or trend available. Habitat loss and collection for trade were considered threats, although it was not considered to be threatened by one author. Solomon Islands became a Party in 2007. All occurred following the suspension coming into force in 1995. Moderate levels of trade in ranched specimens reported 2004-2008 according to countries of import, and in wild and ranched specimens in 2008 according to Solomon Islands. No information on management measures or the basis for making non-detriment findings for wild or ranched specimens has been made available, and the concerns that led to the original suspension have not been addressed. Until further information is provided to demonstrate intended exports for wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
		-	***Ornithoptera victoriae*:** Widespread in Solomon Islands but no information on population size or trend available. Some authors describe it as common and others uncommon, although appears to have disappeared from one region and declined elsewhere, mainly through habitat loss but collection also a threat. Solomon Islands became a Party in 2007. Trade (mainly in ranched bodies) generally declined from 2004-2011; all occurred following the suspension coming into force in 1995. No information on management measures or the basis for making non-detriment findings for wild or ranched specimens has been made available, and the concerns that led to the original suspension have not been addressed. Until further information is provided to demonstrate intended exports for wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	
Cycadales				
Cycadaceae				
Cycadaceae, Stangeriaceae and Zamiaceae Suspension valid from: 6 December 2006	Mozambique	LC	Only one Appendix II species of these families occurs in Mozambique: *Cycas thouarsii*. The species is globally widespread and abundant, with a stable population of over 10,000 individuals, but no detailed population data for Mozambique was located. Relatively high level of trade reported in 2005 only (3100 wild-sourced specimens) and some artificially propagated trade reported in 2004. Details of protection or management within the country are unknown, and it is unclear whether the country intends to export the species. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Fabales				
Leguminosae				
Pericopsis elata (African Teak) Suspension valid from: 7 September 2012	Côte d'Ivoire	EN	Considered to have virtually disappeared within the country, with remaining populations localised and isolated. Logging and forest fragmentation reported as the main threats. Reported to be protected, although harvest reported to be authorized in plantations. Trade levels of around 4000 m^2 reported in both 2006 and 2007 by countries of import. Whilst there was no reported trade since 2007 by either Côte d'Ivoire or countries of import according to CITES annual reports, the CITES Authorities confirmed that trade had occurred in 2012-2014 without export permits, and that there was insufficient monitoring of export products at the countries ports. Côte d'Ivoire has not set a zero quota for the species as recommended by the PC, and there has been international trade reported subsequent to the trade suspension. Based on on-going trade and insufficient management in place, the suspension may still be appropriate.	Suspension may still be appropriate

Species	Range state	IUCN	Summary	Recommendation
Orchidales				
Orchidaceae				
Dendrobium nobile Suspension valid from: 3 February 2009	Lao People's Democratic Republic	-	No information on population size, but reported to be endangered in the country. No reported trade from 2004-2013, however illegal trade in this species from Lao PDR remains a threat. In 2011, Lao PDR verbally indicated to the Secretariat that there was no intention to resume legal trade, however no written confirmation was received and Lao PDR was deemed to not have complied with the SC recommendations. Given that illegal trade persists in this species, the suspension may still be appropriate.	Suspension may still be appropriate
Myrmecophila tibicinis Suspension valid from: 15 June 2010	Belize	-	No population estimates are available for Belize, and the status of the species in the country is unclear. Almost 3000 wild-sourced specimens reported in trade 2004-2009. Efforts to undertake surveys appear to have been limited due to lack of financial resources and compounded by the confusion with other species of the genus. Support to assist Belize in conducting comprehensive surveys and species identification may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
Rosales				
Rosaceae				
Prunus africana (African Cherry) Suspension valid from: 3 February 2009	Equatorial Guinea	VU	Occurs on Bioko island, with a potential distribution of around 21,000 ha. Harvesting for bark is the main threat and impacts of unsustainable harvesting (dead trees) were apparent in the country in 1999 and in 2008. High levels of exports (bark) reported 2004-2009 (prior to the suspension) with countries of import reporting over four times the quantity reported by Equatorial Guinea. A pilot project for a management plan took place in 2006, however no plan has been adopted. Inventory studies and an NDF are still required. There is the potential for an NDF to be produced through the CITES-ITTO project with funding provided by a trade organisation within the country. It is recommended that the CITES Authorities in Equatorial Guinea fully participate to facilitate this process. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate
	Tanzania	VU	Widespread occurrence in the country although only found in forest areas, so extent of occupancy is limited. National population considered as Data Deficient. In some locations considered to be common but declining (in 2006) but elsewhere appears rare. High levels of exports (bark) reported 2004-2009 (prior to the suspension), with countries of import reporting over five times the quantity reported by Tanzania. Illegal logging and domestic use also reported as threats. Plans are underway to conduct an inventory of the species (funding dependent). Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	Suspension may still be appropriate

Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The conditions for trade in Appendix II species are laid out in Article IV of the Convention. The Review of Significant Trade (hereafter abbreviated to RST) was established to ensure that Article IV, paragraphs 2 (a), 3 and 6 (a) of the Convention (non-detriment findings) are properly applied for Appendix II species, ensuring the biological sustainability of the trade being sanctioned under CITES.

The procedure for the RST is set out in Resolution Conf. 12.8 (Rev. CoP13). The resolution "Directs the Animals and Plants Committees, in cooperation with the Secretariat and experts, and in consultation with range States, to review the biological, trade and other relevant information on Appendix-II species subject to significant levels of trade, to identify problems and solutions concerning the implementation of Article IV, paragraphs 2 (a), 3 and 6 (a)."

The RST process involves multiple stages, including the formulation of recommendations directed to range States of species under consideration where action is determined necessary. Paragraph s) of Res. Conf. 12.8 (Rev. CoP13) states that "when the Secretariat, having consulted with the Chairman of the Animals or Plants Committee, is not satisfied that a range State has implemented the recommendations made by the Animals or Plants Committee in accordance with paragraph n) or o), it should recommend to the Standing Committee appropriate action, which may include, as a last resort, a suspension of trade in the affected species with that State. On the basis of the report of the Secretariat, the Standing Committee shall decide on appropriate action and make recommendations to the State concerned, or to all Parties."

In accordance with Res. Conf. 12.8 (Rev. CoP13), a recommendation to suspend trade in the affected species with the State concerned should be withdrawn only when that State demonstrates to the satisfaction of the Standing Committee, through the Secretariat, compliance with Article IV, paragraph 2 (a), 3 or 6 (a). A mechanism for reviewing trade suspensions exists under paragraph v) of the resolution, which states that the "*Standing Committee, in consultation with the Secretariat and the Chairman of the Animals or Plants Committee, shall review recommendations to suspend trade that have been in place for longer than two years and, if appropriate, take measures to address the situation*".

To assist the Secretariat, Standing Committee and AC and PC Chairs with the requirement of paragraph v) of Res. Conf. 12.8 (Rev. CoP13), UNEP-WCMC was asked to compile reviews for taxa that have been subject to trade suspensions for more than two years on the basis of recommendations formulated through the RST. This report provides an overview of the conservation and trade status for 95 such species/country combinations.

Methods

Each taxon/country review provides the following information: history of the CITES Review of Significant Trade process; species characteristics, current distribution, conservation status, population trends and threats; recent trade, including CITES trade data and illegal trade; and management of the taxa in each range State, including any relevant legislation. The national legislation category as defined under the CITES Legislation Project[3] for each range State is noted. Where there are multiple range

[3] https://cites.org/eng/legislation

States reviewed for a taxa or several species of the same genus are reviewed from a range State, an overview of distribution, conservation status, threats, trade and management is also provided.

CITES trade data are provided for the period 2004-2013. Data were downloaded on 10 July 2015. Unless otherwise specified, trade tables include all direct trade (i.e. excluding re-export data) in the taxa under review, and include all sources, terms and units reported in trade. Trade volumes are provided as reported by both exporters and importers. Re-export data are noted separately, where appropriate.

South Sudan is not currently a Party to CITES, and several countries were not a Party for the duration of the period reviewed (e.g. Bahrain became a Party in 2012, Solomon Islands in 2007, and Lao People's Democratic Republic became a Party in 2004). These countries were not required to submit CITES annual and biennial reports for the entire period. For this reason, available trade data may not provide a complete picture of international trade and, for some years, only data provided by importers are available. A list of CITES annual reports received from each range State, along with the date each became a Party to CITES, is provided in Table 1.

Table 1: Overview of annual report submissions by range States under review

Country name	Entry into force of CITES	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bahrain	17/11/2012	-	-	-	-	-	-	-	-	g	×
Belize	21/09/1981	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
Benin	28/05/1984	✓	✓	×	✓	✓	✓	✓	✓	✓	×
Comoros	21/02/1995	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
Democratic Republic of the Congo	18/10/1976	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Equatorial Guinea	08/06/1992	✓	✓	✓	✓	✓	✓	✓	✓	✓	×
Grenada	28/11/1999	×	✓	✓	✓	✓	✓	✓	✓	×	×
Guinea	11/03/1976	✓	✓	✓	×	✓	×	✓	×	×	×
Haiti	Non-Party	-	-	-	-	-	-	-	-	-	-
Kazakhstan	19/04/2000	×	✓	✓	✓	✓	✓	✓	×	×	×
Lao People's Democratic Republic	30/05/2004	g	×	✓	✓	✓	✓	✓	✓	✓	✓
Madagascar	18/11/1975	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mali	16/10/1994	✓	✓	✓	✓	✓	✓	✓	✓	×	×
Mozambique	23/06/1981	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Niger	07/12/1975	✓	✓	✓	✓	✓	✓	✓	×	×	×
Russian Federation	01/01/1992	✓	✓	×	✓	✓	✓	✓	✓	✓	×
Rwanda	18/01/1981	✓	✓	✓	✓	✓	✓	✓	✓	×	×
Solomon Islands	24/06/2007	-	-	-	g	✓	✓	✓	×	×	×
Sudan	24/01/1983	✓	✓	✓	✓	×	×	✓	×	×	×
South Sudan	Non-Party	-	-	-	-	-	-	-	-	-	-
Togo	21/01/1979	✓	✓	×	✓	✓	✓	✓	✓	✓	×
United Republic of Tanzania	27/02/1980	✓	✓	✓	×	✓	✓	✓	✓	✓	✓
Viet Nam	20/04/1994	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key: ✓: annual report received; ×: no annual report has been submitted to date; - State not party to CITES in year indicated, g: grace period of the first year in which the Convention entered into force, no report expected.

All available Biennial reports to CITES[4] from each range State were consulted for any information on confiscations/seizures. No specific information on significant seizures of species subject to this review were reported.

The CITES Management and Scientific Authorities (and the non-Party equivalent MA for South Sudan) for each range State were contacted by post and email in late June 2015. Authorities were asked to provide information on conservation status, trade and management of each taxon, including the basis for making non-detriment findings, and any specific progress made in addressing the relevant Plants or

[4] Accessed from https://cites.org/eng/resources/reports/biennial.php on 19 August 2015

Animals Committee recommendations which had been formulated prior to the trade suspensions. Where possible, national experts were also contacted to provide additional country-specific information.

In order to gain a greater understanding of the conservation status of species or its trade and management on-the-ground for taxa subject to trade suspensions, meetings were held with the CITES Authorities of selected range States, which were prioritised in consultation with the CITES Secretariat.

A mission to Madagascar and Comoros took place in September 2015 by Martin Jenkins (consultant). In Madagascar, representatives from CITES Management and Scientific Authorities were met to discuss the issues surrounding the species from Madagascar for which there are current trade suspensions (predominantly reptiles). A representative from the trade was also consulted.

In Comoros, meetings were held with the Comoros Management and Scientific Authorities, and a brief survey to the northern part of Grand Comoro (Ngazidja) took place to gauge abundance of the two *Phelsuma* species which are subject to current recommendations to suspend trade. The species were observed in banana groves and plantations at several locations.

A mission to Equatorial Guinea took place on 25th-26th August 2015 by Jean Lagarde Betti. A meeting with a local *Prunus africana* harvester was facilitated by the Spanish company EUROMED, and the consultant also met with the Minister of Forest Resources.

Species reviews

Hippopotamus amphibius: Mozambique

A. Summary

MOZAMBIQUE: Suspension valid from: 7 September 2012	Populations size of c. 3,000 individuals, and thought to be declining overall, with contraction of distribution within the country and local extirpations. Poaching considered the main threat. High levels of trade in some years in tusks, teeth, skulls and trophies. Hunting quota appears to be just below the level of sustainable offtake. Occurs in a number of protected areas yet level of protection unknown. Mozambique has made efforts to address the AC recommendation on the requirement for a national survey, but it is unclear if surveys have taken place or how the results of these provide a basis for non-detriment findings. Support to assist Mozambique conduct a population study may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At AC23 (April 2008) *Hippopotamus amphibius* (Hippopotamus) was included in the RST due to declining populations and increasing trade (AC23 WG1 Doc. 1). All 23 range States, including Mozambique, were retained (AC24 Summary Record). At AC25 (July 2011), *H. amphibius* was categorised as of "possible concern" for Mozambique and recommendations were formulated (Table 1). As no response was received, the Secretariat and AC Chair determined that recommendations had not been complied with (SC62 Doc.27.1). The SC agreed to suspend trade covered by Article IV of the Convention for *H. amphibius* from two range States including Mozambique (SC62 Summary Record). The suspensions entered into force on 25 September 2012 (Notification No. 2012/059).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record).

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Mozambique	**Within 90 days the Management Authority should:** a) Provide an explanation of the 'internal system of annual quotas' and other management measures in place and clarify the perceived discrepancies between reported Customs data (imports) and CITES data (exports) referred to in document AC25 Doc. 9.4; b) Provide information derived from the national survey undertaken in 2008 on the distribution, abundance and conservation status of *H. amphibius* in Mozambique, including details of methodologies employed; and c) Provide justification for, and details of, the scientific basis by which, it has been established that the quantities of *H. amphibius* exported were not detrimental to the survival of the species and in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Taxonomic note: Recent mtDNA analysis does support two distinct subspecies *H. a. kiboko* and *H. a. capensis* based on sampling in east and southern Africa (Okello *et al*., 2005).

Biology: Common hippos are found in all types of water habitats from rivers and lakes to muddy wallows and even coastal seawater (Eltringham, 1999). They remain in water during the day and emerge at night to graze on land up to several kilometres from day-time territories (Eltringham, 1999). The species is physiologically dependent on water because its skin is extremely sensitive to direct sunlight exposure (Eltringham, 1993).

Key ecological requirements are access to permanent water in the dry season, sufficiently large aquatic bodies to accommodate groups, and adequate grassland grazing within a few kilometres of day resting sites (Eltringham, 1993; Lewison and Oliver, 2008). Preferred habitats are deep permanent water bodies adjacent to reed beds and grassland (Nowak, 1991). Hippos are highly gregarious and habitats must accommodate a territorial male, groups of females and other submissive males (Eltringham, 1993).

Average age at sexual maturity was reported as around seven to eight years for males, and between seven and eleven years for females (Eltringham, 1999) based on studies in Uganda, Zambia and South Africa (Laws and Clough, 1966; Sayer and Rakha, 1974; Smuts and Whyte, 1981; Suzuki and Imae, 1996). Lewison and Oliver (2008) reported age at sexual maturity as nine to eleven for males and seven to nine for females. Generally a single calf is produced every other year (Lewison and Oliver, 2008). The gestation period is 227 to 240 days (Nowak, 1991). Average longevity is around 45 to 50 years (Jewell and Holt, 1981). The length of dry seasons across the range was considered a factor affecting breeding (Eltringham, 1999); calves are mainly born in the rainy season (Kingdon, 1979).

C. Country review

Mozambique

Distribution: The species has a wide range across sub-Saharan Africa. In Mozambique, *H. amphibius* was reported to be widespread and present on most river systems, particularly the Rovuma and Lugenda in the north, the Zambezi and Pungue in the centre and the Save River in the south, and was reported as "common" in the rivers running into the sea near Maputo (Eltringham, 1999, based on Tello *in litt.*, also supported by Mackie *et al.*, 2012). The CITES Management Authority (MA) (Mahanjane *in litt*. to UNEP-WCMC, 2010) reported that the species occurred in >25 rivers within the country including lakes and ponds, six national parks, seven game reserves, 15 concession hunting areas and 17 game farms. A few hippo were reported to have survived on the Ilha Mariana wetland in the floodplain of the Incomati River (Tinley *et al*., 1976).

Following studies conducted in 2010, Mackie *et al*. (2012) considered that the species was confined to a few isolated populations, with most of the population in Lake Cabora Bassa and the Zambezi River and the rivers of Save, Lugenda and Maputo.

Population status and trends: The species was classified by the IUCN as Vulnerable based on a population decline of 7-20% within ten years as a result of exploitation and habitat loss, and a projected population reduction of over 30% over three generations (30 years) with the likely continuation of these threats (Lewison and Oliver, 2008). Lewison and Oliver (2008) provided the most recent review of the status of the species throughout its range, estimating a total global population of 125,000-148,000 individuals.

For Mozambique, wide variations in population estimates exist, with most recent reports suggesting that the population size is considerably smaller than previous studies indicate.

Tinley *et al*. (1976) reported that *H. amphibius* was abundant in the Parque Nacional da Gorongosa at the southern limit of the Great Rift Valley, the coastal Reserva Especial do Maputo contained "fair" numbers, and the Reserva Especial de Protecçâo dos Bufalos de Marromeu in the southern section of the Zambezi river delta had contained "pleasing" numbers.

L. Tello (cited in Eltringham 1999; Lewison and Oliver, 2008) estimated the population size in Mozambique in 1986 to be 16 000-20 500, with most animals (10,000-12,000) occurring in the Zambezi Wildlife Utilization Area, which includes the Marromeu Reserve and four safari hunting blocks and is contiguous with Gorongosa. Numbers were reported to have increased by 20% since 1974 in this area but elsewhere they had declined, except in Tete Province, whose population was between 1500 and 2500 and stable (Eltringham 1993; Lewison and Oliver, 2008).

A substantial population was reported to exist in an artificial lake on the Zambezi created by the Cabora Basa Dam (Eltringham, 1999) and Lewison and Oliver (2008) considered Gorongosa to have the only sizable population of about 2,000. Overall the population was considered by Lewison and Oliver (2008) to be locally abundant, with an estimated population size of 18,000 individuals, although the authors expressed concern for the conservation status of the species on the basis of a declining population trend.

In 2010, the CITES MA of Mozambique reported that a national wildlife survey completed in 2008 covering 80% of Mozambique estimated 8388 herds with limits of 3896-12,879 (Mahanjane *in litt*. to UNEP-WCMC, 2010).

A population survey of *H. amphibius* in Mozambique was conducted during 2010 using aerial counts along major rivers and lake shores of 19 areas, including four contiguous subdivisions of the Zambezi River (Mackie *et al.*, 2012). A total of 926 individuals were observed in eleven areas, and after applying conversion factors and combining data with surveys undertaken since 2006, it was estimated that 3000 *H. amphibius* remain in Mozambique (Mackie *et al.*, 2012). Of those, approximately 39% were found to occur in Lake Cabora Bassa, approximately 13% on the Zambezi River, 12% on the Lugenda and Luatize rivers, 10% on the Maputo River and Maputo Special Reserve and 5% on the Save River (Mackie *et al.*, 2012). No individuals were observed in Lake Malawi, the north bank of Lake Cabora Bassa, the Messalo, Lurio, Ligonha and Shire Rivers, the Inhambane inland lakes or Lebombo Dam (Mackie *et al.*, 2012).

Data limitations to this study were noted; the primary focus of the survey was *Crocodilus niloticus*, data from Maputo Special Reserve was five years old, and some areas where *H. amphibius* may occur had not been surveyed (Buzi and Lucite Rivers in southern Manica province, some districts in southern Zambezia, south-eastern Gaza and southern Inhambane provinces) (Mackie *et al.*, 2012).

Whilst Mackie *et al.* (2012) considered that the species had declined in Mozambique, it was considered that the previous estimate of 16,000-20,500 in 1986 was inaccurate. It included an estimate of 10,000-12,000 in the Marromeu Complex (an area that includes the southern Zambezi delta), but Hatton *et al.* (2001, cited in Mackie *et al.*, 2012) reported that the number of hippos in the Marromeu Complex had declined from 1000-3000 in the late 1970s to less than 100 in 1998, so basing the estimate on the original figures had led to over-estimation of the population size (Mackie *et al.*, 2012).

Stalmans (2012) counted the species in areas of the Parque Nacional da Gorongosa by aerial surveys that took place from 2000 to 2012; 242, 226 and 227 animals were seen in the years 2007, 2010 and 2012 respectively, compared to 63 or less in 2000, 2001, 2002 and 2004; it was concluded there was a general upward population trend. However, limitations of the "sample line" survey method were noted, and as only a proportion of the park was assessed, it was considered that the total population could be substantially higher (Stalmans, 2012).

Threats: Eltringham (1999) attributed declines in some regions to poaching or drought. Human-hippo conflict is a major threat. From July 2006 - September 2008, twelve people were killed and ten were injured by hippos, with 60 animals killed (Dunham *et al.*, 2010). Attacks were concentrated in the districts bordering Lake Cabora and the Zambezi River, but attacks were noted as less widespread than crop damage, which was mainly reported to occur along the Zambezi, Save and Limpopo Rivers in the south (Dunham *et al.*, 2010). The CITES MA of Mozambique (Mahanjane *in litt.* to UNEP-WCMC, 2010) reported that 57 hippo were killed as Problem Animal Control in 2008, as were 33 in 2009, with 164 killed by sport hunting in 2008 and 310 in 2009. The level of possible illegal hunting remains unknown.

Mackie *et al.* (2012) considered anthropogenic factors to have reduced the distribution of the species in Mozambique, partly due to conflict with agriculturalists and fisherman, but also due to disturbance in rivers by miners digging for alluvial gold.

Trade: *Hippopotamus amphibius* was listed in CITES Appendix III (Ghana) on 26 February 1976 and in Appendix II on 16 February 199516/02/95. Mozambique submitted CITES annual reports for all years 2004-2013. Mozambique has not published any export quotas for *H. amphibius* 1997-2015.

According to data from the CITES Trade Database, trade was predominantly reported as wild-sourced (source 'W'). Direct trade in wild-sourced *H. amphibius* from Mozambique comprised 474 trophies, 1460 tusks, 863 skulls and 585 teeth as reported by Mozambique, and 335 trophies, 574 tusks, 33 skulls and 568 teeth, as reported by countries of import (Table 2). Trade in wild-sourced specimens appears to have increased over this period. Twelve wild-sourced tusks and one skull were reported exported in 2013, following entry into force of the suspension in 2012.

Table 2: Direct exports of *Hippopotamus amphibius* from Mozambique, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
carvings	I	-	Exporter											
			Importer	3										3
	W	P	Exporter				3							3
			Importer											
feet	W	H	Exporter								105	113		218
			Importer		4	18			4	10	12	17		65
	-	H	Exporter											
			Importer									4		4
genitalia	W	H	Exporter							1				1
			Importer											
ivory pieces	W	H	Exporter											
			Importer		12									12
leather products (small)	W	H	Exporter								3	9		12
			Importer									3		3
live	W	N	Exporter											
			Importer						10					10
		P	Exporter								1			1
			Importer											
skin pieces	W	H	Exporter						6	64	54	74		198
			Importer			5				7	7	9		28
		T	Exporter											
			Importer							117				117
skins	W	H	Exporter								3	2		5
			Importer			11	1		3	2	1	2		20
		T	Exporter											
			Importer							577				577
	-	H	Exporter											
			Importer									5		5
skulls	W	H	Exporter						10	6	82	764	1	863
			Importer			2			4	7	5	15		33
tails	W	H	Exporter							1	12	11		24
			Importer						1	3	2	2		8
teeth	W	H	Exporter						168	36	268	102		574
			Importer	25	7	188	12	12	8	95	58	150		555
		P	Exporter		1									1
			Importer		1					12				13

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
		T	Exporter		10									10
			Importer											
	-	H	Exporter											
			Importer									11		11
trophies	W	H	Exporter	50	90	65	67	51	83	68				474
			Importer	38	47	23	52	30	38	48	18	37		331
		P	Exporter											
			Importer			1		1						2
		T	Exporter											
			Importer		1			1						2
tusks	W	H	Exporter						56	390	860	130	12	1448
			Importer			8	24		90	151	84	217		574
		-	Exporter							12				12
			Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade originating in Mozambique 2004-2013, comprised primarily of trophies and trophy items traded for hunting purposes (Table 3).

Table 3: Indirect exports of *Hippopotamus amphibius* from Mozambique, 2004-2013. Virtually all trade was in wild-sourced specimens.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
derivatives	W	P	Exporter											
			Importer								4			4
feet	W	H	Exporter			4			2	8	6	8		28
			Importer			6		8	8	2	2			26
		P	Exporter							3				3
			Importer					4	2					6
leather products (large)	W	H	Exporter			2								2
			Importer											
		P	Exporter					7				1		8
			Importer							9				9
leather products (small)	W	H	Exporter								4			4
			Importer											
		P	Exporter									2		2
			Importer					5			10			15
skin pieces	W	H	Exporter								14			14
			Importer			5			5	3				13
		P	Exporter							5				5
			Importer											
skins	W	H	Exporter			5				3	5			13
			Importer			1			1					2
skulls	W	H	Exporter			1				2	9	4		16
			Importer			2	1	2	1	1				7
		P	Exporter								1			1
			Importer											
		T	Exporter											
			Importer								1			1
tails	W	H	Exporter			1				1	2	2		6
			Importer					1						1
teeth	W	H	Exporter	36		27					12	24		99
			Importer			40	12		58	36				146
		P	Exporter				12							12
			Importer		5		12							17
trophies	I	H	Exporter											
			Importer					1			1			2
	W	H	Exporter	8	7	3	5	13	7	1	6	13		63
			Importer	2	4	18	17	14	15	8	8	10	4	100
		P	Exporter		1				1					2
			Importer											
tusks	W	H	Exporter						36	109	138	44		327
			Importer			12		34	12		12	12	12	94

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: Legal protection for *H. amphibius* was reported to be partial, but the level of enforcement of legal protection was not known (Lewison and Oliver, 2008). *H. amphibius* was reported to be protected in several national parks and reserves in Mozambique including the National Parks of

Gorongosa and Limpopo and the Gile, Maputo, Marromeu and Niassa game reserves (Lewison and Oliver, 2008).

According to Mackie *et al.* (2012), most *H. amphibius* in Mozambique occur outside of protected areas, and it was reported that individuals which can be considered as occurring within a protected area often inhabit the river which functions as the area's boundary; thus possibly moving outside the protected area to feed at night (Mackie *et al.*, 2012). It was also noted that many protected areas in Mozambique, such as Zinave National Park, are inhabited by subsistence farmers, hence the species habitat may not be protected (Mackie *et al.*, 2012). Eltringham (1999) reported that the national park structure had been under some stress, and noted difficulties in enforcement of the law.

Mackie *et al*. (2012) reported that the hunting quota for *H. amphibius* during 2011 was 276, which was considered to represent approximately 9% of the national population in view of the 2010 data. The recorded population growth for hippos in the Luangwa Valley, Zambia, was considered as 11% (Marshall and Sayer, 1976), therefore the 9% quota was considered close to the maximum sustainable offtake (Mackie *et al.*, 2012).

The CITES MA of Mozambique (*in litt*. to UNEP-WCMC, 2015) reported that the country had planned to carry out *H. amphibius* surveys in the second half of 2015, with the key areas identified as Ruvuma, Messalo, Lurio, Zambeze, Save, Limpopo and Maputo Rivers, as well as Lake Nyassa. They reported that the survey would estimate the population size, the distribution of the species and its abundance with the sites where it occurs; the terms of reference for the survey were noted to have been approved, and a funding application was reported to have been submitted to the World Bank (CITES Management Authorities of Mozambique, *in litt*. to UNEP-WCMC, 2015).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Mozambique as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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Falco cherrug: Bahrain

A. Summary

BAHRAIN: Suspension valid from: 22 January 2007	The species was previously reported as a scarce passage-migrant in Bahrain. The CITES Authorities of Bahrain no longer consider Bahrain to be a range State for the species given that no records of occurrence have been reported in the country in the past five years. Capture of wild specimens is prohibited in the country. Low level trade, mostly in captive-bred birds, has been reported 2004-2013, with no trade in wild-sourced specimens since 2006. No exports of the species have been permitted since Bahrain became a Party to CITES in 2012. Given that there is no international trade in wild-sourced specimens anticipated, the removal of the suspension may be warranted.	RECOMMENDATION: Removal of suspension may be warranted - no anticipated trade

RST Background

Falco cherrug (Saker Falcon) was included in the RST at AC19 (August 2003) on the basis of paragraph c) of Resolution Conf. 12.8, which states that, in exceptional cases where new information indicates an urgent concern, the Committee may add species to its list of taxa to be reviewed (AC19 Summary Report). At AC21 (May 2005), *F. cherrug* was categorised as of "possible concern" for 26 range States, including Bahrain (AC Summary Report; AC21 Doc. 10.1.1 (Rev. 1)) and recommendations were formulated (Table 1; Notification No. 2006/061).

At SC54 (October 2006), no response to the recommendations was received from several range States of 'possible concern', including Bahrain (SC54 Doc. 42) and the SC agreed to recommend all Parties suspend trade in *F. cherrug* from these range States (SC54 Summary Record). However, the Secretariat noted that deadlines for responding were relatively short, that exports of wild specimens of *F. cherrug* from these range States have been very low or non-existent, and that Bahrain was not Party to CITES. Consequently, the Secretariat proposed that the SC recommend that all Parties suspend trade in *F. cherrug* from the relevant range States with effect from 1 January 2007 if they have not provided the information regarding their implementation of the recommendations by that date (SC54 Doc. 42); this was adopted by the SC (SC54 Summary record). The Secretariat did not received the requested information from Bahrain by 1 January 2007 (SC55 Doc. 17) and the suspension entered into force on 22 January 2007 (Notification No. 2007/004).

At SC62 (July 2012), the Secretariat commented that Bahrain was not a Party to CITES, and that some trade from Bahrain, mostly involving captive-bred specimens, had been reported by importers (SC62 Doc. 27.2 (Rev.1)). Information on the basis for making non-detriment findings in relation to comparable documentation issued by the competent authorities in Bahrain under Article X of the Convention and on captive-breeding operations had not been made available. (SC62 Doc. 27.2 (Rev.1)), and the recommendation to suspend trade was retained (Notification No. 2012/057).

Bahrain became a Party to CITES in 2012. In 2014, the suspension of trade from Bahrain was confirmed in CITES Notification to the Parties No. 2014/039.

Table 1: Recommendations by the Animals Committee (Notification No. 2006/061).

Range State	Recommendations and deadlines resulting from AC21 (May 2005)
Bahrain	**Within 3 months, provide detailed information to the Secretariat on the following:** a) Confirmation that no exports of *Falco cherrug* are permitted, or, if this is not the case: b) Provide justification for and details of the scientific basis by which, it has been established that the quantities of *F. cherrug* exported were not detrimental to the survival of the species and in compliance with Article IV, paragraphs 2 (a) and 3; c) Provide information on the distribution and conservation status of *F. cherrug*, explaining when the status was established and by what methodology the information was obtained; and; d) Provide information on the number of captive breeding operations for *F. cherrug* in the country and the controls in place to differentiate between captive-bred and wild-caught specimens to ensure that the authorised exports of specimens of wild origin are not augmented by falsely declared 'captive-bred' specimens.

B. Species characteristics

Taxonomic note: *Falco cherrug* has four subspecies: *F. c. cherrug, F. c. milvipes, F. c. coatesi,* and *F. c. hendersoni* (Dickinson 2003; Dickinson and Remsen 2013; Orta *et al.*, 2014). However, its internal taxonomy was described as "very complicated and uncertain, especially with regard to populations of central Asia" (Orta *et al.*, 2014).

Biology: *F. cherrug* is a large, powerful falcon that inhabits open dry country with cliffs or scattered tall trees and, in the breeding season, a good supply of small rodents. It especially favours forest-steppe, steppe, sub-desert, plains and grassland, often in remote hilly areas (Ferguson-Lees and Christie, 2001).

F. cherrug predominantly preys on small to medium-sized diurnal rodents and sousliks (*Spermophilus* spp.). Birds, and to a lesser extent reptiles and insects, also feature in its diet (MEFRG, 2015). Lizards may be locally important (Orta *et al.*, 2014). It mostly catches prey on the ground and watches from vantage points as well as performing low foraging flights looking for ground prey (Orta *et al.*, 2014).

F. cherrug nests on cliffs, trees, human artefacts, such as electricity pylons and buildings, and occasionally on the ground, occupying old nests of other birds (BirdLife International, 2013). It is territorial, defending exclusive nesting areas, which are often reoccupied in consecutive years (MEFRG, 2015). The breeding season begins with egg laying in March or April (MEFRG, 2015), and clutch size varies from two to six (BirdLife International, 2013). *F. cherrug* can breed at two years old, but many birds may not be able to establish themselves in a breeding territory until they are several years older (MEFRG, 2015).

Birds are sedentary, part-migratory or fully migratory, largely depending on the extent to which food supply in breeding areas disappears in winter (Baumgart 1991, Snow and Perrins 1998 cited in BirdLife International, 2013). Its breeding range extends from central and eastern Europe, across the Middle East and central Asia to western China (Ferguson-Lees and Christie, 2001; MEFRG, 2015). Almost all Sakers, except for those in the most southern parts of the breeding range, winter in the Middle East and north-east Africa south to Kenya, with a few west to Tunisia, and in southern parts of Asian breeding range, extending to Pakistan north-west India, Nepal and central China (Ferguson-Lees and Christie, 2001).

C. Country review

Bahrain

Distribution: *F. cherrug* is a wide ranging species, occurring across the Palearctic region from eastern Europe to western China. According to Barton (2002), the historical range of *F. cherrug* has been reduced and fragmented, and is shrinking.

F. cherrug was reported to be a passage migrant in Bahrain (Anon., 2006a; BirdLife International, 2013; Nightingale, 1984; Nightingale and Hill, 1993) and it also winters in the country (BirdLife International, 2013; Nightingale, 1984). However, the CITES Management Authority (MA) of Bahrain (*in litt.* to UNEP-WCMC, 2015) reported that Bahrain is no longer a range State for *F. cherrug*, as the species has not been reported in the country for the past five years.

Population status and trends: The size of the global population size is uncertain, however, BirdLife International (2013) estimated there was c.17,400-28,800 breeding pairs (median c.22 100) in 1990 and a total population of c.6400-15,400 pairs (median c.10,900) in 2010. Orta *et al.* (2014) suggested the world population was c. 6400–15,400 breeding pairs based on summation of national counts. However, knowledge of breeding populations in much of Asia is still incomplete, and there are indications that the population is much larger than previously thought (Dixon, 2009).

Although populations in some places were reported to be increasing (e.g. Europe, probably Mongolia), the overall population trend was thought to be declining (BirdLife International, 2013; Orta *et al.*, 2014). *F. cherrug* was categorised as Endangered in the IUCN Red List on the basis that it may be undergoing a very rapid decline, as a result of unsustainable capture for the falconry trade, as well as habitat degradation and the impacts of agrochemicals. However, this classification is highly uncertain (Birdlife International, 2013).

Nightingale and Hill (1993) described *F. cherrug* as a scarce passage migrant in Bahrain, although their coverage was chiefly up to 1989. The authors reported that its spring passage through Bahrain is in February-March and its autumn passage is undetermined, although it undoubtedly occurs and is likely to be the season it is trapped by falconers (Nightingale and Hill, 1993). A few wild birds winter October-February and it is sometime seen in winter preying on shorebirds in the bays of north-eastern Bahrain (Nightingale and Hill, 1993).

It was not recorded by Hirschfeld (1995) in his detailed study of bird migration patterns in Bahrain, 1990-1992. Similarly it was not recorded by Holmden and Hammonds (1980) during surveys in 1978 and 1979, with just one possible bird seen in December. However, Howard King (*in litt*. to UNEP-WCMC, 1990) stated that only very old records of wild *F. cherrug* sightings dating back to 1971 were available. Although there have been numerous *F. cherrug* sightings since, these have always turned out to be falconers' birds, according to H. King (*in litt*. to UNEP-WCMC, 1990).

In 2015, the CITES MA of Bahrain reported that *F. cherrug* had not been recorded in the country in five years, and that Bahrain was therefore no longer considered a range State for the species (*in litt.* to UNEP-WCMC, 2015).

Threats: Habitat loss and degradation, offtake for falconry, and to a lesser extent, persecution and pesticide use are the main threats to *F. cherrug* (BirdLife International, 2013). "Hybridisation with escaped or released hybrid falcons could influence the genetic integrity of wild populations" (S. Nagy *in litt.* 2007 and Nittinger *et al.* 2007 cited in BirdLife International, 2013).

Falconry is widely practiced in Bahrain (Al-timimi, 2007 cited in Dixon *et al.*, 2011). *F. cherrug* was reported to be the favourite of Arab falconers (Nightingale and Hill, 1993) and the most commonly used species in falconry in Bahrain according to H. King (*in litt*. to UNEP-WCMC, 1990). Nightingale and Hill (1993) noted that in autumn, wild birds may be trapped by falconers from the Arabian Gulf.

In 2003 it was estimated that 500-1000 birds were trapped in Bahrain each year (ERDWA, 2003; Orta *et al.*, 2014). The majority (90%) of these were thought to be females, most of which were juvenile females, potentially creating a major bias in the wild population (ERWDA 2003). Additionally, the number trapped is likely to be higher than reported figures as mortality rates are high as the birds are smuggled across international borders (Dixon, 2009).

Threats to biodiversity in Bahrain include urbanization, over-exploitation of ground water and pollution (Anon., 2006b).

Trade: *Falco cherrug* was listed in CITES Appendix II on 28 June 1979. Bahrain was not a Party to CITES until November 2012 and was therefore not required to submit CITES annual reports. Hence, trade data are only available from countries of import for period 2004-2013. According to data from the CITES Trade Database, a total of 22 birds were reported as imports from Bahrain 2004-2013, of which 21 were captive-bred birds (Table 2). Bahrain has not published any export quotas for this species to date.

Table 2. Direct exports of live *Falco cherrug* from Bahrain, 2004-2013. Bahrain was not required to submit annual reports 2004-2013, and trade was reported by countries of import only. All trade was in live specimens.

Source	Purpose	Reported by	2004	2005	2006	2012	Total
C	P	Exporter					
		Importer	2	3	12		17
	T	Exporter					
		Importer				4	4
W	P	Exporter					
		Importer			1		1

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

No indirect export of *F. cherrug* originating in Bahrain was reported 2004-2013.

Management: Bahrain became a party to CITES in 2012, based on Law No. (27), 2012, enacted to confirm its accession to the Convention[5]. In May 2015, the CITES Secretariat indicated that comprehensive draft legislation had been prepared by Bahrain and was under internal discussion. The next steps were the finalisation and submission of the draft legislation[6].

Decree (2) 1995 and its amendments, with respect to the Protection of Wildlife, outlined the overall framework of the national policy for the conservation of wildlife including legislative regulations and identifying the responsibilities of the competent authority (Anon., 2006b). Although there was no indication whether this legislation covers *F. cherrug*, Anon (2006b) reported that the illegal import and cross-boundary transfer of threatened species, particularly falcons, was strictly regulated in Bahrain.

Bahrain has developed a National Biodiversity Strategy and Action Plan (Government of Bahrain, 2015). A Directorate of Biodiversity was established, following decision no (44) of 2012, that oversees the implementation of the national biodiversity strategy and action plan (Supreme Council for Environment, 2015).

No records of the species from protected areas were located.

Bahrain has participated in various national and regional initiatives relating to CITES or Saker Falcon Conservation:

- Bahrain Customs, its Supreme Council for the Environment and IFAW ran a workshop to combat illegal wildlife trade. The goals were to educate government officials and to spread awareness of the rules of CITES (Abou-Zahra, 2014).
- Bahrain participated in a regional workshop on Strengthening Regional Cooperation to Combat Wildlife Crime in West Asia 29-31 October 2013. The objective of the workshop was to consult with relevant government law enforcement officers (police, Customs, *etc*), CITES Management and Enforcements Authorities and relevant experts from the countries in West Asia to consider

[5] https://www.cites.org/eng/news/pr/2012/20120904_bahrain.php
[6] https://cites.org/sites/default/files/eng/prog/Legislation/CITES-NLP-Table4-less-5years.pdf

the feasibility of establishing a regional mechanism for the coordination of enforcement of laws regulating wildlife trade (SC65 Doc. 39 (Rev. 2) Addendum 2 (Rev. 1)).

- In November 2011, the Convention on Migratory Species (CMS) adopted Resolution 10.28 that lists the Saker Falcon (*F. cherrug*) in CMS Appendix I (excluding the population in Mongolia) and provides for the establishment of an immediate Concerted Action supported by all Parties. It also called for the establishment of a Saker Falcon Task Force (STF), which met in March 2012. The task force has the objective of involving range States, partners and interested parties in the development of a coordinated Global Action Plan for the species' conservation. Although Bahrain is not a Party to CMS, representatives from Bahrain attended the first STF meeting (Anon., 2012).

Extensive work has been undertaken at Al-Areen Wildlife Park and Reserve on the captive breeding of various species, and the park offers a modern facility that aims to support falconry in Bahrain (Anon., 2006b). Dixon (2012) stated that captive-bred falcons were used in the major Arabic falconry nations including Bahrain, although to a much lesser extent that in the United Arab Emirates. Dixon (2012) reported that captive-bred falcons were generally more manageable than wild birds for falconry, although they were noted as more expensive and time-consuming to produce. However, it was reported by Choikhand (2011: AC25 Doc. 9.7 Annex) that "Saker Falcons from wild sources are highly prized for Arabic falconry. They are considered to be superior to falcons produced by captive breeding."

In 2015, the CITES Management Authority of Bahrain reported that no permits to export *F. cherrug* have been issued since the convention came in to force in 2013. They also reported that there are no captive breeding operations for *F. cherrug*, and that wild capture of specimens is prohibited under regional legislation, as well as CITES (*in litt.* to UNEP-WCMC, 2015).

In 2015, the Saker Falcon *Falco cherrug* Global ten-year (2015-2024) Action Plan (SakerGAP) was published (UNEP/CMS/COP11/Doc.23.1.5.2). This Action Plan was developed by the Saker Falcon Task Force. It highlights existing knowledge gaps and the need for urgent and coordinated international action to enhance conservation of the species.

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Balearica pavonina: Guinea, South Sudan, Sudan

A. Summary

GUINEA: Suspension valid from: 2 May 2013	Population is small and fragmented (estimated at 200 individuals or less in 2004), with an unknown population trend. Apparently protected, but commercial exports were reported in 2008 (and by countries of import in 2010-2012). Illegal trade remains a threat. No further information on management measures or the basis for making non-detriment findings has been made available, and the concerns that led to the original suspension have not been addressed. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
SUDAN: Suspension valid from: 2 May 2013	Relatively high population for Sudan of c. 23,000 individuals, but with declines reported (possibly with some local extirpations). Low level of trade reported in wild specimens from Sudan 2004-2013 (with provenance of specimens in trade unknown). Exports may have occurred following the recommendation to suspend trade in 2013; however no annual reports have been submitted since 2010. Unreported trade was previously noted as a concern, and illegal trade remains a threat. No information provided to demonstrate Article IV properly applied. However, efforts to undertake surveys and monitoring of the species have been made, but appear limited through lack of funding and the current political instability. Support to assist Sudan in further assessing the species distribution and identification of priority areas for future management were identified as priorities by the CITES Authorities. It is unclear if the country intends to export the species. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
SOUTH SUDAN: Suspension valid from: 2 May 2013	South Sudan seceded from Sudan on 9 July 2011. The status of the species in South Sudan is unknown. The country is not a Party to CITES, and does not appear to have designated a scientific institution capable of advising that an export is not detrimental to the survival of the species. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At AC 24 (April 2009), *Balearica pavonina* (Black Crowned Crane) was included in the RST as an urgent case (AC24 Summary Record). At AC25 (July 2011), 26 range States, including Guinea, South Sudan and

Sudan, were retained (AC25 Summary Record). At AC26 (March 2012), *B. pavonina* was categorised as of "urgent concern" for Guinea, and of "possible concern" for three range States including South Sudan and Sudan (AC26 Summary Record), and recommendations were formulated (Table 1). No response to the recommendations was received, and the Secretariat and AC Chair determined that recommendations had not been complied with by Guinea, Sudan or South Sudan (SC63 Doc. 14). The SC agreed to suspend trade covered by Article IV of the Convention for *B. pavonina* from Guinea, South Sudan and Sudan (SC63 Summary Record). The suspensions for Guinea, South Sudan and Sudan entered into force on 2 May 2013 (Notification No. 2013/13).

Table 1: Recommendations by the Animals Committee (AC26 Summary Record)

Range State	Recommendations and deadlines resulting from AC26 (March 2012)
Guinea	**Within 90 days, the Management Authority should:** a) Immediately establish a zero annual export quota as an interim measure which should be communicated to Parties by the Secretariat b) Clarify what legal protection is afforded to this species in Guinea and inform the Secretariat under what circumstances the present policy allows for export of the species; c) Provide available information to the Secretariat on the distribution, abundance and conservation status of the species, and any current management measures in place for *Balearica pavonina* in Guinea; and d) Provide justification for, and details of, the scientific basis by which it has been established that the quantities of *Balearica pavonina* exported (between 2001 and 2009) were not detrimental to the survival of the species and were in compliance with Article IV, paragraphs 2 (a) and 3. **Within 2 years, the Management Authority should:** e) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the management measures taken on the basis of this status assessment; f) Establish a revised annual export quota (if appropriate) for wild taken specimens based on the results of the assessment; and g) Communicate the annual export quota to the Secretariat (including zero quota), and provide a justification for, and explanation of, the scientific basis by which it was determined that the quota would not be detrimental to the survival of the species in the wild and was in compliance with Article IV, paragraphs 2 (a) and 3.
Sudan	**Within 90 days, the Management Authority should:** a) Provide the Secretariat with information on the management measures in place to monitor wild populations of the species and implement the requirements of Article IV, paragraphs 2 (a) and 3 of the Convention when authorizing exports; b) Provide all available information to the Secretariat on the distribution, abundance and conservation status of *Balearica pavonina* in Sudan, explaining when the status was established and by what methodology the information was obtained; and c) Provide a justification for, and details of, the scientific basis by which it has been established that the quantities of *Balearica pavonina* exported were not detrimental to the survival of the species and were in compliance with Article IV, paragraphs 2 (a) and 3.
South Sudan	**Within 90 days, the competent authorities should:** a) Provide the Secretariat with detailed information on management measures in place to monitor wild populations of the species and implement the requirements of Article IV, paragraphs 2 (a) and 3 of the Convention when authorizing exports. b) Provide available information to the Secretariat on the distribution, abundance and conservation status of *Balearica pavonina* in South Sudan; and c) Provide justification for, and details of, the scientific basis by which it has been established that the quantities of *Balearica pavonina* exported were not detrimental to the survival of the species and were in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Taxonomic note: *Balearica pavonina* closely resembles *B. regulorum* (Grey Crowned Crane) which occurs in Eastern and Southern Africa (Dickinson, 2003). In the past, the two species were considered to form a single species (*B. pavonina*, Johnsgard, 1983) but they are considered separate species by the

current CITES reference for birds (Dickinson, 2003), as well as in the previous CITES reference (Sibley and Monroe, 1990). *B. p. pavonina* and *B. p. ceciliae* are recognised as subspecies of *B. pavonina* (Archibald *et al.*, 2013; Dickinson and Remsen Jr, 2013; del Hoyo and Collar, 2014).

Biology: *B. pavonina* is an African waterbird that typically inhabits shallow wetlands and grassland (Archibald *et al.*, 2013). Its preferred habitats include flooded lowlands, riverbanks, rice fields and wet cropland, marshes, wet meadows, and the edges of ponds, lakes and rivers in East Africa and upland fields in West Africa (Archibald *et al.*, 2013). According to Williams *et al.* (2003), the species showed both year-round residential and locally migratory behaviour, forming large flocks during the dry season and moving from large permanent wetlands to smaller temporary wetlands to breed during the rainy season.

B. pavonina was reported to be omnivorous, with a diet consisting of grain crops, plants, invertebrates and small vertebrates (Williams *et al.*, 2003). Aynalem *et al.* (2011) reported that *B. pavonina* frequently caused crop damage. Archibald *et al.* (2013) reported that *B. pavonina* frequently forages in close vicinity to domestic livestock, where there is a greater abundance of invertebrates.

The species was reported to nest on the ground in open but shallow marshes with high sedges and grasses (Meine and Archibald, 1996). Clutches were reported to consist of one to five, but most commonly two or three eggs (Walkinshaw, 1964). Walkinshaw, (1964) noted that the young could fly at about 3 months of age, but stayed with the parents until their seventh to ninth month.

Distribution: Disjunct sub-populations of *B. pavonina* were reported to occur through the Sahel and Sudan-Guinea savannah zones of Africa, as far south as the Democratic Republic of Congo (BirdLife International, 2015). *B. p. pavonina* was reported to occur in scattered populations in sub-Saharan West Africa from Senegambia to Chad, and *B. p. ceciliae* in sub-Saharan Africa from Chad to Sudan, South Sudan, Ethiopia, Eritrea, and North Kenya, especially in the basin of the upper River Nile (Archibald *et al.*, 2013; del Hoyo and Collar, 2014).

Population status and trends: In 2000 and 2001, range-wide surveys of the species were undertaken at 187 sites in 20 African countries, leading to a total population estimate of approximately 42 000 individuals; this was lower than the previous 1994 estimate of 65,500-77,500 individuals (Williams *et al.*, 2003). In 2004, the western sub-population (*B. p. pavonina*) was estimated at around 15 000 individuals; the eastern sub-population (*B. p. ceciliae*) was considered less well known, but estimated at 28,000-55,000 individuals in 2004, with at least 80 per cent in Sudan and South Sudan (Beilfuss *et al.*, 2007; BirdLife International, 2012).

Population declines were reported by Meine and Archibald (1996), Williams *et al.* (2003), Diagana *et al.* (2006) and Wetlands International (2015). *B. pavonina* was categorised as Vulnerable in the IUCN Red List on the basis of a rapid population decline which is predicted to continue into the future, primarily due to habitat loss and trapping for domestication or illegal international trade (BirdLife International, 2012).

Threats: Several authors reported the key threat facing *B. pavonina* to be the degradation and loss of its habitat, including use of wetlands for agriculture, or extraction of water for irrigation (Meine and Archibald, 1996; Williams *et al.*, 2003). The removal of *B. pavonina* from the wild for domestication and trade, including illegal trade, was considered to form a further important threat to the species (Beilfuss *et al.*, 2007; Beilfuss, *pers. comm.* to UNEP-WCMC, 2011; Kone *et al.*, 2007; International Crane Foundation, 2009; Morrison, 2006, 2007; K. Morrison, *in litt.* to UNEP-WCMC, 2011). The species was reportedly either trapped, or its eggs and chicks were removed from the nests to raise individuals in captivity and sell them on the local, regional, or international market (Meine and Archibald, 1996; K. Morrison *in litt.* to UNEP-WCMC, 2011; BirdLife International, 2015). The species was reported to be

highly prized in private collections (K. Morrison, *in litt*. to UNEP-WCMC, 2011). According to K. Morrison (*in litt.* to UNEP-WCMC, 2015), unsubstantiated reports suggest that trade in *B. pavonina* is still occurring in Guinea, Sudan and South Sudan and that cranes are readily available for purchase.

In some areas, cranes were reported to be hunted for meat (Meine and Archibald, 1996; BirdLife International, 2015). Parts of *B. pavonina*, particularly the head and wings, were reported to be used in traditional healing (BirdLife International, 2015). Overhead power line collisions, indiscriminate pesticide application and political instability were also reported to pose a threat to *B. pavonina* (K. Morrison, *in litt*. to UNEP-WCMC, 2011).

Captive cranes were reported to be in general short-lived and prone to diseases and injury, and their breeding success was considered 'very low' (International Crane Foundation, 2011). Morrison (2007) conducted a preliminary assessment of the African crane studbooks, concluding that none of the captive populations were viable, and that the birds were rarely able to breed due to lack of suitable breeding areas and high vulnerability to predation. It was also noted that hybridisation was common when breeding did occur (Morrison, 2007). A study of *B. pavonina* in Mali showed that the species did not breed successfully under captive conditions (Kone *et al.*, 2007).

Overview of trade and management: *B. pavonina* was listed in CITES Appendix II in August 1985. According to data from the CITES Trade Database, international trade over the period 2004-2013 consisted principally of live birds traded for commercial purposes. The majority of trade involved wild-sourced birds, with trade in captive-bred specimens also reported.

Ongoing conservation programmes were reported to include sustainable management of freshwater wetlands, mangroves and rice fields in coastal West Africa (Beilfuss *et al.*, 2007), as well as a series of intensive management workshops relating to the species sponsored by IUCN/SSC Conservation Breeding Specialist Group, the recommendations of which are recorded in the Crane Conservation Assessment and Management Plan (CAMP). In 2013 and 2014, an initiative in the coastal zone of West Africa was undertaken by the Wetlands International Africa office and the BirdLife International 'Conservation of Migratory Birds' project to determine the distribution and status of *B. pavonina*; its habitat use (in breeding and non-breeding seasons); and the scale of domestication and trade in the region. Further activities that were identified for the future included the development of specific conservation plans for key sites, community meetings and other activities to raise awareness of cranes, and establishment of local site guardians to improve protection of *B. pavonina*. The project was focussed on the Senegal Delta, the Casamance region of Senegal and the rice-fields and floodplains of Guinea-Bissau and western Guinea. This region was reported to support the most significant sub-populations of *B. pavonina* in West Africa (Dodman, 2013).

C. Country reviews

Guinea

Distribution: The species was listed as resident in the country (BirdLife International, 2015). Williams et al. (2003) reported populations in Guinea at the Upper Gambia River and in freshwater swamps and rice fields in the upper west of Guinea e.g. at Iles Tristao-Kadiene, and in Rio Kapatchez. In 2013, research into the state of the species in Guinea by Birdlife International confirmed the occurrence of *B. pavonina* in the delta de Kapatchez (Boké), the Plaines de Monchon (Boffa) [west Guinea] and Faranah in Haute Guinée. The species was also thought to occur in the Zone de Nyagassola and the Plaine de Sansando, both in Siguiri region in North Guinea (Dodman et al., 2014). Dodman (*in litt*. to UNEP-WCMC, 2015) considered the population to be fragmented in Guinea.

Population status and trends: Based on surveys conducted in 2000 and 2001, Williams et al. (2003) estimated the total population size at less than 25 individuals. For the sites surveyed, the population trend was unknown (Williams et al., 2003). The authors noted that several Crane Areas, including Northwest Guinea, are seasonal sites that did not support any cranes during the survey period. Beilfuss et al. (2007) gave an estimate of 200 individuals for the country for 2004. The species was reported to be rarely encountered within the country, and was suspected to have declined since the 2004 estimate, although it was noted that no recent assessment had taken place (Dodman *in litt*. to UNEP-WCMC, 2015).

Threats: The capture of live individuals for export to international private markets was reported to be a particularly significant problem in Guinea (R. Beilfuss, *pers. comm.* to UNEP-WCMC, 2011).

Trade: Guinea published an export quota of 50 live *Balearica pavonina* in 2001, 2002 and 2003; no export quotas have been published subsequently. Annual reports have been received from Guinea for the years 2004-2006, 2008 and 2010, but have not yet been received for all other years during the period 2004-2013.

According to data in the CITES Trade Database, direct trade in *B. pavonina* from Guinea 2004-2013 comprised ten live, wild-sourced specimens as reported by Guinea and 58 live, wild-sourced specimens as reported by countries of import (Table 2). Four live, captive-bred individuals were also exported by Guinea according to the countries of import.

Table 2: Direct exports of *Balearica pavonina* from Guinea, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2005-2007 or 2013.

Source	Reported by	2004	2008	2009	2010	2011	2012	Total
C	Importer			4				4
	Exporter							
W	Importer	10			28	12	8	58
	Exporter		10					10

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

No indirect trade in *B. pavonina* originating in Guinea was reported over the period 2004-2013.

Illegal trade was reported by Clemmons (2003, cited in Beilfuss et al., 2007 and K. Morrison *in litt*. to UNEP-WCMC, 2011) and by Houpline (*in litt*. 2013 to Dodman et al., 2014). Recent reports of illegal trade in Conakry, which was considered a regional hub for illegal trade, were noted by Dodman (*in litt*. to UNEP-WCMC, 2015).

Management: *B. pavonina* was listed under Annex I of the Wildlife law (1999), banning the hunting, capture, egg collection and export of the species except for permits given for scientific purposes (Republique de Guinee, 1999). The CITES Authority of Guinea was consulted as part of this review, but no information on the management of *B. pavonina* was received at the time of writing. No further information on the management of the species in Guinea could be located.

Given the lack of information on the species in Guinea, the IUCN Crane Specialist Group considered that the trade suspension for *B. pavonina* continued to be appropriate (K. Morrison *in litt*. to UNEP-WCMC, 2015). Through its national legislation project, the CITES Secretariat categorised the national legislation in Guinea as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

Sudan and South Sudan

South Sudan formally seceded from Sudan on 9 July 2011. Much of the literature and data presented in this section were compiled before the two countries separated. Unless otherwise stated, the information presented in this review refers to Sudan prior to the declaration of independence of South Sudan.

South Sudan is not a Party to CITES. An Authority competent to issue CITES permits has been designated, however no Scientific Institution capable of advising that exports are not detrimental to the survival of the species concerned had been designated at the time of writing (August 2015).

Distribution: The species was listed as breeding in Sudan and resident in South Sudan (BirdLife International, 2015). The CITES Authorities of Sudan (*in litt*. to UNEP-WCMC, 2015) listed the following areas of occurrence: Dinder National Park (Gezira umm-uroug, Jamams springs, Magano flood plains, Samberoug wetland, and Al Abyad wetland), Radoum National Park (Ras yadday, Buddoo wetland, Simsir wetlands, Gouz Shalal village, Songo village, Dafag wetlands and Chelly wetlands), The White Nile Islands between Duiem and Kosti, permanent and temporary lakes in southern Kordofan State, seasonally flooded swamps in Western Kordofan State, and lakes and floodplains in the Southern and Western Darfur States.

Williams *et al.* (2003) listed several localities of occurrence: Tesi Swamp, Kelling Swamps, Radom National Park, Lake Kundi, Am-Dafogg (now south-western Sudan), Lake Keilak (central Sudan, now southern Sudan), Dinder Flood Plain (now south-eastern Sudan), and the Rift Valley (now South Sudan). Tréca (2009) reported a wide distribution of *B. pavonina*, especially south of latitude 12°N, and named major localities where large numbers of cranes were observed, including Lake Kundi and Randam National Park (now south-western Sudan), Lake Abyed and Lake Keilack (now southern Sudan), and Dinder National Park (now south-eastern Sudan). Hashim (2010) stated the Southern Dafur region (now south-western Sudan) with Lake Kundi and Radom National Park was the key area for *B. pavonina* in Sudan, but it also occurred in Southern Kordofan (now southern Sudan) at Lake Keilak and Lake Abyad as well as in close proximity to the borders of South Sudan. Tirba (2000) indicated that it seemed to be abundant in the southern states of Sudan.

Dodman (*in litt*. to UNEP-WCMC, 2015) reported that South Sudan has significant habitat available for *B. pavonina*.

Population status and trends: Estimates from 1985 and 1995 suggested population numbers of 50,000 individuals (Urban, 1988, 1996). In surveys conducted in 2000 and 2001, Williams *et al.* (2003) estimated the total population to be more than 25,000 individuals. For all sites surveyed, the population was reported to be declining (Williams *et al.*, 2003). Beilfuss *et al.* (2007) estimated a population size of 25,000-52,000 individuals in 2004.

The CITES Authorities of Sudan (*in litt*. to UNEP-WCMC, 2015) gave an estimate of 23,130 individuals for Sudan; a decline from the estimate of 26,000 which was provided in 2011 (AC26 Doc.12.2 Annex). In addition, population estimates for nine sites in Sudan were provided, with known declines reported at three sites (Table 3). Dodman (*in litt*. to UNEP-WCMC, 2015) noted that the areas of probable highest importance were unable to be monitored [due to the unstable security situation], and considered that the species had disappeared from other areas.

Table 3. Estimates of *Balearica pavonina ceciliae* populations in Sudan 2015. (Source: the CITES Authorities of Sudan, *in litt.* to UNEP-WCMC, 2015).

Location name*	Estimated population size (2015)	Estimated population size (2011)
Southern Kordofan	2000	2000
Western Kordofan	1000	1000
Southern Darfur	14,000	14,000
Western Darfur	1500	1500
Radoum National Park	4000	4000
Dinder National Park	500	500
White Nile Islands south of Duiem	100	1000
Southern Gadarief State	20	1500
Southern west Kassala State	10	500
Total	**23,130**	**26,000**

* All locations refer to sites in Sudan (post July 2011). No information was provided for sites in South Sudan.

Tréca (1996) stated that the status of the species in Sudan could be described as common to very common in the areas where it occurred. Major concentrations of cranes could be seen in the southern part of the county, particularly in the Upper Nile State, where thousands flocked when moving between their feeding and roosting grounds (Tirba, 2000). Williams *et al.* (2003) noted that the species remained relatively common in southern Sudan, particularly south of a belt extending from Western Darfur State to the western parts of South Kordufan State. However, the authors noted that all populations appeared to be in decline across the country compared to the 1970s. Hashim (2010) claimed that the species had disappeared from Dinder National Park after the 1980s, and considered the species to be "critically endangered" in the country.

Dodman (*in litt*. to UNEP-WCMC, 2015) stated that there are no reliable estimates for the population in South Sudan.

Threats: The CITES Authorities of Sudan (*in litt*. to UNEP-WCMC, 2015) considered habitat loss (due to conversion and overexploitation of wetlands) and disturbance as the main threats to the species. Further threats were reported to include drought, fire, loss of roosting sites, agricultural impacts, desertification, and pollution and contamination of wetlands (CITES Authorities of Sudan *in litt*. to UNEP-WCMC, 2015).

The major threats to Sudanese wetlands were reported to include pollution, drought, and habitat transformation as a result of drainage, brick manufacturing, urban development, siltation, and oil exploration development (CITES Authorities of Sudan *in litt*. to UNEP-WCMC, 2015).

In general, local people were thought not to hunt *B. pavonina* for domestication or food (Al-Makki, *in litt*. to UNEP-WCMC, 2011), although Hashim (2010) reported that the bird was hunted for its meat by c. 30 per cent of the local people, and individuals of *B. pavonina* were reportedly captured for domestication by companies as well as governmental bodies. It was suggested that individuals captured by governmental authorities were most likely gifts for special guests of the State, while some companies were actively involved in exporting live specimens from the country (Hashim, 2010).

R. Beilfuss (*pers. comm*. to UNEP-WCMC, 2011) and K. Morrison (*in litt*. to UNEP-WCMC, 2011) considered that the capture of individuals for international trade was a particularly significant threat to the species in Sudan. Illegal trade in the species was reported to be occurring in Sudan (Dodman, *in litt*. to UNEP-WCMC, 2015).

Trade: South Sudan is not a Party to CITES and is not required to submit annual reports. Countries of import did not report any trade in *B. pavonina* originating in South Sudan.

Sudan submitted annual reports for the years 2004-2007 and for 2010, but reports have not yet been received for the years 2008-2013. Sudan has not published any export quotas for *B. pavonina*. According to data in the CITES Trade Database, direct trade in live, wild-sourced *B. pavonina* from Sudan 2004-2013 comprised 278 individuals as reported by Sudan, plus 30 reported without a source, and 255 live, wild-sourced specimens as reported by countries of import (Table 4). Forty captive-bred individuals from Sudan were also reported by the countries of import.

Table 4: Direct exports of *Balearica pavonina* from Sudan 2004-2013 based on data provided in CITES annual reports. All trade was in live specimens.

Source	Purpose	Reported by	2004	2005	2008	2009	2010	Total
C	T	Importer	20				20	40
		Exporter						
W	P	Importer				10		10
		Exporter						
	T	Importer	185	20	10		30	245
		Exporter	186	92				278
-	T	Importer						
		Exporter					30	30

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015.

No indirect trade in *B. pavonina* originating in Sudan was reported 2004-2013.

The CITES Authorities of Sudan (*in litt.* to UNEP-WCMC, 2015) reported that 183 birds were exported from Sudan over the period 2005-2015 (Table 5). The source of the live birds and the purpose of the trade were not specified. According to this data, at least twenty birds were reported exported following the recommendation to suspend trade coming into force in May 2013.

Table 5: Direct exports of live *B. pavonina* from Sudan, 2005-2015, based on data provided by the CITES Authorities of Sudan (*in litt*. to UNEP-WCMC, 2015).

2005	2006	2007	2009	2010	2011	2012	2013	2014	2015
40			10	60	31	6	16	4	16

Source: CITES Management Authority of Sudan (*in litt.* to UNEP-WCMC, 2015).

The CITES Authorities of Sudan (*in litt.* to UNEP-WCMC, 2015) considered that the volume of trade in the species was very small and that it did not threaten the species' survival. Hashim (2010) stated the volume of trade in the species far exceeded the officially reported quantities ("exports of many birds were not accounted for and were without certificate numbers") and that the trade in Sudan was not controlled.

Management: In Sudan, the species was listed as protected under Schedule II of the Wildlife Protection Act of 1986 and its hunting or capture without a license was prohibited (CITES MA of Sudan, O. Sulieman, *pers. comm*. to UNEP-WCMC, 2011). The CITES Authorities of Sudan (*in litt*. to UNEP-WCMC, 2015) noted that no cranes were captured for trade 2006-2008 as a result of a ban imposed by the Animal Resources Ministry due to the avian influenza. Through its national legislation project, the CITES Secretariat categorised the national legislation in Sudan as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

The species occurs in a number of protected areas (see distribution section above). In addition, the CITES Authorities of Sudan (*in litt.* to UNEP-WCMC, 2015) reported that the Wildlife Conservation Administration intends to increase the coverage of protected areas to 10% (from the present 6% coverage), which would provide additional protection for *B. pavonina* at White Nile Islands in Umm-Jurr; further studies were reported underway to declare Lake Kundi in Southern Darfur as a protected area. The CITES Authorities (*in litt.* to UNEP-WCMC, 2015) identified the following recommendations in relation to the conservation of *B. pavonina*:

1. Gather reliable map data of Crowned Crane distribution and status in the states of the Blue Nile (southern parts), White Nile (Umm Galala locality), South Kordofan (South of Umm-Ruwaba), and Western Darfur (Forbaranga Locality);

2. Identification of priority areas (based on reliable map data) to ascertain the degree of protection needed (some areas may require both national and international conservation efforts);

3. Restore the degraded habitats through species adoption programmers and exchange programmers; [this is unclear]

4. Twining arrangements, in addition to request to bilateral and multilateral donors to provide financial assistance to developing countries.

In addition, Hashim (2010) recommended that:

1. "An urgent survey is needed to assess the population of the Black Crowned Crane throughout its geographic range in Sudan.

2. Since zoos and wildlife farms are collection centers, it is important that they be monitored regularly to determine the annual off-take the Black Crowned Crane."

In South Sudan, the Sudd Ramsar site (5,700,000 ha; 07°34'N 030°39'E) was reported to be an important wintering ground for *B. pavonina*, but was considered threatened by oil exploration and the Jonglei Canal Project (Ramsar, 2006; International Resources Group, 2007). No further information on the protection or management of the species in South Sudan could be located.

The IUCN Crane Specialist Group considered that the trade suspension for *B. pavonina* from Sudan and South Sudan continued to be appropriate (K. Morrison *in litt.* to UNEP-WCMC, 2015).

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Balearica regulorum: Rwanda, United Republic of Tanzania

A. Summary

RWANDA: Suspension valid from: 2 May 2013	Small and declining population, of c. 300-500 individuals. Previous anecdotal evidence of unreported/illegal trade but no trade reported since Rwanda became a Party in 1981. Reported to be protected nationally. Domestic trade and illegal trade remain a threat. Community programmes are addressing awareness and efforts have been made to acquire captive specimens for release to the wild. Given that there is no international trade in wild-sourced specimens anticipated, the removal of the suspension may be warranted.	RECOMMENDATION: Removal of suspension may be warranted - no anticipated trade
UNITED REPUBLIC OF TANZANIA: Suspension valid from: 2 May 2013	Widespread in the country, but nowhere numerous and with a population declining "significantly" from c. 20,000 in the 1980s to possibly no more than c. 1000 individuals (based on estimates in 2015). Low levels of trade reported 2004-2013, all for zoos. Previous anecdotal evidence to suggest unreported trade had occurred, and illegal trade continues to be a threat. The 2012 AC recommendation for a precautionary export quota of 50 specimens is supported by Tanzania, but may no longer be appropriate give the population declines. Support to assist Tanzania to conduct a population study and non-detriment finding may be merited; however given the species unfavourable status and threats, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At AC 24 (April 2009), *Balearica regulorum* (Grey Crowned-Crane) was included in the RST as an urgent case (AC24 Summary Record). At AC25 (July 2011), 12 range States, including Rwanda and the United Republic of Tanzania (hereafter referred to as Tanzania), were retained (AC25 Summary Record). At AC26 (March 2012), *B. regulorum* was categorised as of "possible concern" for Rwanda and Tanzania (AC26 Summary Record), and recommendations were formulated (Table 1). No response to the recommendations was received, and the Secretariat and AC Chair determined that recommendations had not been complied with by Rwanda or Tanzania (SC63 Doc. 14). The SC agreed to suspend trade covered by Article IV of the Convention for *B. regulorum* from Rwanda and Tanzania (SC63 Summary Record). The suspensions entered into force on 2/5/2013 (Notification No. 2013/13).

Table 1: Recommendations by the Animals Committee (AC26 Summary Record)

Range State	Recommendations and deadlines resulting from AC26 (March 2012)
Rwanda	**Within 90 days, the Management authority should:** a) Clarify what legal protection is afforded to the species in Rwanda and inform the Secretariat whether the present policy allows for export of the species; b) If there is no intent to allow export of wild taken specimens of this species for the foreseeable future establish a zero export quota for such specimens which should be communicated to the Parties by the Secretariat; or **c)** If trade is to be allowed, establish a conservative annual export quota and provide a justification for, and details of, the scientific basis by which it has been established that the quota is in compliance with Article IV, paragraphs 2 (a) and 3, taking into account any potential unregulated and/or illegal off-take and trade.
United Republic of Tanzania	**Within 90 days the Management Authority should:** a) Establish a conservative export quota of 50 specimens b) Provide the Secretariat with available information on: i) the distribution and abundance of *Balearica regulorum* in United Republic of Tanzania; and ii) the justification, and the scientific basis, by which a quota can be established and is considered not to be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3; and **Within 2 years the Management Authority should:** a) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place; b) Establish a revised annual export quota for wild taken specimens based on the results of the assessment; and c) Provide the justification for, and details of, the scientific basis by which it has been established that the quantities of Balearica regulorum to be exported would not be detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Taxonomic note: *B. regulorum* closely resembles the Black Crowned Crane (*B. pavonina*) (Dickinson, 2003). In the past, the two species were considered to form a single species (*B. pavonina*) (Johnsgard, 1983) but they have been considered separate species by both the current and former CITES Standard references for birds (Dickinson, 2003; Sibley and Monroe, 1990). *B. r. gibbericeps* and *B. r. regulorum* are recognised as subspecies of *B. regulorum* (Dickinson and Remsen Jr, 2013; del Hoyo and Collar, 2014).

Biology: *B. regulorum* is an African waterbird that typically inhabits wetlands and open grasslands or savannah (Archibald *et al.*, 2013). It commonly nests within or on the edges of wetlands, forages in grasslands and agricultural lands (Meine and Archibald, 1996b; Archibald *et al.*, 2013) and roosts in shallow water (Tréca, 1996), in adjacent trees (Allan, 1996; Johnsgard, 1983; Walkinshaw, 1964), or on utility line posts (Archibald *et al.*, 2013). Although not a migratory species, local and seasonal movements in response to changing moisture levels and food and nest sites availability were observed (Allan, 1996; Tréca, 1996; Archibald *et al.*, 2013).

B. regulorum was reported to feed on the tips of grasses, seed heads, insects and other invertebrates, and small vertebrates (Johnsgard, 1983; Pomeroy, 1987; Archibald *et al.*, 2013). It is well-adapted to manmade habitats, and commonly found in a variety of agricultural land types (Meine and Archibald, 1996b; Muheebwa, 2007; Smith, 2011; Tréca, 1996; van Niekerk, 2008).

The species is monogamous, forming pairs at the age of three years, and breeding once a year or every other year, for 16 years (Gichuki, 1996). Average clutch size is 2.5 eggs with an incubation period lasting 28-31 days and a fledging period generally between 56-100 days (Archibald *et al.*, 2013).

Distribution: *B. regulorum* occurs in eastern and southern Africa from eastern Democratic Republic of the Congo, Uganda, and Kenya to south-east South Africa (Walkinshaw, 1964). It was also recorded from Angola and Namibia along the Okavango River (Meine and Archibald, 1996b; Urban, 1983). The total extent of occurrence was estimated at 3,570,000 km2 (BirdLife International, 2015). *B. r. gibbericeps* was reported to occur in Uganda and Kenya south to north Zimbabwe and north Mozambique. *B. r. regulorum* in south Angola and north Namibia east through Botswana to Zimbabwe, then south to southeast South Africa (del Hoyo and Collar, 2014). A range map for the species is provided in Figure 1.

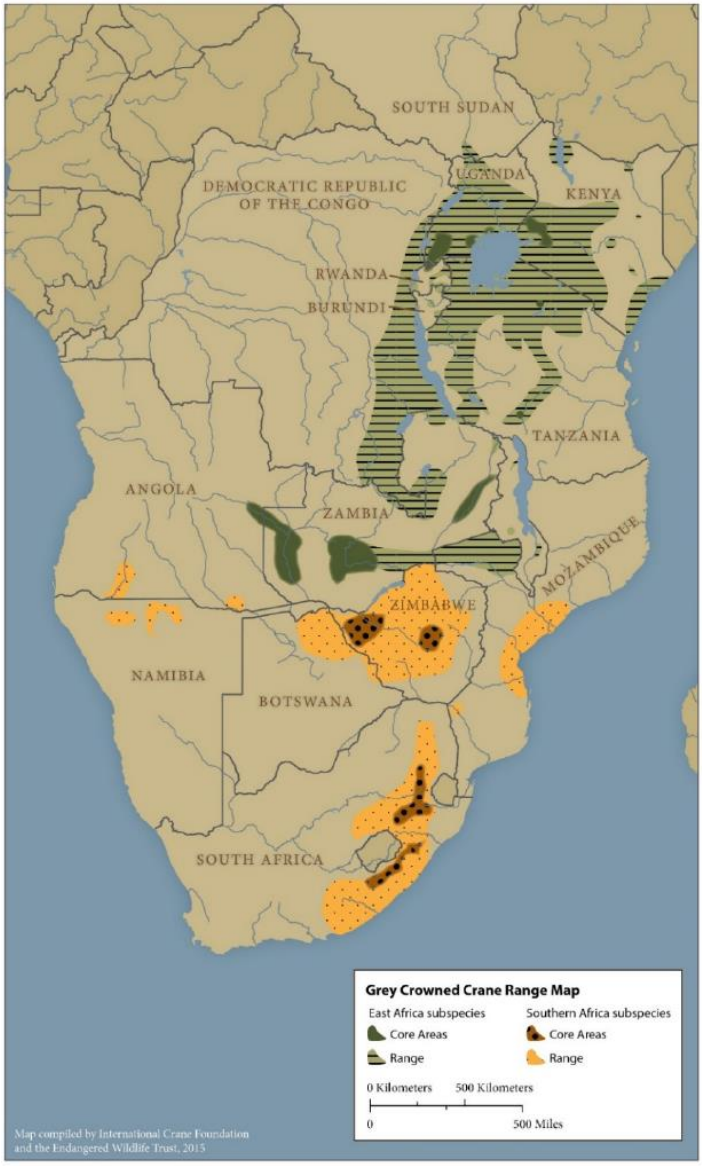


Figure 1. Range map for *B. regulorum*. Compiled by International Crane Foundation and the Endangered Wildlife Trust, 2015.

Population status and trends: The population trend was considered to be decreasing (Meine and Archibald, 1996a; BirdLife International, 2015). In 1985 the total population was estimated to be >100 000 individuals (Urban, 1996), and in 1995 it was estimated to be 85,000-95,000 (Meine and Archibald, 1996a, 1996b; Urban, 1996). In 2004, the population was reported to have declined to 50 000-64 000 individuals (Beilfuss *et al.*, 2007). The current population size is unknown, but given the rapid population decline, it is considered likely to be lower than the 2004 estimate (BirdLife International, 2015). In 2012, *B. regulorum* was up-listed from Vulnerable to Endangered in the IUCN Red List on the

basis that habitat loss and the illegal removal of birds and eggs from the wild have driven very rapid declines during the past three generations (BirdLife International, 2015).

Threats: Principal threats to the species were considered to include the conversion and degradation of wetland breeding grounds, capture for trade and domestication (Beilfuss *et al.*, 2007; Meine and Archibald, 1996b; Morrison *et al.*, 2007b; Olupot *et al.*, 2009; Pomeroy, 1987), and poisoning (Howard, 2010; Smith, 2011).

B. regulorum was considered a highly valued ornamental bird on national and international markets (Beilfuss *et al.*, 2007), in high demand for private collections, breeding facilities, safari parks and zoos (K. Morrison, *in litt.* to UNEP-WCMC, 2011). Illegal trade was reported to be a major threat to the species (R. Beilfuss, *pers. comm.* to UNEP-WCMC, 2011; International Crane Foundation (2009); K. Morrison, *in litt.* to UNEP-WCMC, 2011) and both legal and illegal trade were considered to be increasing (International Crane Foundation, 2009; Morrison, 2006). The short lifespan and poor breeding success of captive *B. regulorum* were considered to fuel the demand of specimens captured from the wild (International Crane Foundation, 2011).

Overview of trade and management: *B. regulorum* was listed in CITES Appendix II in July 1975. According to data in the CITES Trade Database, international trade 2004-2013 primarily consisted of live birds exported mainly for commercial purposes. In total, countries of export reported the direct export of 566 live birds (98% captive-bred) over this period and countries of import reported the import of 716 live birds (80% captive-bred; 20% wild-sourced).

Beilfuss *et al.* (2007) noted that although several conservation programmes had been initiated to mitigate the threats to *B. regulorum* in Africa, the control of trade required action. Corruption, lack of resources, enforcement and awareness, and outdated and weak laws were seen to contribute to the illegal trade on African cranes (Morrison *et al.*, 2007a).

Meine and Archibald (1996b) reported *B. regulorum* was "legally (although not always effectively) protected in Kenya, Uganda, Zimbabwe, and South Africa (Johnson, 1992; Mafabi, 1991; Morris, 1987)." Often considered a sacred species, *B. regulorum* was reported to have a protected status in many local communities (Meine and Archibald, 1996b). K. Morrison (*in litt.* to UNEP-WCMC, 17/10/2011) noted that apart from Tanzania, which has implemented quotas for trade in the past, no other country seems to have implemented specific regulations for wild harvesting and trade.

In 2013, Rwanda Environment Management Authority (REMA) in partnership with the Secretariat of the African-Eurasian Migratory Waterbird Agreement (AEWA), the International Crane Foundation and the Endangered Wildlife Trust Partnership, hosted an AEWA Single Species Action Planning Workshop to discuss the conservation of *B. regulorum* across its range and to develop a species action plan (Morrison, 2013). AEWA (2014) reported that the action plan will be presented for endorsement to the 6th Session of the Meeting of the Parties in November 2015. Once ratified, the plan will become binding on member countries (Morrison, 2013).

C. Country reviews

Rwanda

Distribution: The species was reported to be "distributed between the main wetland systems in the country" (Morrison, in press). The primary site for *B. regulorum* was considered to be Rugezi Marsh, although the species was also reported to be found in Akagera National Park, Kamiranzovu Wetland inside Nyungwe National Park, Nyabarongo Wetland and Akanyura Wetland (Morrison, in press).

Population status and trends: The population in 2015 was estimated at 300-500 individuals and was reported to be declining, based on estimates of 1000 individuals in 1985 (Morrison, in press). Beilfuss et al. (2007) estimated a population size of some hundreds in 2004. Nsabagasani (2010) recorded a total population of 108 individuals in the Rugezi Marsh Ramsar site in 2009; this was considered to be probably the largest population in the country (Nsabagasani, *pers. comm.* to UNEP-WCMC 2011). Based on crane surveys conducted over five years, Nsabagasani estimated the total population of B. regulorum in Rwanda to be 300 individuals, with approximately 100 found at Rugezi Marsh and its environs (Kabanguka, 2013).

Threats: Capture for the domestic pet trade and habitat loss, primarily to agriculture, were considered the primary threat to the species (Morrison, in press). It was noted that cranes were also illegally imported to Rwanda from south western Uganda to supply the domestic trade market for hotels and gardens (Morrison, in press). Future plans to remove peatlands for power generation were considered likely to escalate this decline in Rwanda (Morrison, in press).

Following a site visit to Rugezi Marsh by participants of the AEWA Single Species Action Planning Workshop in 2013, the main threat to this population was considered to be the conversion of habitat into subsistence agriculture, compounded by the capture of almost all crane chicks for sale to hotels and gardens within the country (Morrison, 2013).

Trade: According to data in the CITES Trade Database, no direct or indirect trade in *B. regulorum* originating in Rwanda has been reported 2004-2013. Rwanda has not published any export quotas for this species. Rwanda has submitted annual reports for all years 2004-2011, but has not yet submitted annual reports for 2012 or 2013.

R. Beilfuss (*pers. comm.* to UNEP-WCMC, 2011) considered the trade from Rwanda to be significant, noting that, according to anecdotal accounts, although it was largely illegal, a portion of it was recorded at border points, but CITES permits were rarely issued and the trade was usually not reported to CITES.

Management: The Ministerial order no. 007/2008 listed *B. regulorum* as a protected species and banned all unauthorised hunting (Rwanda Journal Officiel, 2008). C. Nsabagasani (*pers. comm*. to UNEP-WCMC, 2011) stated that capture and export permits are authorised by the Rwanda Development Board/Tourism and Conservation Department. Through its national legislation project, the CITES Secretariat categorised the national legislation in Rwanda as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

The species was reported to occur in Rugezi Marsh, which was the only Ramsar site in the country, and thus the only wetland area where human activities were regulated (Nsabagasani, 2010). It also occurs in a number of protected areas (see distribution), although the Nyabarongo Wetland and Akanyura Wetlands were reported to have no protection despite being Important Bird Areas (Morrison, in press).

In 2013, a community-based project entitled "Enhancing organizational and technical capacity for Integrated Biodiversity Conservation of Rugezi Marsh, Rwanda" was initiated by the Albertine Rift Conservation Society (ARCOS) and the Kitabi College of Conservation and Environmental Management (KCCEM) in collaboration with the International Crane Foundation/Endangered Wildlife Trust Partnership. Following a participatory threat assessment and stakeholder analysis, an environmental education and awareness strategy was developed for implementation in 2013-2014 (Morrison, 2013).

In 2014, the Rwanda Development Board (RDB) announced an amnesty for the surrender of captive *B. regulorum*. In Kigali city alone, it was reported that almost 150 cranes were registered. All birds were tagged and registered (Rolex, 2014; Hill, 2015). A national database of cranes in captivity was reported to have been created (Morrison, n.d.). Through a rehabilitation programme managed in collaboration with Akagera National Park and RDB (Rolex, 2014; Hill, 2015), a large number of confiscated birds were

reported to have been moved to a rehabilitation facility in Akagera National Park for reintroduction to the wild (Morrison, n.d.).

The IUCN Crane Specialist Group considered that the trade suspension for *B. pavonina* from Rwanda should be lifted (K. Morrison *in litt.* to UNEP-WCMC, 2015).

The CITES Authority of Rwanda was consulted as part of this review, but no response was received at the time of writing.

United Republic of Tanzania

Distribution: The species occurs mainly in western and northern parts of the country (Baker, 2007) and is absent from some parts of south-eastern Tanzania (Meine and Archibald, 1996b). The CITES Management Authority of Tanzania (*in litt.* to UNEP-WCMC, 2011) reported the species to be widespread in National Parks and Game Reserves but uncommon in human settlements. (Morrison, in press) reported the species to be widespread, with two non-breeding concentrations on the North West slopes of Mount Kilimanjaro and in the caldera of Ngorogoro Crater. Breeding was reported from areas in northern Tanzania including Serengeti National Park, Tarangire National Park, Arusha National Park, Lake Manyara National Park and Katavi National Park and in Usangu (Ruaha National Park) (Morrison, in press).

A resident population was reported to probably occur in the Ugalla Game Reserve in central-western Tanzania, although it was noted that the species was not "particularly abundant" in the Reserve (Beckner, 2008). In 2011, a small population (5 individuals observed) was recorded at Lake Chada in Katavi National park (Ligate *et al.*, 2014). The species was also reported to occur in Serengeti National Park, Tanzania (de Visser *et al.*, 2011)

In 2013, B. Amulike (*in litt.* to UNEP-WCMC, 2015) interviewed local residents in Kilimanjaro, Arusha and Singida to determine the species distribution within these regions (Table 2).

In 2015, N. Baker (*in litt.* to UNEP-WCMC, 2015) noted the lack of records of *B. regulorum* from the western swamps and in particular from the Moyowos-Malagarasi Ramsar site due to unsuitable habitat. Important areas for the species were considered to be the Usangu Flats and Ruaha River to Mtera Dam, Lake Eyasi via Bahi Swamp, the Singida lakes and Lake Kitangire (N. Baker *in litt.* to UNEP-WCMC, 2015). It was reported that very few individuals remain in the northwest wetlands where former river valley swamps have been converted to agriculture (N. Baker *in litt.* to UNEP-WCMC, 2015).

Table 2: Wetlands in which crowned cranes were reported to have been sighted.

Region	District	Wetland
Kilimanjaro	Same	Kalamawe dam, Chala, Kadondo farm, Dimbi dam
	Mwanga	Bwawa la mungu, Kalemawe dam, Jipe and Chala
	Rombo	Chala
	Moshi	TPC plantation, Msitu wa tembo
	Siha	Magadini dam
Arusha	Longido	Sinya mining, Lake Natron
	Monduli	Lake Manyara, Magadini
	Karatu	Qangdend chemchem
	Ngorongoro	Sakala Dam
	Arumeru	Tindigani Swamp, Momela dam
Singida	Iramba	Doromoni, Tulya, Mwengera, Lake Kitangiri, Shauritanga

Source: B. Amulike *in litt*. to UNEP-WCMC, 2015.

Population status and trends: The population of *B. regulorum* in Tanzania was reported to be decreasing (Morrison *et al.*, 2007b; Morrison, in press), with a potential decline of 75 per cent over 25 years (International Crane Foundation, 2011), despite the reported availability of suitable habitat (K. Morrison, *in litt*. to UNEP-WCMC, 2011). In 2015, (Morrison, in press) reported that declines in Tanzania

were significant, and that there were less than 2000 individuals with "no real evidence to suggest that there are more than 1000". Similarly, N. Baker (*in litt.* to UNEP-WCMC, 2015) considered population estimates of 1000 to 2000 individuals to be "reasonably accurate".

In the 1980s, the total population in Tanzania was estimated to be a maximum 20 000 individuals (Baker, 2007). The population, in 1985 and 1994, was estimated to be several thousand individuals (Urban, 1996), and in 2004, "low 1000s" (Beilfuss *et al.*, 2007). Baker (2007) estimated the population size to be under 5000 individuals noting that the actual figure could be considerably lower than this.

Crane counts to estimate abundance in wetlands of five regions (Kilimanjaro, Arusha and Singida plus two unspecified regions) were carried out in 2013 by B. Amulike (*in litt.* to UNEP-WCMC, 2015). During the dry season six individuals were recorded in Lake Chala (partially protected), none were observed in all other wetlands (Amulike *in litt.* to UNEP-WCMC, 2015). In the wet season, three individuals in total were recorded: two in an unprotected area outside of Lake Manyara National Park (LMNP) and one in Lendoya village (Arusha Region). In all areas where cranes have been reported, local residents reported few or no cranes compared to 5-10 years ago, which suggests the species has been locally extirpated in some areas (Amulike *in litt.* to UNEP-WCMC, 2015).

In 2013, around 279 individuals were recorded in Ngorongoro Conservation Area (NCA), which was considered to provide a stronghold for the species, and two pairs were recorded in Lake Manyara National Park (LMNP). None were found in the Serengeti National Park (SENAPA) or Tarangire National Park (TNP) (Amulike *in litt.* to UNEP-WCMC, 2015).

Few individuals of *B. regulorum* were reported to have been recorded outside of protected areas (Morrison *in litt.* to UNEP-WCMC, 2015).

In 2015, N. Baker (*in litt.* to UNEP-WCMC, 2015) reported that only three post-breeding populations were known, of which one population – on the north-west slopes of Mt Kilimanjaro – probably related to Kenyan breeders. In addition, only three non-breeding congregations were reportedly known: within the Ngorongoro Conservation Area; the lower western slopes of Kilimanjaro; and the Usangu Flats within Ruaha National Park. A possible fourth congregation at the northwest end of Lake Rukwa was also noted. Smaller concentrations of less than 50 birds were also reported from Lake Kitangire, Bahi and Singida (N. Baker *in litt.* to UNEP-WCMC, 2015). Records of *B. regulorum* collected over the past 15 years compared with those collected over 35 years (Figures 2 & 3) show a range reduction from 32% of the country to 19.7%, and the loss of most extralimital records, likely due to a much reduced population size. Extirpation from the Ufipa Plateau was also noted (N. Baker *in litt.* to UNEP-WCMC, 2015).

Figure 2: Records of *B. regulorum* in Tanzania from 2000-2014 (sourced with permission from N. Baker (*in litt*. to UNEP-WCMC, 2015).

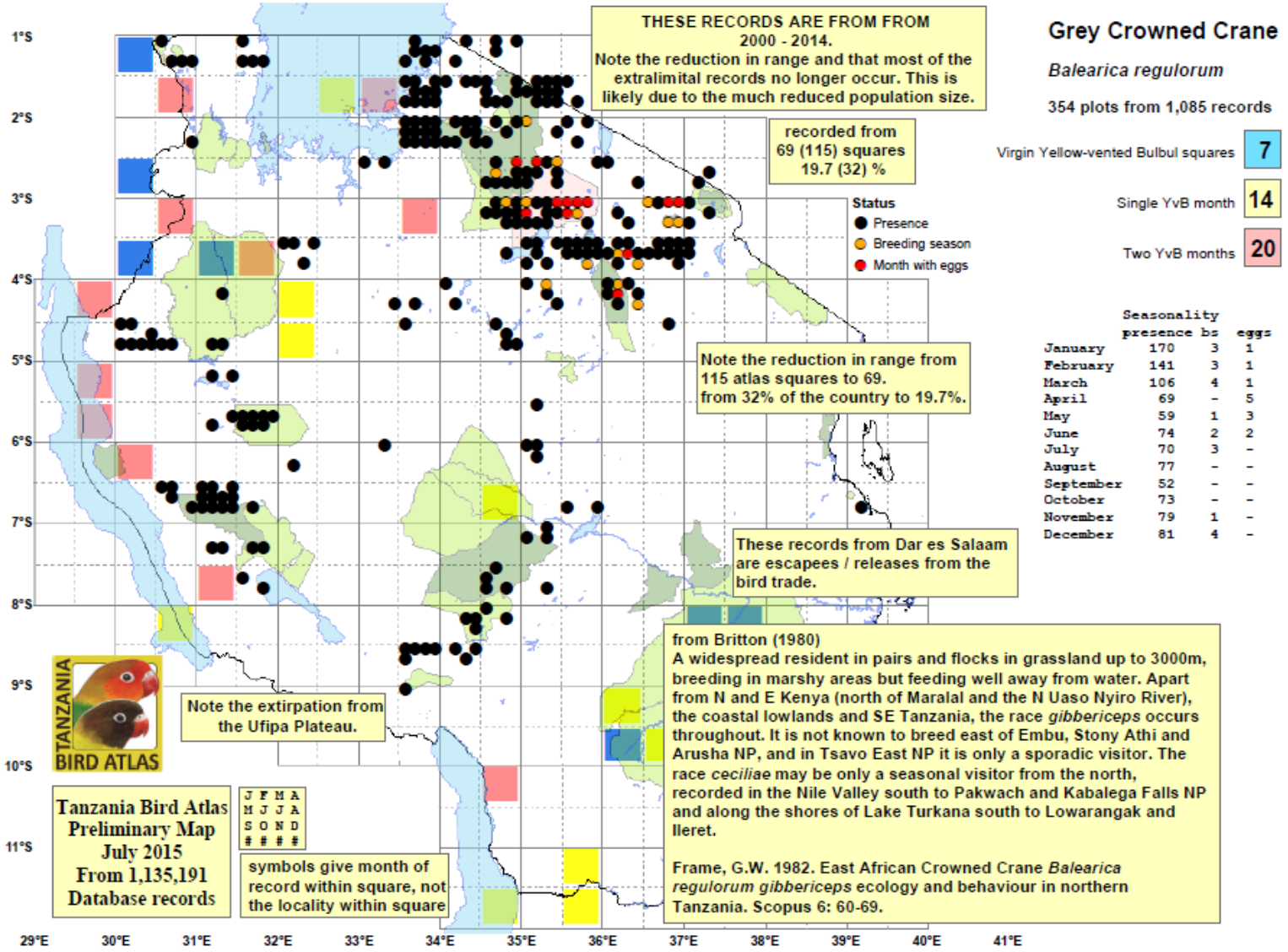
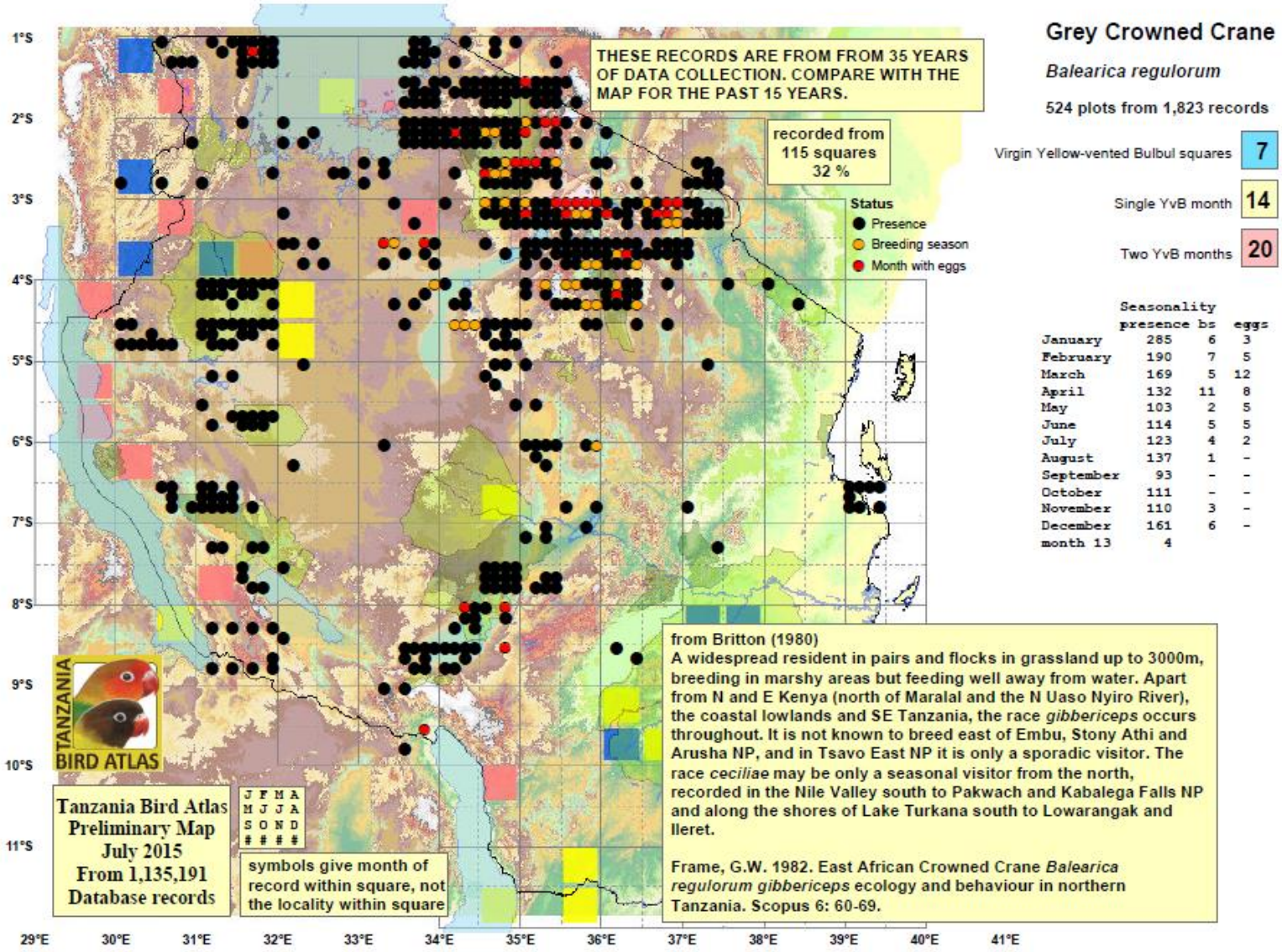
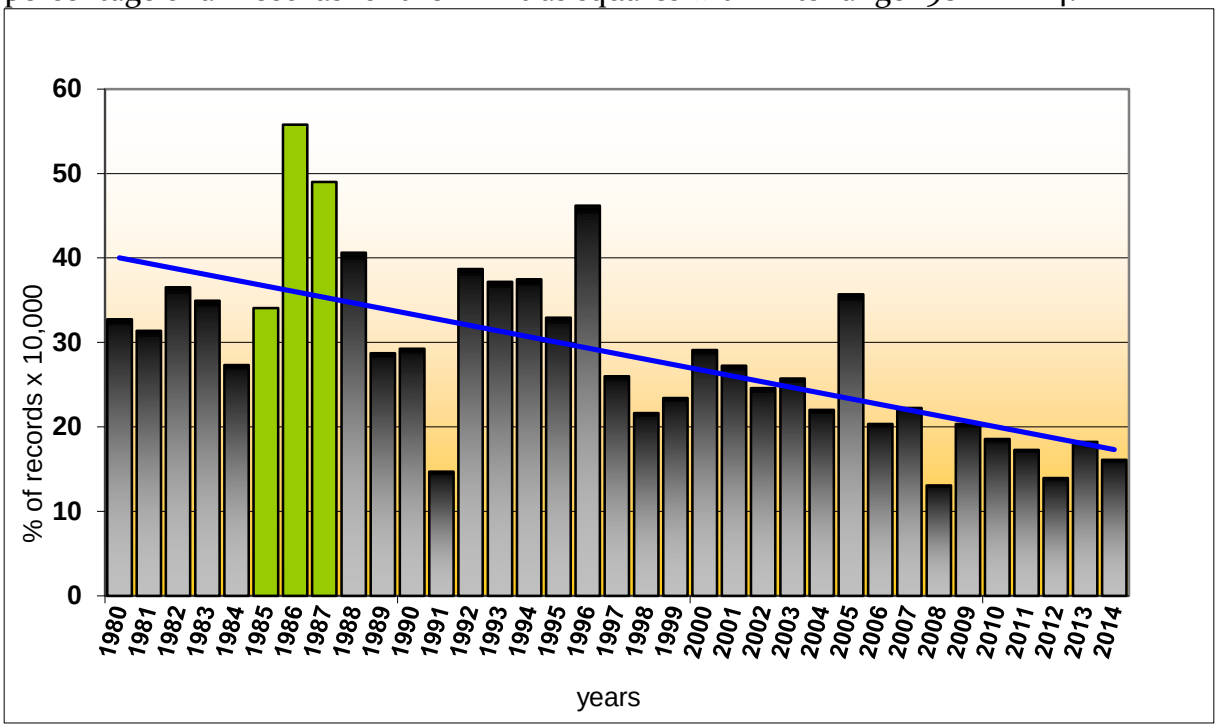


Figure 3: Records of *B. regulorum* in Tanzania over 35 years (sourced with permission from N. Baker (*in litt*. to UNEP-WCMC, 2015)



Data from the Tanzanian Bird Atlas indicate a continuing decline in the range of the species (N. Baker *in litt*. to UNEP-WCMC, 2015) (Figure 4).

Figure 4: Grey Crowned Crane *Balearica regulorum* number of records per year as a percentage of all records for the 116 Atlas squares within its range 1980 – 2014.



Sourced with permission from N. Baker (*in litt*. to UNEP-WCMC, 2015). (A peak in 2005 was considered to be due to additional effort during the January waterbird count).

The CITES Management Authority (MA) of Tanzania (*in litt*. to UNEP-WCMC, 2015) stated that no surveys of the species had been conducted.

Threats: The main threats in Tanzania were considered to include habitat loss due to agriculture and grazing, and the bird trade (Katondo, 1996; CITES Management Authority of Tanzania *in litt*. to UNEP-WCMC, 2011; Amulike *in litt*. to UNEP-WCMC, 2015) the species was also reported to be occasionally poisoned by farmers in response to crop damage (Katondo, 1996). Morrison (in press) also reported mining to be a threat.

A rapid trade assessment conducted in north-western Tanzania in 2007 found evidence of capture and trade, however the findings also showed that the number of captured birds had decreased during the previous four years, and the price of cranes had increased (Morrison, 2007). Mortality rates during transport and capture were considered relatively low (Morrison, 2007). One study, conducted in partnership with Traffic East Southern Africa, found that *B. regulorum* was captured for trade purposes in the Malagarasi Muyovosi Ramsar site in north-west Tanzania (Morrison, *in litt*. to UNEP-WCMC, 2011). Morrison (*in litt*. to UNEP-WCMC, 2011) found a good awareness amongst local communities of the illegal nature of crane trade. Amulike (*in litt.* to UNEP-WCMC, 2015) stated that illegal trade was still occurring in some areas, and Morrison (*in litt.* to UNEP-WCMC, 2015) reported that, during a research project undertaken by the ICF/EWT, local community members noted that "cranes were often removed from the wild for the captive trade markets and were destined for Arusha before supposedly leaving the country."

Trade: Tanzania published export quotas for live specimens of *Balearica regulorum* every year 1998-2004 and 2008-2012 (Table 1); no quotas were published 2005-2007 or since 2012.

Table 1: Export quotas for live *Balearica regulorum* from Tanzania, 1998-2015. No quotas have been published since 2012.

	1998	1999	2000	2001	2002	2003	2004	2008	2009	2010	2011	2012
Quota	366	366	366	50	20	6	5	100	100	100	100	100

With the exception of 2007, all CITES annual reports have been submitted by Tanzania for the period 2004-2013. According to data in the CITES Trade Database, direct trade in *B. regulorum* from Tanzania comprised of live, wild-sourced individuals exported for zoos according to Tanzania (10 individuals) and zoos or commercial purposes according to countries of import (12 individuals) in 2005 and 2011 (Table 2). The quota of 100 specimens does not appear to have been exceeded in 2011.

Table 2: Direct exports of *Balearica regulorum* from Tanzania, 2004-2013. All trade was in live wild-sourced specimens. No trade was reported in 2004, 2006-2010 and 2012-2013.

Purpose	Reported by	2005	2011	Total
T	Exporter			
	Importer	8		8
Z	Exporter	6	4	10
	Importer		4	4

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

In contrast to data provided in CITES annual reports and included in the CITES Trade Database, the CITES MA of Tanzania (*in litt*. to UNEP-WCMC, 2011) reported that a total of 182 *B. regulorum* had been exported 2006-2010.

In the ten-year period 2004-2013, the only indirect trade in *B. regulorum* originating in Tanzania was low levels of trade in live individuals, trophies and bodies re-exported in 2005, 2006 and 2007. Countries of re-export reported trade in nine live birds, two trophies and one body (all wild-sourced), and the countries of import reported trade in four live birds (three wild-sourced and one recorded as pre-Convention). Indirect trade was recorded primarily for commercial purposes (six live and one body) according to countries of export, with the remaining trade recorded as purposes B, P, and Z. No indirect trade has been recorded since 2007.

R. Beilfuss (*pers. comm.* to UNEP-WCMC 2011) considered the trade from Tanzania to be significant, noting that although it was largely illegal, a portion of it was recorded at border points, but CITES permits were rarely issued and the trade was usually not reported to CITES.

Management: The Wildlife Conservation Act of 2009 set the need for hunting licences and permits for the capture of any animal (United Republic of Tanzania, 2009). *B. regulorum* was not listed as a national game species under particular protection (United Republic of Tanzania, 2009). However, it is included in a number of national parks (see distribution section). Through its national legislation project, the CITES Secretariat categorised the national legislation in the United Republic of Tanzania as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

The CITES MA of Tanzania (*in litt*. to UNEP-WCMC, 2011) previously considered the export quota of 100 specimens per year (2008-2012) not to be detrimental to the species' survival, given that no offtake is allowed in protected areas, the species' availability at capture sites indicates a healthy wild population, and export is only permitted under exceptional circumstances (i.e. zoos and scientific research).

B. Amulike (*in litt.* to UNEP-WCMC, 2015) noted that regulations guiding the harvest and trade of *B. regulorum* appeared not to have been communicated at the village level. In addition, the Village government leaders reported a lack of collaboration from the District government, the use of fake permits, and collection of more species than those listed on permits. Village government leaders stated that they would be able to help control both illegal and unsustainable wildlife offtake if they better

understood harvest regulations and were fully involved in conservation activities. B. Amulike (*in litt.* to UNEP-WCMC, 2015) stated that there is no "solid" monitoring or management plan for *B. regulorum* in place in Tanzania, and no government funded research on Crowned Cranes. Research into the species was reported to be mostly carried out by independent researchers and graduate students. N Baker (*in litt.* to UNEP-WCMC, 2015) also noted the lack of official monitoring of bird species in Tanzania.

In 2013, a preliminary study to understand the factors contributing to the decline of *B. regulorum* in Tanzania was conducted. Based on the outputs of the study, further research was to be undertaken from 2014 in four key areas (Ngorongoro Conservation Area, specifically the crater, Lake Kitangire, Usangu Wetlands and West Kilimanjaro). The study aimed to better understand the population status, distribution, seasonal movements and threats to the species in these areas (Amulike, 2013).

The IUCN Crane Specialist Group considered that the trade suspension for *B. pavonina* from Tanzania continued to be appropriate (K. Morrison *in litt.* to UNEP-WCMC, 2015).

The CITES MA of Tanzania (*in litt*. to UNEP-WCMC, 2015) stated that Tanzania agreed with the precautionary export quota of 50 specimens that was recommended by the AC26 (March 2012), and was soliciting funds to conduct a population study and non-detriment finding for the species.

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Agapornis fischeri: United Republic of Tanzania

A. Summary

UNITED REPUBLIC OF TANZANIA: Suspension valid from: 20 April 1993	Estimated population size of this endemic species is c. 290,000 – one million individuals in 1997, and reported to be declining, however in some areas, populations have increased and are considered healthy, with the species being eradicated locally as a pest. No trade reported from Tanzania 2004-2013 during the period of the suspension. Given the large population size, offtake in some locations is likely to be sustainable. Support to assist Tanzania to conduct a population study and non-detriment finding and implement a regular monitoring programme may be merited. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Agapornis fischeri (Fischers Lovebird) was selected for Phase I of the RST at AC5 (August 1991). At AC7 (March 1992), the species was categorised as of "possible concern" for Tanzania (AC7 document) and recommendations were formulated (Table 1).

Table 1: Recommendations by the Animals Committee (AC7)

Range State	Recommendations and deadlines resulting from AC7 (March 1992)
United Republic of Tanzania	**Within 3 months:** (1) Temporary export quota: Establish a moratorium on exports until a population survey has been carried out and the results analysed. **Within 12 months:** (2) Population status and distribution: Undertake a population survey of the species

In 1993, the SC recommended that Parties suspend imports of *A. fischeri* from the United Republic of Tanzania (hereafter referred to as Tanzania) until appropriate action had been taken to address concerns raised by the Animals Committee (SC29 Document). The suspension for Tanzania entered into force on 20 April 1993 (Notification No. 737).

On 28/12/2007 the Secretariat received a letter from Tanzania requesting withdrawal of the suspension, as the country had endeavoured to take measures to address the recommendations (SC57 Doc. 29.2 Annex 3). The Secretariat noted that the species has recovered in some areas and cautious export quotas has been published in 2007 and 2008; the Secretariat and AC Chair recommended that the suspension be withdrawn (SC57 Doc. 29.2 Annex 1 (Rev. 1)). Concerns were raised at SC57 (July 2008) that the recommendations had not been complied with, and the SC agreed to define what additional measures Tanzania needed to take in order for the Committee to withdraw its recommendation to the Parties to suspend imports of specimens of *A. fischeri* (SC57 Summary Record). The SC agreed by postal procedure to withdraw the suspension provided that Tanzania had:

a) Provided the results of its ongoing population survey of the species;
b) Explained how these will be used as a basis for making non-detriment findings;

c) Established a cautious export quota for 2009; and
d) Explained how future quotas will be adjusted as necessary to ensure that the level of trade sustainable.

These recommendations were communicated to Tanzania on 20/06/2009; no reply had been received for inclusion in SC62 Doc. 27.2 (Rev.1)) in 2012, and the trade suspension was retained.

B. Species characteristics

Biology: *Agapornis fischeri* inhabits semi-arid woodland, deforested grassland, and palm savannah (del Hoyo *et al.*, 1997; Morton & Bhatia, 1992; Perrin, 2009). Mwangomo *et al.* (2008) suggested that the species prefers grassland habitat, but it has been known to be present in all types of woodland in the Serengeti (del Hoyo *et al.*, 1997). In the Singida region in central Tanzania, the species was reported to be mainly distributed in areas with *Borassus* palms or mixed Miombo and *Borassus* palms (Mlingwa and Msuhu, 2004, in SC57 Doc 29.2 Annex 3). Beesley (1972) reported that the species was also reported in cultivations outside of Arusha National Park.

The species' diet mainly consists of grass seeds, but also takes *Acacia* seeds directly from trees (del Hoyo *et al.*, 1997; Mwangomo *et al.*, 2008; Perrin, 2009); it was reported to damage crops in some areas (Williams and Arlott, 1992). *A. fischeri* was reported to breed from January to April, and again in June and July (BirdLife International, 2012). Clutch-size in captivity was reported to vary between three to eight eggs (del Hoyo *et al.*, 1997).

C. Country reviews

Tanzania

Distribution: *A. fischeri* is endemic to Tanzania (BirdLife International, 2012, 2015). Records of the species occurring as irregular vagrants in Burundi, Rwanda and Kenya (Forshaw, 2010) are considered to refer to feral populations (Morton and Bhatia, 1992).

The species occurs in north-central Tanzania on the interior plateau of the country between 1000 and 1500 m above sea level (Perrin, 2009). The distribution is bounded in the east by forested mountains of the Rift Valley and by Lake Victoria in the north (Perrin, 2009). However, its southern and western limits do not have obvious geographical barriers (Perrin, 2009) but are recorded as Nzega and Singida regions to the south (Forshaw, 2010).

A. fischeri is a BirdLife restricted range species: its total area of distribution been estimated at 136,000km², but with possibly only 51,000km² of suitable habitat within this area (Collar 1997). *A. fischeri's range* is thought to centre on Serengeti National Park (Collar 1997), but it has also been recorded within a number of nationally and locally protected areas including Arusha National Park, Lake Manyara National Park, Serengeti National Park, Tarangire National Park, Ngorongoro Conservation Area, Maswa Game Reserve, and Longido Game Controlled Area (now forest reserve) (Baker and Baker, 2001; WDPA, 2010). The species was also reported to occur in two unprotected wetland areas: along the southern end of the Wembere River flood-plain, and along the eastern shore of Lake Eyasi (Baker and Baker, 2001).

Population status and trends: The population of *A. fisheri* has been estimated at 290,205-1,002,210, with 103,205–815,210 thought to lie within protected areas and the remaining 187,000 living at very low density outside them (Collar 1997). The species was reported to have been very common in the past, but a major population decline since the 1970s has been reported, which has principally been caused by trapping for the wild bird trade (BirdLife International, 2012). Large flocks of the 1930's have been reported as 'greatly reduced' (largest in recent survey: 150), and perhaps only occurring only

around Ndutu and Serengeti National Park (Collar 1997, Morton and Bhatia, 1992; Moyer, 1995). The population in Arusha was noted to comprise hybrids and birds from around Tinga Tinga, West Kilimanjaro were reported to be small, isolated populations that probably originated from escaped birds from the bird trade more than 40 years ago (N. Baker *in litt*. to UNEP-WCMC, 2015).

The species has been categorized in the IUCN Red List of Threatened Species as Near Threatened on the basis of moderately rapid population reduction in a restricted range as a result of trapping for export (BirdLife International, 2012).

In 2004, the Tanzanian Wildlife Research Institute (TAWRI) conducted a survey of *A. fischeri* in central regions of Tanzania which found the population to be 'healthy', with average densities of 1770 birds/km² (range 0-11,200 birds km²) in the Singida region (SC57 Doc 29.2 Annex 3). It was reported that the species had become an agricultural pest since the trade suspension had been implemented, and thousands had been killed annually by the government to protect crops and livelihoods (SC57 Doc 29.2 Annex 3; CITES Management Authority of Tanzania, *in litt*. to UNEP-WCMC, 2015).

Records of *A. fisheri* collected for the Tanzanian Bird Atlas over 15 years (1999-2014) compared with those collected over 35 years (Figures 1 & 2) show a range reduction from 19% of the country to 17.7% (N. Baker *in litt*. to UNEP-WCMC, 2015).

Threats: A major threat to the species has been the international trade; the species was considered the most commonly traded wild bird in the world in 1987 (BirdLife International, 2012). Using both data from the CITES Trade Database for 1983-1988 and data from the Wildlife Department for 1989-1990, Leader-Williams and Tibanyenda (1991) reported that average exports of the species were over 53,000 (1983-1990) and that the range of the species had retracted as a result.

It was recognised that legal trapping of *A. fischeri* has been halted, but in 1995 the population was considered to be at such low numbers that trade could post a threat if re-started (Moyer, 1995). Butchart and Symes (BirdLife International, 2012) stated that the species could qualify for a higher threat category than Near Threatened if trade re-started and evidence suggested a greater population decline. Mwangomo *et al*. (2008) noted that the species was illegally exploited outside of protected areas.

Trade: *Agapornis fischeri* was listed in CITES Appendix II on 6 June 1981. Tanzania published an export quota of 10,000 live specimens in 2007 and 2008. No export quotas have been published subsequently. According to data from the CITES Trade Database, no direct exports of *A. fischeri* from Tanzania were reported 2004-2013. Annual reports have been received from Tanzania for every year 2004-2013. Low levels of indirect trade in wild-sourced *A. fischeri* originating in Tanzania were reported by re-exporters 2004-2013: one live individual re-exported by Kuwait for personal purposes in 2006 and three specimens re-exported by the United States for scientific purposes (two in 2009 and one in 2013).

Management: In 1993, Tanzania imposed an export ban and also an internal ban on trade in *A. fischeri* (SC57 Doc. 29.2 Annex 3). Tanzania considered the quota published in 2007 and 2008 of 10,000 individuals to be cautious, and it was noted that TAWRI would continue to monitor the population to ensure that breeding viability was maintained within the species natural habitat (SC57 Doc. 29.2 Annex 3). The species was reported to occur in a number of protected areas (see above).

The CITES Management Authority of Tanzania (*in litt*. to UNEP-WCMC, 2015) stated that Tanzania was soliciting funds to conduct a population study and non-detriment finding for the species. However, Tanzania requested that the suspension be removed on the basis that the species had increased to a nuisance level, requiring expensive pest control (killing birds and destruction of breeding sites) (CITES Management Authority of Tanzania, *in litt*. to UNEP-WCMC, 2015). Through its national legislation project, the CITES Secretariat categorised the national legislation in Tanzania as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

Figure 1: Records of *A. fischeri* in Tanzania from 1999-2014 (sourced with permission from N. Baker (*in litt*. to UNEP-WCMC, 2015).

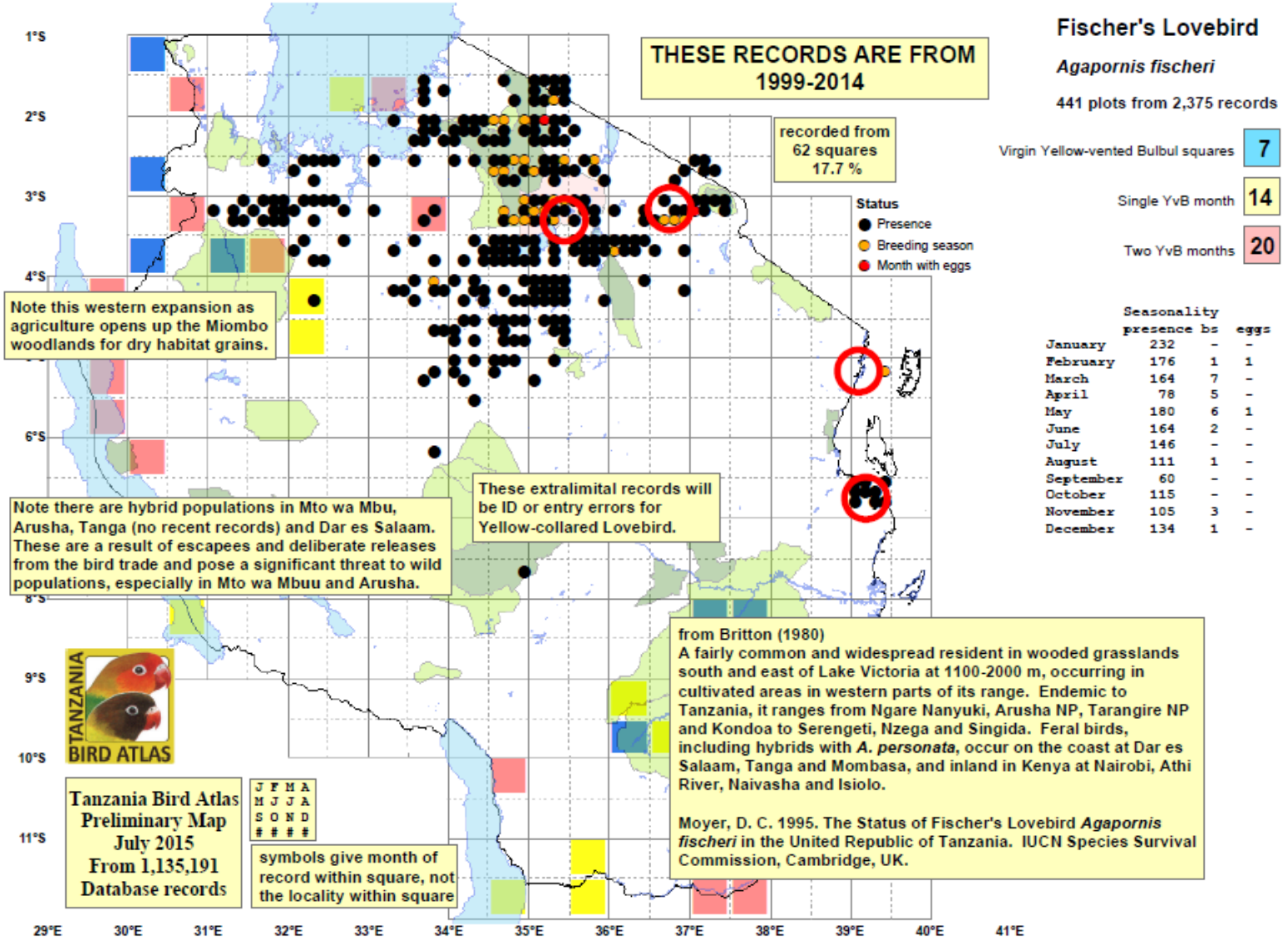
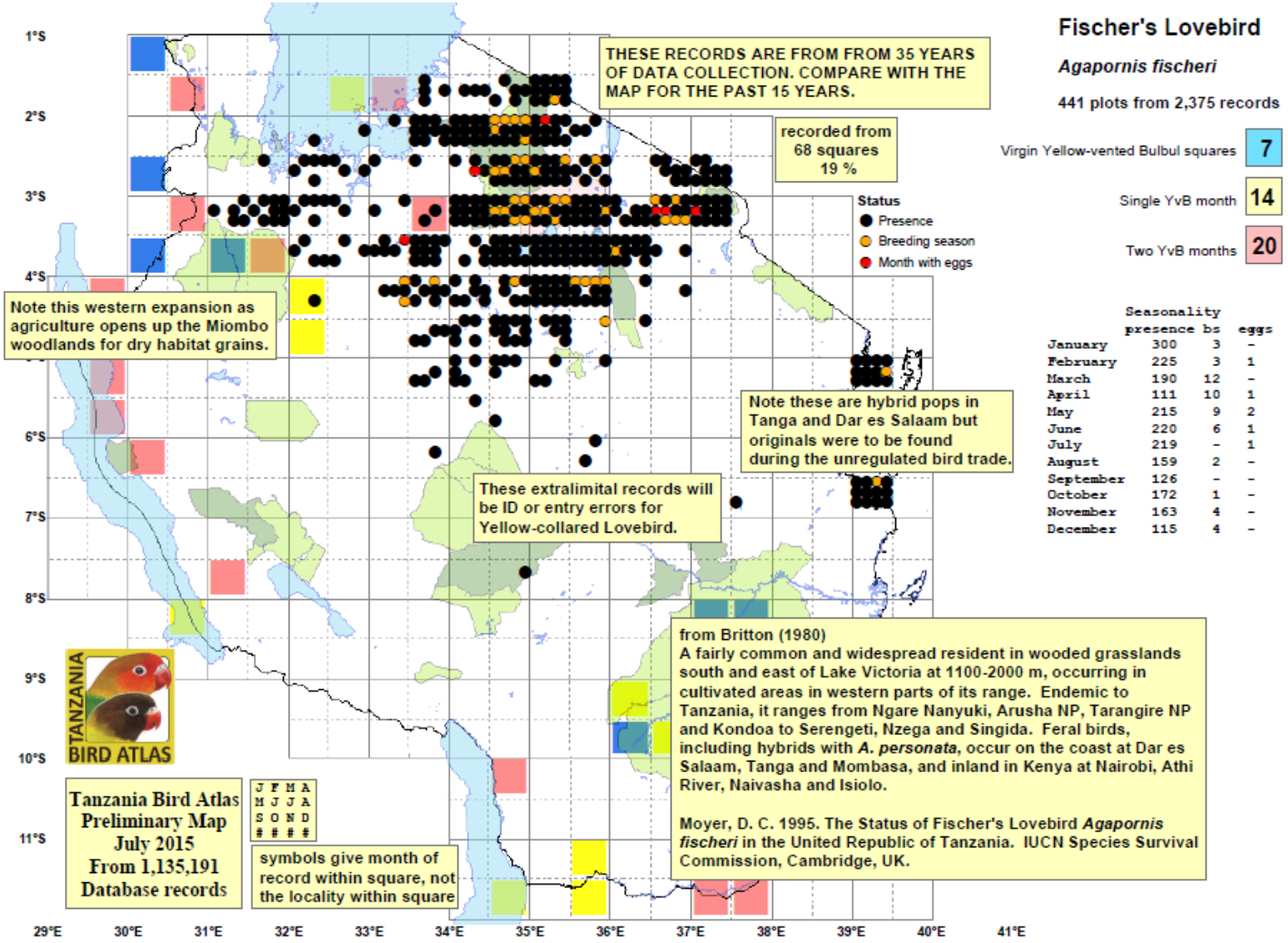


Figure 2: Records of *A. fischeri* in Tanzania over 35 years (sourced with permission from N. Baker (*in litt*. to UNEP-WCMC, 2015).



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Coracopsis vasa: Madagascar

A. Summary

MADAGASCAR: Suspension valid from: 20 January 1995	Global population considered to be declining, although reported to be widespread and common in Madagascar. Regarded to be an agricultural pest in some areas and often killed as such. Locally consumed, although not clear if this is through targeted harvest or pest birds that are being eaten. No trade reported during the period of the suspension. Demand for the species appears to be low. Until a cautious export quota is established and further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Coracopsis vasa (Vasa Parrot) was included in Phase II of the RST based on a preliminary review conducted in 1991. A detailed review of the status and trade was considered at AC9. The species was categorised as of "possible concern", and a primary recommendation was formulated (Table 1). The Management Authority (MA) of Madagascar responded with a draft project proposal for presentation to SC32 (November 1994). They considered that the primary recommendations for this and other species relating to Madagascar were not compatible with the long-term strategy that had been put in place (see SC57 Doc. 29.2 Annex 2). The Secretariat asked what action had been taken to implement the AC recommendation, and requested a copy of the strategy referred to by the MA (see SC57 Doc. 29.2 Annex 2). A two page summary of the principles of the strategy was provided, but the SC did not consider that the response was sufficient (see SC57 Doc. 29.2). The quota was not established within the recommended timeframe, and a recommendation was made that all Parties suspend imports of specimens of *C. vasa* from Madagascar (see SC 57 Doc. 29.2 Annex 2). The suspension entered into force on 20 January 1995 (Notification No. 833).

Table 1: Recommendations by the Animals Committee (AC9; SC 57 Doc. 29.2 Annex 2)

Range State	Recommendations and deadlines resulting from AC9 (September 1993)
Madagascar	**(AC9) Within 3 months Madagascar should:** Provide details of the biological basis for determining exports will not be detrimental. **(SC 57) By 23 December 1994, the Management Authority should:** Establish a cautious annual export quota or implement the outstanding Animals Committee primary recommendation(s), with the notation that, if the Secretariat was not satisfied that this recommendation had been effected, it would send a Notification to the Parties in January 1995 to inform them that the Standing Committee had recommended that Parties not accept imports from this country of specimens of this species until the primary recommendations of the Animals Committee have been implemented.

At SC35 (June-July 2005) following the suspension, a proposal for Project S-084 "Investigation into the population status of *Agapornis cana* and *Coracopsis vasa* in Madagascar and the development of a management programme for their conservation" prepared by the MA was approved by the SC on the condition that the Secretariat be satisfied with the proponent's amendments to the budget and methodology (SC35 Summary Report).

At SC 57 (July 2008), the Secretariat commented that in response to a country-based RST, Madagascar has established a CITES Action Plan which was aimed at dealing with commercial export of Appendix-II listed species, including *Coracopsis vasa* (SC57 Doc. 29.2). The Secretariat noted that it was questionable whether a detailed and expensive survey of the species in the wild is necessary to ensure the establishment of sustainable harvest quotas, particularly in view of the relatively low expected level of demand in international trade (SC57 Doc. 29.2). The Secretariat and AC Chairman recommended that the SC should withdraw its recommendation to Parties not to accept imports of specimens of *C. vasa* from Madagascar, if the MA establishes a cautious export quota in consultation with the Secretariat and the Chairman of the AC (SC57 Doc. 29.2). However, the suspension remained in force (Notification No. 2008/052).

B. Species characteristics

Taxonomic note: Three subspecies of *C. vasa* are recognised: *C. v. comorensis*, *C. v. drouhardii* and *C. v. vasa* (Collar, 1997; Dickinson and Remsen Jr, 2013).

Biology: *C. vasa* was reported to inhabit humid and deciduous forests, coastal plains with coconut plantations, savannahs including palm savannah with scrub and relict forest, ricefields, and other cultivations next to woodland, and sub-desert areas (Collar, 1997). It is found only up to 1000 m (Collar, 1997), but is more common below 600 m (Dowsett, 2000). *C. vasa* was reported to be less tied to forest than *C. nigra* (Collar, 1997), favouring less dense forest and brush (Forshaw, 2010).

C. vasa was reported to feed on fruits, berries, and seeds; capable of eating maize on the stalk (Collar, 1997). It was reported to feed on the ground and in trees (Forshaw, 2010). Although not a migratory species, local movements to search for food were reported (Collar, 1997). It normally forms small flocks, but larger flocks gather at night to roost, and at food sources (Forshaw, 2010).

The species breeds October–January. Average clutch size is three eggs, with an incubation period lasting 17 days and a nesting period of 45-49 days observed in captivity (Collar, 1997). *C. vasa* was noted to have an unusual, polygynandrous mating system (Ekstrom *et al.*, 2007).

C. Country review

Madagascar

Distribution: *C. vasa* occurs in Madagascar and the Comoro Islands (Collar, 1997). The species was introduced to Reunion, but no longer occurs there (Collar, 1997). *C. vasa* was reported to be widely distributed throughout lowland Madagascar (Sinclair and Langrand, 2003).

Population status and trends: The species was considered to be Least Concern by the IUCN Red List (BirdLife International, 2012). The size of the global population is unknown, but the species was reported to be fairly common in many areas (del Hoyo *et al.*, 1997). The population trend was suspected to be declining owing to high levels of persecution (del Hoyo *et al.*, 1997). However, this decline was not believed to be sufficiently rapid to approach the Vulnerable criterion (>30% decline over ten years or within three generations) (BirdLife International, 2012).

Wilkinson (1998) reported *C. vasa* to be common or fairly common on Madagascar, where they were once very common or abundant (Dee, 1986; Langrand, 1990). A study of the population status of *C. vasa* in Madagascar in 2000 found that aspects of the species behaviour prevented accurate estimates of density, but it was considered to be generally common (Dowsett, 2000 in Martin *et al.*, 2014). Ramanampamonjy (2012, *in litt.* to Martin *et al.*, 2014) reported that the species remained common in many localities; flocks of >40 individuals were reportedly observed regularly in the west and southwest

regions where the populations were considered likely stable, but the species was reported as rarer in east Madagascar (Ramanampamonjy, 2012 *in litt.* to Martin *et al.,* 2014). Populations were, however, reported becoming increasingly fragmented (Ramanampamonjy, 2012 *in litt.* to Martin *et al.,* 2014). Martin *et al.* (2014) noted that little data exists to assess range and population trends.

Threats: In the 1970s, *C. vasa* was officially listed as a pest species in Madagascar because of crop predation (Collar, 1997); there were concerns, however, that levels of exploitation were excessive, with over-trapping of birds in response to raids on ricefields (Collar, 1997). The species was also reported to be hunted for food and taken for domestic and international live trade (Juniper and Parr, 1998). According to Ekstrom (2004 in Martin *et al.*, 2014), these activities were only permitted from May-October, to reduce the impacts on breeding birds, but these restrictions were reportedly not well known or obeyed (Ekstrom, 2004 in Martin *et al.*, 2014). Jenkins *et al.* (2011) reported that *C. vasa* was commonly eaten, but this was probably because it was killed as crop pests and eaten rather than targeted for food.

Habitat loss from deforestation, in particular the loss of large breeding trees, was believed to likely negatively impact on some populations (Perrin, 2012; Ekstrom, 2013). Although, Scott *et al.* (2006) found that forest clearance in spiny forest habitat in Madagascar did not reduce abundance compared to other species, and *C. vasa* was also reported to frequent human-modified habitats in some areas (Dowsett, 2000 in Martin *et al.*, 2014).

Trade: *C. vasa* was listed on CITES Appendix II on 6 June 1981 (Ghana previously had listed the species in Appendix III). CITES annual reports have been received from Madagascar for all years 2004-2013. Madagascar has not published any CITES export quotas for this species. According to data in the CITES Trade Database, no direct trade in *C. vasa* from Madagascar was reported during the ten year period 2004-2013. Indirect trade in *C. vasa* originating in Madagascar was reported in 2005 and 2008 and comprised entirely of wild-sourced specimens re-exported for scientific purposes.

Ekstrom (2004 in Martin *et al.*, 2014) reported that there was some local trade in caged birds, which were occasionally seen for sale in Antananarivo.

Management: The species was reported to occur in many protected areas in Madagascar (Collar, 1997; Ekstrom, 2013), including Montane d'Ambre National Park and Ambohitantely Special (Forshaw, 2010). From 2002-2004, *C. vasa* was observed in Fiherenana River Valley, Ranobe Lake and Forests, and Manombo River Valley in PK32-Ranobe (Atsimo Andrefana Region) protected area, where it was associated with all terrestrial habitats (Gardner *et al.*, 2009).

Pain *et al.* (2006) noted there was no national legislation banning the collection of birds. Through its national legislation project, the CITES Secretariat categorised the national legislation in Madagascar as "legislation that is believed generally to meet the requirements for implementation of CITES".

Martin *et al.* (2014) reviewed developments since the publication of the IUCN Parrot Action Plan in 2000 and identified areas where critical knowledge is lacking. For effective conservation of *C. vasa*, Martin *et al.* (2014) recommended:

- "Surveys to determine current distribution and abundance, particularly focusing on areas for which historical data on their distribution in Madagascar exists (Dowsett, 2000) and references therein could be used to assess trends;
- Research into ways to resolve conflicts with farmers in areas where *C. vasa* is persecuted as a perceived crop pest;
- Studies of systematics, focusing on the relationships among populations in the Comoro Islands and Madagascar."

M. Jenkins (Madagascar visit, this project) confirmed that the species awaits the allocation of an export quota. An exporter consulted within the country indicated that there is very little demand for the species in international markets (Donty, J.B, *pers. comm*. to M. Jenkins September 2015), so there may be little incentive to take action on it.

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Poicephalus robustus: Democratic Republic of the Congo, Mali, Togo

A. Summary

DEMOCRATIC REPUBLIC OF THE CONGO Suspension valid from: 9 July 2001	Occurrence reported in the south and east of the country, where breeding has been confirmed, however status is poorly known. No trade from the DRC was reported 2004-2013. The Standing Committee recommended withdrawal of the trade suspension if a cautious export quota was established; no response to this recommendation appears to have been received. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
MALI Suspension valid from: 9 July 2001	Known from only one record in the country and its occurrence in Mali has been questioned. Mali has reported exports of the species in 2004, 2005 and 2010 but it has not provided information on the distribution and abundance of the species in its country nor justified the basis for the quantities in trade, as recommended by the Standing Committee. Details of protection or management within the country are unknown. Until further information is provided to confirm occurrence within the country and demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
TOGO Suspension valid from: 9 July 2001	Known from only one record in the country and its occurrence in Togo has been questioned. Togo has reported exports of the species in 2012 but it has not provided information on the distribution and abundance of the species in its country nor justified the basis for the quantities in trade, as recommended by the Standing Committee. Details of protection or management within the country are unknown. Until further information is provided to confirm occurrence within the country and demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Poicephalus robustus (Cape Parrot) was suggested as a potential candidate for Phase IV of the RST at AC14 (May 1998) (AC14 Summary Record). At AC15 (July 1999), concerns relating to non-detriment findings for trade from non-range countries, or countries where the species is rare, were raised and the species was categorised as "d(ii) those for which there is insufficient information on which to base a judgement" based on Decision 10.79 (AC15 Proceedings, Annex 6).

At AC16 (December 2000), recommendations were formulated (Table 1). No response to the recommendations was received from Democratic Republic of the Congo (hereafter referred to as DRC), Mali and Togo (AC17 Doc. 7.1; SC45 Doc12). At SC45 (October 2006), the SC agreed to recommend that no imports of specimens of the species should be accepted from these three countries (SC45 Summary Report). The suspension entered into force on 9 July 2001 (Notification No. 2001/043).

At SC57 (July 2008), following a review of recommendations to suspend trade made more than two years ago (SC57 Doc. 29.2 Annex 2), the Secretariat and AC Chairman recommended that the SC withdraw its recommendation not to accept imports of specimens of *P. robustus* from the DRC if the MA established a cautious export quota in consultation with the Secretariat and the Chairman of the AC (SC57 Doc 29.2); this was agreed by the SC (SC 57 Summary Record). The Secretariat and AC Chairman also recommended that the SC maintain its recommendation to Parties not to accept imports of specimens of *P. robustus* from Mali and Togo until the AC recommendations are complied with, or until Mali and Togo confirm that they will not authorize further exports.

At SC62 (July 2012), the Secretariat noted that previously (at SC57) the Standing Committee had conditionally withdrawn its recommendations to suspend trade from the DRC and that the Secretariat had written to the DRC on 1 September 2008 to advise them of SC decision but, no reply was received (SC62 Doc. 27.2 (Rev. 1). The Secretariat also recommended that the SC maintain the recommendation that no imports of specimens of the species should be accepted from Mali, and that the SC should withdraw its recommendation to suspend trade with Togo if the country notifies the Secretariat of a voluntary zero export quota for wild specimens (SC62 Doc. 27.2 (Rev. 1)). At SC65 (July 2014), it was reported that there had been no changes in circumstances concerning this case (SC65 Doc. 26.1).

In 2014, the suspension of trade from DRC, Mali and Togo was confirmed in CITES Notification to the Parties No. 2014/039.

Table 1: Recommendations by the Animals Committee (AC16 Doc 16.7.1)

Range State	Recommendations and deadlines resulting from AC16 (December 2000)
Democratic Republic of the Congo	**Within 90 days the Management Authority of the Democratic Republic of the Congo should provide the CITES Secretariat with detailed information on:** i) the detailed distribution and abundance of this species in its country; and ii) the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species.
Mali	**Within 90 days the Management Authority of Mali should provide the CITES Secretariat with detailed information on:** i) the detailed distribution and abundance of this species in its country; and ii) the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species.
Togo	**Within 90 days the Management Authority of Togo should provide the CITES Secretariat with detailed information on:** i) the detailed distribution and abundance of this species in its country; and ii) the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species.

B. Species characteristics

Taxonomic note: The CITES taxonomic reference (Dickinson, 2003) recognises *P. robustus* as a single species that comprises three subspecies: *P. r. robustus, P. r. fuscicollis, P. r. suahelicus*. This arrangement is also followed by BirdLife International (2012), Dickinson and Remsen (2013) and Sibley and Monroe (1990). However, a number of authors believe that *P. robustus* should be split into two separate species: *P. robustus* (endemic to South Africa) and *P. fuscicollis* in southern and western Africa

(Clancey, 1997; Perrin, 2005; Wirminghaus *et al*., 2002a). Sinclair and Ryan (2010) and White (1965) list three separate species for this taxon: *P. robustus, P. fuscicollis,* and *P. suahelicus.*

At the 27th Animals Committee meeting in 2014, South Africa submitted a paper (Coetzer *et al*. undated) that reviewed the taxonomic status of *P. r. robustus*, *P. r. suahelicus* and *P. r. fuscicollis*. Coetzer *et al.* (undated); it concluded that the Cape Parrot *P. robustus* (endemic to South Africa) should be viewed as a separate species and that the Grey-headed Parrot *P. f. suahelicus* and Brown-necked Parrott *P. f. fuscicollis* should be grouped under the *P. fuscicollis* species complex (AC27 Doc. 25.20). South Africa proposed that this nomenclature be adopted by CITES, noting that it would follow the nomenclature used by the International Ornithologists' Union and Birdlife South Africa.

In response to this proposal, the Animals Committee recommended that South Africa should suggest a peer reviewed publication that could be used as a standard reference for nomenclature confirming the validity of *P. r. robustus* as a species of its own and placing *P. r. suahelicus* and *P. r. fuscicollis* into the new species *P. fuscicollis*. The Animals Committee also recommended that South Africa provide identification guidelines to distinguish the two taxa native to South Africa (currently regarded as *P. r. robustus* and *P. r. suahelicus*). (AC27 WG6 Doc. 1; AC27 ExSum. Cons.).

In response to this recommendation, South Africa provided both an identification guide (AC28 Doc. 21.1 Annex 5) and a nomenclature reference Coetzer *et al.* (2015) (AC28 Doc. 21.1); the latter was subsequently published as Coetzer *et al.* (2015). Coetzer *et al.* (2015) undertook a molecular analysis and their results supported the recognition of *P. r. robustus* as a species of its own (*P. robustus*) and the placement of *P. r. suahelicus* and *P. r. fuscicollis* into the new species *P. fuscicollis* on the basis of morphological, ecological, behavioural and molecular differences Coetzer *et al.* (2015). At AC28, the Animal Committee recommended splitting the species to become *P. robustus* and *P. fusicollis*, with the latter including the subspecies *fusicollis* and *suahelicus* (AC28 Com. 10; AC28 Sum. 4 (Rev.1)).

Biology: *P. robustus* is a bulky parrot with a top-heavy appearance (Juniper and Parr, 1998) and it is about 30–36 cm in size and weighs 225–401 g (Collar, 1997). Coetzer *et al.* (2015) reported that there are significant morphological differences between *P. r. robustus* and the other two subspecies. *P. r. robustus* is smaller than the other two subspecies and has a more lightly structured bill as well as differences in plumage colouration (Coetzer *et al*., 2015; CITES Scientific Authority of South Africa, 2015 in AC28 Doc. 21.1 Annex 5).

P. robustus was reported to occur singly, in pairs or in small groups in woodland and drier forest types in savannah and forest-savannah mosaics, as well as in in mangroves (Borrow and Demey, 2014). It has also adapted to exotic plantations in some areas (Sinclair and Hockey, 1996). The three subspecies were reported to occupy different habitat types. *P. r. robustus* was reported to have specialist habitat requirements and inhabits, nests and feeds mainly in Afromontane mixed *Afrocarpus*/*Podocarpus* forest (Coetzer *et al*., 2015). In contrast, *P. r. suahelicus* was reported to inhabit a wide range of lowland woodland habitats across south-central Africa (Coetzer *et al*., 2015; Perrin, 2005) such as riparian fringing forest, intervening montane and baobab woodland, undisturbed *Baikiaea*, and open or dense tall *Brachystegia* (Collar, 1997). *P. r. fuscicollis* is found in mature wooded savanna, palm woodland in the forest-savanna mosaic and mangroves (Collar, 1997). The species occurs up to 3,750 m (Juniper and Parr, 1998) although its altitudinal range varies throughout its distribution (Collar, 1997).

The distribution of the subspecies *P. r. robustus* and *P. r. suahelicus* are reported to overlap in the Limpopo Province of South Africa, but Coetzer *et al.* (2015) stated that there is strong evidence that the two taxa are ecologically separated by habitat and altitude.

P. robustus feeds on seeds, nuts, berries and nectar (Collar, 1997). *P. r. suahelicus* feeds on at least 25 tree species throughout its range and often eats unripe fruit kernels, and therefore accesses the fruit when it is unripe and apparently unattractive to other frugivores (Symes and Perrin, 2003a). It may also

supplement its diet with bark and arthropods (Symes and Perrin, 2003a). *P. r. robustus* are dietary specialists, feeding mostly (~70%) on the kernels of *Podocarpus* spp., and also occasionally on other forest fruits (Wirminghaus *et al.* 2002b). Some populations or parts of populations are resident, whereas others wander extensively in response to seasonably abundant food (Collar, 1997; Symes and Perrin, 2003b; Symes and Perrin, 2008) and *P. robustus* may fly over 100 km from roosting/nesting sites to feeding areas (MacLean, 1985).

The breeding season varies with locality (Collar, 1997; Juniper and Parr, 1998; Symes and Perrin, 2004). *P. r. robustus* nests mainly in holes in the trunks of dead *Podocarpus falcatus* in South Africa, but elsewhere the other two subspecies nest in baobabs (Symes and Perrin, 2004) and in mangroves (Collar, 1997). Its clutch size is 2-4 eggs (Collar, 1997, Juniper and Parr, 1998; MacLean, 1985), with one study on the Cape Parrot (*P. r. robustus*) finding clutch sizes of 2-5 eggs (Wirminghaus *et al.*, 2001). Incubation by the female lasts 28–30 days, with fledging a further 55–79 days later; age of first breeding was usually at 4–6 years (Wirminghaus *et al.*, 2001).

Distribution: *P. robustus* is found in southern and west-central Africa up to 3,750 m (Forshaw, 2010). It probably occurs in three separate ranges in west, south-central, and southern Africa (Juniper and Parr, 1998), broadly corresponding to the three subspecies. *P. r. fuscicollis* is found in Gambia to east central Nigeria and north Angola, *P. r. suahelicus* is found in Rwanda and central Tanzania to Zimbabwe, Mozambique and north-east Limpopo (South Africa), and south Angola, and *P. r. robustus* is found in south-east South Africa (Eastern Cape and KwaZulu-Natal) (Dickinson and Remsen, 2013).

Population status and trends: *P. robustus* is considered to be Least Concern in the IUCN Red List (BirdLife International, 2012). It has a very large range, and although the population trend was considered to be declining, the declines were not considered to be sufficiently rapid to meet the thresholds for a Vulnerable species (BirdLife International, 2012). *P. robustus* was reported to be generally scarce but patchily common (Collar, 1997). Juniper and Parr (1998) described it as local and mostly uncommon throughout its range, although more numerous and frequent in Ghana. The population size has not been quantified (BirdLife International, 2012).

In western Africa, the ecology and population status of *P. r. fuscicollis* is very poorly known (Martin *et al.*, 2014). It was described as generally scarce or rare throughout west Africa (Collar, 1997) and scarce to locally uncommon resident with a patchy distribution (Borrow and Demey, 2014; Martin *et al.*, 2014), except Ghana, where fairly common (Collar, 1997). Sinclair and Ryan (2010) suggested that in west Africa it was locally common but thinly distributed.

In southern Africa, *P. r. suahelicus* was described as an uncommon resident (Sinclair and Hockey, 1996). Martin *et al.* (2014) suggested that its status in southern Africa was varied e.g. it was widespread and stable in Zambia but sparse in Botswana, uncommon in Angola, and declining elsewhere. Sinclair and Ryan (2010) stated that *P. r. suahelicus* [*P. suahelicus*], found in southern Africa, was locally common.

In South Africa, *P. r. robustus* is uncommon, usually found in pairs or small flocks, often moving large distances to feed (Sinclair and Ryan, 2010). It was described as uncommon and endangered in the south (Forshaw, 2010). Martin *et al.* (2014) summarised population estimates for *P. r. robustus* in South Africa: the population was thought to be at least 1,189 in 2012, an increase on previous estimates of 500 in 1999 (Wirminghaus *et al.*, 1999) and less than 1,000 in 2005. However, the authors noted that the higher estimates may be as a result of differences in survey effort rather than actual increases in the wild. Downs *et al.* (2014) noted that annual censuses of the species over a 15 year period found, with the exception of 2009, less than 1 600 Cape Parrots in South Africa in the wild in each year. *P. r. robustus* has declined in number since the 1800s due to the clearance of Afromontane forest and selective of logging of *Podocarpus* and *Afrocarpus* trees (Martin *et al.*, 2014). The species' distribution in forest fragments reflects past distribution in a larger mosaic of forest patches (Downs, 2005).

Threats: Habitat loss is a threat to *P. r. suahelicus* (southern Africa) and *P. r. robustus* (South Africa), particularly logging of nesting trees (Martin *et al.*, 2014). In Ghana, the species is threatened by deforestation including charcoal production (Dowsett-Lemaire and Dowsett, 2014). Capture for the live bird trade was thought to be a threat for *P. r. fuscicollis* (Martin *et al.*, 2014). However, legal trade was no longer considered to be a threat to *P. r. suahelicus* due to low numbers in trade, however, it was thought that local trade may threaten some populations (Martin *et al.*, 2014). In South Africa, *P. r. robustus* has been trapped in small numbers for the live bird market (Juniper and Parr, 1998; Martin *et al.*, 2014) and poaching activity outside protected areas was considered a primary threat (Martin *et al.*, 2014). In South Africa, the species has also experienced persecution by pecan nut farmers (Juniper and Parr, 1998; Martin *et al.*, 2014).

Overview of trade and management: *P. robustus* was listed in CITES Appendix II on 1 July 1975. Quotas were established for the species by Tanzania in 1998, 1999, and 2000, DRC in 2001, and Côte d'Ivoire in 2005 and 2006. No quotas have been established by any country since 2006.

The main trade in *P. robustus* 2004-2013 was in live, captive-bred birds traded for commercial purposes. Trade in live wild birds was also reported, but at very low levels since 2010. Over the ten year period, the main exporters of captive-bred live birds were South Africa, Guinea and Central African Republic. The main exporter of live wild birds was Guinea, with imports of 971 live wild birds from the country reported 2004-2013. Relatively high numbers were also reported from Côte d'Ivoire and Mali.

C. Country reviews

Democratic Republic of the Congo

Distribution: *P. robustus* is a resident of the DRC (BirdLife International, 2015; Gill and Donsker, 2013), where it is found in the south and the east (Clements *et al.*, 2014; Juniper and Parr, 1998). Dowsett *et al.* (2015a) reported that it was a resident in the DRC and breeding records were confirmed.

It has been reported in Itombwe, in east DRC, and surrounding areas in the following locations: Chakila, Karungu; Kilumba, Kizombo; mountain forests (2000 m) north-west of Lake Tanganika; and forests of Sibatwa (Prigogine, 1971). It has been recorded in Katanga, in south-east DRC (Louette and Hasson, 2011) and was reported to be a forest visitor in the Virungas National Park in the east of DRC (Owiunji, undated; Pederson and Languy, 1994). It has been recorded around the volcanoes of Kivu at altitudes of between 2200 and 4000 m in the east of the country (Lippens and Wille, 1976).

Population status and trends: In the highlands of eastern DRC the species frequents montane forest up to 3750 m, and occurs regularly in the lowlands in the south, but not in great numbers (Britton, 1980; Chapin, 1939 in Forshaw and Cooper, 1989). In the volcanoes of Kivu it nests at the end of the rainy season in March and nests are located in holes in trees (Lippens and Wille, 1976).

Threats: No information on threats to the species in the DRC was located. The main threats to biodiversity more widely in the DRC were reported to include deforestation, habitat degradation and poaching (Ministère de l'Environnement, Conservation de la Nature et Tourisme, 2014).

Trade: DRC published an export quota of 1000 live birds for *Poicephalus robustus* in 2001, no other quotas were published 1997-2015. DRC submitted CITES annual reports for all years 2004-2013. According to data from the CITES Trade Database, no direct or indirect trade in *P. robustus* originating in DRC was reported 2004-2013.

Management: The DRC was reported to have a "comprehensive legislative framework that criminalizes poaching; dealing in illegal trophies; and importing, exporting, and transferring trophies in

violation of substantive and procedural legal requirements. The framework includes penalties for the violation of these provisions, consisting of fines, prison terms, and forfeiture of the instruments and effects used in the course of committing the crimes." (Figueroa, 2013). Through its national legislation project, the CITES Secretariat categorised the national legislation in DRC as "legislation that is believed generally to meet the requirements for implementation of CITES".

Regulation of hunting, fishing, and the capture of wild animals is the responsibility of central government, however, Congolese provinces have exclusive jurisdiction in applying national legislation (Figueroa, 2013). The Hunting Law of 1982 directly protects wildlife and addresses poaching and illegal trafficking in the DRC and there are several implementing laws: implementing Decree 014 of 2004; Law 48 of 1983 on the Conservation and Exploitation of Wildlife; Law 003 of 1991 on the Protection of the Environment; the Criminal Code of 2004; and Law 37 of 2008 on Wildlife and Protected Areas (Figueroa, 2013).

Wild animals are classified in three categories: fully protected, partially protected, and not protected. Decree 014 of 2004[7], implementing the Hunting Law, contains three annexes on fully, partially, and non-protected flora and fauna (Figueroa, 2013). The status of *P. robustus* in this legislation is unclear.

P. robustus occurs in at least one national park (Owiunji, undated; Pederson and Languy, 1994). Except by prior authorization from the relevant Ministry, the following activities are forbidden in protected areas: "(a) hunting, fishing, grazing, and the introduction of endemic animals and vegetables (b) bushfires, brushfires, and the logging of wood and other plants (c) the carrying of firearms, or hunting within protected areas (d) the shooting, hunting, or capturing of protected wildlife, or destruction of their habitat (e) the destruction, mutilation, extraction, or incineration of protected flora (f) the exportation of protected species and (g) the shooting and capture of wild animals within wildlife reserves" (Figueroa, 2013).

The CITES Authority of DRC was consulted as part of this review, but no information regarding the management of *P. robustus* was received at the time of writing.

Mali

Distribution: The species is considered to be a non-breeding vagrant species in Mali (BirdLife International, 2015). Mali was not listed as a range State by Collar (1997), Dowsett *et al.* (2015b) nor Gill and Donsker (2013). Lamarche (1980) referred to one record south of Falea, on the border with Guinea. Dowsett-Lemaire and Dowsett (2005) questioned the record reported by Lamarche (1980) and argued that *P. robustus* should be removed from the list of species that occur in Mali.

Population status and trends: Reported to be patchily distributed, scarce to locally uncommon resident in south-west Mali (Borrow and Demey, 2001). Lamarche (1980) described it as uncommon.

Threats: No information on threats to the species in Mali was identified. The main threats to biodiversity more widely in Mali were reported to include climate change, fragmentation and degradation of natural habitats, introduction of alien species, erosion of genetic resources and the shortcomings of institutional capacity (Ministere De l'Environnement De l'eau et de l'Assainissement, 2014).

[7] http://www.leganet.cd/Legislation/Droit%20economique/Chasse/A041.29.04.2004.htm

Trade: Mali has not published export quotas for this species. Mali submitted CITES annual reports for all years 2004-2013.

According to data from the CITES Trade Database, direct trade in *P. robustus* from Mali 2004-2013 comprised of live wild-sourced birds traded for commercial purposes; 40 birds exported in 2004, 60 in 2005 and 100 in 2010, as reported by both the exporter and countries of import..

No indirect trade in *P. robustus* originating in Mali was reported 2004-2013.

Management: Mali has enacted legislation (Loi No. 02-017-du 3/6/02) to implement CITES (Mali Biennial Report, 2003-2004) which governs the possession of, trade in, and export, re-export, import, transport and transit of specimens of species of wild fauna and flora (AC23 Doc. 5.1) and Decree 2007 which establishes the list of local species and procedures for obtaining permits for production, possession, use for commercial purposes, trade, sale, offering for sale and manufacture of objects originating from all or part of a species subject to the provisions of Law No. 02-017 of 3 June 2002 (AC23 Doc. 5.1).

However, through its national legislation project, the CITES Secretariat categorised national legislation in Mali as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES" (Category 2).

Other relevant legislation include Order No. 98-0139/MDRE-SG which defines the conditions for the issuance of permits and special authorizations for foreign non-resident hunting and [8]Law N ° 95-031, which governs the management of wildlife and its habitat.

The African Bird Club (2013a) noted that there is legislation in Mali that bans the cutting of live trees without special use permits, however, the authors suggested that the government has been unable to enforce this; wood has been collected by subsistence farmers and additionally an estimated 300 000 and 400 000 hectares per year are cleared for cultivation. They also suggested that although hunting for birds is regulated by law on paper, in practice it happens without control (African Bird Club, 2013a). There is a system of classified forests in Mali, in which use is specially regulated, and these areas are not as depleted as other areas (African Bird Club, 2013a).

The CITES Authority of Mali was consulted as part of this review, but no response was received at the time of writing.

Togo

Distribution: Togo was listed as range country by BirdLife International (2015), Juniper and Parr (1998), Peters (1937), Reichenow (1892) and Reichenow (1902). However, it is only known from one specimen (*P. r. fuscicollis*) collected at Bismarckburg (Cheke and Walsh 1996; Collar, 1997; Dowsett-Lemaire and Dowsett, 2011).

Cheke and Walsh (1996) stated: 'Status uncertain. Only known from one specimen (*P. r. fuscicollis*) collected by R. Buttner at Bismarckburg, date unknown (Reichenow 1892, 1902). J. von Zech collected a male west of Mpoti, 16 Jan 1899, which could be a site in Togo at 08°l4'N. 00°46'E. It is more likely, however, to be a site in Ghana with a similar name at 06°49'N, 00°08'W, as von Zech also collected 2 males and a female from Kratschi (Kete Kratschi at 07°46'N, 00°03'W). None of these specimens, which are in the MNB, were noted by Grimes (1987)".

[8] http://www.environnement.gov.ml/index.php?page=textes-nationaux

Dowsett-Lemaire and Dowsett (2011) suggested the individual seen at Bismarckburg was a worn specimen that might have been captive bird, and concluded that occurrence in Togo should be considered unconfirmed (Dowsett-Lemaire and Dowsett, 2011).

Togo was not listed as a range State in the IOC World Bird List (Gill and Donsker, 2013).

Population status and trends: Very little information on *P. robustus* in Togo was located. It was described as a vagrant in Togo (Collar, 1997; Dowsett *et al*., 2015c) and reported to be rare (Borrow and Demey, 2001).

Threats: No information on threats specific to *P. robustus* in Togo was identified. Deforestation, overgrazing and subsequent soil erosion, and urban expansion have been reported as environmental concerns in Togo (African Bird Club, 2013b).

Trade: Togo submitted CITES annual reports for every year 2004-2012, but not for 2013. Togo has not published any quotas for *P. robustus* 1997-2015.

According to data from the CITES Trade Database, the only direct trade in *P. robustus* from Togo 2004-2013 comprised 30 live wild-sourced birds exported for commercial purposes in 2012, as reported by the exporter only. This trade occurred following the entry into the force of the suspension in 2001.

No indirect trade in *P. robustus* originating in Togo was reported 2004-2013.

Management: Togo has implemented national legislation on nature conservation as well as a CITES implementation decree (AC23 Doc. 5.1). However, through its national legislation project, the CITES Secretariat categorised national legislation in Togo as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES" (Category 2).

Loi No. 2008-09 Portant Code Forestier regulates the management of forests and protected areas, and affords different levels of protection to forest species and defines the conditions for which species can be harvested.

Togo has three designated National Parks, nine Faunal Reserves and 53 Forest Reserves; however, lawlessness following political instability in the early 1990s had a significant impact on conservation with killing of wildlife occurring in most protected areas (African Bird Club, 2013b).

The CITES Authority of Togo was consulted as part of this review, but no response was received at the time of writing.

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Psittacus erithacus: Equatorial Guinea

A. Summary

EQUATORIAL GUINEA: Suspension valid from: 22 August 2008	Globally Vulnerable, with an estimated population size in Western Africa of c. 40,000-100,000 birds but with a declining trend. No population figures available for Equatorial Guinea, however some populations appear to be increasing locally. Harvesting for trade is the main threat, along with deforestation and harvest for bushmeat. No commercial trade reported after 2006 or following the trade suspension in 2008. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Psittacus erithacus (Grey Parrot) was included in Phase VI of the RST at AC20 (April 2004) on the basis of trade data (AC20 WG 1 Doc. 1). No reply was received from Equatorial Guinea to correspondence sent by the Secretariat (AC21 Doc. 10.1.1 (Rev. 1)). At AC22 (July 2006), the species was categorised as of "possible concern" for three countries, including Equatorial Guinea (AC22 Summary Record), and recommendations were agreed (Table 1).

Table 1: Recommendations by the Animals Committee (AC22 Summary Record).

Range State	Recommendations and deadlines resulting from AC22 (July 2006)
Equatorial Guinea	**Within 12 months:** Provide detailed information on how it was determined that the quantities of specimens exported were not detrimental to the survival of the species in the wild. Provide information on the legal status of the species in the country. **Within 24 months:** Develop a scientifically-based field survey to establish the population status of the species in the country; Develop a National Management Plan for the species. The National Management Plan for the species shall include: i) Standardized and verifiable population monitoring techniques; ii) A mechanism to establish biologically sustainable capture and/or export quotas for the species, that consider in their development: the status and demography of the species, levels of illegal trade, trade-related mortality, and national use; iii) Effective mechanisms to prevent illegal capture and trade in the species; iv) A detailed description of the methodology used to determine that levels of exports are non-detrimental; and v) Once developed and regionally agreed upon, incorporation of the Regional Management Plan for conservation of and trade in these species.

No response to the recommendations was received (SC57 Doc. 29.1 (Rev. 2)). The SC agreed to recommend all Parties to suspend trade covered by Article IV of the Convention for *P. erithacus* from Equatorial Guinea (SC57 Summary Report). The suspension entered into force on 22 August 2008 (Notification No. 2008/052).

B. Species characteristics

Taxonomic note: Two subspecies are currently recognised: *Psittacus erithacus erithacus* and *P. e. timneh* (Melo and O'Ryan, 2007). Some authors recognise the subspecies *P. e. princeps* from the Gulf of Guinea Islands (Collar and Kirwan, 2014). A recent genetic analysis using mitochondrial DNA from 50 individuals supported the existence of the two mainland lineages, but revealed that birds on the island of Principe (currently assigned to the subspecies *P. e. erithacus*) formed two independent lineages: one evolved *in situ* for up to 1.4 million years after early colonisation of the island by an ancestor of *P. e. timneh*, the other lineage consisted of *P. e. erithacus* colonising from the mainland in more recent times. The authors also noted that the large genetic distance between the two currently recognised subspecies may indicate that they qualify as separate species (although this remains to be investigated) (Melo and O'Ryan, 2007). *P. e. timneh* is recognised as a separate species, *P. timneh* Fraser, 1844, by some authorities (del Hoyo *et al.*, 1997; BirdLife International, 2014).

Biology: *Psittacus erithacus* is a large grey parrot with a short scarlet tail (Juniper and Parr, 1998). It typically inhabits lowland moist forest, including edges and clearings, gallery forest, savannah woodland, cultivated areas and sometimes mangroves (Collar and Kirwan, 2014) (Juniper and Parr, 1998). Although it is mostly confined to lowland areas, it has been recorded at altitudes of up to 2200 m (Juniper and Parr, 1998).

It is a gregarious species, forming large communal roosts of up to 10 000 individuals, and dispersing into smaller groups of up to 30 birds for feeding (Juniper and Parr, 1998). It was reported to nest in tree cavities, 10-30 m above ground, sometimes in loose colonies of up to several hundred pairs, but mainly solitarily (Juniper and Parr, 1998).

Clutch size in captivity was reported to consist of two to three eggs (rarely four), laid at three-day intervals, with an incubation period of 21 to 30 days or longer, with young leaving the nest after 80 days, but being dependent for a further month (Collar and Kirwan, 2014). The diet of *P. erithacus* consists of a variety of seeds, nuts, fruit and berries, which are generally gathered by climbing the upper branches of trees (Juniper and Parr, 1998). It can be a pest, having been reported to cause damage to maize crops (Juniper and Parr, 1998), and to plum and oil-palm nut crops (Tamungang *et al.*, 2013).

C. Country reviews

Equatorial Guinea

Distribution:

P. erithacus was reported to range across the African tropical forest belt (Dändliker, 1992b), from Guinea-Bissau to Côte d'Ivoire and east to western Kenya and northwest Tanzania (Dändliker, 1992b; Dickinson, 2003). The subspecies *P. e. erithacus* was reported to range from western Uganda to south eastern Côte d'Ivoire, while *P. e. timneh* occurs from Guinea Bissau to southern Côte d'Ivoire (Forshaw, 2010).

In Equatorial Guinea, *P. erithacus* was recorded from Bioko (Fernando Po) island (Larison *et al.*, 1999; BirdLife International, 2013b) and it was reported to be resident on the mainland (Río Muni/ Mbini), although breeding was unproven (AC22 Doc. 10.2). A survey of five protected areas in Equatorial Guinea found the species in all five areas: Rio Campo Natural Reserve; Altos de Nsork National Park; Monte Alen National Park (including Montes Mitra); and Muni Estuary Natural Reserve (Larison *et al.*, 1999).

Population status and trends: This species was estimated to have a global population of 0.56-12.7 million birds, however numbers are suspected to be rapidly declining due to harvesting for

international trade and habitat loss (BirdLife International, 2013a). As a result, *P. erithacus* and its subspecies *P. e. timneh* (listed as *P. timneh* in the IUCN Red List; BirdLife International, 2013a) were categorised as Vulnerable in the IUCN Red List (BirdLife International, 2013a). The global population was reported to show a decreasing trend (BirdLife International, 2013a).

P. erithacus was generally considered to be scarce in West Africa (Forshaw, 2006), although Borrow and Demey (2014) note it to be locally common in some areas. West African population estimates for this species ranged between 40,000 and 100,000 birds (BirdLife International, 2013a), plus a further 100,000-500,000 individuals from the *P. e. timneh* subspecies (Dändliker, 1992a; del Hoyo *et al.*, 1997).

In Equatorial Guinea, *P. erithacus* has been recorded as locally abundant in some areas including Sendje village near the western boundary of Monte Alen National Park (Keylock, 2002), and the Luba Crater Scientific Reserve on the island of Bioko (Garcia and Eneme, 1997; in Larison *et al.*, 1999). UNEP-WCMC reported that, in 1987, the Equatorial Guinea Commission of Experts on Flora and Fauna estimated the population of *P. erithacus* in the country to be no less than 2.5 million (Obama, 1987; in AC20 Doc. 8.5) but since this would equate to 90 birds per km^2 across the whole country they considered the figure to be "barely credible" (AC20 Doc. 8.5). In 2011, the Scientific Authority of Guinea stated in correspondence to TRAFFIC International that no population surveys had been conducted, although they estimated that there may have been a slight increase in the population size (Scientific Authority of Equatorial Guinea, *in litt.* to TRAFFIC, 2011; in AC26/PC20 Doc. 7, Annex 5).

On Bioko, *P. erithacus* was considered more common in the south, where human pressure was less and oil palm plantations were more extensive (Eisentraut, 1973; Pérez del Val, 1996; in AC22 Doc. 10.2). Although much of the forest below 600-900 m had been degraded in Bioko, many of the more southerly plantations have been abandoned and the forest was reported to be regenerating (Pérez del Val, 2001). At higher altitudes the forest was reported to be pristine (Pérez del Val, 2001). On Río Muni, the original lowland forest was reported to have been degraded by agriculture (Pérez del Val, 2001).

Threats: *P. erithacus* is one of the most popular parrots in international trade (Mulliken, 1995; May, 2001; IUCN, 2006; Melo and O'Ryan, 2007; BirdLife International, 2013b), with harvesting for this trade threatening many populations. It is also considered to be threatened by domestic trade, habitat loss and deforestation at the global level (Juste, 1996; del Hoyo *et al.*, 1997; Forshaw, 2006; Melo and O'Ryan, 2007; BirdLife International, 2013a, 2013b; Borrow and Demey, 2014; Collar and Kirwan, 2014).

Within Equatorial Guinea, unsustainable hunting and logging are considered the major threats to most forest species (Pérez del Val, 2001; US Fish and Wildlife Service, 2014). New road networks have exacerbated the problem by increasing access to forests and urban bushmeat markets, and higher incomes among the urban elite combined with a lack of alternative protein and jobs in rural areas were reported to have led to an increase in demand for bushmeat (US Fish and Wildlife Service, 2014). Extractive industries, including logging, mining and oil exploration, were reported to threaten wildlife in the country (US Fish and Wildlife Service, 2014).

Trade: *P. erithacus* was listed on CITES Appendix on 6 June 1981. Equatorial Guinea published an export quota for *P. erithacus* in 1998 (500 birds). No export quotas have been published for this species/country combination since then. With the exception of 2013, all CITES annual reported have been submitted by Equatorial Guinea for the period 2004-2013.

According to data from the CITES Trade Database, direct trade in *P. erithacus* from Equatorial Guinea 2004-2013 comprised of 483 live, wild-sourced individuals as reported by Equatorial Guinea, and 673 live, wild-sourced individuals as reported by countries of import (Table 2). Low levels of trade have been reported since 2005, with only two live birds recorded in 2007 and five scientific specimens recorded in 2011; no trade has been recorded since 2011.

Table 2: Direct exports of *Psittacus erithacus* from Equatorial Guinea, 2004-2013. All trade was in wild-sourced specimens.

Term	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
live	P	Exporter	9										9
		Importer	4			2							6
	T	Exporter	474										474
		Importer	395	272									667
specimens	S	Exporter											
		Importer								5			5

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *P. erithacus* originating in Equatorial Guinea 2004-2013 comprised 100 live, captive-bred individuals re-exported by Guinea for commercial purposes in 2004 according to the countries of import; three live, wild-sourced birds re-exported as personal possessions (purpose 'P') in 2007 (two re-exported by Senegal) and 2010 (one re-exported by Ghana); and two live birds recorded imported from Senegal as source 'I' (seized/confiscated) as personal possessions in 2007.

A mean annual capture rate of approximately 552 *P. erithacus* for bushmeat was reported from hunters operating from Sendje (Fa and Yuste, 2001), while a survey of the same village between November 2002 and January 2004 revealed offtake levels of 258 *P. erithacus* per year (Kümpel, 2006). Anecdotal information from a hunter from the same village indicated a "healthy income" from a daily catch of four to five parrots, sold to a specialist trader about once a month, with the birds reportedly traded on illegally to the UK (Keylock, 2002).

It was noted that exports were either regulated or banned in "most, if not all" range States, although implementation of trade controls was reported to often be insufficient to ensure that national legislation and/or CITES has been complied with (AC22 Doc. 10.2). Trade bans were, in some cases, reported to have resulted in a shift in trade routes and mechanisms rather than cessation (AC22 Doc. 10.2).

Management: No information on legal protection of the species in Equatorial Guinea was located.

The CITES Management Authority/ Scientific Authority (*pers. comm.* to UNEP-WCMC, 2015) confirmed that there had been no studies undertaken for *P. erithacus* in Equatorial Guinea, and no commercial exports since the trade suspension come into effect.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Equatorial Guinea as legislation that is believed generally to meet the requirements for implementation of CITES.

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Uromastyx dispar: Mali

A. Summary

MALI Suspension valid from: 22 August 2008	No information on the species population size, trend, threats or management available for Mali. Trade in wild-sourced specimens occurred in 2009 and 2010 following the suspension, although subsequent trade reported only in captive-sources. It is unclear if the country intends to address the AC recommendations and export wild-sourced specimens of the species. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Uromastyx dispar was selected for Phase VI of the RST at AC20 (April 2004) on the basis of reported trade (AC20 WG 1 Doc. 1). No reply was received from Mali to correspondence sent by the Secretariat (AC21 Doc. 10.1.1 (Rev. 1)). At AC22 (July 2006), the species was categorised as of "possible concern" for Mali (AC22 Summary Record), and recommendations were agreed (Table 1). No response to the recommendations was received and it was concluded that Mali had not complied with the initial recommendations of the AC (SC57 Doc. 29.1 (Rev. 2)). The SC agreed to recommend all Parties suspend trade covered by Article IV of the Convention for *U. dispar* from Mali (SC57 Summary Report). The suspension entered into force on 22 August 2008 (Notification No. 2008/052).

Table 1: Recommendations by the Animals Committee (AC22 Summary Record)

Range State	Recommendations and deadlines resulting from AC22 (July 2006)
Mali	**Within six months**: Clarify to the Secretariat the scientific basis for the annual export quota. Clarify to the Secretariat if captive breeding of *U. dispar* or other *Uromastyx* species takes place in Mali, and if so, provide details on the nature and extent of captive breeding. **Within 18 months:** Conduct a status assessment, including an evaluation of threats to the species; develop and implement a population monitoring programme for the species; and advise the Secretariat of the details of the assessment and the programme. Establish an annual export quota based on the results of the assessment and programme

B. Species characteristics

Taxonomic note: The CITES Nomenclature Committee recommends adoption of Wilms (2001) as the basic reference for *Uromastyx* (CoP13 Doc. 9.3.1). This recognises *Uromastyx dispar* as a separate species from *U. acanthinura*, although it has been in the past considered a subspecies of the latter. It considers *U. maliensis*, described by Joger and Lambert (1996) and still treated by some as a separate species, as a synonym for *U. dispar* (AC22 Doc. 10.2).

Biology: *U. dispar* was reported to be found in arid areas with rocky slopes in mountain valleys (AC22. Doc 10.2 Annex 6c). While it occurs in harsh habitats with few shrubs or grasses (Walls, 2012), it was also recorded in palm oases and fields (AC22 Doc 10.2 Annex 6c). Its range was found to be fragmented

(AC22 Doc 10.2 Annex 6c) and in Algeria, Chad, Mali, Mauritania, Sudan, and Western Sahara the species was reported to occur at altitudes from 100 up to 2,000 m (Wilms et al., 2009).

Adults were reported to reach an average size of around 36 cm and *Uromastyx* species were reported to reach sexual maturity at 2-3 years of age, laying clutches of 8 and 25 eggs, depending on the species (Walls, 2012). The smaller *Uromastyx*, of which *U. dispar* is one, may reach sexual maturity in two or three years (Gray, n.d.; Nussbaum *et al.*, 2000). Eggs are laid in female burrow systems in the late spring-early summer or at the beginning of the dry season and hatch after an incubation period of eight to ten weeks (Bahiani, M., Gernigon-Spychlowicz, T., Hammouche, S., and Khannar, 1997; Zug *et al.*, 2001). However, sometimes entire clutches have been reported to disintegrate entirely, possibly due to not being fertile, due to unknown reasons (Walls, 2012). Wild-caught *Uromastyx* specimens have been known to live for 20 years in captivity with estimates of a life span of 25 years (Bartlett, n.d.).

C. Country reviews

Mali

Distribution: *U. dispar* occurs along a belt across the southern part of the Sahara, from Western Sahara, Mauritania, Mali, the western and southern parts of Algeria, to the northern parts of Chad and Sudan (Sindaco and Jeremcenko, 2008). Some consider that the species also occurs in Somalia (Bartlett, 2003).

In Mali, the species was thought to occur in north and east of the country (Wilms *et al.*, 2009).

Population status and trends: The species has not yet been assessed by the IUCN. However, in the Mediterranean Basin it was considered to be Near Threatened (Cox *et al.*, 2006). Little information was reported to be available on the size of the population, although it was thought to be locally common (IUCN, in prep. in AC22 Doc 10.2 Annex 6c). The global population was thought to potentially number several hundred thousand and possibly even millions, based on estimates for other *Uromastyx* species (AC22 Doc 10.2 Annex 6c).

No quantitative estimate of population size or trends for *U. dispar* in Mali were located.

Threats: No country specific threats to *U. dispar* within Mali were located. In general, *Uromastyx* species have been hunted for food and for souvenirs (Wilms *et al.*, 2009). Species of the genus are large and colourful, and were reported to be popular within the international pet trade and also used, to a lesser extent, by some communities for traditional medicine (Knapp, 2004). As their preferred habitat was thought to consist of desert environments with little or no commercial value, habitat loss was generally not seen as a threat to *U. dispar* (Nemtzov, 2008).

Trade: *Uromastyx dispar* was listed on CITES Appendix II on 04 February 1977. Mali published export quotas for *U. dispar* every year 2006-2014 (Table 2). No quotas were published in 2015.

Table 2: Export quotas published by Mali for live *Uromastyx dispar*, 2006-2014. No quota was published for 2015.

	2006	2007	2008	2009	2010	2010	2011	2012	2013	2014
Quota	30,000	30,000	in prep.	0*	0*	0*	0*	0*	0*	0*

*quota resulting from AC/SC recommendations

With the exception of 2012 and 2013, all annual reported have been submitted by Mali for the period 2004-2013. According to data from the CITES Trade Database, direct exports in *U. dispar* from Mali 2004-2013 consisted of over 82,000 live specimens traded for commercial purposes according to Mali, and over 50,000 specimens according to countries of export (Table 3). Trade was predominantly

reported as wild-sourced (source 'W'), with trade apparently shifting to captive-bred and captive–born sources (source 'C' and 'F') in 2010. Following the trade suspension in 2008, trade in wild-sourced specimens occurred in relatively high numbers in 2009 and 2010 (2000-3000).

Table 3: Direct exports of *Uromastyx dispar* from Mali, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2013.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
C	Exporter							250	1290		1540
	Importer							93	1138	20	1251
F	Exporter								800		800
	Importer								740	136	876
I	Exporter										
	Importer			2			1482			197	1681
W	Exporter	12,605	19,330	15,060	16,315	16,254	3060	30			82,654
	Importer	9900	7138	9037	11,491	11,307	2400	3020			54,293

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: No information on the management of *U. dispar* in Mali, or information on captive breeding in the country was located. The CITES Management Authority of Mali was consulted as part of this review, but no response was received.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Mali as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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Calumma spp. *and Furcifer* spp., Madagascar

A. Summary

MADAGASCAR	Species	IUCN		RECOMMENDATION
Suspensions valid from: 20 January 1995	*Calumma amber:*	NT	Endemic species restricted to mid-altitude humid forest at a single site in the north. Small area of occurrence estimated at 385 km^2. Considered to be common and population stable. No trade reported since the genus listing. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma ambreense:	NT	Endemic species occurring in mid-altitude humid forest of Montagne d'Ambre in the north and possibly a few other locations. Small area of occurrence of 385 km^2. Considered to be common and population stable. Very low level of trade 2004-2013 (one body, purpose S, reported by country of import). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma capuroni:	VU	Endemic species, restricted to montane forests at a single site in the south-east. Very small area of occurrence of 78 $km^{2.}$ No information on population size, but presumed to be stable in the absence of ongoing threats. Very low level of trade 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Entire population protected within the Andohahela National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

MADAGASCAR	Species	IUCN		RECOMMENDATION
			annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	
	Calumma cucullatum:	VU	Endemic species, found at numerous locations in the east and north-east. Considered to be uncommon, with loss and degradation of humid forest habitat the main threat. Very low level of trade in bodies 2004-2013 (all purpose S, reported by countries of import). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within several protected areas and species is nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma furcifer:	EN	Endemic species, restricted to mid-elevation forests in the east, with area of occurrence of 582 km^2. Locally common, but with a fragmented and declining population. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within one protected areas and species is nationally protected (collection requires authorization from CITES Authorities). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma guibei:	NT	Endemic species, occurring in the north at one site in the north-west, although also reported from one site in the north-east. Reported as common, with a stable population trend. Low level of trade in bodies 2004-2013 (all purpose S, reported by countries of import only). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs within one protected area and species is nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

MADAGASCAR	Species	IUCN		RECOMMENDATION
			lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	
	Calumma hafahafa:	CR	Endemic species, restricted to the northwest, with small area of occurrence thought to be less than 5 km^2. Described as uncommon; categorized as Critically Endangered on the basis of a restricted distribution, population decline and fragmentation and ongoing habitat loss. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Not known from any protected areas. Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma hilleniusi:	EN	Endemic species, occurring in central and southeast Madagascar. Extent of occurrence estimated at 820 km^2. Described as reasonably common, but with a declining population. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within three strict protected area, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma jejy:	VU	Endemic species, restricted to a single site in the north, with very small area of occurrence of 20 km^2. Reportedly not abundant, but with stable population trend. Habitat loss through fire considered a potential threat given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Reported to occur only within one national park, where collection is prohibited. There appears to be no intention to	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

MADAGASCAR	Species	IUCN		RECOMMENDATION
			resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	
	Calumma linota:	Not assessed	Endemic species, restricted to a single site in the northeast. No information on population size, trends or threats located. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma peltierorum:	NT	Endemic species, restricted to two known locations in the north. Reported to be uncommon, but with stable population trend. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within two protected areas, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma peyrierasi:	VU	Endemic species, restricted to a single site in the northeast, with very small area of occurrence of 10 km^2. No information on population size or trends located. Habitat loss through fire considered a potential threat given limited distribution. Very low level of trade in bodies 2004-2013 (all purpose S). A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma tarzan:	CR	Recently described endemic species (therefore not considered at AC25). Recorded only from fragments of lowland moist forest in two localities central eastern Madagascar. Categorized as Critically Endangered on the basis of restricted	Suspension may no longer be appropriate – no anticipated trade

MADAGASCAR	Species	IUCN		RECOMMENDATION
			distribution, a fragmented population and ongoing habitat loss. No reported trade 2004-2013. Not reported from any existing protected areas. Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	
	Calumma tsaratananense:	VU	Endemic species, restricted to a single site in the north, with an area of occurrence of <100 $km^{2,}$ and potentially only 6km^2. Reported to be locally common, with stable population trend. Habitat loss through fire considered a potential threat given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within one protected area, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma tsycorne:	VU	Endemic species, occurring in the south-east. Reported to be common in one location. Population considered severely fragmented, with trend unknown. Deforestation for agriculture considered the main threat. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Occurs only within protected areas, where collection is prohibited. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation
	Calumma vatosoa:	DD	Endemic species occurring in the north-east; species known only form a single specimen. Unknown population range, size or trends. Habitat loss and fire considered threats given limited distribution. No reported trade 2004-2013. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Not reported from any protected area, although range may extend into one national park. There appears to be no intention to resume trade in	Suspension should be withdrawn in line with AC25 conclusion and SC61 recommendation

MADAGASCAR	Species	IUCN		RECOMMENDATION
			this species. Madagascar are encouraged to publish annual zero quotas. The suspension was lifted at SC61, however this was inadvertently omitted from Notification No. 2011/035.	
	Calumma vohibola:	EN	Recently described endemic species (therefore not considered at AC25). Recorded only from fragments of lowland and littoral forest from localities within 60 km of the central eastern coast, with area of occurrence of around 441 km^2. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Unknown population size, but considered declining. No reported trade 2004-2013. Reported from one protected area, which may be the species stronghold. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
	Furcifer angeli:	LC	Endemic species, occurring in the northwest, with a large estimated extent of occurrence (over 31,000 km^2) and with viable area for the species estimated at 3919 km^2. Reported as abundant within and outside of protected areas, and apparently tolerant of some habitat degradation. Population size estimated at >979,000 (based on density extrapolations) and considered stable. Very low level of trade in bodies 2004-2013 (all purpose S). Reported to occur within four protected areas; almost half of the population considered to occur within these protected areas. Nationally protected (collection requires authorization from CITES Authorities). Quota of 150 specimens proposed which is considered to represent 0.06% of the population in the intended collection area of the Sofia Region. Madagascar appears to have complied with the AC recommendations, and removal of the suspension may be warranted.	Suspension may no longer be appropriate - AC Recommendations completed and NDF in place
	Furcifer balteatus:	EN	Endemic species, occurring in the central and far southeast, with an extent of occurrence estimated at 1971 km^2. Reported to be rare, with a declining and severely fragmented population. Categorized as Endangered on the basis of restricted distribution, a fragmented population and ongoing habitat loss. Very low level of trade in specimens 2004-2013 (all purpose S). Illegal trade considered a	Suspension may no longer be appropriate – no anticipated trade

MADAGASCAR	Species	IUCN		RECOMMENDATION
			threat. Reported to occur within two protected areas. Nationally protected (collection requires authorization from CITES Authorities). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	
	Furcifer belalandaensis:	CR	Endemic species, restricted to two locations in the southwest and with very small extent of occurrence estimated at 4km^2. Population considered small and decreasing. Categorized as Critically Endangered on the basis of extremely restricted distribution, ongoing habitat loss (the main threat). Very low level of trade in wild-sourced bodies 2004-2013 (all purpose S). Some (limited) illegal collection. A zero export quota was proposed by Madagascar for 2012 (in response to AC recommendations). Reported to occur from one reserve, which is not a strictly protected area. Nationally protected (collection requires authorization from CITES Authorities).Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
	Furcifer labordi:	VU	Endemic species occurring in the west and southwest, with an extent of occurrence estimated at over 16,000 km^2. Densities of individuals vary between sites, but the population considered to be fragmented and declining overall. Habitat loss considered to be the main threat. Very low level of trade in specimens 2004-2013 (all purpose S). Illegal trade was also reported. Reported from two protected areas and two under development. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species, although written confirmation of this has not been received from the Madagascan Management Authority. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate

MADAGASCAR	Species	IUCN		RECOMMENDATION
	Furcifer monoceras:	-	The need for taxonomic revision has been identified. The species is considered a junior synonym of *F. rhinoceratus*; AC28 supported this nomenclature change. A trade suspension is not in place for *F. rhinoceratus* and there has been no commercial trade since 2001 indicating that trade is not anticipated. No reported trade 2004-2013 in *F. monoceras*. Endemic species, known only from the holotype from Betsako bei Mojunga in the north-west. Unknown population range, size or trends, and no known specific threats. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
	Furcifer nicosiai:	EN	Endemic species, restricted to a single site in the west, but may potentially occur further north, with estimated area of occurrence of <1566 km^2. Reported to be uncommon, with a declining population trend. Habitat loss, degradation and fragmentation considered the main threat. Very low level of trade in specimens 2004-2013 (all purpose S). Occurs within the Parc National de Tsingy, the only confirmed location, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
	Furcifer timoni:	NT	Endemic species, occurring only in the primary forest of Montagne d'Ambre in the north. Small area of occurrence estimated at 385 km^2. No information on population size, but presumed to be stable in the absence of ongoing threats. No reported trade 2004-2013. Entire population protected within the Montagne d'Ambre National Park where collection is illegal. There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
	Furcifer tuzetae:	DD	Endemic species, known only from a single specimen collected in Andrenalamivola in the southwest. Information on population size and trends unknown, but likely to be severely fragmented and declining given loss of dry forest habitat. Very low level of trade 2004-2013 (one body, purpose S). A zero export quota was proposed	Suspension may no longer be appropriate – no anticipated trade

MADAGASCAR	Species	IUCN	RECOMMENDATION
		by Madagascar for 2012 (in response to AC recommendations). Not known to occur within any protected areas. Nationally protected (collection requires authorization from CITES Authorities). There appears to be no intention to resume trade in this species. Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	

Taxonomic note:

Calumma spp. and *Furcifer* spp., were split from the Genus *Chamaeleo*, following adoption of a standard references at CoP11 in 2000 (CoP11 Doc. 11.4.2). At AC26 (March 2012), it was proposed that *Calumma tarzan* was split from *C. furcifer*; and a new species of the *C. nasutum* group, *Calumma timoni* was identified. All were proposed to CoP16 (AC26 WG9 Doc.1 Annex) and were adopted at the meeting (CoP16 Doc. 43.1 (Rev. 1) Annex 3).

RST Background

Calumma globifer, *C. linota*, *C. malthe*, *Furcifer campani* and *F. monoceras* were included in the RST at AC5 in 1991 (CITES Notification No. 785). A report was submitted to the AC in 1993 and it became a working document, providing the basis for future recommendations. At AC9 (November 1994), primary and secondary recommendations for *Chamaeleo* spp. were adopted in accordance with Resolution Conf. 8.9 (Table 1).

Table 1: Recommendations by the Animals Committee (AC9).

Range State	Recommendations and deadlines resulting from AC9 (November 1994)
Madagascar	**Within 3 months:** • Provide details of the biological basis for determining exports will not be detrimental to the survival of the species; • Cease to issue export permits that do not indicate the species involved in the consignment; • Implement a system to verify the identification of specimens before export; • Suspend exports pending establishment of scientifically based sustainable harvest quotas; • Submit to Secretariat copies of all export permits issued. **Within 12 months:** Undertake field assessments before exports resume.

The recommendations were sent to Madagascar by the Secretariat on 12 January 1994, with a deadline for implementing primary recommendations 90 days after receiving notice. The Secretariat reported to the SC on the implementation of the primary recommendations at SC32 (November 1994). Madagascar was informed that if it did not, by 23 December 1994, either establish a cautious export quota for the species concerned or implement the recommendation of the AC, the SC would recommend that Parties not accept imports of specimens of the species in question from that country until it had implemented the primary recommendations of the AC. The SC reported that Madagascar had not taken the action recommended and that it had therefore been added to the list of list of countries included in Notification to the Parties No. 800. The SC recommended that all Parties suspend imports of chameleons from Madagascar, with the exception of *Furcifer lateralis*, *F. oustaleti*, *F. pardalis* and *F. verrucosus* (Notification No. 833). The suspension entered into force in January 1995.

Continuing failure to resolve the issue, combined with other concerns regarding the management and control of export of CITES-listed species led to Madagascar being selected for the first country-based RST at AC17 (August 2001) (AC19 Doc. 8.4). This review concentrated on Appendix-II listed species that were exported for commercial purposes, but placed these in the context of the overall CITES implementation in Madagascar, and the country's management system for wildlife trade as a whole. It identified a number of areas where change was needed, and led to development of an Action Plan for the Reform of Madagascar's wildlife trade adopted by the country in 2003 (AC23/PC17). The review came to an end in 2008, and whilst a number of tangible reforms resulted from implementation of the Action Plan, the recommendations to suspend trade in the majority of chameleons from Madagascar remained in force (AC24 Doc. 7.2).

SC57 (July 2008) asked the Animals Committee to re-evaluate its recommendations regarding export of Malagasy chameleons with a view to the SC withdrawing its recommendation to suspend trade in those cases where the AC considered that the relevant provisions of Article IV were being complied with. To help the Animals Committee, in 2009 the Secretariat commissioned a study of the species concerned (at that time numbering some 13 species of *Furcifer* and 30 species of *Calumma*), to identify which might be able to support some export that complied with Article IV.

On the basis of available information, the study tentatively place the species in four categories: C1 containing species for which available information suggested that no collection for trade should be allowed at present; C2 containing species for which there was insufficient information to determine whether collection for trade should be allowed at present; and C3 and C4 containing species for which available information suggested that some collection for trade could be allowed. This study formed the basis for discussion at AC24 in April 2009 (as the Annex to AC24 Doc. 7.2).

For the *Calumma* and *Furcifer* spp., AC24 made a decision that the suspension for species in categories C3 and C4 could be lifted if certain conditions were met. For the species *Calumma andringitraensis* (now *C. andringitraense*), *C. boettgeri*, *C. brevicornis*, *C. fallax*, *C. gallus*, *C. gastrotaenia*, *C. glawi*, *C. globifer*, *C. guillaumeti*, *C. malthe*, *C. marojezensis* (now *C. marojezense*), *C. nasuta* (now *C. nasutum*), *C. oshaughnessyi*, *C. parsonii*, *C. vencesi*, *Furcifer antimena*, *F. bifidus*, *F. campani*, *F. minor*, *F. petteri*, *F. rhinoceratus* and *F. willsii* (SC58 Doc. 21.3 (Rev. 1)) the six conditions established by AC24 which had to be met in order for the suspension to be removed, included:

- Establishment of conservative export quotas "based on estimates of sustainable offtake and scientific information" with data and information demonstrating that the quotas would not have a detrimental impact on the wild population;
- Conducting a status assessment and developing an internationally agreed population monitoring programme for the species; and
- Basing any changes to the annual export quota on the results of this assessment and monitoring programme.

The Secretariat also reported to SC59 (March 2010) that no response had been received from Madagascar in response to this. However, these species have been considered subsequently by Committee meetings, notably AC25 (July 2011), SC61 (August 2011), AC26 (March 2012) and SC62 (July 2012).

Madagascar had in fact submitted a response (Anon, 2011), which appears to have been considered at AC25, although it is not included as either a meeting document or an information document for that meeting. Madagascar submitted the response that had been provided to the Secretariat in 2011 (*in litt*. to UNEP-WCMC, 2015). In the document Madagascar provided information on the species and indicated that, were the suspension to be lifted, they would establish zero quotas for 40 species (32 species of *Calumma* and 8 of *Furcifer*) for 2012. They proposed a quota of 250 for one species (*Furcifer campani*), for which they provided detailed information to demonstrate non-detriment. They also indicated that they considered *Furcifer angeli* a suitable candidate for export, and intended to prepare a non-detriment finding for that species.

Based on input from Madagascar, discussions at AC25 and further clarifications, SC61 decided to lift the recommended suspension for 26 species of *Calumma* and four species of *Furcifer.* Discussion at AC26 led to SC62 deciding to lift the recommended suspension for a further five species of *Calumma* and three species of *Furcifer,* including *F. campani.* These decisions were communicated to Parties, as usual, through notifications. Unfortunately, as the Secretariat indicated (*in litt.* 17 Sept 2015), Notification No. 2011/035 of 5 September 2011, regarding the SC61 decision, omitted the names of 15 species of *Calumma*; the suspensions for these species have therefore been retained erroneously.

The current suspension applies to all exports of *Calumma* and *Furcifer* from Madagascar, except *C. andringitraense, C. boettgeri, C. brevicorne, C. crypticum, C. fallax, C. gallus, C. gastrotaenia, C. glawi, C. globifer, C. guillaumeti, C. malthe, C. marojezense, C. nasutum, C. oshaughnessyi, C. parsonii, C. vencesi, F. antimena, F. bifidus, F. campani, F. lateralis, F. minor, F. oustaleti, F. pardalis, F. petteri, F. rhinoceratus, F. verrucosus* and *F. willsii* (Notification No. 2014/039).

However, taking into account the error in Notification 2011/035, the SC recommendation to suspend trade should only apply to seven species of *Furcifer (F. angeli, F. balteatus, F. belalandaensis, F. labordi, F. nicosiai, F. timoni,* and *F. tuzetae)*. One of these (*F. timoni*) has been relatively recently described (2009) and was therefore not considered at AC24.

Of the remainder, three (*F. angeli, F. belalandensis* and *F. tuzetae*) were included in a summary list of species that Madagascar proposed for zero export quota in 2012 in the document submitted in 2011 (Anon., 2011b). The other three species (*F. balteatus*, *F. labordi* and *F. nicosiai*) were omitted from this list but detailed background information on them from the IUCN Red List assessment was included in the document's annex, indicating that their omission from the list was in error.

Given that all *Calumma* species, including those originally categorised as C1 or C2 in the background document considered at AC24, have now been removed from suspension, it is not clear why these *Furcifer* species particularly the three listed as proposed for zero export by Madagascar in their 2011 document remain under recommendation of suspension.

A document has been prepared that it is understood Madagascar may submit for consideration at SC66 reconfirming zero export quotas for the *Calumma* species omitted from Notification No. 2011/035 and proposing zero export quotas for the *Furcifer* species still under suspension, with the exception of *Furcifer angeli* for which a cautious export quota based on a detailed non-detriment finding is proposed (Randrianantoandro, C. *in litt.* 7 Sept. 2015).

The document may also clarify the nature of the zero export quotas, indicating that Madagascar would establish ongoing zero quotas for species known to have highly restricted ranges and to be severely threatened, or whose known populations are confined to protected areas where collection for commercial trade is banned. For other species where information may become available in the future indicating that non-detrimental commercial export could be undertaken, Madagascar may wish to establish a non-zero quota at some point, based on a non-detriment finding made in a similar way to those done for *F. campani* and *F. angeli*.

B. Species characteristics

Taxonomic note: The genus *Chamaeleo* was revised by (Klaver and Böhme, 1986), resulting in two new genera: *Calumma* and *Furcifer* (IUCN/SSC Trade Specialist Group, 1993). The CITES standard nomenclatural references recognise 33 Calumma species (Andreone *et al.*, 2001; Böhme, 1997; Gehring *et al.*, 2010b, 2011; Glaw and Vences, 2007; Klaver and Böhme, 1997; Lutzmann and Lutzmann, 2004; Raxworthy and Nussbaum, 2006; Walbröl and Walbröl, 2004) and 21 Furcifer species (Glaw *et al.*, 2009; Jesu *et al.*, 1999; Klaver and Böhme, 1997). The Standard Reference for Chamaeleonidae proposed at AC28 (August-September 2015) (AC28 Sum. 2 (Rev. 1); Glaw, 2015) recognises 22 *Furcifer* spp., with two new species proposed (*F. major* and *F. viridis*), while *F. monoceras* is suggested for revision as a junior synonym of *F. rhinoceratus*. It was noted that the genus *Calumma* includes taxa of uncertain taxonomic status (Raxworthy and Nussbaum, 2006), and the species inventory was considered "*far from complete*" (Gehring *et al.*, 2011).

Biology: *Calumma* and *Furcifer* are both generally medium- to large-sized, arboreal and colourful (Glaw and Vences, 2007). *Calumma* spp. are restricted to humid areas (Glaw and Vences, 2007), from sea level to high elevations (Randrianantoandro *et al.*, 2009), generally in undisturbed primary habitats

(Glaw and Vences, 2007). Most *Furcifer* spp. inhabit arid areas (Glaw and Vences, 2007); a few species only (including *F. balteatus* and *F. timoni*) are exclusively found in rainforest areas (Glaw and Vences, 2007; Glaw *et al.*, 2009). Several species (including *F. oustaleti*) were reported to be able to adapt to very different environments (Glaw and Vences, 2007). It was noted that *Furcifer* spp. in general can adapt to degraded and secondary habitats. (Glaw and Vences, 2007). All Malagasy chameleons are oviparous and both *Calumma* and *Furcifer* demonstrate conspicuous sexual dimorphism, with males larger than females (Glaw and Vences, 2007).

Distribution: *Calumma* species are endemic to Madagascar (Glaw and Vences, 2007; CoP16 Doc. 43.1, Rev. 1, Annex 3). The greatest species richness of this genus was reported from northern Madagascar (Raxworthy and Nussbaum, 2006); no records were reported from the dry southwest (Glaw and Vences, 2007).

With the exception of two Comorian species, *Furcifer* spp. are endemic to Madagascar (Glaw and Vences, 2007). They inhabit arid areas in the west of the country; with some species extending to the highlands (Glaw and Vences, 2007).

Population status and trends: Out of the 17 *Calumma* and 8 *Furcifer* species under review that have been assessed in the IUCN Red List, three were considered Critically Endangered, five Endangered, seven Vulnerable, five Near Threatened and one Least Concern, two species were described as Data Deficient; 11 species had declining population trends, nine had stable populations and for three the trend was considered unknown (IUCN, 2015). Two species (*Calumma linota* and *Furcifer monoceras*) have not been assessed.

Durkin *et al.* (2011) noted that the herpetofauna of Madagascar remained understudied, especially outside protected areas. Although recent efforts have been made to improve understanding of Madagascan reptiles, knowledge of species' distribution and abundance, and the condition and extent of remaining habitat was considered incomplete (D'Cruze *et al.*, 2009; Durkin *et al.*, 2011; Jenkins *et al.*, 2014).

Threats: The primary threat to Malagasy chameleons was reported to be the rapid destruction, fragmentation and degradation of habitat, especially forests (Raxworthy, 1988; Brady and Griffiths, 1999; Andreone *et al.*, 2009; Gehring *et al.*, 2010b; Jenkins *et al.*, 2014). Forest cover decreased almost 40% from the 1950s to 2000 (Harper *et al.*, 2007). Over the period 1990 to 2000, the rate of deforestation was estimated at 0.83% per year, declining to 0.53 % per year from 2000-2005, and to 0.4% per year between 2005 and 2010 (MEFT *et al.*, 2009; ONE *et al.*, 2013). Malagasy chameleons may be particularly vulnerable to these threats as a number of species have restricted distributions (Brady and Griffiths, 1999; Randrianantoandro *et al.*, 2009). Gehring *et al.* (2012) considered new lineages of Malagasy chameleons under threat of extinction from rapid ongoing habitat loss since some are likely restricted to small geographic areas. High altitude species were also considered potentially at risk from up-slope displacement due to climate change (Raxworthy *et al.*, 2008).

Exploitation for trade was also considered a threat (Jenkins *et al.*, 1999; CBSG, 2002; Jenkins *et al.*, 2014). Chameleons were considered perhaps the most targeted group of Madagascar's herpetofauna (Jenkins *et al.*, 1999), with some chameleons in high demand in the pet trade (Jenkins *et al.*, 2014). Endemic species or those with restricted ranges were considered particularly at risk (Carpenter *et al.*, 2004). Trade of *Calumma* and *Furcifer* species increased rapidly in the late 1980s and early 1990s as a result of liberalisation of export controls in 1988 (Ordonnance No. 88-015) (Carpenter *et al.*, 2005) and Madagascar became a significant exporter of chameleons (Brady and Griffiths, 1999). Seven species were reported to have accounted for 94% of trade between 1977 and 2001: *Calumma brevicornis, C. parsonii, Furcifer campani, F. lateralis, F. oustaleti, F. pardalis* and *F. verrucosus* (not under review) (Carpenter *et al.*, 2004). Randrianantoandro *et al.* (2011) reported that *Furcifer* chameleons sold for $US 100-450 and

legal exports of four common species totalled 8,000 animals each year, generating $US 200,000 - $ 900,000 per year.

Todd (2011) considered Thailand to be a major route for illegally traded Malagasy reptiles and reported that specimens of *Calumma* and *Furcifer* were recorded in illegal trade.

Collection sites of *Calumma* and *Furcifer* species were reported to be poorly known (Carpenter *et al.*, 2005). Carpenter (2003) recommended that, in future, the location of collection must be given and monitoring of the harvest sites should be carried out by independent, qualified observers.

Mortality of individuals in transit was considered very high and often undocumented (IUCN/SSC Trade Specialist Group, 1993; Todd, 2011). It was reported that captive breeding is unlikely to provide a sufficient supply to meet the demand for chameleon species as pets (Jenkins *et al.*, 2014), due to specialised husbandry requirements (de Vosjoli, 1990 in Jenkins *et al.*, 1999; Ferguson *et al.*, 2002), which makes maintaining and breeding chameleons in captivity difficult (IUCN/SSC Trade Specialist Group, 1993; Todd, 2011). The turnover of Malagasy chameleons in trade was reported to be high (Todd, 2011), due to their specific husbandry requirements (Ferguson *et al.*, 2002), short life spans (Glaw and Vences, 2007), and low captive breeding success (ISIS, 2010 in Todd, 2011), which resulted in higher death rates than other lizards in trade (Todd, 2011).

There is no reported domestic use of chameleons in Madagascar.

Overview of trade and management: *Calumma* and *Furcifer* were listed as genus on CITES Appendix II on 4 February 1977. Annual reports have been received from Madagascar for every year 2004-2013.

The late 1980s and early 1990s saw an upsurge in the export of live animals from Madagascar, very largely for the exotic pet trade. Among those exported was a range of species included in Appendix II, notably chameleons.

Following a period of political instability in 2002, the CITES Management Authority (MA) of Madagascar introduced a six-month moratorium on all international trade in native species of fauna and flora (Rabesihanaka *et al.*, 2008). In accordance with the recommendations of the CITES Animals and Plants Committees, a Review of Significant Trade was conducted at the country level in Madagascar, which resulted in the creation of a CITES Action Plan for the reform of Madagascar's wildlife export and the establishment of an operational Scientific Authority (Rabesihanaka *et al.*, 2008). Madagascar adopted several pieces of legislation relating to wildlife trade (Ministère de l'Environnement des Eaux et Forets, 2006):

- Act No. 2005-018 of 17 October 2005 on International Trade and Endangered Species of Wild Fauna and Flora;
- Decree No. 2006-097 of 31 January 2006 laying down detailed rules for implementing the Act No. 2005-018 of 17 October 2005;
- Decree No. 2006-098 of 31 January 2006 concerning the publication of the revised Appendices to CITES;
- Decree No. 2006-400 from 13 June 2006 on the classification of species of wildlife. The wildlife species of Madagascar are classified into three categories: protected (Category 1), harmful (Category 2) and game (Category 3).

Under Decree No. 2006-400, *Calumma capuroni*, *C. cucullatum* (as *C. cucullata*), *C. furcifer*, *C. guibei*, *C. hilleniusi*, *C. linota*, *C. peyrierasi*, *C. tsaratananense*, *Furcifer angeli*, *F. balteatus*, *F. belalandaensis*, *F.*

labordi, *F. monoceras*, *F. nicosiai*, and *F. tuzetae* are classified as Category 1, Class 2 (protected) species, which means authorisation from the relevant in-country CITES authorities is required for the collection of the species from the wild and collection is not permitted from strict protected areas (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

A review of Malagasy wildlife trade policy noted several weaknesses such as a lack of adequate political support for the implementation of CITES and a lack of personnel and resources for control and monitoring. As a result, implementation of national wildlife laws was considered poor (UNEP and UNCTAD, 2008). The review also noted "exports exceeding quotas, questionable data employed in the setting of quotas and widespread illegal trafficking" (UNEP and UNCTAD, 2008).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Madagascar as "legislation that is believed generally to meet the requirements for implementation of CITES".

Jenkins *et al.* (2014) estimated that almost 40% of the geographic range of Malagasy reptiles was within the national network of protected areas, including the most threatened endemic reptiles in Madagascar. Several categories of protected areas are recognised in Madagascar and Law No. 2001-005 prohibits the sale of wild animals from any protected areas (UNEP and UNCTAD, 2008). In 2003, Madagascar's President Ravalomanana pledged to triple the coverage of protected areas in the country to six million hectares within five years (called the Durban Vision), which corresponds to around 10% of the total land area (IUCN, 2008; USAID, 2008), to be undertaken through the establishment of the Système d'Aires Protégées de Madagascar (SAPM). It was noted by Randrianantoandro *et al.* (2011) that the Durban Vision process was ongoing and new protected areas are being created. In 2013, WWF reported that a Protected Area network covering more than six million hectares was in place in Madagascar (WWF, 2013). However, habitat loss and direct exploitation of reptiles was nevertheless reported to occur within the boundaries of protected areas (Jenkins *et al.*, 2014). D'Cruze *et al.* (2009) noted that herpetological conservation efforts had focussed more on Madagascar's evergreen rainforest than on dry deciduous forests, spiny forest and savannah areas.

An exporter reported that the specialist international market for chameleons is small, with many of the species being in very limited demand. This applies to some of those that have recently been given non-zero quotas, such as *Calumma oshaughnessyi*, for which exporters have had difficulty in finding a market even for the small quota allocated (250 in total in 2015) (Donty, J.B, *pers. comm*. to M. Jenkins, September 2015).

C. Species reviews

Calumma amber

Taxonomic note: Records of *C. amber* were formerly considered to be *C. brevicorne* (Jenkins *et al.*, 2011r).

Biology: Males of *C. amber* were reported to be 100-112 mm SVL and females up 72-105 mm SVL (Glaw and Vences, 2007). *C. amber* was reported to be restricted to mid-altitude humid forest, at elevations between 900-1150 m above sea level.

Distribution: Endemic to Madagascar and reported only from Montagne d'Ambre in northern Madagascar (Glaw and Vences, 2007; Durkin *et al.*, 2011, Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species extent of occurrence was estimated at 385 km² (Jenkins *et al.*, 2011r).

Population status and trends: *C. amber* was categorised as Near Threatened in the IUCN Red List (nearly qualifying for listing as Vulnerable), due to its occurrence at a single site only and the

immediate future threats to that site (Jenkins *et al.*, 2011r). The species was considered common, with a stable population trend (Jenkins *et al.*, 2011r).

Threats: Montagne d'Ambre was reported to be under immediate future threat of several activities expanding into the park, including logging, cattle grazing, clearance for agriculture, and rosewood collection (N. D'Cruze and L. Durkin *pers. comm*. January 2011 to Jenkins *et al.*, 2011r).

Trade: According to the CITES Trade Database, there has been no reported trade in this species from Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur entirely within the Parc National de Montagne d'Ambre, a strict protected area where collection is illegal (Jenkins *et al.*, 2011r). The species was considered relatively well protected but is not included the Decree 2006-400 (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011r) noted that population trends should be monitored to assess whether human activities around and within the reserve pose a major threat to the survival of the species.

Calumma ambreense

Taxonomic note: *Calumma ambreense* was previously regarded as a subspecies of *C. oshaughnessyi* (Jenkins *et al.*, 2011s). The taxonomy of this species was considered in need of revision (Glaw, 2015).

Biology: The species roosting height during the rainy season was reported to be variable (between 1.51-10 m) (Glaw and Vences, 2007). In the dry season, repeated use of the same resting site was reported to be common and small, discrete territories were maintained without aggression (Glaw and Vences, 2007). *C. ambreense* was reported to inhabit mid-altitude rainforests (Glaw and Vences, 2007), at elevations between 900-1250 m above sea level (Jenkins *et al.*, 2011s).

Distribution: The species is endemic to Madagascar, with occurrence reported in Montagne d'Ambre in the north (Glaw and Vences, 2007; Durkin *et al.*, 2011). It was considered probably to occur in Tsaratanana [northern Madagascar] (Glaw and Vences, 2007), but the identity of populations from Marojejy [northeast Madagascar] and Tsaratanana (Antsahamanara, Manarikoba forest) were considered to need confirmation; they may belong to *C. globifer* or *C. ambreense* (Glaw and Vences, 2007). The extent of the species occurrence was estimated at 385 km² (Jenkins *et al.*, 2011s).

Population status and trends: *C. ambreense* was categorised as Near Threatened in the IUCN Red List (nearly qualifying for listing as Vulnerable), due to its occurrence at a single site only and the immediate future threats to that site (Jenkins *et al.*, 2011s). Tsaratanana was not considered part of the species range in the IUCN assessment (Jenkins *et al.*, 2011s). The species was reported to be common and the population trend was considered stable (Jenkins *et al.*, 2011s).

Threats: Montagne d'Ambre was reported to be under immediate future threat of several activities expanding into the park, including logging, cattle grazing, clearance for agriculture, and rosewood collection (N. D'Cruze and L. Durkin *pers. comm*. January 2011 to Jenkins *et al.*, 2011s).

Trade: Direct trade in *C. ambreense* from Madagascar 2004-2013 comprised one wild-sourced body for scientific purposes according the country of import only. No exports were reported by Madagascar. No other trade has been reported since the genus listing. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: In Montagne d'Ambre, the species was reported to occur entirely within the Parc National de Montagne d'Ambre, a strict protected area where collection is illegal (Jenkins *et al.*, 2011s). Although this forest was considered under pressure from humans, the species was considered relatively well protected (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species is not included the Decree 2006-400. Jenkins *et al.*(2011s) noted that population trends should be monitored to assess whether human activities around and within the reserve pose a major threat to the survival of the species.

Calumma capuroni

Biology: *Calumma capuroni* (Madagascar Chameleon) has been observed on vegetation up to approximately 4 m above the ground (Glaw and Vences, 2007). Males of *C. capuroni* were reported to be up to 90 mm SVL and females up to 85 mm SVL (Glaw and Vences, 2007). *C. capuroni* was reported to inhabit montane rainforests, at elevations between 1550-1950 m above sea level (Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar and occurrence was reported in Andohahela and Chaines Anosyennes [southeast Madagascar] (Glaw and Vences, 2007). Although Jenkins *et al.* (2011t) considered its occurrence within the Anosyennes mountain chain in need of verification. In Andohahela, the extent of the species occurrence was estimated at 78 km² (Jenkins *et al.*, 2011t).

Population status and trends: *C. capuroni* was categorised as Vulnerable in the IUCN Red List, due to its occurrence at a single site only and the plausible future threat of habitat loss (Jenkins *et al.*, 2011t). Chaines Anosyennes was not considered part of the species range in the IUCN assessment (Jenkins *et al.*, 2011t). Jenkins *et al.* (2011t) noted there was no information on the population of this species, but presumed it to be stable in the absence of ongoing threats.

Threats: Forest loss and degradation from slash and burn agriculture and cattle grazing was considered to pose a plausible future threat to *C. capuroni* (Jenkins *et al.*, 2011t). However, there were not considered to be any current threats operating within its range at high elevations (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

Trade: Direct trade in *C. capuroni* from Madagascar 2004-2013 comprised of two wild-sourced bodies for scientific purposes according to both Madagascar and the country of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). In Andohahela, the species was reported to occur entirely within Parc National d'Andohahela, a strict protected area where collection is illegal (Jenkins *et al.*, 2011t). Jenkins *et al.* (2011t) noted that further research should be carried out to establish whether the species' occurs within the Anosyennes mountain chain, and to monitor population trends to evaluate the impacts of any future threats.

Calumma cucullatum

Biology: *Calumma cucullatum* (Hooded Chameleon) is a medium-sized chameleon (IUCN/SSC Trade Specialist Group, 1993), with males up to 190 mm SVL and females up to 145 mm SVL (Glaw and Vences, 2007). *C. cucullatum* was reported to inhabit low and mid-elevation humid forest, but was considered unlikely to occur in degraded habitats (Jenkins *et al.*, 2011u).

Distribution: The species is endemic to Madagascar and its occurrence was reported from a number of localities in eastern and north-eastern Madagascar, including Ambavaniasy, Ampasinambo, Anandrivola, Belalono, Fotsialana, Marojejy, Tampina, Toamasina, Tsararano (Glaw and Vences, 2007), Marolambo (Gehring *et al.*, 2010a), and Masoala (F. Andreone *pers. comm*. January 2011 to Jenkins *et al.*, 2011u). Its extent of occurrence was estimated at 17,432 km² (Jenkins *et al.*, 2011u). At Marojejy, *C. cucullatum* was recorded at elevations between 440-720 m above sea level (Jenkins *et al.*, 2011u). The species was reported to occur as highly localised subpopulations (C Raxworthy, *pers. comm*, to C. Randrianantoandro 2011, *in litt.* to UNEP-WCMC, 2015)

Population status and trends: *C. cucullatum* was categorised as Vulnerable in the IUCN Red List, based on its extent of occurrence, exposure to threats, presumed to be severely fragmented population, and the continuing decline of suitable forest habitat (Jenkins *et al.*, 2011u). The species was reported to be uncommon and the population was considered likely to be both declining and severely fragmented due to intolerance of habitat degradation (Jenkins *et al.*, 2011u).

Threats: The main threat to the species was reported to be the loss and degradation of humid forest (Jenkins *et al.*, 2011u).

Trade: Direct trade in *C. cucullatum* from Madagascar 2004-2013 comprised of three bodies for scientific purposes according the country of import only. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: This species was reported to occur in a number of protected areas, including the Zahamena-Ankeniheny corridor (Rabibisoa *et al.*, 2005). The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011u) noted that research should be carried out into the species' distribution, rates of population decline, and its extent of exposure to and the impact of threats.

Calumma furcifer

Biology: *Calumma furcifer* (Fork-nose Chameleon) is a small chameleon (IUCN/SSC Trade Specialist Group, 1993), with one male (holotype) recorded at 70 mm SVL (Glaw and Vences, 2007). *C. furcifer* was considered to be easily distinguishable from other species (Jenkins *et al.*, 2011v). Jenkins *et al.* (2011v) noted that *C. furcifer* was able to tolerate a limited amount of forest disturbance. *C. furcifer* was reported to inhabit mid-elevation forest in eastern Madagascar (Glaw and Vences, 2007; Jenkins *et al.*, 2011v).

Distribution: Endemic to Madagascar, where occurrence in the central east was reported from Andekaleka, Antsihanaka, Fito and Vohidrazana (in the Zahamena-Ankeniheny Corridor), at elevations between 600-865 m above sea level, and from Toamasina, where it was recorded near sea level (Glaw and Vences, 2007). Its extent of occurrence was estimated at 582 km² (Jenkins *et al.*, 2011v). Randrianantoandro (*in litt.* to UNEP-WCMC, 2015) noted that the species is readily distinguishable from other species, and would likely have been detected elsewhere it occurrence was wider.

Population status and trends: *C. furcifer* was categorised as Endangered in the IUCN Red List, based on the extent of its occurrence, and the severe fragmentation and decline in its habitat (Jenkins *et al.*, 2011v). The species was reported to be locally common and the population was considered to be both declining and severely fragmented (Jenkins *et al.*, 2011v). *C. furcifer* was reported to occur at densities of 1.1 individuals/ha (Brady and Griffiths, 1999).

Threats: The main threat to the species was reported to be the severe pressure on low elevation forests it inhabits from expanding slash-and-burn agriculture, logging, and cattle grazing (Jenkins *et al.*, 2011v).

Trade: Direct trade in *C. furcifer* from Madagascar 2004-2013 comprised of two bodies exported in 2004 for scientific purposes according to Madagascar and two bodies exported in 2010 for scientific purposes according the country of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur in the Zahamena-Ankeniheny Corridor, a new protected area (Jenkins *et al.*, 2011v). Jenkins *et al.* (2011v) noted that further research should be carried out into the species' population trends and its responses to habitat modification.

Calumma guibei

Taxonomic note: The taxonomy of *Calumma guibei* (Guibe's Chameleon) was considered in need of revision (Jenkins *et al.*, 2011w; Glaw, 2015). It was noted that possible records of *C. guibei* from Manarikoba [northern Madagascar] could not be distinguished with certainty from *C. boettgeri* or another undescribed species (Jenkins *et al.*, 2011w).

Biology: *C. guibei* was reported to inhabit montane humid forest and sclerophyllous forest (Raxworthy and Nussbaum, 1996).

Distribution: The species is endemic to Madagascar. Jenkins *et al.* (2011w) reported the species occurrence at Tsaratanana only [northwest Madagascar], at elevations between 1000-2250 m above sea level. However, Glaw and Vences (2007) also reported the species occurrence from Antsahamanara [northeast Madagascar]. The extent of occurrence was estimated to be less than 1,300 km², (Jenkins *et al.*, 2011w).

Population status and trends: *C. guibei* was categorised as Near Threatened in the IUCN Red List, due to its occurrence at a single site only at high elevations, its extent of occurrence, and the potential threats to its habitat (Jenkins *et al.*, 2011w). Antsahamanara was not considered part of the species range in the IUCN assessment (Jenkins *et al.*, 2011w). The species was reported to be common, although less abundant overall than *C. malthe*, *C. peltierorum* and *C. tsaratananense* (Raxworthy *et al.*, 2008; Jenkins *et al.*, 2011w). The population trend was considered to be stable (Jenkins *et al.*, 2011w).

Threats: Tsaratanana was reported to be under pressure from slash-and-burn agriculture, but only at lower altitudes where the species was not found (Jenkins *et al.*, 2011w).

Trade: Direct trade in *C. guibei* from Madagascar comprised of 35 bodies exported in 2010 and four bodies exported in 2013 for scientific purposes according the countries of import. No trade was reported by Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). In

Tsaratanana, the species was reported to occur in the Réserve Naturelle Intégrale de Tsaratanana (Jenkins *et al.*, 2011w). Jenkins *et al.* (2011w) noted that research is needed to clarify the taxonomy of this species to better understand its area of occupancy.

Calumma hafahafa

Biology: A single male *Calumma hafahafa* (Bizarre-nosed Chameleon) was reported to be 100 mm SVL (Glaw and Vences, 2007).

Distribution: *C. hafahafa* is endemic to Madagascar and has been collected from both intact and slightly disturbed relict humid forest at the Bemanevika Lakes [District of Bealanana, Sofia Region, north-western Madagascar], at elevations between 1580-1750 m above sea level (Raxworthy and Nussbaum, 2006; Glaw and Vences, 2007); (Andriamazava *pers. comm*. January 2011 to Jenkins *et al.*, 2011c). It was also recorded from a forest fragment near the Tsaratanana massif [north-western Madagascar] at 1,717 m (F. Ratsoavina and M. Vences *pers. comms*. 2011 to Jenkins *et al.*, 2011c). The species extent of occurrence was unknown, but considered to be less than 100 km² (Jenkins *et al.*, 2011c). However, Randrianantoandro (*in litt.* to UNEP-WCMC, 2015) considered the area of occurrence to be below 5km².

Population status and trends: *C. hafahafa* was categorised as Critically Endangered in the IUCN Red List, due to its very limited distribution, its increasingly, and severely, fragmented population, and the continuing decline in its forest habitat (Jenkins *et al.*, 2011c). The species is known from a limited number of specimens collected from 2003-2010 (Raxworthy and Nussbaum, 2006; Jenkins *et al.*, 2011c). The species was considered to be uncommon (Jenkins *et al.*, 2011c). The population was presumed to be declining, and severely fragmented (Jenkins *et al.*, 2011c).

Threats: The main threat to the species was reported to be the loss and degradation of humid forest (Jenkins et al., 2011c).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is not included the Decree 2006-400. *C. hafahafa* was reported as not represented within any formal protected area (Jenkins *et al.*, 2014). Although, Bemanevika has been proposed as a New Protected Area (category V) (Jenkins *et al.*, 2011c; SAPM, n.d.). Jenkins *et al.* (2011c) noted that further research should be carried out into the species' distribution and population trends, its exposure to, and tolerance of, disturbance, and all aspects of its natural history.

Calumma hilleniusi

Taxonomic note: *Calumma hilleniusi* was previously regarded to be a subspecies of *C. brevicorne* (Raxworthy and Nussbaum, 2006). The identity of southern subpopulations assigned to *C. hilleniusi* were considered in need of verification (Vences *et al.*, 2002).

Biology: Male *C. hilleniusi* were reported to be up to 135 mm SVL and females up to 120 mm SVL (Glaw and Vences, 2007). Females collected between January and February were found to contain up to ten large eggs (Vences *et al.*, 2002). *C. hilleniusi* has been observed in or on the edge of humid montane forest (Glaw and Vences, 2007; Jenkins *et al.*, 2011a). The species was also reported to inhabit secondary

heathland (Raxworthy and Nussbaum, 1996) and savannah (Randrianantoandro *et al.*, 2009). It was reported from elevations between 1550-2550 m above sea level (Raxworthy and Nussbaum, 1996).

Distribution:

The species is endemic to Madagascar with occurrences reported from Ankaratra [central Madagascar] (Glaw and Vences, 2007; Randrianantoandro *et al.*, 2009), Andringitra [southeast Madagascar] (Raxworthy and Nussbaum, 1996; Glaw and Vences, 2007), and Ivohibe [southeast Madagascar] (Raselimanana, 1999 in Jenkins *et al.*, 2011a). Although records from Andringitra and Ivohibe were considered in need of verification (Vences *et al.*, 2002; Glaw and Vences, 2007). An isolated record was also reported from near Ambohijanahary [central Madagascar] (H. Rakotondravony *pers. comm*. 2011 to Jenkins *et al.*, 2011a), and from Ibity and Itremo [central Madagascar], although the latter were considered in need of verification (Birkinshaw *et al.*, 2006 cited in Jenkins *et al.*, 2011a). Its extent of occurrence was estimated at 820 km² (Jenkins *et al.*, 2011a).

Population status and trends: *C. hilleniusi* was categorised as Endangered in the IUCN Red List, due to its extent of occurrence, continuing decline of its habitat, and severely fragmented population (Jenkins *et al.*, 2011a). *C. hilleniusi* was reported to occur at densities of 19.7 individuals/ha (Randrianantoandro *et al.*, 2009). The species was reported to be reasonably common, but the population was considered to be both declining and severely fragmented (Jenkins *et al.*, 2011a).

Threats: The main threat to the species was reported to be the loss of montane humid forest (Jenkins *et al.*, 2011a).

Trade: Direct trade in *C. hilleniusi* from Madagascar 2004-2013 comprised of two bodies and <0.01 kg of scientific specimens according to Madagascar, and six bodies and 12 units of specimens according to the countries of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur in three strict protected areas: Parc National d'Andringitra, Réserve Spéciale du Pic d'Ivohibe and Réserve Spéciale Ambohijanahary (Jenkins *et al.*, 2011a) and was not reported to occur outside of those protected areas by Randrianantoandro (*in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011a) noted that further research should be carried out into the species' distribution and the identity of southern populations.

Calumma jejy

Biology: *Calumma jejy* (Marojejy Peak Chameleon) was reported to resemble *C. brevicorne* (Jenkins *et al.*, 2011d). Male *Calumma jejy* were reported to be 73-96 mm SVL and one female was reported as 83 mm SVL (Glaw and Vences, 2007). *C. jejy* was reported to inhabit ericoid dominated montane heathland and transitional montane forest (Glaw and Vences, 2007; Jenkins *et al.*, 2011d). It has been observed on vegetation 1-1.8 m above the ground, or terrestrial among grass (Glaw and Vences, 2007). It was also reported to be found on warm rocks (Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar, with occurrence reported from the Marojejy massif only [north-eastern Madagascar] (Glaw and Vences, 2007; Jenkins *et al.*, 2011d), where it was

restricted to high elevations between 1800-2130 m above sea level (Raxworthy and Nussbaum, 2006). Its known area of occurrence was reported to be approximately 20 km² (Jenkins *et al.*, 2011d).

Population status and trends: *C. jejy* was categorised as Vulnerable in the IUCN Red List, due to its occurrence at a single site only and the plausible future threat from fire (Jenkins *et al.*, 2011d). The population was reported to be stable (Jenkins *et al.*, 2011d), although it was noted that the species is not abundant (C. Raxworthy *pers. comm.* June 2011 to (Jenkins *et al.*, 2011d). The species has been recorded during a number of surveys in Marojejy (Jenkins *et al.*, 2011d).

Threats: Habitat loss from fire was considered to pose a potential future threat to *C. jejy* (Jenkins *et al.*, 2011d). It was also reported to be potentially susceptible to stochastic events due to its small range (R. Jenkins *pers. comm*. June 2011 to Jenkins *et al.*, 2011d).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is not included the Decree 2006-400. The species was reported to occur within Parc National de Marojejy (Jenkins *et al.*, 2011d) and was not reported to occur outside of this protected area (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011d) noted that further research should be carried out into the species' population trends, and its exposure and sensitivity to threats.

Calumma linota

Taxonomic note: The taxonomy of *Calumma linota* (Maroantsetra Chameleon) was reported to be under revision (Glaw, 2015) and the species was tentatively considered as a synonym of *C. boettgeri* by (Glaw and Vences, 2007). A CITES standard reference for Chamaeleonidae (Glaw, 2015) was proposed at AC28 (August-September 2015) revising the species name to *Calumma linotum* and this was recommended by the Animals Committee (AC28 Com. 10; AC28 Sum. 4 (Rev. 1)).

Distribution: *C. linota* is endemic to Madagascar, and was reported to occur in the northeast (Brogard, 2005) from the Col d'Ambatondradama only (Raxworthy, *pers. comm.* in IUCN/SSC Trade Specialist Group, 1993). Raxworthy (*pers. comm*. in IUCN/SSC Trade Specialist Group, 1993) considered it possible that the species occurs over a large area in the northeast from Antala to Maroantsetra. However, the correct attribution of the name *C. linotum* to northern Madagascan populations was considered uncertain by (F. Glaw *pers. comm.* to P. Uetz 2014, Uetz and Hallerman 2014 to Jenkins *et al.*, 2011e).

Population status and trends: *C. linota* has not yet been assessed for the IUCN Red List.

Threats: No information on threats to the species could be found.

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: No information on management measures could be found.

Calumma peltierorum

Biology: Male *Calumma peltierorum* (Peltiers' Chameleon) were reported to be up to 108 mm SVL and females up to 110 mm SVL (Glaw and Vences, 2007). *C. peltierorum* was reported to inhabit intact montane rainforest (Glaw and Vences, 2007; Jenkins *et al.*, 2011f).

Distribution: The species is endemic to Madagascar, with occurrence known only from Anjanaharibe-Sud and Tsaratanana massifs [northern Madagascar] (Glaw and Vences, 2007), at elevations between 1700 and 2580 m above sea level (Raxworthy and Nussbaum, 2006). Its extent of occurrence was estimated at 3620 km^2; this estimate includes its probable occurrence at sites of suitable elevations between the two known locations (Jenkins *et al.*, 2011f).

Population status and trends: *C. peltierorum* was categorised as Near Threatened in the IUCN Red List, due to its extent of occurrence, known only from two locations, and the potential threat from deforestation (Jenkins *et al.*, 2011f). The species was reported to be uncommon (Jenkins *et al.*, 2011f). The population trend was considered stable (Jenkins *et al.*, 2011f).

Threats: Habitat loss was reported from sites between the confirmed records of the species, including at high elevations, but was not considered to be occurring at the species known localities (Jenkins *et al.*, 2011f).

Trade: Direct trade in *C. peltierorum* from Madagascar 2004-2013 comprised of five bodies exported in 2010 and one body exported in 2013 for scientific purposes according the countries of import. No trade was reported by Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is not included the Decree 2006-400. It was reported to occur in two strict protected areas: Réserve Naturelle Intégrale de Tsaratanana and Réserve Spéciale d'Anjanhajaribe-Sud (Jenkins *et al.*, 2011f). It was not reported to occur outside of those protected areas (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011f) noted that research should be carried out into the species' exposure to threats and to clarify its distribution.

Calumma peyrierasi

Biology: *Calumma peyrierasi* (Brygoo's Chameleon) is a small chameleon, with males and females up to 48 mm SVL (Glaw and Vences, 2007). *C. peyrierasi* was reported to inhabit dense montane bush, at elevations between 1900-2000 m above sea level (Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar, and known only from specimens collected from Marojejy Mountains in the northeast (Brygoo, 1978; Glaw and Vences, 2007; Jenkins *et al.*, 2011g). Its extent of occurrence was estimated at 10 km^2 (Jenkins *et al.*, 2011g).

Population status and trends: *C. peyrierasi* was categorised as Vulnerable in the IUCN Red List, based on its limited extent of occurrence at a single location, and the serious threat posed by fire (Jenkins *et al.*, 2011g). Jenkins *et al.* (2011g) noted there was no information on the population status or trends of this species.

Threats: The habitat type (high-altitude montane shrub) for this species is only intact in Madagascar in the Marojejy National Park (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Whilst protected, the main threat to the species was reported to be from fire, which could result in large losses of this habitat (Jenkins *et al.*, 2011g).

Trade: Direct trade in *C. peyrierasi* from Madagascar 2004-2013 comprised four bodies for scientific purposes according the countries of import. No trade was reported by Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur entirely within Marojejy National Park (Jenkins *et al.*, 2011g). Jenkins *et al.* (2011g) noted that further research should be carried out into the species' population status and trends.

Calumma tarzan

Taxonomic note: The species *Calumma tarzan* was recently described, and was recognised as a species at CoP16 in 2013 (CoP16 Doc. 43.1 (Rev. 1), Annex 6 (Rev. 1)).

Biology: *C. tarzan* was reported to be a medium-sized chamaeleon (Gehring *et al.*, 2010b), which was found to roost in forest vegetation 1-4 m above the ground (Gehring *et al.*, 2010b).

Distribution: *C. tarzan* is endemic to Madagascar and has been recorded from fragments of lowland moist forest (Jenkins *et al.*, 2011h) from two localities in the Anosibe An'Ala District (one km north of Tarzanville and from Ambatofotsy), central eastern Madagascar, at elevations between 800-910 m above sea level (Gehring *et al.*, 2010b; Jenkins *et al.*, 2011h). An unidentified form of the *C. furcifer* group found in the Marolambo area (50 km south of Ambatofotsy) in 2009 was tentatively referred to as *C. cf. tarzan* by (Gehring *et al.*, 2010b). In 2011, five individual *C. tarzan* were recorded in the Ampotaka forest (Anosibe An'Ala District, Alaotra-Mangoro Region) at densities of 1.05 individuals per 100 m (Randrianantoandro, 2012); the species was not recorded in suitable habitat above 811 m above sea level (Randrianantoandro, 2012). This represented the first record of *C. tarzan* west of the Mangoro River and the authors considered the species may be more widely distributed (Randrianantoandro, 2012).

Population status and trends: *C. tarzan* was categorised as Critically Endangered in the IUCN Red List based on its estimated area of occupancy, severely fragmented population, and the continuing decline in its habitat (Jenkins *et al.*, 2011h). The species was reported to be locally abundant during April (Gehring *et al.*, 2010b). The population was considered to be both severely fragmented and declining (Jenkins *et al.*, 2011h).

Threats: The main threat to the species was reported to be the ongoing clearance of humid forest (Jenkins *et al.*, 2011h).

Trade: No reported trade 2014-2013 according to the CITES Trade Database. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species has not been reported from any existing protected areas (Jenkins *et al.*, 2011h). However, one of the forests from where *C. tarzan* was collected, at Ambatofotsy (25 km southeast of Tarzanville), has been proposed as a new protected area (SAPM, n.d.; Jenkins *et al.*, 2011h). It was noted that the species should be a priority for further survey work to further establish distribution (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species is not included the Decree 2006-400.

Calumma tsaratananense

Biology: *Calumma tsaratananense* (Tsaratanan Chameleon) is a very small chameleon, with a single female reported to be 44 mm SVL (Glaw and Vences, 2007). *Calumma tsaratananense* was reported to inhabit heathland (Raxworthy and Nussbaum, 1996), at elevations between 2500-2850 m above sea level (Raxworthy *et al.*, 2008). The species was noted to be not dependent on vegetation (Randrianantoandro *in litt.* to UNEP-WCMC, 2015),

Distribution: The species is endemic to Madagascar, with occurrence reported only from the Tsaratanana massif in northern Madagascar (Glaw and Vences, 2007). Its extent of occurrence was considered less than 100 km², and maybe as low as 6 km² (Jenkins *et al.*, 2011i).

Population status and trends: *C. tsaratananense* was categorised as Vulnerable in the IUCN Red List, due to its occurrence at a single site only and the plausible future threat from fire (Jenkins *et al.*, 2011i). The species was reported to be locally common and the population trend was considered stable (Jenkins *et al.*, 2011i).

Threats: Fire mortality was considered to be a potential threat to the species (C. Raxworthy *pers. comm.* June 2011 to Jenkins *et al.*, 2011i). Raxworthy *et al.* (2008) also noted the threat to *C. tsaratananense* and other high altitude species from upslope displacement due to climate change.

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported only from within a strictly protected area: Réserve Naturelle Intégrale de Tsaratanana (Jenkins *et al.*, 2011i). The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Jenkins *et al.* (2011i) noted that further research should be carried out into the species' distribution within the reserve, and its tolerance of habitat loss or degradation.

Calumma tsycorne

Biology: Males of *Calumma tsycorne* (Blunt-nosed Chameleon) were reported to be 95-115 mm SVL and females 95-124 mm SVL (Glaw and Vences, 2007). *C. tsycorne* was reported to be a canopy species, which inhabits relatively intact mid-altitude humid forest (Jenkins *et al.*, 2011j). It was noted to be dependent on this vegetation type (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

Distribution: The species is endemic to Madagascar, with occurrences reported from Kalambatritra, Andohahela (Raxworthy and Nussbaum, 2006), Ivohibe and Midongy (A. Raselimanana *pers. comm.* January 2011 to Jenkins *et al.*, 2011j) in the southeast, at elevations between 850-1300 m above sea level (A. Raselimanana *pers. comm.* January 2011 to Jenkins *et al.*, 2011j). Its extent of occurrence was estimated at 11,047 km² (Jenkins *et al.*, 2011j).

Population status and trends: *C. tsycorne* was categorised as Vulnerable in the IUCN Red List, due to its extent of occurrence and the continuing decline in its habitat (Jenkins *et al.*, 2011j). The species was reported to common in Kalambatritra, but only a few were recorded in Andohahela and Midongy (Jenkins *et al.*, 2011j). No further information on a population in Ivohibe could be located. The population was considered to be severely fragmented; the trend was unknown (Jenkins *et al.*, 2011j).

Threats: The main threat to the species was reported to be deforestation due to slash-and-burn agriculture (Jenkins *et al.*, 2011j).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur in three strict protected areas: Réserve Spéciale Kalambatritra, Parc National d'Andohahela and Parc National Midongy (Jenkins *et al.*, 2011j). It was not reported to occur outside of those protected areas by Randrianantoandro (*in litt.* to UNEP-WCMC, 2015). The species is not included the Decree 2006-400. Jenkins *et al.* (2011j) noted that further research should be carried out into the species' distribution and population trends.

Calumma vatosoa

Biology: A single male *Calumma vatosoa* was reported to be 60 mm SVL (Glaw and Vences, 2007). It was collected from mosaic habitat consisting of lowland humid rainforest and small patches of ericoid heathland (Andreone et al., 2005 in Randrianantoandro, *in litt.* to UNEP-WCMC, 2015).

Distribution: *C. vatosoa* is an endemic species, known only from north-eastern Madagascar (Glaw, 2015), in Tsararano forest at 665 m above sea level (Andreone *et al.*, 2001) and from Ampukafo on the Masoala Peninsula at 370 m above sea level (Lutzman 2006, Lutzman et al. 2010 in Jenkins *et al.*, 2011k). Although the estimated extent of occurrence is 425 km², it was reported that the species may range more widely (Jenkins *et al.*, 2011k).

Population status and trends: *C. vatosoa* was categorised as Data Deficient in the IUCN Red List as the species is known only from a single specimen and photograph, and little is known of its range (Jenkins *et al.*, 2011k).

Threats: Main threats to the species were reported to include forest degradation and fire (Jenkins *et al.*, 2011k).

Trade: No trade reported 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species is not included the Decree 2006-400. The species has not been recorded in any protected areas, although it was considered likely that its range extended into Masoala National Park (Jenkins *et al.*, 2011k). Jenkins *et al.* (2011k) noted that further research should be carried out into the species' distribution, its ecological requirements, and its exposure to, and tolerance of, threats.

Calumma vohibola

Taxonomic note: *Calumma vohibola* was considered to be part of the *C. nasutum/fallax* complex; other populations, yet to be assigned, may be referred to *vohibola* (Gehring *et al.*, 2011; Jenkins, 2014). The species *C. vohibola* was recently described.

Biology: *C. vohibola* is a small-sized chameleon (SVL 43.0-49.8 mm) (Gehring *et al.*, 2011). *C. vohibola* was reported to be a forest specialist, which inhabits littoral forest fragments (Gehring *et al.*, 2011; Jenkins, 2014). Jenkins (2014) noted that *C. vohibola "does not tolerate fully transformed habitats,*

although it can be found on forest edges". (Gehring *et al.*, 2011) considered *C. vohibola* was probably tolerant to some forest disturbance.

Distribution: The species is endemic to Madagascar, where occurrence was believed to be relatively restricted to fragmented areas of lowland and littoral forest (<10 km² in width) from localities within a 60 km stretch of the central eastern coast of Madagascar between Ivoloina and the island Ille aux Prunes in the north [Toamasina Province, Region Antsinanana] and the Vohibola forest in the south (60 km south of Toamasina) (Gehring *et al.*, 2011). Its extent of occurrence was estimated at 441 km² (Jenkins, 2014).

Population status and trends: *C. vohibola* was categorised as Endangered in the IUCN Red List, due to its small range, severely fragmented population, and the continuing decline of its habitat (Jenkins, 2014). Jenkins (2014) noted there was no information on the population abundance or trends of this species, but it was considered to be declining due to the ongoing loss of habitat outside of protected areas (Gehring *et al.*, 2011; Jenkins, 2014).

Threats: The main threat to the species was reported to be the deforestation and degradation of littoral forests outside of protected areas (Gehring *et al.*, 2011; Jenkins, 2014). The remaining littoral forests of Madagascar were reported to be persist only as small fragments owing to deforestation (Gehring *et al.*, 2011).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is not included the Decree 2006-400. The species was reported to occur in the protected forest of Vohibola, which Gehring *et al.* (2011) noted may be a stronghold for the species.

Furcifer angeli

Biology: Males of *Furcifer angeli* (Angel's Chameleon) were reported up to 160 mm SVL and females up to 78 mm SVL (Glaw and Vences, 2007). *F. angeli* was reported to inhabit deciduous dry forest in the northwest (Glaw and Vences, 2007) at elevations between 40-300 m above sea level (Jenkins *et al.*, 2011l).

Distribution: *F. angeli* is endemic to Madagascar, where it was reported to occur in north-west (Glaw, 2015) in the Boeny and Sofia Regions (Voakajy, 2013). Jenkins *et al.* (2011l) reported the species occurrence at locations between Anjiamangirana in the north and Parc National de Namoroka to the south (Raselimanana, 2008). Its occurrence was also reported from Bongolava (Randrianantoandro *et al.*, 2010a) and Ambohibola (C. Raxworthy *pers. comm.* January 2011 to Jenkins *et al.*, 2011l). Its extent of occurrence was estimated at 31,506 km² by (Jenkins *et al.*, 2011l). However, Voakajy (2013) estimated its extent of occurrence covers over 3,086,804,257.8 ha (30,868,043 km²), but the viable area for the species within this was estimated at 391,877.90 ha (3919 km²)(Voakajy, 2013).

Population status and trends: *F. angeli* was categorised as Least Concern in the IUCN Red List, based on its extent of occurrence, and that it appears tolerant to certain levels of habitat degradation (Jenkins *et al.*, 2011l). The population was considered stable (Jenkins *et al.*, 2011l).The species was reported to be abundant in primary forests and in degraded habitats within and outside of protected areas (Voakajy, 2013). The species was reported to be less common at Ankarokaroka in Parc National d'Ankarafantsika than in the Parc National Baie de Baly, near Soalala (Ramanamanjato and Rabibisoa, 2002).

F. angeli was reported to occur at average densities of 4.7 individuals/ha (confidence interval of 2.5 to 8.5 individuals/ha representing minimum and maximum density values) and the national population was estimated at 979,695 individuals, of which 233,048 (3%) were reported to occur in the Sofia Region (Voakajy, 2013). This estimate of population size was obtained by Voakajy (2013) by multiplying the minimum density of the species (2.5 individuals/ha) by the surface area of its viable area. The population at Marosely (Sofia region), which Voakajy (2013) proposed as a collection site, if trade in this species was reopened, was estimated at 1500 individuals (Voakajy, 2013).

Threats: The main threat to the species was reported to be the loss of deciduous forest (Jenkins *et al.*, 2011l).

Trade: Direct trade in *F. angeli* from Madagascar 2004-2013 comprised around 0.1 kg of specimens exported for scientific purposes according to Madagascar, and 14 specimens reported by the countries of import. Prior to the trade suspension *F. angeli* was not traded at very high levels, with only a single individual traded for commercial purposes, recorded on the WCMC trade database for 1988-1998 (Jenkins *et al.*, 2011l).

Management: Madagascar propose establishment of an export quota for this species (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur within the Parc National d'Ankarafantsika (Ramanamanjato and Rabibisoa, 2002), Parc National Baie de Baly (Carpenter, 2003), Parc National de Namoroka (Raselimanana, 2008 in Jenkins *et al.*, 2011l) and Bongolava New Protected Area (Randrianantoandro *et al.*, 2010a in Jenkins *et al.*, 2011l). It was reported that protected areas cover 45% of the species extent of occurrence, and the Sofia Region, where proposed collection would be carried out, 51% of the distribution is protected (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

In 2013, field studies by Madagasikara Voakajy for the CITES Secretariat were carried out in Marosely (Bongolava forest corridor) in the Sofia Region to collect information on the species population size and conservation status with a view to reopening international trade in the species (Voakajy, 2013). Based on the pre-NDF risk assessment, *F. angeli* was considered to be at medium risk as a result of collection (Voakajy, 2013). Voakajy (2013) considered an export quota of 150 individuals per year from the Sofia region would not be detrimental to this population; a collection procedure was proposed to facilitate monitoring of the impact (Voakajy, 2013). A cautious quota of 150 individuals represents 0.06% of the population of the Sofia Region (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

To ensure that collection does not affect the survival of the species, Voakajy (2013) set the following conditions for managing collection:

- Collection period: from February to April;
- Restricted collection area in the Sofia Region;
- Identified collection site: Marosely (about 600 ha);
- Collection of juvenile individuals or pregnant females is prohibited;
- Collection impact should be monitored.

The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

Furcifer balteatus

Biology: *Furcifer balteatus* (Two-banded Chameleon) is a large chameleon (IUCN/SSC Trade Specialist Group, 1993), with males up to 175 mm snout-ventral length (SVL) and females up to 145 mm SVL (Glaw and Vences, 2007). Glaw and Vences (2007) reported that the species was sometimes observed high in trees during the day. *F. balteatus* was reported from in and near low- and mid-altitude

humid forest (Jenkins *et al.*, 2011l), typically associated with intact primary forest (C. Raxworthy *pers. comm.* May 2011 to (Jenkins *et al.*, 2011l). Jenkins *et al.* (2011l) noted that its tolerance of habitat degradation is not well understood, but it was considered unlikely to be widespread in degraded areas (C. Raxworthy *pers. comm.* May 2011 to (Jenkins *et al.*, 2011l).

Distribution:

The species is endemic to Madagascar, and was reported to occur in central southeast, at elevations around 1050 m above sea level (Glaw and Vences, 2007), in the far southeast at Manongotry at 800 m above sea level (J. B. Ramanamanjato *pers. comm*. January 2011 to (Jenkins *et al.*, 2011l), and Tsitongambarika (southeast Madagascar) (C. Randrianantoandro and A. Andriamazava *pers. comms.* January 2011 to Jenkins *et al.*, 2011l). The extent of its known occurrence was estimated at 1,971 km² (Jenkins *et al.*, 2011l).

Population status and trends: *F. balteatus* was categorised as Endangered in the IUCN Red List, due to its extent of occurrence, presumed to be severely fragmented population, and the continuing decline of its habitat (Jenkins *et al.*, 2011m). The species was reported to be rare (C. Raxworthy *pers. comm*. May 2011 to Jenkins *et al.*, 2011m), with all records reported to consist of single individuals (Jenkins *et al.*, 2011m). The population was believed to be declining and severely fragmented (Jenkins *et al.*, 2011m).

Threats: The loss of forest habitat was reported to likely threaten this species (Jenkins *et al.*, 2011m). Illegal trade was also considered to pose a threat; *F. balteatus* was reported to be highly desirable in the international pet trade (C. Raxworthy *pers. comm*. May 2011 to Jenkins *et al.*, 2011m).

Trade: Direct trade in *F. balteatus* from Madagascar 2004-2013 comprised two wild-sourced bodies and <0.01 kg specimens reported by Madagascar and three bodies reported by the countries of import. All trade was for scientific purposes. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was reported to occur within Parc National de Ranomafana (Raselimanana and Rakotomalala, 2003 cited in (Jenkins *et al.*, 2011m) and Parc National d'Andohahela (CBSG, 2002). The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

Furcifer belalandaensis

Biology: *Furcifer belalandaensis* (Belalanda Chameleon) was considered very poorly known (Glaw and Vences, 2007). The SVL of a single males was reported as 118 mm (Glaw and Vences, 2007). *F. belalandaensis* has been observed up to 10-12 m in the canopy (Jenkins *et al.*, 2011b). The species was reported to inhabit large mature trees (Jenkins *et al.*, 2011b). It was reported to be restricted to degraded forest (Glaw and Vences, 2007); (R. Jenkins *pers. comm*. June 2011 to Jenkins *et al.*, 2011b), but its original habitat was considered likely to be gallery forest (Raxworthy and Nussbaum, 2000).

Distribution: The species is endemic to Madagascar, and known only from Belalanda and Sakabera [small villages], both near Toliara in the arid southwest, at elevations between 18-20 m above sea level (Glaw and Vences, 2007; C. Raxworthy *pers. comm*. January 2011 to Jenkins *et al.*, 2011b). Its extent of occurrence was estimated at 4 km² (Jenkins *et al.*, 2011b).

Population status and trends: *F. belalandaensis* was categorised as Critically Endangered in the IUCN Red List, due to its extremely small extent of occurrence, ongoing habitat loss, and some limited illegal collection (Jenkins *et al.*, 2011b). The species' population was reported to be very small and likely decreasing (Jenkins *et al.*, 2011b). Glaw and Vences (2007) noted that *F. belalandaensis* was very poorly known.

Threats: The main threat to the species was reported to be the loss of large mature trees for charcoal. Illegal collection was also considered to pose a threat, although this was believed to be limited. Mining was considered to pose a future threat to the species (Jenkins *et al.*, 2011b).

Trade: Direct trade in *F. belalandaensis* from Madagascar 2004-2013 comprised of two wild-sourced bodies exported in 2008 for scientific purposes according to the countries of import. No trade was reported by Madagascar. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was reported to occur entirely within PK32 New Protected Area, but it was noted that the new reserve is not managed as a strict protected area (R. Jenkins *pers. comm*. June 2011 to Jenkins *et al.*, 2011b). The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). Survey work is underway to obtain more accurate information on the species distribution and abundance (Randrianantoandro *in litt.* to UNEP-WCMC, 2015).

Furcifer labordi

Biology: *Furcifer labordi* (Labord's Chameleon) is a medium- large-sized diurnal chameleon (Karsten *et al.*, 2008), with males up to 138 mm SVL and females 83 mm SVL (Glaw and Vences, 2007). The species was reported to have an unusual annual life cycle where hatching occurs in November, followed by rapid growth to maturity, copulation in January and senescence and death by April (Karsten *et al.*, 2008). One female was observed laying 11 eggs in southern Madagascar (Karsten *et al.*, 2008 in Randrianantoandro *in litt.* to UNEP-WCMC, 2015). *F. labordi* was reported to inhabit deciduous dry forest (Glaw and Vences, 2007) and spiny forest (Karsten *et al.*, 2009b), at elevations between 20-100 m above sea level (Jenkins *et al.*, 2011n).

Distribution: The species is endemic to Madagascar, with occurrence reported from the west and south-west (Glaw and Vences, 2007; Karsten *et al.*, 2009b). It occurs within forests of the Menabe region (Glaw and Vences, 2007; Randrianantoandro *et al.*, 2010b), the Ranobe forest (approximately 30 km north of Toliara) (Karsten *et al.*, 2009b), Ihotry (Glaw and Vences, 2007), Katsepy and Soalala (Brygoo, 1978; Glaw and Vences, 2007). In 2006-07, *F. labordi* was recorded in the dry deciduous forests of Beronto and Nosy-Ambositra in south-western Madagascar, within surveyed altitude ranges of 100-350 m above sea level (Rakotondravony and Goodman, 2011). Its extent of occurrence was estimated at 16,649 km^2 (Jenkins *et al.*, 2011n).

Population status and trends: *F. labordi* was categorised as Vulnerable in the IUCN Red List, due to its extent of occurrence, severely fragmented population, and the continuing decline in its habitat (Jenkins *et al.*, 2011n). The population was considered likely to be both declining and severely fragmented (Jenkins *et al.*, 2011n). *F. labordi* was reported to occur at densities of 30.8 individuals/ha in dry spiny forest habitats in south-western Madagascar (Karsten *et al.*, 2009a), but at lower densities of 7.2 individuals/ha in the dry deciduous forests in the Menabe region, western Madagascar (Randrianantoandro *et al.*, 2010b).

Following study of the six chameleon species that inhabit the arid southwest of Madagascar, (Karsten *et al.*, 2009a) recommended that two species, *F. antimena* and *F. labordi*, should be considered as a conservation priority due to their "restricted distribution, susceptibility to extirpation, lower population densities and lack of formal habitat protection". (Karsten *et al.*, 2009a) also noted that *F. labordi* "has a restricted range and has a unique life history that makes it susceptible to perturbations from deforestation or illegal harvesting".

Threats: The main threat to the species was reported to be the conversion of native forest vegetation (Jenkins *et al.*, 2011n) into charcoal and forest clearance for agriculture (Randrianantoandro *in litt*. to UNEP-WCMC, 2015).

Trade: Direct trade in *F. labordi* from Madagascar 2004-2013 comprised <0.01 kg specimens and 0.05l specimens according to Madagascar and five bodies 0.1kg specimens, 0.05l specimens and 21 specimens (no units) according to the countries of import. All trade was wild-sourced and for scientific purposes. Individuals of the species were reported to have been found in illegal trade (Jenkins *et al.*, 2011n).

Management: The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur within the Parc National Mikea and Parc National Kirindy Mitea (Raselimanana, 2008 in Jenkins *et al.*, 2011n), and in two protected areas under development: Antimena in the Menabe Region and PK32 Ranobe in the Atsimo Andrefana Region (Jenkins *et al.*, 2011n).

Furcifer monoceras

Taxonomic note: It was noted that *Furcifer monoceras* (One-horned Chameleon) is not distinguishable from *F. rhinoceratus* by external features except for its small size (Glaw and Vences, 2007). The species was proposed for revision as a junior synonym of *F. rhinoceratus* at AC28 based on Glaw and Vences (2007) and (Glaw, 2015) (AC28 Doc. 21.1 Annex 6), and this was recommended by AC28 (AC28 Com. 10; AC28 Sum. 4 (Rev. 1)).

Distribution: *F. monoceras* is endemic to Madagascar, and was reported to be known from only from the holotype recorded at Betsako bei Mojunga in north-western Madagascar (Glaw, 2015)

Population status and trends: *F. monoceras* has not yet been assessed for the IUCN Red List.

Threats: No information on threats to the species could be found.

Trade: No trade reported 2004-2013 according to the CITES Trade Database.

Management: No information on management measures could be found.

Furcifer nicosiai

Taxonomic note: It was noted that the *Furcifer verrucosus, F. nicosiai, F. oustaleti* group was in need of revision and likely contained undescribed species (Glaw and Vences, 2007). Records of the species from the Menable Region were considered to belong to another taxon (Raselimanana, 2008 in Jenkins *et al.*, 2011o).

Biology: The SVL of a single male was reported as 145 mm and a single female 90 mm (Glaw and Vences, 2007). Glaw and Vences (2007) reported that most specimens were observed roosting on branches 1-2 m above the ground. It was also noted that *F. nicosiai* was easily confused with sub-adult *F.*

oustaleti (Glaw and Vences, 2007). *F. nicosiai* was reported to inhabit dense sub-humid forest, dense dry forest with xerophytic vegetation, and forest edges (Glaw and Vences, 2007), with elevational records from between 57-571 m above sea level (Bora *et al.*, 2009).

Distribution: The species is endemic to Madagascar. (Jenkins *et al.*, 2011o) reported the species was known only from the Parc National Tsingy de Bemaraha [western Madagascar], but considered it likely to occur further north (Jenkins *et al.*, 2011o). While Glaw and Vences (2007) reported the species occurrence from Tsingy de Bemaraha and Kirindy [western Madagascar]. Its extent of occurrence was estimated to be less than the Parc National Tsingy de Bemaraha area of 1566 km2 (Jenkins *et al.*, 2011o). In 2011, the species was also recorded in the forest of Beanka (Melaky Region) (Randriandimbimahazo, 2013).

Population status and trends: *F. nicosiai* was categorised as Endangered in the IUCN Red List, due to its extent of occurrence at a single site only, and the continuing decline in its habitat (Jenkins *et al.*, 2011o). The species was reported to be uncommon and the population trend was considered to be declining (Jenkins *et al.*, 2011o). *F. nicosiai* was reported to occur at densities of 1.5 individuals/ha in in the dry deciduous forest of Parc National Tsingy de Bemaraha (Jenkins *et al.*, 2011o).

Threats: The main threats to this species was reported to be the loss, degradation and fragmentation of dry deciduous forest in the Parc National de Tsingy de Bemaraha (Jenkins *et al.*, 2011o).

Trade: Direct trade in *F. nicosiai* from Madagascar 2004-2013 comprised four bodies and < 0.01 specimens as reported by Madagascar and four bodies according to the countries of import. All trade was wild-sourced and for scientific purposes. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is classified in Category I, Class II I the Decree 2006-400 (prohibiting collection from strict protected areas) (Randrianantoandro *in litt.* to UNEP-WCMC, 2015). The species was reported to occur within the Parc National de Tsingy de Bemaraha (Raselimanana, 2008 in Jenkins *et al.*, 2011o). Randrianantoandro (*in litt.* to UNEP-WCMC, 2015) reported that the species occurred entirely within this protected area, although other records of occurrence have been reported.

Furcifer timoni

Taxonomic note: The species *Furcifer timoni* was recently described.

Biology: *F. timoni* was reported to be a cryptic, canopy-dwelling species, which descends to lower vegetation during the egg-laying period (Glaw *et al.*, 2009). *F. timoni* was reported to be a small-sized chameleon (male SVL 88 mm, female SVL 95–96 mm) (Glaw *et al.*, 2009). Females with 10-14 eggs were collected in February (Glaw *et al.*, 2009). *F. timoni* was reported to inhabit mid-altitude primary rainforest (Glaw *et al.*, 2009).

Distribution: The species is endemic to Madagascar and was reported to be known only from the Montagne d'Ambre National Park in the north (Glaw *et al.*, 2009; Durkin *et al.*, 2011), at elevations between 750-900 m above sea level (Glaw *et al.*, 2009). Photographic records of the species in Marojejy National Park were considered to need confirmation (Jenkins *et al.*, 2011p). Its extent of occurrence was estimated at 385 km² (Jenkins *et al.*, 2011p).

Population status and trends: *F. timoni* was categorised as Near Threatened in the IUCN Red List (nearly qualifying for listing as Vulnerable), due to its occurrence at a single site only and plausible

future threats to that site (Jenkins *et al.*, 2011p). Jenkins *et al.* (2011p) noted there was no information on the population of this species, but presumed it to be stable in the absence of ongoing threats.

Threats: Montagne d'Ambre was considered to be under immediate future threat from several activities expanding into the park (Jenkins *et al.*, 2011p). R. Jenkins (*pers. comm.* June 2011 to Jenkins *et al.*, 2011p) considered high levels of collection unlikely as *F. timoni* is a canopy-dwelling species.

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species is not included the Decree 2006-400. The species was known only from within Parc National Montagne d'Ambre (Jenkins *et al.*, 2011p). Jenkins *et al.* (2011p) noted that research should be carried out into the species' distribution, and the identity of individuals in Marojejy.

Furcifer tuzetae

Biology: The SVL of a single male was reported as 173 mm (Glaw and Vences, 2007). The region from which the specimens was found is categorised by dry forest (Glaw and Vences, 2007; Jenkins *et al.*, 2011q). R. Jenkins (*pers. comm.* June 2011 to Jenkins *et al.*, 2011q) presumed *F. tuzetae* to be arboreal and tree dependent (typical of *Furcifer* species in western Madagascar).

Distribution: *Furcifer tuzetae* (Ambiky Chameleon) is a Madagascan endemic which was reported to be known only from a single specimen collected in Andrenalamivola (Toliara Region) in south-western Madagascar, Records of *F. tuzetae* in northern Madagascar were considered to need confirmation (Raselimanana, 2008 in Jenkins *et al.*, 2011q).

Population status and trends: *F. tuzetae* was categorised as Data Deficient in the IUCN Red List as the species is known only from a single specimen (Jenkins *et al.*, 2011q). The population was considered likely to be severely fragmented and declining (Jenkins *et al.*, 2011q).

Threats: Loss and degradation of its presumed dry forest habitat were considered potential threats to the species (Jenkins *et al.*, 2011q).

Trade: Direct trade in *F. tuzetae* from Madagascar 2004-2013 comprised one specimen exported in 2012 for scientific purposes according to the country of import. No trade was reported by Madagascar.

Management: The species is not included the Decree 2006-400. The type locality was not from a protected area (Jenkins *et al.*, 2011q). Jenkins *et al.* (2011q) noted that further information was urgently needed on the species' distribution, ecology, exposure to threats, and its population trends.

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Chamaeleo africanus: Niger

A. Summary

NIGER Suspension valid from: 7 September 2012	Virtually no information on the distribution, conservation status or management of the species in Niger was located. International trade levels were moderate during the years 2004-2010, but no reported trade since 2010. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Chamaeleo africanus (African Chameleon) was selected for the RST following CoP14 at AC23 (April 2008) on the basis of trade data provided in document AC23 Doc. 8.5, noting large discrepancies between quotas set and exports realised (AC23 WG1 Doc. 1; AC23 Summary Record). At AC25 (July 2011), *C. africanus* was categorised as of "possible concern" for Niger (AC25 Summary Record), and recommendations were formulated (Table 1). No response to the recommendations was received and the Secretariat and AC Chair determined that the recommendations had not been complied with (SC62 Doc. 27.1). The SC agreed to suspend trade covered by Article IV of the Convention for *C. africanus* from Niger (SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record)

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Niger	**Within 90 days** a) The Management Authority of Niger should provide the Secretariat with available information on: i) the distribution and abundance of *Chamaeleo africanus* in its country; and ii) the justification, and the scientific basis, by which it has been established that the quantities exported will not be detrimental to the survival of the species and in compliance with Article IV, paragraphs 2 (a) and 3; and b) The Management Authority should establish an interim conservative quota for this species, based on estimates of sustainable off-take and available scientific information and provide details to the Secretariat. **Within two years** a) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place; b) Establish a revised annual export quota for wild taken specimens based on the results of the assessment; c) The Management Authority should forward the quota details to the Secretariat (including zero quotas) and provide an explanation of how the Scientific Authority determined that the quantities would not be detrimental to the survival of the species in the wild; and d) The Secretariat, in consultation with the Chair of the Animals Committee, should consider the information provided and, if satisfied, publish the proposed export quota.

B. Species characteristics

Taxonomic note: Several authors have synonymised *C. calcaricarens* with *C. africanus* (Ineich, 2001 cited in Bowles, 2014; Böhme, 1985 cited in Glaw, 2015); however, Tilbury and Tolley (2009), the

CITES Standard Reference for *Trioceros*, accepted *C. calcaricarens* as a valid species. The Standard Reference for Chamaeleonidae proposed at AC28 (August-September 2015) (Glaw, 2015) (AC28 Sum. 2 (Rev. 1)) also recognised *C. calcaricarens*, and this was recommended by AC28 (AC28 Com. 10; AC28 Sum. 4 (Rev. 1)).

Biology: *C. africanus* is a medium-sized chameleon reaching approximately 45 cm in length (Tilbury, 2010). It is broadly found in the Sahelian region, living in trees, bushes and grasses (Junius-Bourdain, 2006; Tilbury, 2010; Trape *et al.*, 2012). The species is sometimes found on the ground in sandy areas, and in the dry season can be seen on paths and roads (Trape *et al.*, 2012). An introduced population in Greece has adapted to coastal dune habitats (Tilbury, 2010).

C. africanus feeds on insects and other arthropods (Trape *et al.*, 2012). It has been recorded from traditionally cultivated agricultural land as well as rural gardens (Wilms *et al.*, 2014). Females produce a single clutch of between 4 and 43 eggs per year (Wilms *et al.*, 2014; Tilbury, 2010).

C. Country reviews

Niger

Distribution: *C. africanus* has a wide range across northern Africa from Egypt, Sudan, and eastwards to Mauritania (Trape *et al.*, 2012). Records of *C. africanus* in West and Central Africa exist for Mali, Niger, Nigeria, Cameroon, Chad, the Central African Republic and Gabon (Wilms *et al.*, 2014). Records of occurrence were understood to refer to *C. calcaricarens rather than C. africanus* in in Ethiopia and Eritrea (Tilbury, 2010) and in Djibouti and Somalia (Largen,1997). An introduced population occurs in southern Greece, where the species is restricted to a tiny part of the south-western Peloponnese (Wilms *et al.*, 2014).

In Niger, the species occurrence was reported by Klaver and Böhme (1997) and Sindaco and Jeremčenko (2008). Brito *et al.* (2008) recorded a specimen during their 2004 expedition across North and West Africa, 20 km west of the town of Birni N'Konin, on the Niger/Nigeria border. *C. africanus* was also observed just outside Termit Massif in Central Niger (Ineich *et al.*, 2014), and in Gouré, 8km southwest of Zinder in South Niger (Gonçalves *et al.*, 2013).

Population status and trends: *C. africanus* was categorised as Least Concern in the IUCN Red List of threatened Species (Wilms *et al.*, 2014) on the basis of a wide distribution and presumed large population – where the species occurs, it was reported to be locally very common (Tilbury, 2010). There is no quantitative information on the abundance or population of the species, but the global population is suspected to be stable, and any declines in population are likely to be localised (Wilms *et al.*, 2014). No quantitative information on the population status in Niger was located. It was noted that only a few records from southern Niger exist suggesting that the species is not widely distributed there (IUCN Chameleon Specialist Group, 2015).

Threats: *C. africanus* is not considered to be subject to major threats at a global level due to its wide distribution, local abundance and occurrence in a range of both natural and modified environments (Wilms *et al.*, 2014). However, it was reported to be probably threatened by the reclamation of wetlands in the northern Nile delta (Wilms *et al.*, 2014). *C. africanus* was reported to be used in traditional medicine in Niger, and collected from the wild from natural forests and other wooded land (Hamissou, 2000). Global trade levels were not thought to be detrimental to the species given its large distribution (Wilms *et al.*, 2014).

Trade: *C. africanus* was listed in CITES Appendix II on 4 February 1977. Niger has submitted CITES annual reports for all years 2004-2010, but has not submitted an annual report since 2010.

Niger published an annual export quotas in 2004-2009. No export quotas have been published since 2009. According to both exporter and importer reported quantities in the CITES Trade Database, trade remained within quota 2004-2009.

Table 2: Export quotas for live *Chamaeleo africanus* from Niger, 1997-2015. No quotas have been published since 2009.

	2004	2005	2006	2007	2008	2009
Quota (live)	15,000*	10,000*	3000	3000	3000	3000

* wild-sourced

According to data in the CITES Trade Database, direct trade in *C. africanus* from Niger 2004-2013 consisted of 2606 live, wild-sourced individuals as reported by Niger, and 4160 live, wild-sourced individuals as reported by countries of import (Table 3).

Table 3: Direct exports of *Chamaeleo africanus* from Niger, 2004-2013. All trade was in live, wild-sourced specimens for commercial purposes.

Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Exporter	700	150	1910			750	650				4160
Importer	300	246	1910			150					2606

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

The only indirect trade in *C. africanus* originating in Niger 2004-2013 was the re-export of 246 live, wild-sourced individuals in 2006 (as reported by both countries of import and re-export) and the re-export of 50 live, wild-sourced individuals in 2010 (according to the country of import only); all re-exports were for commercial purposes.

Management: No information on management plans or monitoring systems were identified for *C. africanus* in Niger. There are numerous protected areas in Niger, covering 6.6% of the national territory (CBD, 2015). However, it was not possible to confirm the species' occurrence within these protected areas. No legal protection was identified for *C. africanus* in Niger. It is not included in the schedules of Loi No. 98-07 fixant le régime de la chasse et de la protection de la faune 29 April 1998 (République du Niger, 1998), which defines the system of hunting and wildlife protection in Niger and lists protected animal species.

Wilms et al. considered that no conservation measures were thought to be necessary throughout most of this species' range (Wilms *et al.*, 2014). The CITES Authority of Niger was consulted as part of this review, but no information on the management of *C. africanus* was received to date. Through its national legislation project, the CITES Secretariat categorised the national legislation in Niger as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

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Trioceros feae: Equatorial Guinea

A. Summary

EQUATORIAL GUINEA: Suspension valid from: 7 September 2012	Endemic to Bioko Island of Equatorial Guinea with a restricted distribution of less than 1000 km^2 and considered Near Threatened. One author suggested the population density was high and the population stable. However, little survey data is available, the species is not legally protected, and no management measures appear to be in place. Whilst Equatorial Guinea have not reported any exports of the species, imports from the country were reported consistently until the trade suspension entered into force. One expert suggested some trade in *T. feae* may be mis-described and represents other species. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Trioceros feae (Bioko Montane Chameleon) was selected for the RST at AC23 (April 2008) on the basis of trade data and other information provided in document AC23 Doc. 8.5.1 (AC23 WG2 Doc. 1). At AC25 (July 2011), *T. feae* was categorised as of "possible concern" for Equatorial Guinea (AC25 Summary Record) and recommendations were formulated (Table 1). No response to the recommendations was received (SC62 Doc. 27.1 (Rev. 1)). The SC agreed to recommend all Parties suspend trade in specimens of *T. feae* from Equatorial Guinea (SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record).

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Equatorial Guinea	**Within 90 days** a) The Management Authority should confirm that no export permits have been issued for this species since 1999, and provide an explanation to the Secretariat for the perceived discrepancies between reported Customs data (imports) and CITES data (exports) referred to in document AC25 Doc. 9.4; b) If there is no intent to allow export of this species for the foreseeable future, establish a zero quota which should be communicated to Parties by the Secretariat; or c) If trade is allowed, provide justification for, and details of, the scientific basis by which it has been established that the quantities of *Chamaeleo feae* exported are not detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Taxonomic note: Tilbury and Tolley (2009) reviewed the comparative anatomy and genetics of the genus *Chamaeleo*, and proposed to elevate the sub-genus *Chamaeleo* (*Trioceros*) from the genus Chamaeleo to instate both *Chamaeleo* and *Trioceros* as full genera (Tilbury and Tolley, 2009). Tilbury and Tolley (2009) was adopted at the CITES Standard Reference at CoP16, hence *Trioceros feae* replaced *Chamaeleo feae* as the accepted name.

Biology: *Trioceros feae* is a medium-sized chameleon with a maximum of 21 cm in total body length (Tilbury, 2010), though the size can range from 15 to 35 cm (Chiu, 2013). It inhabits trees and bushes (Junius-Bourdain, 2006), although its preferred habitat seems to be the edges of secondary forest, and also elephant grass and gaps in primary forest (T. Butynski, *pers. comm.* to UNEP-WCMC, 2010). The species also occurs in wet montane forests (Klaver and Böhme, 1992).

The species was described to be confined to montane forests at altitudes of 1300-1600 m, where the habitat is relatively cool and moist (Tilbury, 2010)(Chiu, 2013) *T. feae* have been observed to leave sleeping sites (the ends of fine vines and branches, blades of elephant grass and fern fronds that hang out over gaps at 1-4 m above the ground) at first light to forage mainly at a higher level, but also readily coming to the ground to forage and move between sites (T. Butynski, *pers. comm*. to UNEP-WCMC, 2010).

Little is known about the reproductive cycle for *T. feae*; Chiu (2013) palpated three gravid *T. feae* during field research, and recorded the clutch size to vary from three to five.

C. Country reviews

Equatorial Guinea

Distribution: *T. feae* is endemic to Bioko (Fernando Pó), an island of about 2000 km² located in the Gulf of Guinea in Equatorial Guinea (Martin, 1992). It was reported to occur over much of Bioko, mainly from 1,000 m to 2,000 m above sea level (T. Butynski, *pers. comm.* to UNEP-WCMC, 2010). Carpenter (2013) considered the species' elevation range to be between 1,300 and 1,600 m above sea level, giving it an inferred extent of occurrence of 908 km². The species was noted to have been recorded in at least three localities in the Moka Valley (Carpenter, 2013).

Population status and trends: Butynski (*pers. comm.* to UNEP-WCMC, 2010) reported that *T. feae* appeared to be the most common and widespread chameleon on Bioko. During nocturnal searches for chameleons, Butynski (*pers. comm.* to UNEP-WCMC, 2010) reported finding one or two *T. feae* per hour (on average and in good habitat at Moka, 1370 m a.s.l.), and surmised that there were at least 50 individuals/ha in the most suitable habitat, or perhaps >100 individuals/ha. He concluded that "There must be many hundreds of thousands of this species on Bioko", and considered that numbers were probably stable and perhaps even increasing, as forest gaps and secondary forests are created (Butynski, *pers. comm.* to UNEP-WCMC, 2010). Although, it was noted that gaps and edges may increase observer success, resulting in bias (IUCN Chameleon Specialist Group, 2015).

Given its restricted distribution in montane forests of Bioko, *T. feae* was assessed as Near Threatened in the IUCN Red List (Carpenter, 2013). It was considered that the species could potentially qualify for a Vulnerable listing, however it had not been considered possible to accurately estimate the total number of locations in which *T. feae* occurs, which may include areas outside of Moka Valley (Carpenter, 2013). No information on the population size or trend was reported to be known (Carpenter, 2013).

Threats: Carpenter (2013) considered collection for the pet trade to be a possible threat to the species. Whilst commercial logging is banned, it was reported that small-scale logging may take place and negatively impact the habitat of *T. feae* (Carpenter, 2013). Road building has also fragmented forests (Carpenter, 2013). However, Chiu (2013) suggested that *T. feae* may be a forest edge species, thus benefitting from fragmented habitats, although it was noted that this finding may be due to sampling bias.

Butynski (*pers. comm.* to UNEP-WCMC, 2010) considered that *T. feae* were unlikely to be under any threat. He noted that a small number of specimens were harvested for medicinal purposes, however this was considered unlikely to have an impact on the conservation status of the species.

Fa (1992) reported that the biggest threats to wildlife in Equatorial Guinea were the uncontrolled use of natural resources and the clearing of land for agriculture. As a result of expanding human populations, Bioko's lowland forest was noted as fragmented and degraded everywhere except for the southern third of the island, which has suffered very little damage (Toham *et al.*, 2006). Although the majority of the lowland forest except in the extreme south of the island has been converted to cocoa plantations, in many areas most of the original canopy trees have been maintained to provide shade (Sunderland and Tako, 1999).

The montane forest was reported to have experienced relatively little physical disturbance aside from some coco-yam cultivation in the immediate vicinity of settlements (Sunderland and Tako, 1999). However, rates of loss of all natural habitats were reported to be low (Sunderland and Tako, 1999) and commercial logging, which took place in the lowland forest of the southern half of the island during the early 1990s, was reported to have ceased (Sunderland and Tako, 1999). The impact of habitat loss/alteration on the overall population of *T. feae* is not known.

Trade: *Trioceros feae* was listed on CITES Appendix II on 04 February 1977. Except for 2013, Equatorial Guinea submitted CITES annual reports for all years 2004-2013. Equatorial Guinea has not published any export quotas for *T. feae* 1997-2015.

According to data from the CITES Trade Database, direct trade in *T. feae* from Equatorial Guinea 2004-2013 comprised of 4387 live wild-sourced specimens traded for commercial purposes (Table 2). Trade was only reported by importers.

According to C.V. Anderson (*in litt.* to UNEP-WCMC, 2015) trade reported in *T. feae* may represent illicit trade in *T. montium* [an endemic species to Cameroon] based on discrepancies noted between the number of *T. montium* reported in the CITES Trade Database and the number observed to be available in the European and United States markets. It was reported that no *T. feae* appeared to be available in Europe and the U.S. since 2000/2001, and that one observed confiscated shipment in the U.S had contained *T. montium* rather than *T. feae* as reported (C.V. Anderson, *in litt.* to UNEP-WCMC, 2015).

Table 2: Direct exports of *Trioceros feae* from Equatorial Guinea, 2004-2013. All trade was in live, wild-sourced specimens traded for commercial purposes. No trade was reported in 2013.

Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Exporter										
Importer	483	1110	895	380	466	449	215	80	309	4387

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

In the ten-year period 2004-2013, the only indirect trade in *T. feae* originating in Equatorial Guinea was low levels of trade in live wild-sourced individuals re-exported for commercial purposes in 2005, 2006 and 2007. The country of re-export reported trade in 33 live specimens, and the countries of import reported trade in 118 live specimens. No indirect trade has been recorded since 2007.

Management: *Trioceros feae* was not included in the list of protected fauna in Equatorial Guinea under Law Nº 8/1988 (República de Guinea Ecuatorial, 1988), and the CITES Management/Scientific Authority of Equatorial Guinea (S.F. Engonga Osono, in litt. to UNEP-WCMC, 2010) confirmed that there was no legal protection for *T. feae* in Equatorial Guinea. The montane forest of Bioko is protected by the Pico de Basilé National Park and the Caldera de Luba Scientific Reserve (IUCN and UNEP-WCMC, 2015), but the occurrence of *T. feae* within them is unconfirmed.

The CITES Management/Scientific Authority (MA/SA)of Equatorial Guinea confirmed that there were no management plans for *T. feae* in Equatorial Guinea (Engonga Osono, *in litt*. to UNEP-WCMC, 2010). The CITES MA/SA confirmed that no studies on the species had been undertaken (*pers. comm.* to UNEP-WCMC, 2015).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Equatorial Guinea as "legislation that is believed generally to meet the requirements for implementation of CITES".

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Cordylus mossambicus: Mozambique

A. Summary

MOZAMBIQUE: Suspension valid from: 7 September 2012

Restricted to Mozambique and Zimbabwe. The distribution, population status and trends remain unknown within Mozambique and the management of the species in the country is unclear. The genus more broadly has been affected by over-collection due to the pet trade across its range. Trade appears to have increased prior to the CITES suspension coming into force in 2012. Mozambique has made efforts to address the AC recommendation on the requirement for a national status assessment, but it is unclear if surveys have taken place or how the results of these provide a basis for non-detriment findings. Support to assist Mozambique to conduct a population study may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.

RECOMMENDATION:

Suspension may still be appropriate

RST Background

Cordylus mossambicus (Mozambique Girdled Lizard) was discussed at AC23 (April 2008) on the basis of trade data provided in document AC23 Doc. 8.5. The Working Group recommended that the species was included in the RST, and data were to be requested concerning the species, which has a restricted, endemic distribution, and "populations presumably are small, to determine the reasoning for the quota setting" (AC23 WG 1 Doc. 1). At AC25 (July 2011), *C. mossambicus* was categorised as of "possible concern" for Mozambique (AC25 Summary Record), and recommendations were formulated (Table 1). No response to the recommendations was received, and the Secretariat proposed that the SC agreed to suspend trade covered by Article IV of the Convention for *C. mossambicus* from Mozambique (SC62 Doc. 27.1 (Rev 1); SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record)

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Mozambique	**Within 90 days the Management Authority should provide the Secretariat with detailed information on:** i) the distribution and abundance of *Cordylus mossambicus* in its country; and ii) the justification, and the scientific basis, by which it has established that the quantities exported will not be detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3 and iii) provide an explanation for the quota apparently exceeded in 2003, 2004 and 2007. **Within 2 years the Management Authority should:** a) Conduct a national status assessment, including an evaluation of threats to the species and advise the Secretariat of the details of any management measures in place; b) Establish a revised annual export quota for wild taken specimens based on the results of the assessment;

c) The Management Authority should forward the quota details to the Secretariat (including zero quotas) and provide an explanation of how the Scientific Authority determined that the quantities would not be detrimental to the survival of the species in the wild; and

d) The Secretariat, in consultation with the Chair of the Animals Committee, should consider the information provided and, if satisfied, publish the proposed export quota.

B. Species characteristics

Taxonomic note: The genus *Cordylus* contains 47 species (Broadley, 2006 - CITES Standard Nomenclature Reference). More recently, Stanley *et al.* (2011) reassessed the family Cordylidae into 10 genera, with *Cordylus mossambicus* falling within the genus *Smaug,* along with five other species.

Biology: *Cordylus mossambicus* is a large lizard with a snout-vent length of 75-100 mm, or up to 112 mm for females (Branch, 1998). The species lives in cracked boulders in montane grassland or well-wooded lower slopes, preferring large rock outcrops in mesic savannah (Branch, 1998). All members of the genus *Cordylus* are viviparous, giving birth to 1-6 large young each year (Branch, 1998; Stanley *et al.*, 2011); births of six young have been recorded for this species (Alexander and Marais, 2007). Sexual maturity in *Cordylus* species is reached in 2-4 years and they are long lived (up to 25 years in captivity) (Branch, 1998).

C. Country reviews

Mozambique

Distribution: *C. mossambicus* was reported to occur in montane grasslands or well-forested lower slopes of two mountainous areas in Mozambique and Zimbabwe (Branch, 1998). According to the CITES standard reference for the genus *Cordylus*, the species was reported to occur from the Gorongosa mountains in central Mozambique southwest to the lower slopes of the Chimanimani Mountains in Sofala province on the Zimbabwe border (Broadley, 2006). However, coordinates given for a specimen collected by Stanley *et al.* (2011) were further north in Mozambique, near to the town of Guro, indicating that its range may in fact be larger than recognized by Broadley (2006). The CITES Management Authority (MA) of Mozambique (S.B. Mahanjane, *in litt*. to UNEP-WCMC, 2010) reported the occurrence of the species as "all over the country".

Population status and trends: No information on population status or trends of *C. mossambicus* within Mozambique was located. The species has not been assessed by the IUCN Red List of Threatened Species.

Threats: No information on threats to *C. mossambicus* within Mozambique was located. Anecdotal references to habitat destruction have been recorded (S.B. Mahanjane, *in litt*. to UNEP-WCMC, 2010).

Trade: The genus *Cordylus* has been listed in CITES Appendix II since June 1981. Mozambique submitted CITES annual reports for all years 2004-2013. Mozambique published export quotas for this species from 2003 to 2010 for live animals (Table 2). The export quota was apparently exceeded in 2004 and 2007. The quota increased by 1000 live specimens in 2009.

Table 2: Export quotas published by Mozambique for live *Cordylus mossambicus,* 2003-2015. No quotas have been published since 2010.

	2003	2004	2005	2006	2007	2008	2009	2010
Quota	500	500	500	500	500	500	1500	1500

According to data from the CITES Trade Database, direct trade in *C. mossambicus* from Mozambique during the ten-year period 2004-2013, the majority of trade was in wild-sourced individuals. Direct trade comprised of 6372 live, wild-sourced individuals as reported by Mozambique, and 1333 live, wild-sourced individuals as reported by countries of import, all for commercial purposes (Table 3).

Table 3: Direct exports of *Cordylus mossambicus* from Mozambique, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2013.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
C	Exporter									100	100
	Importer				72						72
W	Exporter	690	370	150	600	130	1392	300	1980	760	6372
	Importer	50		41	40	20	44		258	880	1333

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Low levels of indirect trade originating in Mozambique was recorded 2004-2013, with 13 live individuals reported re-exported in 2006 (according to countries of import only) and five live individuals re-exported in 2012 (according to both countries of import and export). All indirect trade during this period was in live, wild-sourced individuals re-exported for commercial purposes.

Management: No information on management plans or monitoring systems were located for *C. mossambicus* in Mozambique. However, the CITES MA of Mozambique confirmed that surveys were planned for 2015, which are to focus on the Gorongosa and Chimanimani mountains (CITES Management Authority of Mozambique, *in litt*. to UNEP-WCMC, 2015). They reported that the survey would estimate the population size, the distribution of the species and its abundance with the sites where it occurs; the terms of reference for the survey were noted to have been approved, and a funding application was reported to have been submitted to the World Bank (CITES Management Authority of Mozambique, *in litt*. to UNEP-WCMC, 2015). It is unknown whether the species occurs in any protected areas.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Mozambique as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES". The CITES MA of Mozambique (S.B. Mahanjane, *in litt*. to UNEP-WCMC, 2010) reported that harvesting of *C. mossambicus* was regulated through the Forestry and Wildlife Act nº 10/99, of 7 July and its Regulation Decree nº 12/2002, of 6 June. This Act categorises wildlife exploitation into three modalities (simple hunting permit, sport hunting and commercial hunting) and stipulates that there shall be annual quotas for animals to be hunted (Government of Mozambique, 1999).

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Cordylus tropidosternum: Mozambique

A. Summary

MOZAMBIQUE: Suspension valid from: 10 August 2001	No information on the species population size, trend or management available for Mozambique. The genus more broadly has been affected by over-collection due to the pet trade across its range. No export quotas published by Mozambique since 2001. Illegal trade in the species persists globally. It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Cordylus tropidosternum (East African Spiny-tailed Lizard) was identified as a potential candidate for Phase IV of the RST at AC14 (May 1998) (AC14 Summary Record). At AC15 (July 1999), the species was categorised as d(ii) based on Decision 10.79, "those for which there is insufficient information on which to base a judgement" for two range States, including Mozambique (AC15 Proceedings). At AC16 (December 2000), recommendations were formulated (Table 1). The MA of Mozambique responded to the recommendations; however the procedures used to distinguish this species from related ones and the basis of the implementation of Article IV for *C. tropidosternum* were not elaborated (SC45 Doc 12). Furthermore, an explanation of quota control problems that resulted in the frequent exceeding of annual export quotas was not provided (SC45 Doc 12). The SC agreed to suspend trade covered by Article IV of the Convention for *C. tropidosternum* from Mozambique (SC45 Summary Report). The suspension entered into force on 10 August 2001 (Notification No. 2001/056).

Table 1: Recommendations by the Animals Committee (Doc. AC16.7.1)

Range State	Recommendations and deadlines resulting from AC16 (December 2000)
Mozambique	**The Management Authority of Mozambique should provide the CITES Secretariat with detailed information on:** i) distribution and abundance of this species in its country; ii) the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species; iii) the procedures used to correctly identify the species [e.g. the identification key and characteristics used to identify this species from other species of the same genus]; and iv) justification for permitting exports of this species that regularly exceed the declared annual export quota.

B. Species characteristics

Taxonomic note: *Cordylus tropidosternum jonesii*, previously classified as a sub-species of *C. tropidosternum,* was elevated to species status (Broadley, 2006). It was noted that *C. tropidosternum* is morphologically similar (although genetically distinct) to *C. beraduccii* and *C. meculae* (Stanley *et al.*, 2011). Given the wide distribution of *C. tropidosternum* across multiple ecoregions, the taxon was considered likely to represent a complex of species (Greenbaum *et al.*, 2012).

Biology: *C. tropidosternum* was reported to inhabit dry lowveld, particularly mopane savannah (Branch, 1998), at elevations from sea level to 1800 m (Spawls *et al.*, 2002). It is a arboreal, diurnal species, which is closely associated with trees, sheltering under bark and in hollows (Branch, 1998; Spawls *et al.*, 2002).

C. tropidosternum is ovoviviparous and the number of young produced annually reportedly varies between one and five (Broadley and Branch, 2002; Branch *et al.*, 2005), but was reported to be usually around two (Branch, 1998).

C. Country reviews

Mozambique

Distribution: The species' occurrence was reported in East Africa from coastal Kenya, south through Tanzania to central Mozambique, extending west to southeast Democratic Republic of Congo (Katanga), northern Zambia, Malawi and north-eastern Zimbabwe (CoP12 Inf. 14; Broadley, 2006). The type locality, Madagascar (Cope, 1969), was considered an error as there are no recorded extant *Cordylidae* in Madagascar (Greenbaum *et al.*, 2012). The type locality was instead tentatively corrected to Mozambique (Broadley and Branch, 2002).

In Mozambique, the species' occurrence was reported from central Mozambique (CoP12 Inf. 14; Broadley, 2006). According to Broadley and Branch (2002) the Save River in Mozambique represented the southern limit of the species' overall range. However, the species was reported to occur in arid regions such as Gaza [south of the Save River], Manica, Sofala and Tete provinces by S. B. Mahanjane (*in litt.* to T. Milliken, Director, TRAFFIC East/Southern Africa, 2006 in SC57 Doc 29.2 Annex 2). In 2001, the CITES Management Authority of Mozambique believed that the *Cordylus* spp. population was "sustainable", on the basis that its occurrence extended to Inhambane (68,615 km²) and Zambezia (103,127 km²) and on the basis of "the number of exporting companies (two [at that time]), the size of the country (800 000 km²), apart from the area occupied by protected areas where game business is forbidden" (S. B. Mahanjane *in litt.* 2001 to T. Milliken, Director, TRAFFIC East/Southern Africa, 2006 in SC57 Doc 29.2 Annex 2).

Population status and trends: There are few data relating to populations of *C. tropidosternum* (WCMC *et al.*, 1999) and the species has not been assessed by the IUCN Red List. No information was found on the status of the population in Mozambique.

Threats: Switak (1995) considered habitat destruction and over-collection for the pet trade to be threats to the genus *Cordylus*. (Broadley and Branch, 2002) noted that *C. tropidosternum* was readily available in international trade. No country-specific threats were identified for Mozambique.

Habitat loss may be the principal threat to *C. tropidosternum*; populations restricted to small fragmented, coastal forests are of special concern. The removal of dead wood may affect the habitat of the species, but this requires confirmation (KM. Howell, *in litt*. to IUCN/SSC Trade Programme, 1999).

Trade: The genus *Cordylus* was listed in CITES Appendix II on 6 June 1981. Mozambique published export quotas of 1000 live *C. tropidosternum* for 1997-2001; no export quotas have been published since 2001. According to data from the CITES Trade Database, no direct or indirect trade in *C. tropidosternum* originating in Mozambique was reported 2004-2013.

In December 2008, a shipment of live reptiles was seized at Manchester Airport, UK which had been imported form the USA without accompanying CITES import permits; the 44 specimens included *Cordylus tropidosternum* (TRAFFIC, 2009), but the origin of these specimens is unclear.

Management: No information on the management of this species in Mozambique was located. As part of this review, the Management Authority of Mozambique were consulted for all species subject to trade suspensions in place longer than two years. A response was provided for some species, however no details relating to this species in particular were included. Through its national legislation project, the CITES Secretariat categorised the national legislation in Mozambique as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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Phelsuma comorensis and *P. v-nigra:* Comoros

A. Summary

COMOROS: Suspension valid from: 22 August 2008	*Phelsuma comorensis:* Endemic and restricted to one area in the north of Grand Comoro. Adapted to a range of habitats, including urban environments and plantations. No estimates of population size or density exist, but no indications of decline as a result of previous trade levels (although some recovery could have taken place since last reported trade in 2004). Reported to be locally abundant in 2008 and 2010. Observed to be numerous in 2015, indicating the population is very substantial and likely at least in the hundreds of thousands. No management or monitoring of the population is in place, and non-detriment findings have not been formulated. However, Comoros implemented a voluntary moratorium on trade of reptiles and there appears to be no intention to resume trade in this species. Should Comoros wish to resume trade, a cautious export quota should be established. Given the abundance of the species, some offtake is likely to be sustainable, and the AC22 recommendations (of 2006) requiring a comprehensive national assessment and a population monitoring programme may now be considered to be unnecessary. The concerns that led to the original suspension no longer appear appropriate, and removal of the suspension may be warranted.	RECOMMENDATIONS: Suspension may no longer be appropriate – no anticipated trade
Suspension valid from: 22 August 2008	*Phelsuma v-nigra*: Endemic and present on the three islands of the Comoros. Adapted to a range of habitats, including urban environments, plantations and degraded forests. No estimates of population size or density, but previous level of exploitation was not expected to have a significant impact of the species. Reported to be widespread and locally abundant on Grand Comoro in 2007. Observed to be numerous in 2015, indicating the population is very substantial and likely at least in the hundreds of thousands. No management or monitoring of the population is in place, and no non-detriment findings have not been formulated. However, Comoros implemented a voluntary moratorium on trade of reptiles and there appears to be no intention to resume trade in this species. Should Comoros wish to resume trade, a cautious export quota should be established. Given the abundance of the species, some offtake is likely to be sustainable, and the AC22 recommendations (of 2006) requiring a comprehensive national assessment and a population monitoring programme may now be considered to be unnecessary. The concerns that led to the original suspension no longer appear appropriate, and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade

RST Background

Phelsuma comorensis (Comoro Day Gecko) and *P. v-nigra* (Boettger's Day Gecko) were discussed at AC20 (March-April 2000) (AC20 Doc. 8.5 Annex C) and included within Phase VI of the RST process by the AC following CoP12 (AC20 Summary Record). No reply was received from Comoros to correspondence was sent by the Secretariat (AC21 Doc. 10.1.1 (Rev. 1)). At AC22 (July 2006), both species were categorised as of "possible concern" for Comoros (AC22 Summary Record), and recommendations were agreed (Table 1). No response to the recommendations was received (SC57 Doc. 29.1 (Rev. 2)) and the SC agreed to recommend that all Parties suspend trade in *P. comorensis* and *P. v-nigra* from Comoros (SC57 Summary Record). The suspension entered into force on 22 August 2008 (Notification No. 2008/052).

Table 1: Recommendations by the Animals Committee (AC22 Summary Record).

Range State	Recommendations and deadlines resulting from AC22 (July 2006)
Comoros	**Within 6 months:** In consultation with the Secretariat, establish a cautious annual export quota as an interim measure. **Within 18 months:** Conduct a status assessment, including an evaluation of threats to the species; develop and implement a population monitoring programme for the species; and advise the Secretariat of the details of the assessment and the programme. Establish an annual export quota based on the results of the assessment and programme.

Overview of trade and management

The genus *Phelsuma* was listed in Appendix II on 04 February 1977. Comoros became a Party to CITES in 1994 and began exporting reptile species in 2000, mainly comprising *Phelsuma* spp. and native chameleons (e.g. *Furcifer cephalolepis*) and some non-native species (including Malagasy chameleons) which were not reported as re-exports (M. Jenkins, Comoros visit, this project). In 2001 and 2002, Comoros exported several hundred *Phelsuma* spp. identified only at the genus level (M. Jenkins, Comoros visit, this project).

The Management Authority (MA) of the Comoros reported to M Jenkins (Comoros visit, this project), that all commercial export of CITES-listed reptiles had been suspended by the Government in 2008. This is consistent with data in the CITES Trade Database, which indicate that no export of live reptiles since that year. The basis for the suspension is unclear, but may be related to the problems outlined above.

The period of highest exports of live reptiles from the Comoros (2001-2004) coincided with a period of restriction in the export of the same or closely related species from neighbouring Madagascar, which has a well-established and relatively large scale live reptile export trade. These restrictions arose from political unrest in Madagascar and also from a voluntary moratorium imposed by the Malagasy authorities on export of all CITES-listed species during 2003 (M. Jenkins, Comoros visit, this project).

The Comoros MA indicated in September 2015 that, as far as they were aware, there was currently no interest in the commercial export of live reptiles from the country, and indicated that they did not intend at present to lift the suspension (M. Jenkins, Comoros visit, this project).

The MA of Comoros indicated that if exports were to resume in the future, it would be on the basis of cautious quotas established in consultation with the Scientific Authority (SA) and using available information, including the brief survey conducted in September 2015 (detailed below) (M. Jenkins, Comoros visit, this project). It was noted by M. Jenkins (Comoros visit, this project) that the Comoros MA and SA have extremely limited resources available and would be unlikely to be able to establish and maintain a continuous population monitoring programme for this species. However, given the

abundance of the species and the minimal impact that collection for a cautious export quota would have on the status of the species, it was considered unlikely that such a programme would be needed (M. Jenkins, Comoros visit, this project).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Comoros as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

Phelsuma comorensis

B. i. Species characteristics

Biology: *P. comorensis* is a relatively small day-gecko, reaching around 12 cm in total length (Edwards 2001 cited in AC22 Doc 10.2), that is endemic to the Comoros (Ineich, 2010a), where it is reportedly found at higher altitudes (Carretero *et al.*, 2005) (above 600 m) (Edwards 2001 cited in AC22 Doc 10.2). It was reported to occur at altitudes upwards of 200m to 1036m (Hawlitschek, 2008). *P. comorensis* occupies territories as pairs, which are usually plants, however the species was reported to adapt to a variety of habitats, and was found to occur mainly in areas of dry vegetation and plantation, but also scrubland, natural and degraded forest and open urban areas (Hawlitschek, 2008).

The species is largely insectivorous although also takes nectar, pollen and plant exudates (Edwards, 2001). Females lay clutches of two eggs (Glaw and Vences, 2007) which they glue to a substrate (Mellerin, 2011) that hatch after an incubation period of 33-45 days (Christenson and Christenson, n.d.). Most *Phelsuma* species can lay multiple clutches following a single mating, and may reach maturity in a year or less (Christenson and Christenson, 2003; AC22 Doc 10.2 Annex 5c). Individuals were reported to reach sexual maturity at 3-4 months (CITES Management Authority of Comoros, *in litt*. to UNEP-WCMC, 2015).

C. i. Country reviews

Comoros

Distribution: *Phelsuma comorensis* is endemic to the island of Grand Comoro (Ngazidja) in the Comoros, western Indian Ocean (Ineich, 2010a). The distribution was reported to extend from the type locality (La Grille, 1,000 metres altitude) to the north coast of the island (Hawlitschek *et al.*, 2011). Carretero *et al.* (2005) reported the species in mountain forest habitats in the north of the island (La Grille) during surveys in 2003 and Hawlitscek (2008) reported *P. comorensis* to be restricted to the mountainous area of La Grille. The species was reported from Mount Karthala, a volcano in the southern part of Ngazidja (Safford, 2001) and one individual was observed near the capital Moroni (west central Ngazidja), however no other populations outside of the La Grille area were reported to be known (Hawlitschek *et al.*, 2011).The extent of occurrence was calculated as 250.1 km² with an area of occupancy of 183.5 km² (Hawlitschek *et al.*, 2011).

Population status and trends: Despite being an island endemic with a very limited range, *P. comorensis* was reported to be locally abundant (Ineich, 2010a). Meier (1982) noted that it was less common on the north coast than elsewhere on the island. Based on surveys undertaken in 2008, Hawlitscek (2008) reported the species was in 'considerable abundance' both in forest, urban areas and plantations, and considered the species' habitat not to be fragmented. Hawlitscek (2008) suggested that neither a decline nor extreme fluctuations of the population could be inferred. Hawlitschek *et al.* (2011) considered it "not immediately threatened". The species was assessed as Least Concern in the IUCN Red List of Threatened Species, and although the population trend was unknown, the species was not expected to decline significantly (Ineich, 2010a).

No estimates of population size could be located. In AC22 Doc 10.2 Annex 5c, it was noted that ecologically similar *Anolis* in the Neotropics had been shown regularly to reach densities of many hundreds to several thousands of individuals per hectare (Rodda *et al.*, 2001; Stamps *et al.,* 1997) and that observation indicates that the more adaptable *Phelsuma* species, such as *P. comorensis*, may achieve similar population levels at least locally (author's observations, Edwards, *in litt.,* 2006). Even if only a small proportion of this is actually occupied at such densities, the population is likely to be at minimum several hundred thousand animals and more likely several million."

In September 2015, a brief survey of the northern part of Grand Comoro (Ngazidja) by M. Jenkins (see methods, this report) found *P. comorensis* to be widespread and abundant in banana groves and plantations at low altitudes, including those in close proximity to dwellings (M. Jenkins, Comoros visit, this project). In suboptimal conditions (viewing during the middle of the day in a dry period), two to six individuals (either *P. comorensis* or *P. v-nigra*) could generally be found in each banana plant with minimum searching. Typically banana plants were multi-stemmed and spaced two to three metres apart, equating very roughly to 1000-2000 plants per ha. In the localities viewed during the visit, *P. v-nigra* appeared to be somewhat commoner than *P. comorensis*, although the difference was small (M. Jenkins, Comoros visit, this project).

Extrapolation from these figures indicate that population densities of these two species in banana groves and plantations is very likely to exceed 1000 individuals per hectare. FAO estimate some 8500 ha of bananas under cultivation in the Comoros. If these are distributed proportionately across the islands, around half of this area may be expected to be found on Grand Comoro, which accounts for almost half of the total land area of the country. If the banana groves and plantations surveyed are in any way typical, then it is possible that the populations of each of these species on Grand Comoro in this one habitat may exceed one million individuals (M. Jenkins, Comoros visit, this project).

The Comoros SA noted that both species appeared to be at their most abundant or at least easily observed in banana plantations, but also reported them to be common in other habitats (M. Jenkins, Comoros visit, this project). Even if the average population density over the whole area of occupancy (just over 18,000 ha for *P. comorensis* as calculated by Hawlitschek *et al.*, (2008)) is markedly less than that in banana plantations, it is still evident that the populations of *P. comorensis* is very substantial (M. Jenkins, Comoros visit, this project).

Threats: The most significant threat for this species was reported to be the international pet trade, with harvesting around the town of Maweni in the north of the island reported (Ineich, 2010a). Trade in *P. comorensis* was thought to have increased following the recommendation to suspend trade in many species of the genus *Phelsuma* from Madagascar in 1994 (AC22 Doc 10.2 Annex 5c; Hawlitschek *et al.*, 2011).

The impact of international trade on the wild population was considered by Hawlitschek *et al.* (2011) to be difficult to assess. However, Hawlitschek *et al.* (2011) noted that despite relatively heavy exploitation of *P. comorensis*, the species was still more abundant in the Comoros than the less exploited *Phelsuma* species from Mayotte, suggesting that the collection of specimens has so far not had a significantly negative effect on the wild populations (Hawlitschek *et al.*, 2011). Field surveys undertaken in April 2008, (prior to the suspension coming into force) also indicated that *P. comorensis* was found in 'considerable abundance' (Hawlitschek, 2008), however no exports of the species had been reported since 2004. Considering the relatively low levels of annual exports, the international trade was not considered by Ineich (2010a) to be a major threat. Illegal trade was reported to affect *Phelsuma* geckos in Comoros (Safford, 2001); however no further information on illegal trade was located.

Hawlitscek (2008) reported that further human population and intensification of agriculture or horticulture may lead to fragmentation and degradation of the area of occupancy for *P. comorensis* and

this was reported as the most serious threat to the species by the CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015). The introduction of an invasive alien species *Agama agama* was also reported to be a threat as this species is both a predator and competitor of *P. comorensis*; it was reported that a program to control this invasive has been started by the University of the Comoros (CITES MA of Comoros, *in litt*. to UNEP-WCMC, 2015). *P. comorensis* was reported to prefer habitats where invasive *Phelsuma* species are rare or absent Hawlitschek *et al*. (2011).

Cyclones were also considered to pose a threat to populations, both directly through mortality of individuals and indirectly through habitat loss (CITES MA of Comoros, *in litt*. to UNEP-WCMC, 2015).

M. Jenkins (Comoros visit, this project) found local concern about possible impacts of the introduced African lizard *Agama agama*. This species was first reported in Moroni in 1996 and since then has become well established in the city and its immediate surroundings. Although concrete data are lacking, it has been hypothesised that it could compete with, or predate on, day-geckos, or both. However, the two have different, though overlapping, habitat preferences, with the agama being chiefly terrestrial and rupicolous and day-geckos arboreal and wall-dwelling. To date, the agama only occupies a tiny proportion of the range of either of the species. Both species thrive in anthropogenic habitats and face no foreseeable threat from habitat loss or fragmentation, although it was considered populations at higher altitudes may face some impact from periodic fire (M. Jenkins, Comoros visit, this project).

Trade: According to data from the CITES Trade Database, direct exports of *P. comorensis* from Comoros 2004-2013, consisted of 850 live wild-sourced specimens as reported by Comoros, and 3200 wild-sourced specimens as reported by countries of import (Table 2). Countries of import reported over three times the level of trade than was reported by Comoros. Annual reports have been received every year 2004-2012, but not for 2013. No export quotas have ever been published for this species/country combination.

However, higher levels of trade were reported prior to 2004. Comoros reported exports of 4915 live wild individuals from 2000-2003; trading partners reported the import of 7802 live specimens originating from Comoros during the same period.

An additional 1223 live wild specimens of *Phelsuma* spp. were reported by countries of import only in 2001-2002; 350 *Phelsuma* spp. specimens from Comoros were confiscated by countries of import over the same period. No trade was reported following the trade suspension coming into force in 2008.

Table 2: Direct exports of live wild-sourced *Phelsuma comorensis* from Comoros 2004-2007. All trade was in live, wild-sourced specimens for commercial purposes. No trade was reported in 2005 or 2008-2013.

Reported by	2004	2006	2007	Total
Exporter	850			850
Importer	2600	300	300	3200

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015.

Management: *P. comorensis* is listed on CITES Appendix II. The species is not known to be covered by any national legislation. The CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015) outlined a number of actions for species management in the country within three specific areas: protection (including implementation of a management plan and a monitoring schedule), research (species distribution and population structure) and communication (awareness programs to promote conservation). Requests for technical and financial support to undertake surveys were reported to have been requested but not yet received CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015). There are no specific conservation measures in place for *P. comorensis* in Grand Comoro, however Ineich (2010a) suggested that no further measures are required. It is unclear if there is any protection for La Grille.

Phelsuma species have been bred successfully in captivity (Mattioli *et al.*, 2006). Captive-bred individuals are reported to supply a large proportion of the market in consumer countries (AC22 Doc. 10.2).

Phelsuma v-nigra

B. ii. Species characteristics

Taxonomic note: Three subspecies were recognised by Hawlitschek (2008); *Phelsuma v-nigra anjouanensis*, *P. v-nigra comoraegrandensis* and *P. v-nigra v-nigra*. The CITES taxonomic reference (Hallmann *et al.*, 2008) also recognises the three subspecies of *Phelsuma v-nigra*.

Biology: *Phelsuma v-nigra* is one of the smallest members of the genus, the mean length snout-tail was recorded at around 10 cm in length (Hawlitschek, 2008). The species can be found in forest, scrubland, degraded forest and plantations, and has also been known to occur around human dwellings in dense urban areas (Ineich, 2010b). It is largely insectivorous although also takes nectar, pollen and plant exudates. Females lay clutches of two eggs (Glaw and Vences, 2007) that hatch after an incubation period of 33-45 days (Ac22 Doc 10.2). Most *Phelsuma* species can lay multiple clutches following a single mating (Christenson and Christenson, 2003), and may reach maturity from nine months old (Christenson and Christenson, 2003).

C. ii. Country reviews

Comoros

Distribution: The distribution of *P. v-nigra* was reported to include the Comoros Islands and the island of Mayotte, an overseas department of France (Ineich, 2010b). Hawlitschek (2008) reported that the species occurred on the three islands of the Comoros as endemic subspecies, with *P. v-nigra anjouanensis* on the island of Anjouan (Nzwani), *P. v-nigra comoraegrandensis* on Grand Comoro (Ngazidja), and *P. v-nigra v-nigra* on Moheli (Mwali). The species was not reported as present in Mayotte by Hawlitschek (2008) and Hawlitschek *et al.* (2011). It was found to occur at altitudes ranging from 2m asl to 851m asl, with the highest record from Mount Karthala on Grand Comoro (Hawlitschek, 2008). It was also found at all altitudinal ranges on Moheli and reported from the islets of the Parc Marin to the top of the central mountain ridge (Hawlitschek, 2008). Safford (2001) recorded the species from Mount Karthala on Grand Comoro the Mwali highlands (Moheli) and the highlands on Ndzuani.

P. v-nigra adapts to a variety of habitats, and was found to occur mainly in areas of degraded forests and plantations but also forests, areas of dry vegetation and open and dense urban areas on the Comoro Islands (Hawlitschek, 2008). On Anjouan, it was found only in urban areas (Hawlitschek, 2008). The extent of occurrence on all islands was calculated as 1650.1 km² with an area of occupancy of 1368.2 km² (Hawlitschek *et al.*, 2011).

Population status and trends: *P. v-nigra* was recorded as highly abundant in plantations (Hawlitschek, 2008). Occurrence in plantations and degraded forests indicated that the species was more abundant in secondary habitats than in pristine forest (Hawlitschek *et al.*, 2011). The species was assessed in as Least Concern in the IUCN Red List of Threatened Species due to its ability to adapt to a variety of habitats, including anthropogenic environments (Ineich, 2010b). Although the population trend was unknown, the species was not expected to decline significantly (Ineich, 2010b).

It was reported to be widespread and at least locally abundant on Grand Comoro, for example in the vicinity of Moroni, the capital city (CITES 2007 cited in Ineich, 2010b). *P. v-nigra* was found to be present in buildings and gardens in Moroni, the country's capital (M. Jenkins, *pers. obs.*, Comoros visit,

this project).

P. v-nigra was also found to be widespread and abundant in banana groves and plantations at low altitudes, including those in close proximity to dwellings (see methods section and detailed results presented above for *P. comorensis*). It was considered that if the banana groves and plantations surveyed are in any way typical, then it is possible that the populations of each of these species on Grand Comoro in this one habitat may exceed one million individuals (M. Jenkins, Comoros visit, this project).

The Comoros SA noted that both species appeared to be at their most abundant or at least easily observed in banana plantations, but also reported them to be common in other habitats (M. Jenkins, Comoros visit, this project). Even if the average population density over the whole area of occupancy (just under 14,000 ha for *P. v-nigra* as calculated by Hawlitschek *et al.*, (2008)) is markedly less than that in banana plantations, it is still evident that the populations of *P. v-nigra* is very substantial (M. Jenkins, Comoros visit, this project).

Threats: This species was reported to be the international pet trade, although this was not thought to be a major threat (Ineich, 2010b). The impact of international trade on the wild population was considered by Hawlitschek *et al.* (2011) to be difficult to assess. However, Hawlitschek *et al.* (2011) noted that despite relatively heavy exploitation of *P. v-nigra*, the species was still more abundant in the Comoros than the less exploited *Phelsuma* species from Mayotte, suggesting that the collection of specimens has so far not had a significantly negative effect on the wild populations (Hawlitschek *et al.*, 2011). Illegal trade was reported to affect *Phelsuma* geckos in Comoros (Safford, 2001); however no further information on illegal trade was located.

The CITES MA of Comoros (*in litt*. To UNEP-WCMC, 2015) considered the most serious threat to the species to be degradation, fragmentation of habitats. However, Hawlitschek (2008) considered that given the habitat adaptability of the species to plantations and urban areas, the area suitable for *P. v-nigra* did not appear to be subject to fragmentation or degradation. The introduction of an invasive alien species *Agama agama* was also reported to be a threat as this species is both a predator and competitor of *P. v-nigra*; it was reported that a program to control this invasive has been started by the CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015). Introduced *P. dubia* was considered a possible competitor with *P. v-nigra* on Moheli (Hawlitschek, 2008).

Both species thrive in anthropogenic habitats and face no foreseeable threat from habitat loss or fragmentation, although it was considered populations at higher altitudes may face some impact from periodic fire (M. Jenkins, Comoros visit, this project).

Trade: Comoros has not published any export quotas for *P. v-nigra* 1997-2015. With the exception of 2013, Comoros has submitted CITES annual reports for all years 2004-2013.

According to data from the CITES Trade Database, direct trade in *P. v-nigra* from Comoros 2004-2013 comprised of wild-sourced bodies and live specimens traded for commercial and scientific purposes (Table 3).

Table 3: Direct exports of *Phelsuma v-nigra* from Comoros, 2004-2013. All trade was in wild-sourced specimens. No trade was reported in 2006, 2008-2009 and 2011-2013.

Term	Purpose	Reported by	2004	2005	2007	2010	Total
bodies	S	Exporter					
		Importer				2	2
live	T	Exporter	950				950
		Importer	1300	450	300		2050

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

No indirect trade in *Phelsuma v-nigra* originating in Comoros was reported 2004-2013.

Management: The species is not known to be covered by any national legislation. The CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015) outlined a number of actions for species management in the country within three specific areas: protection (including implementation of a management plan and a monitoring schedule), research (species distribution and population structure) and communication (awareness programs to promote conservation). Requests for technical and financial support to undertake surveys were reported to have been requested but not yet received from the CITES MA of Comoros (*in litt*. to UNEP-WCMC, 2015). There are no specific conservation measures in place for *P. v-nigra* in Grand Comoro, however (Ineich, 2010b) suggested that no further measures are required.

D. References

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Phelsuma spp.: Madagascar

A. Summary

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
	Phelsuma abbotti	LC	Reported to be widespread in the north and northwest. No estimates of population size or densities, but presumed large population and stable population trend. Reported to be common in forests and anthropogenically disturbed habitats in 2005-2006, and abundant in similar habitats in 2006-2007. The population in the country was not considered at risk in 2011. Low level of trade in bodies and specimens 2004-2013 (all purpose S). Occurs in a number of protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 350 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
	Phelsuma antanosy	CR	Endemic species with only three subpopulations restricted to a small area in the southeast. Very small area of occurrence of 16 km^2 and area of occupancy of between 1-9 km^2. Population size estimated at 5000-10 000 individuals. Population considered to be severely fragmented and declining. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Occurs within areas being developed and managed as New Protected Areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led	Suspension may no longer be appropriate – no anticipated trade

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			to the original suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma barbouri	LC	Endemic species, occurring at high elevation sites in the central highlands, with an area of occurrence of 526 km^2. No information on the population status or trends, but presumed abundant within its restricted distribution. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
	Phelsuma berghofi	NT	Endemic species, occurring in the southeast. Known only from three locations, with an estimated area of occurrence of 1985 km^2. Considered common in *Ravenala madagascariensis,* but the population densities and trend are unknown. Very low level of trade 2004-2013 (one body, purpose S, reported by country of import). Harvesting for illegal trade was reported to pose a low-level threat to the species. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
	Phelsuma borai	DD	The species is known only from a single specimen and photographs, although records of *Phelsuma mutabilis* from north-western Madagascar may refer to *P. borai.* No reported trade 2004-2013. The species was reported to have been found within a National Park. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
	Phelsuma breviceps	VU	Endemic species, occurring in coastal areas in the south and southwest, with an area of occurrence of 9272 km^2. Reported to be encountered infrequently. The population was considered to be severely fragmented and declining. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 50 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
	Phelsuma cepediana	LC	Introduced to Madagascar, but no evidence that the population remains. No reported trade 2004-2013. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
	Phelsuma dubia	LC	The status of the species is in need of revision. Species occurrence was confirmed from sites in the north and west. Inhabits forests and anthropogenic habitats, including buildings, banana and palm plantations. Reported as common and locally abundant throughout most of its range, with stable population trend. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Reported to be “very popular” among reptile hobbyists. No conservation measures in place. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 200 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
	Phelsuma flavigularis	EN	Species known only from its type locality in the east, with a small area of occurrence of 380 km^2. No information on the population status or trends but considered likely both declining and severely fragmented. Very low level of trade	Suspension may no longer be appropriate – no trade anticipated

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			2004-2013 (one wild-sourced body, purpose S). May be of interest in the international pet trade but this was not considered to pose a major threat. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma gouldi	DD	Endemic species, known only from Anja Reserve on the central high plateau in the south, although it was noted that records of *P. mutabilis* from central Madagascar may represent *P. gouldi.* The species is categorised as Data Deficient on the basis that it is known only from the holotype and photographs from the same location. Considered rare; only two individuals recorded since the species original description. No reported trade 2004-2013. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
	Phelsuma guttata	LC	Endemic species, occurring in the east and northeast, with an area of occurrence of 30 863 km^2. The species was considered common in suitable habitat, however, the population was considered likely both declining and severely fragmented. The main threat to the species was reported to be the loss of humid forest, although it was considered probably tolerant to moderate levels of habitat disturbance. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). The species was reported to occur in a number of protected areas and sites under conservation management. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 200 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma hielscheri	VU	Endemic species, occurring in the west and southwest, with an area of occurrence of 8700 km^2. Local population densities were reported to be dependent on the availability of screw palms (*Pandanus*) and the main threat to the species was reported to be the exploitation of these plants. The population was considered to be likely both declining and severely fragmented. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
	Phelsuma hoeschi	DD	Endemic species, occurring in the east. Reported to be known from artificial habitats. The species was categorised as Data Deficient on the basis that its taxonomy is uncertain, and little is known about its distribution, population status and threats. No reported trade 2004-2013. Not known to occur in any protected areas. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species, or a zero quota is published to indicate there is no anticipated trade, the suspension may still be appropriate.	Suspension may still be appropriate
	Phelsuma kely	DD	Endemic species, known only from around Lac Ampitambe. Categorised as Data Deficient on the basis that it is very poorly known and there is no information on its distribution, population status or threats. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
	Phelsuma klemmeri	EN	Endemic species, with isolated populations known only from two locations (Ampasindava peninsula and around Mandrozo Lake), with an area of occurrence of 955 km^2. Reported to be widespread in the Ampasindava peninsula, although absent in suitable habitat in at least one area, and known only from two specimens from around Mandrozo Lake. No reported trade 2004-2013. However, reported to be "highly attractive" and potentially in high demand in the pet trade. Mandrozo Lake has been proposed as a new protected area and conservation measures were reported to be in place in the Ampasindava peninsula. Based on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no anticipated trade
	Phelsuma malamakibo	NT	Endemic species, known only from a few sites in the in the Andohahela reserve in the southeast, with an area of occurrence of 837 km^2. Reported to be locally abundant at high altitudes; population trend unknown. Very low level of trade 2004-2013 (one wild-sourced body, purpose S). The species was reported to occur within the Andohahela National Park, however, the park was reported to be under pressure from human activity. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Madagascar are encouraged to publish an annual zero quota. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
	Phelsuma masohoala	CR	Endemic species, known only from Cap Est on the Masoala peninsula in the northeast, with an area of occurrence presumed less than 100 km^2. Reported to be known only from the holotype and two museum specimens of unknown origin. It has not been observed since the early 1990s and no population information is	Suspension may no longer be appropriate – no trade anticipated

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			available. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma modesta	LC	Endemic species, occurring in the south, with an area of occurrence of 25 500 km^2. Categorised as Least Concern due to its wide distribution, tolerance of a broad range of habitats, and large, stable population. Reported as common in villages. Four live individuals were exported for commercial purposes in 2004 (following the suspension), and very low level of trade in bodies 2004-2013 (all purpose S). No management measures reported. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 300 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota
	Phelsuma mutabilis	LC	One of the most widespread *Phelsuma* species in Madagascar, occurring throughout most of the western and southern coastal areas, and in inland locations. Considered highly adaptable to different habitat types. Reported to be collected for the pet trade, although considered unlikely to be undergoing significant population declines as a result. No information on the population status or trends, although sometimes found in high densities in villages. Very low level of trade in bodies, skins and specimens 2004-2013 (all purpose S). The species distribution was reported to coincide with protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 500 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma pronki	CR	Occurs in isolated fragments of the eastern rainforest bordering the central highlands in the Andramasina region, with a small area of occurrence of less than 100 km^2. Reported to be known only from a few individuals. Categorised as Critically Endangered due to the severe habitat loss occurring within its range and harvesting for the international pet trade was reported to have resulted in population declines in recent years. Commercial collectors reported the species to be very rare and the population in severe decline. Very low level of trade 2004-2013 (one wild-sourced body, purpose S). Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Critically Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
	Phelsuma pusilla	LC	The taxonomy of the species is in need of revision. Endemic species, widespread in the east with an area of occurrence of 75 500km^2. Reported to be tolerant of a broad range of habitats. Presumed large population, which appears stable. The species was reported to be common, although the subspecies *P. p. hallmani* was described as rare. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). Reported to occur within several protected areas. Based on correspondence submitted to the Secretariat in 2011, Madagascar has proposed an annual quota (no more than 450 specimens). This quota was considered to be non-detrimental by an additional expert. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
	Phelsuma ravenala	LC	Recently described species, noted to be widespread in eastern Madagascar, with an area of occurrence of 3573 km^2. Found only in anthropogenic habitats. Reported to be locally abundant on *Ravenala madagascariensis* (traveller's palm) throughout its range and the population trend considered stable. No reported trade 2004-2013. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012), however, the species was considered a candidate for potential future trade. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, and a cautious export quota is established, the suspension may still be appropriate.	Suspension may still be appropriate
	Phelsuma roesleri	EN	Endemic species, known only from a single location in the north. Its extent of occurrence was estimated at 147 km^2, but its area of occupancy was thought to be considerably more restricted due to its reliance on *Pandanus* plants. No information on the population status or trends. No reported trade 2004-2013. Occurs within the Réserve Spéciale d'Ankarana, where collection is prohibited. Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. There appears to be no intention to resume trade in this species; therefore, the suspension may no longer be appropriate.	Suspension may no longer be appropriate – no anticipated trade
	Phelsuma seippi	EN	Endemic species, occurring in the northwest, with an area of occurrence of 3713 km^2. Reported to be regularly encountered in bamboo forest, and found in relatively high numbers where *Ravenala madagascariensis* was present. Widespread on the Ampasindava peninsula and more abundant than on Nosy Be. However, the population was presumed to be severely fragmented. Very low level of trade 2004-2013 (one wild-sourced body, purpose S, reported by country of import). The species was reported to occur within Resérve Naturele Intégrale Lokobe and Manongarivo Special Reserve, where collection is prohibited. Based	Suspension may no longer be appropriate – no anticipated trade

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
			on correspondence submitted to the Secretariat in 2011, Madagascar indicated there was insufficient information to resume trade (zero quota was proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	
	Phelsuma serraticauda	EN	Endemic species, occurring on the coast in the east and northeast, with an area of occurrence of 4464 km^2. The species was reported to be common on coconut trees, although the population was presumed to be severely fragmented and may be subject to localised declines. A continuing decline in the number of mature individuals was reported due to collection for the pet trade. Very low level of trade in bodies and specimens 2004-2013 (all purpose S). The species may occur in Mananara-Nord protected area. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated
	Phelsuma standingi	VU	Known only from five locations in the arid southwest in the Toliara region, with an area of occurrence of 17 130 km^2. No specific population data for the species, but numbers declined in the 1990s due to heavy collection for the international pet trade. No reported trade 2004-2013. Not known to occur in any protected areas. Madagascar has proposed a quota (no more than 100 specimens). Two experts consider the proposed quota to be non-detrimental. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – species likely to withstand trade at level of proposed quota

MADAGASCAR Suspensions valid from: 20 January 1995	Species	IUCN		RECOMMENDATION
	Phelsuma vanheygeni	EN	Endemic species, occurring in the northwest. Reported from three locations on the Ampasindava peninsula, although may occur more widely in the region in suitable habitats. No information on the population status or trends. No reported trade 2004-2013. Low levels of illegal trade in the species may occur. Not known to occur in any protected areas. Based on correspondence submitted to the Secretariat in 2011, there appears to be no intention to trade in this species (zero quota proposed for 2012). Written confirmation of a zero quota for Endangered species of this genus has been received from the Madagascan Management Authority (MA), and Madagascar are encouraged to publish annual zero quotas. The concerns that led to the original suspension no longer appear applicable and removal of the suspension may be warranted.	Suspension may no longer be appropriate – no trade anticipated

RST Background

At AC9 (November 1994), seven Malagasy *Phelsuma* species were included in the RST (*Phelsuma barbouri, P. breviceps, P. flavigularis, P. quadriocellata, P. seippi, P. serraticauda, and P. standingi*) (see AC24 Doc. 7.2; SC57 Doc. 29.2). The AC formulated recommendations at the genus level (Table 1).

Table 1: Recommendations by the Animals Committee (see SC57 Doc. 29.2; SC57 Doc. 29.2 Annex 2)

Range State	Recommendations and deadlines resulting from AC9 (November 1994)
Madagascar	**Within 3 months:**
	suspend exports of all but four *Phelsuma* species pending science-based harvest quotas;
	provide the biological basis for determining that exports of these species would not be detrimental;
	cease to issue export permits that did not indicate the species involved;
	implement a system to verify the identification of specimens before they were exported; and
	to improve the effectiveness of its implementation of the Convention, regularly submit to the Secretariat copies of all export permits issued
	Within 12 months:
	undertake scientifically based field assessments of the species before allowing exports to resume

In 1994, all Parties were urged not to accept export documents issued by the Management Authority (MA) of Madagascar that did not accurately indicate the *Phelsuma* species being traded (Notification No. 784). In 1995, the MA notified the Secretariat that it would not issue export permits without specifying the species to be exported. The Secretariat was satisfied that this particular recommendation had been implemented (SC57 Doc. 29.2).

At its 32nd meeting, the SC recommended that Madagascar establish a cautious annual export quota or implement the outstanding AC primary recommendations (SC57 Doc 29.2 Annex 2). As neither the AC nor SC recommendations were adhered to, the recommendation was made to all Parties to suspend imports of specimens of *Phelsuma* spp. (excluding *P. laticauda*, *P. lineata*, *P. madagascariensis* and *P. quadriocellata*) from Madagascar (SC57 Doc 29.2 Annex 2). The suspension entered into force on 20 January 1995 (Notification No. 833).

In response to a country-based RST, Madagascar established a CITES Action Plan which in large part is specifically aimed at dealing with commercial export of Appendix-II listed species (SC57 Doc. 29.2) [see further details above for *Calumma* and *Furcifer* spp.]

SC57 (July 2008) asked the Animals Committee to re-evaluate its recommendations regarding export of Malagasy *Phelsumas* with a view to the SC withdrawing its recommendation to suspend trade in those cases where the AC considered that the relevant provisions of Article IV were being complied with. The study covered 22 *Phelsuma* spp. On the basis of available information, the study tentatively place the species in four categories: C1 containing species for which available information suggested that no collection for trade should be allowed at present; C2 containing species for which there was insufficient information to determine whether collection for trade should be allowed at present; and C3 and C4 containing species for which available information suggested that some collection for trade could be allowed. This study formed the basis for discussion at AC24 in April 2009 (as the Annex to AC24 Doc. 7.2).

For *Phelsuma* spp., AC24 concluded that the suspensions for species in categories C3 and C4 could be lifted if certain conditions were met. At SC58 (July 2009), the SC agreed to withdraw its recommendation to Parties not to accept imports of specimens of *Phelsuma abbotti, P. barbouri, P. breviceps, P. cepediana, P. dubia, P. guttata, P. klemmeri, P. modesta, P. mutabilis, P. pusilla, P. seippi* and *P. standingi* from Madagascar if the Management Authority:

A. established conservative annual export quota for wild specimens intended for trade, based on estimates of sustainable offtake and scientific information;
B. forwarded the quota details to the Secretariat (including zero quotas) and provide information and data used by the Scientific Authority to determine that the quantities would not be detrimental to the survival of the species in the wild;
C. The Secretariat after consultation with the Animals Committee should publish the quota agreed by the Animals Committee (including any zero quotas). No export should occur until the agreed quotas have been published on the Secretariat's website;
D. ensured that specimens produced from captive-production systems were distinguished in trade from genuine wild-harvested specimens, that separate export quotas were established and notified to the Secretariat;
E. conducted a status assessment, including an evaluation of threats to the species; developed and implemented an internationally agreed standard population monitoring programme for the species; and advised the Secretariat of the details of the assessment and the programme; and
F. based any changes to the conservative annual export quota for wild-taken specimens on the results of the assessment and monitoring programme.

At SC59 (March 2010) the Secretariat reported that these conditions had been communicated to Madagascar in August 2009 but that no response had been received. These species have not been considered since then by either the AC or the SC and the suspensions remain in force.

Madagascar had in fact submitted a response to the Secretariat in 2011[9] (Anon, 2011). This document discussed all Malagasy *Phelsuma* species, apart from the four for which commercial export was permitted. It provided summary information on the species and indicated that, were the suspension to be lifted, Madagascar would intend to maintain zero quotas for all C1 and C2 species and for three in categories C3 and C4 (*P. barbouri*, *P. klemmeri* and *P. seippi*). For eight species (*P. abbotti, P. dubia, P. guttata, P. modesta, P. mutabilis, P. pusilla* and *P. standingi*) small quotas, ranging from 50 to just under 500 were proposed. The document also drew attention to eight recently described species not at that time included as accepted taxa in the CITES species database (all are now so), providing further information on one of these (*P. ravenala*).

All species other than the four exempted since 1994 still remain under recommendation of suspension of trade. The document prepared by Madagascar regarding these species and sent to the Secretariat in 2011 does not appear to have been considered by any subsequent meeting of either the AC or SC – it is not included as a meeting document or information document for any of these meetings. [It may have arrived too late for adequate consideration at AC25 and was omitted from consideration at subsequent meetings because the species in question did not appear explicitly under any Agenda item].

For the majority of species, zero export quotas are proposed in the document, which would appear to satisfy the relevant requirements of Article IV (there is no requirement for a non-detriment finding). It is therefore unclear why AC24 advised that the SC recommendation to suspend trade in some species (those in categories C1 and C2 of the background document) remain in place regardless of any subsequent action by Madagascar. (It should be noted that AC24 came to a similar conclusion regarding the chameleons, but evidently reversed this on deliberation at subsequent meetings).

For eight species that AC24 had decided could be traded if certain conditions were met, cautious export quotas are proposed in the document, together with a rationale. These too would appear to fulfil the original requirements of the Standing Committee that a cautious export quota be established.

The document also indicates that the relatively recently described (2007) *Phelsuma ravenala* is much more widespread and abundant than previously thought and notes that Madagascar may wish to propose

[9] it bears the date 6 August 2009, but this is evidently the date of the communication from the Secretariat to Madagascar, as the document has 2011 references in it, and requests quotas for 2012

a non-zero export quota, based on a non-detriment finding, sometime in the future. The document does not indicate Madagascar's intentions regarding the other 7 species recently included in the CITES checklist (*P. borai, P. dorsivittata, P. gouldi, P. hoeschi, P. kely, P. roesleri*) although given that *P. ravenala* was singled out as a species that might be appropriate for export, it seems likely that the others would be intended to have zero quotas. It is understood that Madagascar may re-submit a revised version of this document to SC66 (January 2016) (M. Jenkins, Madagascar visit, this project).

B. Species characteristics

Taxonomic note: The CITES standard nomenclatural references recognise 35 Malagasy *Phelsuma* species (Hallmann *et al.*, 2008; Berghof and Trautmann, 2009; Glaw *et al.*, 2009, 2010; Rocha *et al.*, 2010; Crottini *et al.*, 2011). Although, (Glaw and Cole, 2011) noted that *P. cepediana* should be considered as extinct on Madagascar unless its continued presence can be confirmed. It was noted that the taxonomy of some species and subspecies is in need of revision (Glaw and Rösler, 2015; AC24 Doc 7.2).

Biology: Malagasy *Phelsuma* are medium- to large-sized arboreal, diurnal, and colourful geckos (Mattioli *et al.*, 2006; Glaw and Vences, 2007).

Phelsuma species vary greatly in their distribution range and abundance (Glaw and Rösler, 2015). They are found in a variety of habitats on Madagascar, mainly in forest regions (Rocha *et al.*, 2009). It was noted by Glaw and Rösler (2015) that dependence on natural habitats varies greatly between species of *Phelsuma*. Some species appear to be restricted to specific natural habitats (e.g. *P. roesleri*) while many others (e. g. *P. dubia*, *P. ravenala*) are well adapted to anthropogenic habitats (Glaw and Rösler, 2015).

An egg clutch of *Phelsuma* typically consists of two eggs, often attached to each other (Glaw and Vences, 2007). Egg deposition occurs 18-30 days after mating and *Phelsuma* species can be distinguished as either "egg-gluers" (attach their eggs to substrates) or "non-gluers". For the latter, the females generally hold the eggs until they become hard (Glaw and Vences, 2007). The sex of the offspring is determined by the incubation temperature (Glaw and Vences, 2007). *Phelsuma* are primarily insectivorous, but some species also feed on pollen or nectar (Taylor and Gardner, 2014).

Distribution: The genus *Phelsuma* was reported to be distributed across Madagascar, and numerous adjacent islands in the western Indian Ocean region, eastern Africa, and Andaman Islands (Glaw and Rösler, 2015). 35 of the 53 recognised species of *Phelsuma* occur on Madagascar, most of which are endemic to the island. Some species have very restricted distributions (e.g. *P. antanosy*, *P. masohoala*) whereas other species are more widespread (e.g. *P. dubia*, *P. mutabilis*) (Glaw and Rösler, 2015), and a few species are known only from a few individuals (*P. borai*, *P. gouldi*, *P. pronki*).

Population status and trends: Out of the 27 *Phelsuma* species under review assessed in the IUCN Red List, three were considered Critically Endangered, six Endangered, three Vulnerable, two Near Threatened and nine Least Concern, four species were described as Data Deficient; seven species had declining population trends, five had stable populations and for 15 the trend was considered unknown (IUCN, 2015). One species, *P. cepediana,* was considered extinct on Madagascar (Glaw and Cole, 2011).

Durkin *et al.* (2011) noted that the herpetofauna of Madagascar remained understudied, especially outside protected areas. Although recent efforts have been made to improve understanding of Madagascan reptiles, knowledge of species' distribution and abundance, and the condition and extent of remaining habitat was considered incomplete (D'Cruze *et al.*, 2009; Durkin *et al.*, 2011; Jenkins *et al.*, 2014).

Threats: In the IUCN Global Reptile Assessment, Madagascar was designated as a centre of threatened species richness (Böhm and et al., 2013). The primary threat to Malagasy geckos was reported to be the conversion of forest and scrubland for agriculture (Jenkins *et al.*, 2014), and species dependent on natural habitats or with restricted distributions may be particularly at risk. Forest cover in Madagascar decreased almost 40% from the 1950s to 2000 (Harper *et al.*, 2007). Over the period 1990 to 2000, the rate of deforestation was estimated at 0.83% per year, declining to 0.53 % per year from 2000-2005, and to 0.4% per year between 2005 and 2010 (MEFT *et al.*, 2009; ONE *et al.*, 2013).

Phelsuma are considered "highly attractive" and in high demand by the pet trade (Mattioli *et al.*, 2006; Glaw and Rösler, 2015). For some species, exploitation for trade was considered to pose a threat and low levels of illegal trade have been reported (IUCN, 2015). Todd (2011) considered Thailand to be a major route for illegally traded Malagasy reptiles and noted that the country's reptile trade was rapidly expanding both in volume and range of taxa (although no *Phelsuma* species were found during the investigation of illegal trade in Malagasy reptiles in Thailand). Consequently, D'Cruze (2011) believed a taxonomic, ecological, and conservation focused review of the *Phelsuma* genus in Madagascar should be a priority.

There is no domestic use of *Phelsuma* spp. in Madagascar (M. Jenkins, Madagascar visit, this project).

Overview of trade and management: The genus *Phelsuma* was listed on CITES Appendix II on 04 February 1977. Annual reports have been received from Madagascar for very year 2004-2013. Madagascar communicated to the Secretariat that they would implement zero quotas in 2012 for the following species: *Phelsuma antanosy*, *P. berghofi*, *P. cepediana*, *P. flavigularis*, *P. hielscheri*, *P. kely*, *P. malamakibo*, *P. masohoala*, *P. pronki*, *P. ravenala*, *P. serraticauda*, *P. vanheygeni* (CITES Management Authority (MA) of Madagascar *in litt*. to UNEP-WCMC, 2015). The CITES Scientific Authority in Madagascar considered that there was insufficient information to resume trade in *P. barbouri*, *P. klemmeri* and *P. seippi* (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015). Seven species were considered able to withstand low or modest levels of collection including *P. abbotti*, *P. breviceps*, *P. dubia*, *P. guttata*, *P. modesta*, *P. mutabilis*, *P. pusilla* and *P. standingi* (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Given that the proposed quotas for *Phelsuma* spp. from Madagascar are relatively low, Frank Glaw, (Herpetologist, Zoologische Staatssammlung München) considered that this level of trade would be sustainable and would not provide any significant threat to the species (R. Jenkins, *in litt*. to UNEP-WCMC, 16th September 2015).

Following a period of political instability in 2002, the CITES Management Authority of Madagascar introduced a six-month moratorium on all international trade in native species of fauna and flora (Rabesihanaka *et al.*, 2008). In accordance with the recommendations of the CITES Animals and Plants Committees, a Review of Significant Trade was conducted at the country level in Madagascar, which resulted in the creation of a CITES Action Plan for the reform of Madagascar's wildlife export and the establishment of an operational Scientific Authority (Rabesihanaka *et al.*, 2008). Concurrently, Madagascar adopted several pieces of legislation relating to wildlife trade (Ministère de l'Environnement des Eaux et Forets, 2006):

- Act No. 2005-018 of 17 October 2005 on International Trade and Endangered Species of Wild Fauna and Flora;
- Decree No. 2006-097 of 31 January 2006 laying down detailed rules for implementing the Act No. 2005-018 of 17 October 2005;
- Decree No. 2006-098 of 31 January 2006 concerning the publication of the revised Appendices to CITES;

- Decree No. 2006-400 from 13 June 2006 on the classification of species of wildlife. The wildlife species of Madagascar are classified into three categories: protected (Category 1), harmful (Category 2) and game (Category 3).

Under Decree No. 2006-400, *Phelsuma abbotti, P. antanosy, P. barbouri, P. berghofi, P. breviceps, P. cepediana, P. dubia, P. flavigularis, P. guttata, P. hielscheri, P. klemmeri, P. masohoala, P. modesta, P. mutabilis, P. pronki, P. pusilla, P. seippi, P. serraticauda* and *P. standingi* are classified as Category 1, Class 2 (protected) species, which means authorisation from the relevant in-country CITES authorities is required for the collection of the species from the wild and collection is not permitted from strict protected areas. However, this legislation does not include newly described species or reflect the recent taxonomic changes and the legal status of *P. dorsivittata*, *P. parva*, *P. borai*, *P. gouldi*, *P. hoeschi*, *P. ravenala* and *P. roesleri* is unclear.

A review of Malagasy wildlife trade policy noted several weaknesses such as a lack of adequate political support for the implementation of CITES and a lack of personnel and resources for control and monitoring. As a result, implementation of national wildlife laws was considered poor (UNEP and UNCTAD, 2008). The review also noted exports exceeding quotas, questionable data employed in the setting of quotas and high levels of illegal trafficking (UNEP and UNCTAD, 2008). According to Rakotoarivelo *et al.* (2011), Madagascar has a sound legal framework for the use and protection of wildlife, however, renewed effort is needed to communicate and enforce wildlife legislation, in particular regarding the illegal hunting and export of protected species.

Jenkins *et al.* (2014) estimated that almost 40% of the geographic range of Malagasy reptiles was within the national network of protected areas, including the most threatened endemic reptiles in Madagascar. Several categories of protected areas are recognised in Madagascar and Law No. 2001-005 prohibits the sale of wild animals from any protected areas (UNEP and UNCTAD, 2008). In 2003, Madagascar's President Ravalomanana pledged to triple the coverage of protected areas in the country to six million hectares within five years (Durban Vision), which corresponds to around 10% of the total land area (IUCN, 2008; USAID, 2008), to be undertaken through the establishment of the Système d'Aires Protégées de Madagascar (SAPM). It was noted by (Randrianantoandro *et al.*, 2011a) that the Durban Vision process was ongoing and new protected areas are being created. In 2013, (WWF, 2013) reported that a Protected Area network covering more than six million hectares was in place in Madagascar. However, habitat loss and direct exploitation of reptiles was nevertheless reported to occur within the boundaries of protected areas (Jenkins *et al.*, 2014). D'Cruze *et al.* (2009) noted that herpetological conservation efforts had focussed more on Madagascar's evergreen rainforest than on dry deciduous forests, spiny forest and savannah areas.

It was noted that some species are regularly kept and bred by private hobbyists (Mattioli *et al.*, 2006), although further research was thought to be required to achieve good results in captivity and to produce individuals that are more economically competitive than wild-caught specimens (Mattioli *et al.*, 2006). It was reported that there is no authorised breeding or export of captive bred *Phelsuma* species in Madagascar (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Regarding *Phelsumas* in general, exporters report that there is only a very small specialist or collectors' market, so that international demand for most species, particularly those that are not brightly coloured, is likely to be low. This includes some of the species that are proposed for export, such as *Phelsuma guttata* which is almost transparent. They also note that very small quotas are generally impractical or not commercially viable for groups such as *Phelsumas* which do not command high export prices (Donty, J.B, *pers. comm.* to M. Jenkins, Madagascar visit, this project, Sept. 2015).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Madagascar as "legislation that is believed generally to meet the requirements for implementation of CITES".

Table 2: Direct trade in *Phelsuma* spp. from Madagascar, 2004-2013.

Term	Unit	Source	Purpose	Reported by	2004	2005	2006	2008	2009	2010	2012	2013	Total
bodies	-	W	S	Exporter				9		12		6	27
				Importer	7	5	10			11		1	34
live	-	I	T	Exporter									
				Importer					38				38
		W	S	Exporter			74						74
				Importer									
			T	Exporter									
				Importer		40		28				52	120
scales	mg	W	S	Exporter								0.00 0046	0.00 0046
				Importer									
specimens	mg	W	S	Exporter			0.00 0004					0.00 0006	0.00 001
				Importer									
	ml	W	S	Exporter									
				Importer							0.00 04		0.00 04
	-	W	S	Exporter						3		65	68
				Importer			19	6			1		26

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

C. Species reviews

Phelsuma abbotti

Taxonomic note: Malagasy *Phelsuma abbotti* (Abbott's Day Gecko) was assigned to the subspecies *P. a. chekei* (Börner and Minuth, 1984; Glaw and Rösler, 2015).

Biology: Malagasy populations were reported to inhabit large, sun-exposed tree trunks outside of primary rainforest (Glaw and Vences, 2007; Gerlach *et al.*, 2011). On Noisy Be and the Ampasindava Peninsula the species was reported to inhabit coastal mangroves and mangrove trees next to swamps and rivers (Gerlach *et al.*, 2011). In western Madagascar, the species was found in large deciduous trees near Antsalova. In Montagne des Français the species was reported to be associated with forest habitats and was not recorded in clear-cut areas and orchards during surveys by D'Cruze and Kumar (2011). In urban areas (Antsiranana and southern Nosy Be), it were reported on houses and in gardens (Gerlach *et al.*, 2011).

Distribution: The species occurrence was reported from northern Madagascar and the southern Seychelles (Aldabra atoll and associated islets, and Assumption) (Gerlach *et al.*, 2011).

In Madagascar, *Phelsuma abbotti chekei* was reported to be widespread in the north and northwest (Gerlach *et al.*, 2011), at elevations from sea level to 320 m (D'Cruze *et al.*, 2007); a possible occurrence at 456 m above sea level was considered to need confirmation (Labanowski and Lowin, 2011). The species occurrence has been reported from: Andavakoera (Montage des Français massif) (Rakotondravony, 2006b; D'Cruze *et al.*, 2007; Glaw and Vences, 2007), Ankarana (D'Cruze *et al.*, 2007; Rocha *et al.*, 2010), Ampombofofo (the extreme north) (Megson *et al.*, 2009), Analamerana (Rakotondravony, 2006b), Beanka forest (central-western Madagascar) (Raselimanana, 2013) Bemaraha (Tsingy de Bemaraha plateau in central-western Madagascar) (Bora *et al.*, 2009; Rocha *et al.*, 2010), Belambo (Raselimanana, 2008 in Gerlach *et al.*, 2011), Berara (Sahamalaza Peninsula, northwest Madagascar) (Andreone *et al.*, 2001), Lokobe (Nosy Be, northwest Madagascar) (Andreone *et al.*, 2003), Loky-Manambato (Rakotondravony, 2006a), Montagne d'Ambre (D'Cruze *et al.*, 2008), Nosy Hara (Metcalf *et al.*, 2007), Namoroka (Raselimanana, 2008 in Gerlach *et al.*, 2011), Nosy Mamoko (Andreone *et al.*, 2003), Nosy Mitsio (Andreone *et al.*, 2003), Nosy Sakatia (Andreone *et al.*, 2003) and Nosy Tanikely (Andreone *et al.*, 2003). A possible record from Antsolipa, a small forest fragment between Montagne d'Ambre and Ankarana, was considered to need confirmation (Labanowski and Lowin, 2011); although Durkin *et al.*

(2011) reported the species from the same region. A single photo record was reported from north of Sambava in north-eastern Madagascar (Schmidt and Glaw, 1997). In 2013, a single record of *P. abbotti* was reported from Nosy Komba Island (north-western Madagascar) by Roberts and Daly (2014).

Population status and trends: *P. abbotti* was categorised as Least Concern in the IUCN Red List, based on its wide distribution, broad range of habitats, and presumed large population (Gerlach *et al.*, 2011). The overall population trend was considered stable (Gerlach *et al.*, 2011). The species was reported as common in forests and anthropogenically disturbed habitats in Andavakoera (massif Montagne des Français in northern Madagascar) from surveys in 2005-2006 (D'Cruze *et al.*, 2007), and abundant in similar habitats in Ampombofofo (in the extreme north) from surveys in 2006-2007 (Megson *et al.*, 2009). *P. a. chekei* was recorded as infrequent in the Forêt d'Ambre Special Reserve (Montagne d'Ambre, northern Madagascar) (D'Cruze *et al.*, 2008).

Threats: The population on Madagascar was not considered at risk (Gerlach *et al.*, 2011).

Trade: According to the CITES Trade Database, direct trade in *P. abbotti* from Madagascar 2004-2013 comprised of three bodies and 0.000003 mg specimens according to Madagascar and two bodies and 43 scientific specimens according to the countries of import. All trade was wild-sourced and for scientific purposes. The species was reported to have been encountered in the pet trade at low levels (Gerlach *et al.*, 2011).

Management: *P. a. chekei* was reported to occur in a number of protected areas in Madagascar (Gerlach *et al.*, 2011), including Ankarana Special Reserve (D'Cruze *et al.*, 2007), Réserve Spéciale d'Analamerana (Rakotondravony, 2006b), Lokobe strict nature reserve (Andreone *et al.*, 2003) and the Forêt d'Ambre Special Reserve (D'Cruze *et al.*, 2008). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Gerlach *et al.* (2011) noted that research should be carried out into the species' distribution, population status and natural history in Madagascar.

The species was considered able to withstand some trade (no more than 350 specimens) on the basis that it is relatively easy to identify and can be distinguished from similar species, and is a widespread species that is not threatened and can survive in both rural and urban settings as well as within or at the forest edge (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma antanosy

Biology: *Phelsuma antanosy* (Antanosy Day Gecko) was reported to inhabit relatively undisturbed, closed-canopy littoral forest (Ramanamanjato *et al.*, 2002; Ramanamanjato, 2007; Glaw and Vences, 2007), at 1-5 m above the ground (Glaw and Vences, 2007). The species was reported to be dependent on *Pandanus* spp. and the endemic *Dypsis saintlucei* (Ramanamanjato *et al.*, 2002), which it uses for egg-laying and to forage for food (Ramanamanjato *et al.*, 2002; Ramanamanjato, 2007).

Distribution: *P. antanosy* is endemic to Madagascar (Jenkins *et al.*, 2011), where it was reported to be restricted to a small area in southeast Madagascar (Glaw and Rösler, 2015) in Ambatotsirongorongo (Ramanamanjato, 2007) and Sainte Luce (Ramanamanjato *et al.*, 2002), at elevations from sea level to 300 m (Jenkins *et al.*, 2011). A population at Petriky was extirpated before 1984 (Ramanamanjato *et al.*, 2002). Its extent of occurrence was estimated at 16 km², and its area of occupancy was considered may be as low as 1 km², up to a maximum of 9 km² (Jenkins *et al.*, 2011).

Population status and trends: *P. antanosy* was categorised as Critically Endangered in the IUCN Red List, based on its area of occupancy (potentially less than 1 km², maximum of 9 km²), extent of

occurrence (ca. 16 km²), severely fragmented population, and its continuing population decline (Jenkins *et al.*, 2011).

Three subpopulations were reported to exist: two in forest fragments at Sainte Luce and the remainder in Ambatotsirongorongo (Jenkins *et al.*, 2011). The total population was estimated at 5000-10,000 individuals, with densities of approximately 10 individuals/ha where *Pandanus* plants are present (J. B. Ramanamanjato *pers. comm.* January 2011 to Jenkins *et al.* (2011)). Ambatotsirongorongo forest was reported to be "very small and degraded" by Temple *et al.* (2012), and the long-term viability of the local population was unknown (Temple *et al.*, 2012).

Threats: The main threat to the species was reported to be the destruction of its forest habitat and the exploitation of *Dypsis* species (Jenkins *et al.*, 2011). Glaw and Vences (2007) considered *P. antanosy* to be extremely vulnerable to extinction by habitat destruction within its small range. Mining was considered an important future threat, with a "significant proportion" of the Sainte Luce population reported to inhabit areas set aside for mining (Azafady Conservation Programme, 2015) and a potential residual loss of 5.1% of the species global population projected by 2065 (Temple *et al.*, 2012).

Trade: According to the CITES Trade Database, direct trade in *P. antanosy* from Madagascar 2004-2013 comprised one body and 0.0002 mg of specimens according to Madagascar and one body and 15 specimens and 0.0001g specimens according to the countries of import. All trade was wild-sourced and for scientific purposes. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The Ambatotsirongorongo forest and two fragments at Sainte Luce (Ambato Atsinanana) are being developed and managed as New Protected Areas (Jenkins *et al.*, 2011; SAPM, n.d.). However, illegal forest degradation was nevertheless reported to occur (Jenkins *et al.*, 2011). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas).

In 2011-2012, the Azafady Conservation Programme (ACP) started conducting studies of *P. antanosy* in Sainte Luce to determine its life history and behavioural ecology, with the aim of providing sufficient information to support captive breeding of the species (Azafady Conservation Programme, 2012). The findings contributed towards a five-year management strategy, which was put in place in 2012 (Azafady Conservation Programme, 2012). In 2014, an assessment of the species population and habitat was undertaken in Sainte Luce to determine its responses to human disturbance, effects of seasonality on its habitat and its breeding regimes (Azafady Conservation Programme, 2015). Phase II of the project, which began late 2014, intends to determine the ecological boundaries of the species to advise future conservation planning and captive breeding efforts (Azafady Conservation Programme, 2015).

The mining company Rio Tinto QMM, Fauna & Flora International and the national NGO Voakajy were reported to be involved in a '*Phelsuma antanosy* Management Plan' project to research the most appropriate conservation measures for this species to mitigate future impacts of mining on the species (Temple *et al.*, 2012).

A local management law (dina) was passed in 2005 in Sainte Luce, but the forest was reported to remain under heavy pressure from local resource use.

Phelsuma barbouri

Biology: *Phelsuma barbouri* (Barbour's Day Gecko) was considered the most terrestrial *Phelsuma* by Glaw and Vences (2007) and it was reported to be common on the ground and on boulders in montane rocky habitats (Glaw and Vences, 2007).

Distribution: *P. barbouri* is endemic to Madagascar, where it occurs at high elevation sites in the central highlands (Raxworthy, 2011a) between Antananarivo and the Andringitra massif (Glaw and Rösler, 2015). Its occurrence was reported from Andringitra (Glaw and Vences, 2007), Ankaratra (Vences *et al.*, 2002), Ibity (Glaw and Vences, 2007) and Antoetra (Andreone *et al.*, 2007), at elevations between 1600-2640 m above sea level (Raxworthy, 2011a). Its extent of occurrence was estimated at 526 km² (Raxworthy, 2011a).

Population status and trends: *P. barbouri* was categorised as Least Concern in the IUCN Red List, due to its abundance within its restricted distribution, presumed large population, and the absence of any significant threats (Raxworthy, 2011a). Raxworthy (2011a) noted that there was no information on the population status or trends of this species.

Threats: No major threats were reported for the species. However, a low level of illegal trade was reported (Raxworthy, 2011a).

Trade: According to the CITES Trade Database, direct trade in *P. barbouri* from Madagascar 2004-2013 comprised of four bodies according to Madagascar and three bodies and three scientific specimens according to the countries of import. All trade was wild-sourced and for scientific purposes. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur within a national park (Raxworthy, 2011a). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy (2011a) noted that further research should be carried out into the species' population status.

Phelsuma berghofi

Biology: *Phelsuma berghofi* was reported to inhabit *Ravenala madagascariensis* in grassland, savannah and close to villages (Glaw and Vences, 2007; Gehring *et al.*, 2010b; Raxworthy *et al.*, 2011a). It was also reported to have been found in *Agave sisalana* and *Pandanus* spp. (Gehring *et al.*, 2010b). The species was reported to be tolerant to certain levels of habitat decline (Glaw and Vences, 2007; Gehring *et al.*, 2010b).

Distribution: *P. berghofi* is endemic to Madagascar, where it occurs in the southeast (Glaw and Rösler, 2015). The species is known from the village of Somisiky (Krüger, 1996; Berghof, 2005, 2008 in Gehring *et al.*, 2010b), Manombo Special Reserve (50 km north of type locality) (Glaw and Vences, 2007; Rocha *et al.*, 2009), and from an area between the villages Vangaindrano and Nosy Omby (Gehring *et al.*, 2010b), at elevations from sea level to ca. 50 m above sea level (Gehring *et al.*, 2010b). Its extent of occurrence was estimated at 1985 km² (Raxworthy *et al.*, 2011a).

Population status and trends: *P. berghofi* was categorised as Near Threatened in the IUCN Red List, based on its extent of occurrence and that it is known only from three locations (Raxworthy *et al.*, 2011a). The species was considered common in *Ravenala madagascariensis,* but the population

densities and trend was unknown (Raxworthy *et al.*, 2011a). The species was reported to be bred in captivity (F. Glaw *pers. comm.* January 2011 to Raxworthy *et al.* (2011a)).

Threats: Harvesting for illegal trade was considered to pose a low-level threat to the species (Raxworthy *et al.*, 2011a).

Trade: According to the CITES Trade Database, direct trade in *P. berghofi* from Madagascar 2004-2013 comprised of one wild-sourced body for scientific purposes according to the country of import. No exports were reported by Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur within the Manombo Special Reserve (Glaw and Vences, 2007; Gehring *et al.*, 2010b). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy *et al.* (2011a) noted that research should be carried out into the species' distribution and population trends, as well as its dependence on *Ravenala madagascariensis* and the threat posed by harvest of these trees.

Phelsuma borai

Taxonomic note: It was noted that records of *Phelsuma mutabilis* from north-western Madagascar might refer to *Phelsuma borai* (Glaw *et al.*, 2009).

Biology: *P. borai* was reported to inhabit relatively dry deciduous forest (Glaw *et al.*, 2009).

Distribution: In 2006, an adult male *P. borai* was collected at Andafiabe, Beboka River in Tsingy de Bemaraha National Park, western Madagascar at 177 m above sea level (Glaw *et al.*, 2009). In addition, photographs of a *Phelsuma* species from Ankarafantsika National Park in north-western Madagascar, originally identified as *P. mutabilis*, were considered likely to represent *P. borai* (Glaw *et al.*, 2009). Glaw *et al.* (2009) believed *P. borai* might be distributed in the dry forests between the Tsingy de Bemaraha and Ankarafantsika, and that other records of *P. mutabilis* from north-western Madagascar might refer to *P. borai* or to both *P. mutabilis* and P. *borai*.

Population status and trends: *P. borai* was described as Data Deficient in the IUCN Red List on the basis that it is known only from a single specimen (Raxworthy *et al.*, 2011b). Raxworthy *et al.* (2011b) noted that there was no information on the population status or trends of this species.

Threats: It was noted that threats to this species are poorly known, but illegal logging within protected areas and bush fires were considered to pose potential threats (Raxworthy *et al.*, 2011b).

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species was reported to have been found within the Bemaraha National Park (Raxworthy *et al.*, 2011b). The species is not included in Decree 2006-400. Raxworthy *et al.* (2011b) noted that further research should be carried out into the species' ecology, population status and threats, and to confirm its presence in Ankarafantsika National Park.

Phelsuma breviceps

Biology: *Phelsuma breviceps* was reported to inhabit hot and dry thornbush areas along the southwest coast, often on *Euphorbia stenoclada*, which the female uses to deposit its eggs, but also found on bushes, small trees and A*gave sisalana* (Glaw and Vences, 2007).

Distribution: *P. breviceps* is endemic to Madagascar, where it was reported to occur in coastal areas in the south and southwest (Glaw and Rösler, 2015). Its occurrence was reported from Arboretum (Toliara) (Rocha *et al.*, 2009), Anakao (Glaw and Vences, 2007), Andavadoaka (Gardner and Jasper, 2010), Antabore and Tongaenoro (Raselimanana *et al.*, 2005 in Raxworthy *et al.*, 2011c), Efoetse, Itampolo, Vohombe (Raselimanana, 2008 in Raxworthy *et al.*, 2011c), Tsimanampetsotsa (Glaw and Vences, 2007), and the Mikea forest (Toliara region) (representing a range extension of approximately 170 km) (Gardner and Jasper, 2010; Raselimanana *et al.*, 2012), at elevations from sea level to 120 m. Its extent of occurrence was estimated at 9272 km² (Raxworthy *et al.*, 2011c).

Population status and trends: *P. breviceps* was categorised as Vulnerable in the IUCN Red List, based on its extent of occurrence, severely fragmented population, and the continuing decline in its habitat (Raxworthy *et al.*, 2011c). *P. breviceps* was reported to be encountered infrequently (Raxworthy *et al.*, 2011c). The species was considered likely to be declining and to occur as a severely fragmented population (Raxworthy *et al.*, 2011c).

Threats: The spiny forest *P. breviceps* inhabits was considered under pressure from cattle grazing, charcoal production and land clearance for agriculture, but the extent to which these impact the species was unknown (Raxworthy *et al.*, 2011c). Development of villages and fishing communities was considered a potential threat to coastal populations (Raxworthy *et al.*, 2011c).

Trade: According to the CITES Trade Database, direct trade in *P. breviceps* from Madagascar 2004-2013 comprised of one body and <0.01 mg specimens according to Madagascar and two bodies, five specimens and <0.01 mg of specimens according to the countries of import. All trade was wild-sourced, for scientific purposes.

Management: The species was reported to occur within the Tsimanampetsotsa National Park (Raxworthy *et al.*, 2011c). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy *et al.* (2011c) noted that research should be carried out into the species' population trends, and to establish the sensitivity of the species to threats.

The species was considered able to withstand some trade (no more than 50 specimens) on the basis that it is relatively easy to identify, and is known from different localities and habitat types within its range that recognised a recent extension of ca. 170 km north from its former known limits (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma cepediana

Phelsuma cepediana (Mauritius Greater Day Gecko) was introduced at Ivoloina on the eastern coast of Madagascar, but there was no evidence that this population survived (Glaw and Cole, 2011). According to Glaw and Cole (2011), *P. cepediana* should be considered as extinct on Madagascar unless its continued presence can be confirmed. Glaw and Rösler (2015) reported that there are no recent records to indicate the continued existence of the species on Madagascar. There has been no reported trade in this species from Madagascar 2004-2013. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Phelsuma dubia

Taxonomic note: *Phelsuma ravenala* was described as genetically nested within populations assigned to *P. dubia* (Rocha *et al.*, 2009). It was noted that the status of both taxa are in need of clarification (Rocha *et al.*, 2009). Most subpopulations along the east coast were provisionally considered to belong to *P. ravenala* (Raxworthy *et al.*, 2007).

Biology: *P. dubia* (Bright-eyed Day Gecko) was reported to inhabit dry deciduous forest, secondary vegetation and edges of humid forests, and anthropogenic habitats, including buildings, banana and palm plantations (Carretero *et al.*, 2005; Glaw and Vences, 2007).

Distribution: The species was reported to be widespread, occurring in coastal Kenya and Tanzania (Spawls *et al.*, 2002), Mozambique Island, the Comoros archipelago, and Madagascar (Spawls *et al.*, 2002; Rocha *et al.*, 2007, 2009; Hawlitschek *et al.*, 2011; Raxworthy *et al.*, 2014).

In Madagascar, the species occurrence was considered confirmed from Ambanja, Antsalova, Antsiranana, Mahajanga, Nosy Be, and Soalala (Glaw and Vences, 2007) in the north and west of Madagascar, at elevations from sea level to less than 100 m (Raxworthy *et al.*, 2014). In 2013, two specimens of *P. abbotti* were also reported from Nosy Komba (north-western Madagascar) (Roberts and Daly, 2014). It was noted that records from the east coast, including records from Nosy Boraha, Toamasina and Mananjary previously attributed to *P. dubia* (Glaw and Vences, 2007), were provisionally attributed to *P. ravenala* (F. Glaw *pers. comm*. July 2011 to Raxworthy *et al.* (2014)) and considered in need of confirmation (Glaw and Rösler, 2015).

Population status and trends: *P. dubia* was categorised as Least Concern in the IUCN Red List, based on its wide distribution, common presence in anthropogenic habitats and the absence of threats (Raxworthy *et al.*, 2014). The species was considered to be common and locally abundant throughout most of its range (Raxworthy *et al.*, 2014). Its population trend was considered stable (Raxworthy *et al.*, 2014).

Threats: No major threats were identified for the species (Raxworthy *et al.*, 2014). The species was reported to be "very popular" among reptile hobbyists (Spawls *et al.*, 2002), although the species was reported to be bred in captivity (Raxworthy *et al.*, 2014).

Trade: According to the CITES Trade Database, direct trade in *P. dubia* from Madagascar 2004-2013 comprised of one body according to Madagascar and three bodies and one scientific specimen according to the countries of import. All trade was wild-sourced and for scientific purposes.

Management: Raxworthy *et al.* (2014) noted that no conservation measures are in place for this species in Madagascar. The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). The species was considered able to withstand some trade (no more than 200 specimens) on the basis that it is relatively easy to identify and can be distinguished from similar species, and is a widespread species that is not threatened in Madagascar (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma flavigularis

Biology: *Phelsuma flavigularis* (Yellow-throated Day Gecko) was reported to inhabit mid-altitude primary rainforest habitat, mainly in *Ravenala* plants and palm trees (Glaw and Vences, 2007).

Distribution: The species was reported to be known only from its type locality around Perinet (Andasibe) in eastern Madagascar (Raxworthy and Vences, 2011). Its extent of occurrence was estimated at around 380 km² (Raxworthy and Vences, 2011).

Population status and trends: *P. flavigularis* was categorised as Endangered in the IUCN Red List, due to its extent of occurrence, presumed severely fragmented population, and the continuing decline in its habitat (Raxworthy and Vences, 2011). Raxworthy and Vences (2011) noted that there was no information on the population status or trends, but the species was considered likely both declining and severely fragmented.

Threats: The species' habitat was reported to be threatened by habitat loss (Raxworthy and Vences, 2011). The species may be of interest in the international pet trade, but this was not considered to pose a major threat (Raxworthy and Vences, 2011).

Trade: According to the CITES Trade Database, direct trade in *P. flavigularis* from Madagascar 2004-2013 comprised of one wild-sourced body exported for scientific purposes in 2004 according to both Madagascar and the country of import.

In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was reported to occur in Vohimana Private Reserve (J. Rafanomezantsoa *pers. comm.* January 2011 to Raxworthy and Vences, 2011). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy and Vences (2011) noted that further research should be carried out into the species' distribution, population, habitat status, and threats.

Phelsuma gouldi

Taxonomic note: It was noted that records of *P. mutabilis* from central Madagascar needed clarification and may represent *P. gouldi* (Crottini *et al.*, 2011).

Biology: *P. gouldi* was found on a tree trunk in a forest fragment, ca. 2.5 m above the ground in an open, sun-exposed forest area (Crottini *et al.*, 2011). The species was considered possibly rock-dwelling (Crottini *et al.*, 2011).

Distribution: The species is endemic to central Madagascar (Crottini *et al.*, 2011), where it was reported to be known only from Anja Reserve, 13 km south of Ambalavao, on the central high plateau of southern Madagascar (Crottini *et al.*, 2011), at 949 m above sea level (Bowles, 2012).

Population status and trends: *P. gouldi* was described as Data Deficient in the IUCN Red List, on the basis that it is known only from the holotype and photographs from the same location (Bowles, 2012). The species was considered rare; only two individuals had been recorded since the species original description (A. Crottini *pers. comm.* March 2012 to Bowles, 2012).

Threats: The surrounding area of the type locality was reported to be fragmented and under threat of widespread forest clearance (Crottini *et al.*, 2011), but the exposure and sensitivity of *P. gouldi* to these threats was unknown (Bowles, 2012).

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species was reported to occur entirely within the Anja Reserve (Crottini *et al.*, 2011; Bowles, 2012). The species is not included in Decree 2006-400. Bowles (2012) noted that research should be carried out into the species' natural history, and sensitivity to threats. Crottini *et al.* (2011) noted that research is also needed into the species' distribution and to determine the identity of records from central Madagascar that may represent *P. gouldi*.

Phelsuma guttata

Biology: According to Glaw and Vences (2007), *Phelsuma guttata* (Speckled Day Gecko) inhabits primary humid forest on *Ravenala*, *Pandanus*, and trees, but is not found in cultivated areas. However, Gehring (2010) observed the species in a cultivated area along the Route National 5 between Rantabe and Fananehana. The species was also reported to inhabit littoral forests (Gehring *et al.*, 2010a).

Distribution: The species is endemic to Madagascar (Raxworthy, 2011b), where it occurs in the east and northeast (Glaw and Rösler, 2015). Its occurrence has been reported from Anjanaharibe-Sud (Andreone *et al.*, 2000), Binara in the Loky-Manambato region (Rakotondravony, 2006a), Marojejy (Raselimanana *et al.*, 2000), Nosy Boraha (Glaw and Vences, 2007; Rocha *et al.*, 2010), Nosy Mangabe (Rocha *et al.*, 2009), Sandrananitra (Mantadia-Zahamena corridor) (Rabibisoa *et al.*, 2005), Tampolo (Glaw and Vences, 2007), Tsararano (Andreone *et al.*, 2000) and Zahamena (Glaw and Vences, 2007), at elevations from sea level to 950 m (Raxworthy, 2011b). Its extent of occurrence was estimated at 30,863 km² (Raxworthy, 2011b).

According to Gehring *et al.* (2010a), the species was "mainly found within primary rainforests of Madagascar´s east coast between Sambava in the north and Toamasina in the south (Glaw and Vences, 2007), this species was observed in the low-altitude rainforests of Ambodiriana and Sahafina as well as in the littoral forests of Tampolo and Vohibola." Gehring *et al.* (2010a) also reported *P. guttata* in a cultivated area along the Route National 5 between Rantabe and Fananehana, and in the Ambodiriana forest.

Population status and trends: *P. guttata* was categorised as Least Concern in the IUCN Red List, as despite the continuing decline in its habitat and presumed severely fragmented population, it has an estimated extent of occurrence of 30,863 km² (Raxworthy, 2011b). The species was considered common in suitable habitat (Raxworthy, 2011b). However, the population was considered likely both declining and severely fragmented (Raxworthy, 2011b).

Threats: The main threat to the species was reported to be the loss of humid forest (Raxworthy, 2011b), although it was considered probably tolerant to moderate levels of habitat disturbance (Glaw and Vences, 2007; Raxworthy, 2011b).

Trade: According to the CITES Trade Database, direct trade in *P. guttata* from Madagascar 2004-2013 comprised of six bodies and <0.01 mg exported in 2004-2006 according to Madagascar and five bodies and 20 scientific specimens according to the countries of import. All trade was wild-sourced and for scientific purposes.

Management: The species was reported to occur in a number of protected areas and sites under conservation management (Raxworthy, 2011b). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy (2011b) noted that research should be carried out into the impacts of moderate disturbance on the species.

The species was considered able to withstand some trade (no more than 200 specimens) on the basis that it is relatively easy to identify and can be distinguished from similar species, and is a widespread species that is not threatened (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma hielscheri

Biology: *Phelsuma hielscheri* was reported to be strongly associated with *Pandanus* screw palms. It was reported to inhabit palms in sandy areas close to human settlements near Morondava, and found on *Pandanus* plants along small streams in the Isalo region (Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar (Raxworthy *et al.*, 2011d), where it was reported to occur in the west and southwest (Glaw and Rösler, 2015). Its occurrence was reported from Morondava, Isalo, Belo-sur-Mer, Kirindy (Glaw and Vences, 2007) and Makay (Raxworthy *et al.*, 2011d), at elevations from sea level to 900 m (Raxworthy *et al.*, 2011d). Its known extent of occurrence was reported to be around 8700 km² (Raxworthy *et al.*, 2011d).

Population status and trends: *P. hielscheri* was categorised as Vulnerable in the IUCN Red List, based on its extent of occurrence, severely fragmented population and, despite being found in anthropogenic habitats, the continuing decline in the *Pandanus* microhabitat it is associated with (Raxworthy *et al.*, 2011d). Local population densities were reported to be dependent on the availability of screw palms (*Pandanus*), and the species was reported to be "rather common" on these plants around Ranohira in the Isalo region (Glaw and Vences, 2007). However, it was reported to be uncommon at Makay, despite the abundance of *Pandanus* plants (Raxworthy *et al.*, 2011d). The population was considered to be likely both declining and severely fragmented (Raxworthy *et al.*, 2011d).

Threats: The main threat to the species was reported to be the exploitation of *Pandanus* screw palms (Raxworthy *et al.*, 2011d). Fire was thought to possibly also pose a threat in some areas (Raxworthy *et al.*, 2011d).

Trade: According to the CITES Trade Database, direct trade in *P. hielscheri* from Madagascar 2004-2013 comprised of one body and two specimens according to Madagascar and two bodies and two scientific specimens according to both the countries of import. All trade was wild-sourced and for scientific purposes. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur within the Isalo National Park and in the vicinity of other protected areas (Raxworthy *et al.*, 2011d). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy *et al.* (2011d) noted that further research should be carried out into the species' distribution.

Phelsuma hoeschi

Taxonomic note: It was noted that the taxonomy of this species is in need of revision and the distinction between *Phelsuma hoeschi* and *P. pusilla hallmanni* needs clarification (Gehring *et al.*, 2010a; Raxworthy *et al.*, 2011e; Gehring *et al.*, 2013).

Biology: *P. hoeschi* was reported to be known from artificial habitats, observed on and close to tropical almond trees (*Terminalia catappa*) on the coast (Berghof and Trautmann, 2009 in Gehring *et al.*, 2010a), in a degraded cultivated area at 44 m above sea level (Gehring *et al.*, 2010a), and in secondary vegetation, consisting of isolated trees, near to a village at Anosibe An'Ala (Gehring *et al.*, 2010b). Females were considered to be well camouflaged (Raxworthy *et al.*, 2011e).

Distribution: The species is endemic to Madagascar (Raxworthy *et al.*, 2011e), where it occurs in the east (Raxworthy *et al.*, 2011e). It is known from the type locality in Brickaville (a few kilometres south of Ampasimanaolotra), and from Vatomandry (60 km south of Ampasimanolotra) (Gehring *et al.*, 2010a). Its occurrence between Ampasimanolotra and Vatomandry along the east coast was considered likely (Raxworthy *et al.*, 2011e), and its extent of occurrence between the two sites was estimated at 1726 km² (Raxworthy *et al.*, 2011e). In 2010, the species was also reported from Anosibe An'Ala at 594 m above sea level (Gehring *et al.*, 2010b).

Population status and trends: *P. hoeschi* was described as Data Deficient in the IUCN Red List, on the basis that the species' taxonomy is uncertain, and little is known about its distribution, population status and threats (Raxworthy *et al.*, 2011e).

Threats: It was thought that tree clearance around villages may pose a threat (Raxworthy *et al.*, 2011e).

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species was not known to occur in any protected areas (Raxworthy *et al.*, 2011e). The species is not included in the Decree 2006-400. Raxworthy *et al.* (2011e) noted that further research should be carried out into the species' distribution, habitat, and threats.

Phelsuma kely

Biology: *Phelsuma kely* was believed to be the smallest *Phelsuma* species by (Glaw and Vences, 2007). It was reported to inhabit open, sun-exposed secondary forest at the coast (Schönecker *et al.*, 2004; Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar (Raxworthy *et al.*, 2011f), where it is known only from around Lac Ampitambe (ca. 65 km south of Toamasina) in the east, at 10 m above sea level (Schönecker *et al.*, 2004; Glaw and Vences, 2007; Rocha *et al.*, 2009).

Population status and trends: *P. kely* was described as Data Deficient in the IUCN Red List, on the basis that it is very poorly known and there is no information on its distribution, population status or threats (Raxworthy *et al.*, 2011f).

Threats: It was thought that habitat loss and degradation was likely to occur in the area where *P. kely* occurs, but the impact on the species was unknown (Raxworthy *et al.*, 2011f).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was not known to occur in any protected areas (Raxworthy *et al.*, 2011f). The species is not included in Decree 2006-400. Raxworthy *et al.* (2011f) noted that further research should be carried out into the species' distribution, population status and threats.

Phelsuma klemmeri

Biology: *Phelsuma klemmeri* was reported to inhabit bamboo patches in either intact forest or degraded areas (Van Heygen, 2004; Razafimahatratra *et al.*, 2010). The species was considered to be highly conspicuous (Van Heygen, 2004).

Distribution: The species is endemic to Madagascar (Raxworthy *et al.*, 2011g), where it is known only from the Ampasindava peninsula (Antsiranana province) in the northwest (Van Heygen, 2004; Glaw and Vences, 2007) and from near Mandrozo Lake 600 km to the south (Razafimahatratra *et al.*, 2010), found at elevations near sea level, and around 400 m above sea level in Ampasindava (Raxworthy *et al.*, 2011g). Populations at the two locations are believed likely to be isolated from each other (Raxworthy *et al.*, 2011g). Its extent of occurrence was estimated at 955 km² (Raxworthy *et al.*, 2011g).

Population status and trends: *P. klemmeri* was categorised as Endangered in the IUCN Red List, based on its extent of occurrence at two locations only, severely fragmented population, and the continuing decline in its habitat (Raxworthy *et al.*, 2011g). The species was reported to be widespread in the Ampasindava Peninsula, although absent in suitable habitat in at least one area (Van Heygen, 2004). Around Mandrozo Lake, it was known only from two specimens (Razafimahatratra *et al.*, 2010). The population trend was unknown (Raxworthy *et al.*, 2011g).

Threats: The species was thought to be threatened by the loss of forest and bamboo habitats (Raxworthy *et al.*, 2011g), although (Van Heygen, 2004) noted that bamboo forest rapidly establishes itself on cleared land and that, as a result, bamboo-dependent species, such as *P. klemmeri,* may benefit from primary forest clearance. However, this was considered to require further study (Raxworthy *et al.*, 2011g). The species was reported to be "highly attractive" and potentially in high demand in the pet trade, although the species was reported to be widely bred in captivity (Raxworthy *et al.*, 2011g).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: Mandrozo Lake has been proposed as a new protected area (SAPM, n.d.; Razafimahatratra *et al.*, 2010). (Raxworthy *et al.*, 2011g) noted that conservation measures are in place in the Ampasindava peninsula, although no further details could be located. The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy *et al.* (2011g) noted that research should be carried out into the impact of threats on the species, and whether it is collected from the wild for the international pet trade.

Phelsuma malamakibo

Biology: *Phelsuma malamakibo* was reported to inhabit primary evergreen humid forest or montane grassland and heathland, and was considered to require rock substrates (Glaw and Vences, 2007). At lower elevations, in closed canopy forest, the species was reported to be restricted to open areas along riverbanks (Glaw and Vences, 2007). In more open canopy habitat at higher elevations, it was reported to be widely distributed in montane habitats containing rocks (Glaw and Vences, 2007)

Distribution: The species was reported to be known only from a few sites in the Andohahela reserve in the Anosy Region of southeast Madagascar, at elevations between 810-1940 m above sea level (Nussbaum *et al.*, 2000). Its extent of occurrence was estimated at 837 km² (Glaw and Rakotondrazafy, 2011a).

Population status and trends: *P. malamakibo* was categorised as Near Threatened in the IUCN Red List, based on its extent of occurrence at a single location only (Glaw and Rakotondrazafy,

2011a). The species was reported to be locally abundant at high altitudes (Glaw and Vences, 2007). The population trend was unknown (Glaw and Rakotondrazafy, 2011a).

Threats: The loss or degradation of humid forest was thought to pose a potential threat to the species (Glaw and Rakotondrazafy, 2011a). It was noted that upslope displacement due to climate change may pose a future threat (Glaw and Rakotondrazafy, 2011a).

Trade: Direct trade in *P. malamakibo* from Madagascar 2004-2013 comprised of one wild-sourced body exported for scientific purposes in 2005 according to both Madagascar and the country of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011).

Management: The species was reported to occur within the Andohahela National Park, however, the park was reported to be under pressure from human activity (Glaw and Rakotondrazafy, 2011a). The species is not included the Decree 2006-400. Glaw and Rakotondrazafy (2011a) noted that research should be carried out into the species' distribution and threats.

Phelsuma masohoala

Biology: *Phelsuma masohoala* was reported to inhabit littoral humid forest, where it may occupy the upper canopy (Raxworthy and Nussbaum, 1994).

Distribution: The species is endemic to Madagascar, where it is known only from Cap Est on the Masoala peninsula (northeast Madagascar), at 5 m above sea level (Raxworthy and Nussbaum, 1994). Raxworthy and Nussbaum (1994) noted that it has not been found at other sites around Cap Est despite extensive searches. Its extent of occurrence was presumed to be less than 100 km^2 (Glaw and Rakotondrazafy, 2011b).

Population status and trends: *P. masohoala* was categorised as Critically Endangered in the IUCN Red List, on the basis that it is known only from a single location where it has not been observed since the early 1990s, and due to the continuing decline in its habitat (Glaw and Rakotondrazafy, 2011b). The species was reported to be known only from the holotype and two museum specimens of unknown origin (Glaw and Rakotondrazafy, 2011b). It was noted that no population information is available (Glaw and Rakotondrazafy, 2011b).

Threats: The species was considered potentially at high risk from the loss of its littoral forest habitat (Glaw and Rakotondrazafy, 2011b).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was not known to occur in any protected areas (Glaw and Rakotondrazafy, 2011b). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Glaw and Rakotondrazafy (2011b) noted that research is urgently needed to identify whether this species still exists at Cap Est, or occurs in Masoala National Park.

Phelsuma modesta

Taxonomic note: There are three recognised subspecies of *Phelsuma modesta* (Modest Day Gecko); *Phelsuma modesta modesta*, *P. m. leiogaster* and *P. m. isakae* (Glaw and Vences, 2007). The latter was considered in need of taxonomic revision (Glaw and Vences, 2007) and was not recognised in a taxonomic checklist by Glaw and Rösler (2015).

Biology: *P. m. modesta* and *P. m. leiogaster* were reported to inhabit arid areas, while *P. m. isakae* was reported from areas of humid forest (Glaw and Vences, 2007).

Distribution: The species is endemic to Madagascar (Raxworthy, 2011c), where it was reported to occur in the south (Glaw and Rösler, 2015): *P. m. modesta* was reported to occur in the south and southeast (Glaw and Vences, 2007; Glaw and Rösler, 2015) and *P. m. leiogaster* in the southwest (Glaw and Vences, 2007). The species occurrence was reported from Ambovombe (*P. m. modesta*), Ilasombe (*P. m. isakae*), Toliara (*P. m. leiogaster*) (Rocha *et al.*, 2009), Malahelo Forest, Manantantely, Mandena, Petriky, Sainte Luce (Ramanamanjato *et al.*, 2002), Morombe and Tolagnaro (Glaw and Vences, 2007). Its extent of occurrence was estimated at 25,500 km² (Raxworthy, 2011c).

Population status and trends: *P. modesta* was categorised as Least Concern in the IUCN Red List, due to its wide distribution, tolerance of a broad range of habitats, and large, stable population (Raxworthy, 2011c). The species was reported to be common in villages, but rarely found in deep forest by Glaw and Vences (2007), although Lehtinen *et al.* (2003) found *P. modesta* preferred interior areas than edges in small fragments of littoral forests. The species was considered by Ramanamanjato *et al.* (2002) to be very rare, if present at all, in Malahelo Forest.

Threats: It was noted by Raxworthy (2011c) that further research should be carried out once the subspecies taxonomy has been revised to identify population specific threats.

Trade: According to the CITES Trade Database, direct trade in *P. modesta* from Madagascar 2004-2013 comprised of eight bodies and <1 mg of specimens exported for scientific purposes, in addition to four live individuals exported for commercial purposes in 2004 (following the recommendation to suspend trade in 1995) as reported by Madagascar. All trade reported by countries of import was for scientific purposes and comprised 34 specimens and <1 mg of specimens. All trade reported by Madagascar and importers was wild-sourced.

Management: The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). The species was considered able to withstand some trade (no more than 300 specimens) on the basis that, although it can be confused with *P. mutabilis*, morphological and colouration pattern differences exist between these species, and it is a widespread species that is not threatened (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma mutabilis

Biology: *Phelsuma mutabilis* (Thick-tailed Day Gecko) was considered to be highly adaptable to different habitat types (Taylor and Gardner, 2014). It was reported to inhabit dry forest, thornbush, savannah and anthropogenic habitats (Glaw and Vences, 2007). The species has also been recorded drinking nectar from the flowers in Mangrove trees (Taylor and Gardner, 2014).

Distribution: *P. mutabilis* was considered to be one of the most widespread *Phelsuma* species in Madagascar, occurring throughout most of western and southern coastal areas of Madagascar, and in inland locations (Crottini *et al.*, 2011). The species occurrence was reported from Ankarafantsika,

Antsalova, Berenty, Betioky, Ejeda, Fierin, Menabe, Morondava, Toliara, Tranomaro, Tranoroa, Vohibasia forest and Zombitse forest (Glaw and Vences, 2007), Ampanihy, Ifaty and Makay (Crottini *et al.*, 2011), Ambondrolava (Taylor and Gardner, 2014), the Beronto Forest and the Antevankira Forest (Nosy Ambositra) (Rakotondravony and Goodman, 2011), and the Mandrare Valley (ca. 40 km north of Ambovombe in southern Madagascar) (Theisinger and Ratianarivo, 2015). The species was reported to be most common in coastal areas, but recorded up to 1000 m above sea level (Glaw and Vences, 2007).

Population status and trends: *P. mutabilis* was categorised as Least Concern in the IUCN Red List, due to its wide distribution, tolerance of a range of habitats, and because it is unlikely to be undergoing significant population declines as a result of the pet trade to qualify for listing in a threat category (Raxworthy and Vences, 2010a). Raxworthy and Vences (2010a) noted there was no information on the population status or trends of this species, although Glaw and Vences (2007) reported that the species was sometimes found in high densities in villages.

Threats: The species was reported to be collected for the pet trade, but annual trade volumes were not known (Raxworthy and Vences, 2010a).

Trade: According to the CITES Trade Database, direct trade in *P. mutabilis* from Madagascar 2004-2013 comprised of five bodies, four specimens, <1 mg skins, and <1 mg specimens. Trade reported by countries of import comprised nine bodies, 11 specimens, <1 mg specimens, and <1 ml specimens. All trade was wild-sourced and for scientific purposes.

Management: The species distribution was reported to coincide with protected areas (Raxworthy and Vences, 2010a), including the Ifotaka North Protected Area in the Mandrare Valley, Southern Madagascar (Theisinger and Ratianarivo, 2015) and Ankarafantsika National Park (Glaw and Vences, 2007). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy and Vences (2010a) noted research should be carried out into the number of individuals harvested for the pet trade.

The species was considered able to withstand some trade (no more than 500 specimens) on the basis that, although it can be confused with *P. modesta* females and *P. borai*, morphological and colouration pattern differences exist between these species, and it is a widespread species that is not threatened (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma pronki

Biology: *Phelsuma pronki* (Pronk's Day Gecko) was reported to be known only from a few individuals collected from humid forests (Seipp, 1994 in Raxworthy and Vences, 2010b), but appears to mainly inhabit dead trees (Raxworthy and Vences, 2010b).

Distribution: The species was reported to occur "in isolated fragments of the eastern rainforest bordering the central highlands in the Andramasina region" (Raxworthy and Vences, 2010b), where its extent of occurrence was estimated to be less than 100 km² (Raxworthy and Vences, 2010b). Raxworthy and Vences (2010b) also reported recent collections of *P. pronki* in the north from the Anjozorobe reserve and the Ambatovy area (Raxworthy and Vences, 2010b).

Population status and trends: *P. pronki* was categorised as Critically Endangered in the IUCN Red List, due to the severe habitat loss occurring within its range and harvesting for the international pet trade, which have resulted in population declines in recent years. In addition, its extent of occurrence was estimated at less than 100 km², and it persists only in severely fragmented populations, which are still being degraded (Raxworthy and Vences, 2010b). According to M. Vences (Raxworthy and

Vences, 2010b), commercial collectors reported that the species was very rare and the population was in severe decline.

Threats: The species habitat was reported to be extremely fragmented (Raxworthy and Vences, 2010b). *P. pronki* was reported to be harvested for the international pet trade (Raxworthy and Vences, 2010b).

Trade: According to the CITES Trade Database, direct trade in *P. pronki* from Madagascar 2004-2013 comprised of one wild-sourced body exported for scientific purposes in 2005 according to both the Madagascar and the country of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). Raxworthy and Vences (2010b) noted that further research and monitoring should be carried out into the species' population, distribution, harvest levels, habitat status and threats. It was also noted by that conservation measures, such as the establishment of protected areas, are urgently needed to reduce the rate of habitat loss (Raxworthy and Vences, 2010b).

Phelsuma pusilla

Taxonomic note: Two subspecies are recognized for *Phelsuma pusilla* (Dwarf Day Gecko), *Phelsuma pusilla pusilla* and *P. p. hallmanni* (Glaw and Vences, 2011). It was noted that the taxonomy of this species was in need of revision (Glaw and Rösler, 2015).

Biology: *P. p. pusilla* was reported to have been found on banana plants, palm trees and buildings, and occasionally in humid forests at low elevations (Glaw and Vences, 2007). *P. p. hallmanni* was reported to inhabit the edges of humid forests at mid-elevations, but rarely found on buildings (Glaw and Vences, 2011).

Distribution: The species is endemic to Madagascar (Glaw and Vences, 2011), where it was reported to be widespread in the east (Glaw and Vences, 2007). It was estimated to occur over an area of around 75,500 km² (Glaw and Vences, 2011).

Population status and trends: *P. pusilla* was categorised as Least Concern in the IUCN Red List, due to its wide distribution, tolerance of a broad range of habitats, and presumed large population, which appears stable (Glaw and Vences, 2011). The species was reported to be common, although *P. p. hallmani* was described as rare by Glaw and Vences (2007).

Threats: *P. p. hallmanni* was considered potentially at risk from deforestation (Glaw and Vences, 2011).

Trade: According to the CITES Trade Database, direct trade in *P. pusilla* from Madagascar 2004-2013 comprised of five bodies and <one mg specimens as reported by Madagascar. Trade reported by countries of import comprised eight bodies and 12 scientific specimens. All trade was wild-sourced, for scientific purposes.

Management: The species was reported to occur within several protected areas (Glaw and Vences, 2011). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from

strict protected areas). The species was considered able to withstand some trade (no more than 450 specimens) on the basis that it is relatively easy to identify and can be distinguished from similar species, and is a widespread species that is not threatened (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma ravenala

Taxonomic note: Rocha *et al.* (2010) noted *Phelsuma ravenala* is genetically indistinguishable from *Phelsuma dubia* (based on mtDNA data and, more weakly, nuclear data). The validity of *P. ravenala* was considered to need confirmation, especially regarding morphological differences (Rocha *et al.*, 2010) and the taxonomy was considered in need of revision (Glaw and Rösler, 2015).

Biology: *P. ravenala* has been found only in anthropogenic habitats (Ratsoavina *et al.*, 2011a). Individuals were found on trunks and leaves of *Ravenala madagascariensis* in Mananjary (Raxworthy *et al.*, 2007), and on *R. madagascariensis* and coconut trees in Brickaville (Berghof and Trautmann, 2009 in Ratsoavina *et al.*, 2011a).

Distribution: *P. ravenala* was described from the eastern coast of Madagascar as a new species from the *P. dubia* group by Raxworthy *et al.* (2007). The species occurrence was reported from near and within the town of Mananjary (Fianarantsoa Province) (Raxworthy *et al.*, 2007; Rocha *et al.*, 2009) and Brickaville (Berghof and Trautmann, 2009 in Ratsoavina *et al.*, 2011a), at elevations below 50 m above sea level (Ratsoavina *et al.*, 2011a). Populations at Toamasina (Tamatave) and Nosy Boraha (Isle Ste. Marie) were tentatively reassigned to *P. ravenala* from *P. dubia* by Raxworthy *et al.* (2007). Its extent of occurrence was estimated at 3573 km² (Ratsoavina *et al.*, 2011a).

Population status and trends: *P. ravenala* was categorised as Least Concern in the IUCN Red List, due to its apparent abundance in suitable habitat, tolerance of a high degree of habitat modification, and no known major threats (Ratsoavina *et al.*, 2011a). The species was reported to be locally abundant on *R. madagascariensis* throughout its range (Ratsoavina *et al.*, 2011a) and the population trend was considered stable (Ratsoavina *et al.*, 2011a).

Threats: No information on threats to the species could be found.

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species was not known to occur within any protected areas (Ratsoavina *et al.*, 2011a). The species is not included the Decree 2006-400.

Phelsuma roesleri

Biology: All individuals of *P. roesleri* were found exclusively on *Pandanus* screw pines within a disturbed, semi-open deciduous dry forest on loose limestone blocks (Glaw *et al.*, 2010), with the exception of one individual observed under more humid conditions in a closed canopy forest near a stream (Glaw *et al.*, 2010).

Distribution: The species is endemic to Madagascar, where it is known only from a single location on the Ankarana massif (Antsiranana Province) in the north, at 128 m above sea level (Glaw *et al.*, 2010). Surveys of the nearby Analamera massif did not find *P. roesleri* (Ratsoavina *et al.*, 2011c). Its extent of occurrence was estimated at 147 km² (Ratsoavina *et al.*, 2011c). Its area of occupancy was thought to be considerably more restricted due to its reliance on *Pandanus* plants (Ratsoavina *et al.*, 2011c).

Population status and trends: *P. roesleri* was categorised as Endangered in the IUCN Red List, based on its extent of occurrence, known from a single site, and the continuing decline in its habitat (Ratsoavina *et al.*, 2011c). Ratsoavina *et al.* (2011c) noted that there was no information on the population status or trends of this species.

Threats: The main threat to the species was reported to be habitat loss. Collection for the pet trade was also thought to pose a potential threat by (Glaw *et al.*, 2010), although (Ratsoavina *et al.*, 2011c) thought *P. roesleri* was probably not collected for the pet trade.

Trade: No reported trade 2004-2013 according to the CITES Trade Database. The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was reported to occur within the Réserve Spéciale d'Ankarana (Ratsoavina *et al.*, 2011c). The species is not included the Decree 2006-400. It was noted by Ratsoavina *et al.* (2011c) that further research is needed into the species' extent of occurrence and area of occupancy, and susceptibility to threats including the risk from commercial collection.

Phelsuma seippi

Biology: *Phelsuma seippi* (Seipp's Day Gecko) was reported to inhabit areas with bamboo in both intact rainforest and degraded vegetation (Van Heygen, 2004; Glaw and Vences, 2007). It was also reported to have been found on *Ravenala madagascariensis* (Van Heygen, 2004).

Distribution: The species is endemic to Madagascar (Ratsoavina *et al.*, 2011b), where it occurs in the Sambirano region in the northwest (Glaw and Vences, 2007; Glaw and Rösler, 2015). Its occurrence was reported from Lokobe (Nosy Be) (Andreone *et al.*, 2003; Van Heygen, 2004), Manongarivo (Rakotomalala, 2002 in Ratsoavina *et al.*, 2011b), the Ampasindava peninsula and Nosy Komba (Van Heygen, 2004). It occurs at elevations up to 400 m above sea level (Ratsoavina *et al.*, 2011b). Its extent of occurrence was estimated at 3713 km² (Ratsoavina *et al.*, 2011b).

Population status and trends: *P. seippi* was categorised as Endangered in the IUCN Red List, based on its extent of occurrence, severely fragmented population, and the continuing decline in its habitat (Ratsoavina *et al.*, 2011b). The species was reported to be regularly encountered in bamboo forest, in primary and secondary vegetation (Ratsoavina *et al.*, 2011b). Van Heygen (2004) reported *P. seippi* was widespread on the Ampasindava peninsula and appeared to be more abundant than on Nosy Be. Van Heygen (2004) also noted that *P. seippi* was found in relatively high numbers where *Ravenala madagascariensis* was present on the Ampasindava peninsula. The population was presumed to be severely fragmented (Ratsoavina *et al.*, 2011b).

Threats: The main threat to the species was reported to be the loss of its bamboo habitat (Ratsoavina *et al.*, 2011b).

Trade: Direct trade in *P. seippi* from Madagascar 2004-2013 comprised of one wild-sourced body exported for scientific purposes in 2013 according to the country of import. No exports were reported by Madagascar. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was reported to occur within Resérve Naturele Intégrale Lokobe and Manongarivo Special Reserve (Ratsoavina *et al.*, 2011b). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). It was noted by Ratsoavina *et al.* (2011b) that further research is needed into the species' threats and its tolerance to habitat modification.

Phelsuma serraticauda

Biology: Glaw and Vences (2007) reported that *Phelsuma serraticauda* (Fan-tailed Day Gecko) was usually observed high-up in the vegetation, mainly on coconut palms (*Cocos uncifera*). During a survey of the species in Involoina, Randrianantoandro *et al.* (2012) reported 84.3% of observations were made on *Cocos uncifera*. It was also recorded on breadfruit *Artocarpus altilis* (4.9%), and on houses (8.3%) (Randrianantoandro *et al.*, 2012).

Distribution: The species is endemic to Madagascar, where it occurs on the coast in the east and northeast (Randrianantoandro *et al.*, 2012). The species was reported to have been found in sites around Ivolonia (type locality) (Randrianantoandro *et al.*, 2012), Manompana and Mananara (Gehring *et al.*, 2010a). Reports of the species from Masoala (Raxworthy and Nussbaum, 1993) and Antalaha (CBSG, 2002) were considered by Randrianantoandro *et al.* (2012) to need confirmation. Randrianantoandro *et al.* (2012) reported that the species range extends no further south than Ambatoafo (2 km south Ivoloina) while the northern limit was considered in need of confirmation. The species was reported to occur at elevations between 3-75 m above sea level (Randrianantoandro *et al.*, 2012) and its extent of occurrence was estimated at 4464 km² (Randrianantoandro *et al.*, 2011b).

Population status and trends: *P. serraticauda* was categorised as Endangered in the IUCN Red List, based on its extent of occurrence, severely fragmented population, and the continuing decline in the number of mature individuals due to collection for the pet trade (Randrianantoandro *et al.*, 2011b). The species was reported to be common on coconut trees (Randrianantoandro *et al.*, 2011b). The population was presumed to be severely fragmented and may be subject to localised declines (Randrianantoandro *et al.*, 2011b).

Threats: Illegal collection was thought to pose a localised threat (Randrianantoandro *et al.*, 2011b) and Randrianantoandro *et al.* (2012) noted cases of illegal collection of the species around Ivoloina during a survey in 2008. The species was also reported to be threatened by habitat loss (Randrianantoandro *et al.*, 2012). New populations of *P. laticauda* and *P. grandis* found around Toamasina, which overlap with *P. serraticauda,* were considered to pose a threat to the species as adaptable and aggressive competitors (Dubos *et al.*, 2014). *P. grandis* was also considered to pose a risk of predation (Dubos *et al.*, 2014).

Trade: Direct trade in *P. serraticauda* from Madagascar 2004-2013 comprised of four wild-sourced bodies exported for scientific purposes in 2004 according to Madagascar and one wild-sourced scientific specimen exported in 2004 according to the country of import. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: Randrianantoandro *et al.* (2011b) thought that *P. serraticauda* may occur in Mananara-Nord protected area. The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). It was noted by Randrianantoandro *et al.* (2011b) that

further research should be carried out into the species' distribution and exposure to threats and Randrianantoandro *et al.* (2012) noted that a monitoring system and a conservation site should be urgently established.

Phelsuma standingi

Biology: *Phelsuma standingi* (Standing's Day Gecko) was reported to inhabit large trees in dry forest and thornbush, but rarely observed on buildings in villages (Glaw and Vences, 2007).

Distribution: The species was reported to be known only from the arid southwest at locations in the Toliara region (Glaw and Vences, 2007; Raxworthy and Vences, 2010c), including the Mikea forest (Raselimanana *et al.*, 2012). Its extent of occurrence was estimated at 17,130 km² (Raxworthy and Vences, 2010c).

Population status and trends: *P. standingi* was categorised as Vulnerable in the IUCN Red List, based on its estimated extent of occurrence, from five locations only, the continuing decline in its habitat, and the decrease in numbers of individuals due to over-exploitation (Raxworthy and Vences, 2010c). Raxworthy and Vences (2010c) noted that there was no specific population data for the species, but numbers were thought to have declined in the 1990s due to heavy collection for the international pet trade.

Threats: The main threats to the species were reported to include the loss, degradation and fragmentation of its native habitat and illegal collection for the international pet trade (Raxworthy and Vences, 2010c).

Trade: No reported trade 2004-2013 according to the CITES Trade Database.

Management: The species was not known to occur in any protected areas (Raxworthy and Vences, 2010c). The species is classified in Category I, Class II in the Decree 2006-400 (prohibiting collection from strict protected areas). It was noted by Raxworthy and Vences (2010c) that further research and monitoring should be carried out of the species' distribution, population, and harvest levels.

The species was considered able to withstand some trade (no more than 100 specimens) on the basis that it is relatively easy to identify, and due to the size of its range (CITES MA of Madagascar *in litt*. to UNEP-WCMC, 2015).

Phelsuma vanheygeni

Biology: *Phelsuma vanheygeni* is a small gecko, measuring up to 75-80 mm (TL) (Van Heygen, 2004). It was reported to inhabit bamboo patches at the edge, or within, primary forest, or in secondary vegetation (Lerner, 2004; Glaw and Vences, 2007). It was noted by Van Heygen (2004) that the species retreated into smaller, leafy bamboo branches when disturbed, where they are difficult to locate.

Distribution: The species is endemic to Madagascar (Randrianantoandro *et al.*, 2011c). It occurs in the Sambirano region in the northwest, where it has been recorded from three locations on the Ampasindava peninsula (Lerner, 2004; Van Heygen, 2004), at elevations between 50-400 m above sea level (Lerner, 2004; Van Heygen, 2004). It was noted by Lerner (2004) that the species may occur more widely within the Sambirano in suitable habitats.

Population status and trends: *P. vanheygeni* was categorised as Endangered in the IUCN Red List, based on its extent of occurrence, known only from three locations, and the continuing decline in

its habitat (Randrianantoandro *et al.*, 2011c). Randrianantoandro *et al.* (2011c) noted that there was no information on the population status or trends of this species.

Threats: The removal of bamboo was considered to pose a threat to the species (Randrianantoandro *et al.*, 2011c), although Van Heygen (2004) noted that bamboo forest rapidly establishes itself on cleared land and that, as a result, bamboo-dependent species, such as *P. vanheygeni,* may benefit from primary forest clearance. However, this was considered to require further study (Randrianantoandro *et al.*, 2011c). Low levels of illegal trade in the species were thought may be occurring (Randrianantoandro *et al.*, 2011c).

Trade: No reported trade 2004-2013 according to the CITES Trade Database. In their response to AC recommendations, Madagascar submitted a document to the Secretariat in 2011 proposing a zero quota for 2012 for this species (Anon, 2011). The Management Authority (MA) of Madagascar (*in litt.* to UNEP-WCMC, 14 October 2015) confirmed that in consultation with the Scientific Authority (SA) of Madagascar, zero quotas are set for species of this genus that are categorised in the IUCN Red List as Critically Endangered or Endangered.

Management: The species was not known to occur in any protected areas (Randrianantoandro *et al.*, 2011c). It was noted by Randrianantoandro *et al.* (2011c) that further research is needed the establish the species' population status and extent of range, the impacts of threats, and whether it is being collected for the international pet trade.

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Corucia zebrata: Solomon Islands

A. Summary

SOLOMON ISLANDS: Suspension valid from: 9 July 2001	No national population estimate available, although high densities reported on Ugi island with a population range of 841-18,500 (large range owing to difficulties in estimating numbers) and with no concern relating to this population noted. However, anecdotal evidence of depletions in other areas close to human settlement. Local consumption and habitat loss and fragmentation considered threats; trade also thought to have affected populations. Over 800 wild-sourced specimens reported in trade by importers 2004-2009; all occurred during the period of the trade suspension. The species has low fecundity. No apparent management measures for the species in place. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Corucia zebrata (Prehensile-tailed Skink) was suggested as a potential candidate for Phase IV of the RST at AC14 (May 1998) (AC 14 Summary Record). At AC15 (July 1999), concerns were raised relating to non-detriment findings for trade from Solomon Islands (AC15 Proceedings, Annex 6). At AC16 (December 2000), recommendations were formulated (Table 1). No response to the recommendations was received (AC17 Doc. 7.1; SC45 Doc12). The SC agreed to recommend that no imports of *C. zebrata* should be accepted from the Solomon Islands (SC45 Summary Report). The suspension entered into force on 9 July 2001 (Notification No. 2001/043).

Table 1: Recommendations by the Animals Committee (AC16 Doc. 16.7.1)

Range State	Recommendations and deadlines resulting from AC16 (December 2000)
Solomon Islands	**The competent authority of the Solomon Islands should:** i) provide the Secretariat with detailed information on the distribution and abundance of this species in its country, and the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species; and ii) explain the biological and scientific basis for authorizing exports of specimens of this species for each year during the period 1993-1996 that were substantially in excess of the declared annual quotas.

B. Species characteristics

Taxonomic note: *Corucia* is a monotypic genus, with two recognised subspecies: *C. zebrata zebrata* and *C. zebrata alfredschmidti* (Kőhler, 1997). The latter is known from the north of the species' distribution, on the Island Bougainville and Buka (Papua New Guinea) while the former was reported to occur on the eastern islands of the Solomon Islands (Kőhler, 1997). No molecular genetic study of the systematics of *C. zebrata* has been undertaken (Hagen, 2011).

Biology: *Corucia zebrata* is a nocturnal and almost entirely arboreal skink species, which inhabits large lowland rainforest canopies (McCoy, 2006). The species is the largest known skink species (McCoy,

2006; Read and Moseby, 2006) and can reach a total length of up to 800 mm and weight of more than 1000 g (McCoy, 2006). *C. zebrata* is an ecologically and evolutionary unique reptile within its distribution, having a prehensile tail (Hagen *et al.*, 2012). Its preferred habitat was reported to be strangler figs (*Ficus spp.*) (McCoy, 2006). *C. zebrata* is completely herbivorous, feeding mostly on the leaves and fruit of an epiphytic *Sciandapsus* vine, a wild pepper vine (*Piper* spp.), and the leaves of the creeper (*Epipremnum pinnatuin*) (Anon. 1992; McCoy, 2006). There have been records of this species occurring in cultivated areas and derelict food gardens (Anon. 1992).

The species has a strong home fidelity (Hagen & Bull, 2011). It is slow moving and generally unable to travel or colonise new areas if the forest canopy has been broken (Anon. 1992; McCoy, 1980; F. Parker *in litt.* to WCMC *et al.*, 1999). Although the species has been reported to be found in small groups from three to five animals (Anon., 1992), Hagen *et al.* (2013) found that the species did not show a strong prevalence for group living, but that individuals were occasionally found together in daytime shelters.

The species is ovoviparous, with females giving birth to one or two young, after a gestation of six to seven months (McCoy, 2006). Captive specimens reach maturity between the fourth and fifth year (Groves, 1994). The longevity of *C. zebrata* in captivity has been reported to reach 32 years (Honegger, 2010).

C. Country reviews

Solomon Islands

Distribution: *C. zebrata* is endemic to the Solomon Island archipelago, and its distribution covers all major islands: from Buke and Bougainville (Papua New Guinea) in the west to the island of Makira in the east of the Solomon Islands (Hagen, 2011). The species' distribution is naturally fragmented, due to its distribution on a number of islands (Hagen *et al.*, 2013).

Population status and trends: *C. zebrata* has not yet been assessed by the IUCN Red List of Threatened species. The population of Ugi Island (an island about 50 km^2 located approximately 8 km north of the island of Makira) was estimated at 841 to 18,500 (Hagen, 2011). The large variation between the figures was noted to be due to the low detection probability of the species and difficulty in estimating the actual numbers (Hagen, 2011). Despite no reliable population estimates of *C. zebrata* on Ugi Island, the reported high densities gave rise to "little concern" (Hagen, 2011).

No information on the population size of other islands was located. However, on Tetepare Island, three to four people searched for 20 days in 2007-2008, without encountering any specimens (Hagen, 2011), despite the species being reported as present on the island (Read and Moseby, 2006). A number of people searching for a week on Ngela found just one specimen (Hagen, 2011). Hagen (2011) observed that *C. zebrata* populations seemed depleted in places close to dense human settlements, such as Mt Austen and Ngela, and suggested that this may be due to human consumption and habitat destruction. Little information was reported to exist about the *C. zebrata* populations on the Shortland Islands, Makira, Maliaita, Choiseul, Isabel and the Western Province (Hagen, 2011).

The species' population was believed to have declined considerably due to overharvest and habitat loss (Mann and Meek, 2004).

Threats: Harvest for the international pet trade has been assumed to affect the number of populations (McCoy, 2006). McCoy (2006, in Anon, 1992) stated that "comparatively large numbers of skinks are being taken from relatively small areas". The species was also reported to be a popular source of protein for communities in the Solomon Islands (Hagen, 2011). The habitat of *C. zebrata* was reported

to becoming increasingly fragmented and degraded through unsustainable logging (Dauvergne, 1998 in Hagen *et al.*, 2013).

Logging operations and agricultural developments were reported to have caused habitat loss, fragmentation and degradation, making the country's ecosystems rank among the 10 most threatened forest ecoregions in the world (Wein and Chatterton, 2005). However, the effects of fragmentation, human consumption and pet trade on the population of *C. zebrata* remains unquantified (Hagen, 2011).

Trade: *C. zebrata* was listed in CITES Appendix II on 11 June 1992. The Solomon Islands became a Party to CITES in 2007 and was not required to submit an annual report until 2008. CITES annual reports were received 2008-2010, but reports for 2011-2013 have not yet been received. The Solomon Islands has not published any export quotas for this species.

Direct trade in *C. zebrata* from the Solomon Islands 2004-2013 comprised of live individuals primarily exported for commercial purposes (Table 2). In total, five live, wild-sourced individuals as reported by Solomon Islands and 813 live, wild-sourced individuals and 882 captive-bred individuals were reported by countries of import. Very low levels of trade (5 individuals or less) were reported in 2008 and 2009, with no reported trade since 2009.. All reported trade 2004-2009 occurred following the entry into force of the trade suspension in 2001.

Table 2: Direct exports of *Corucia zebrata* from Solomon Islands, 2004-2013. All trade was in live specimens.

Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	Total
C	T	Exporter							
		Importer	182		700				882
W	S	Exporter					5		5
		Importer							
	T	Exporter							
		Importer	100	415	100	190	4	4	813

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *C. zebrata* originating in Solomon Islands 2004-2013 predominantly comprised live individuals re-exported for commercial purposes. In total, 157 live individuals were reported by countries of re-export, the majority (105) as seized/confiscated (source I), with the remainder wild-sourced (19) or captive-bred (33). Countries of import reported 43 live individuals during this period (32 captive-bred; 11 wild-sourced). Trade was only reported in the four years 2004-2007, with low levels (<10) in all years except 2004. No indirect trade has been recorded since 2007.

Management: Only 0.28% of terrestrial ecosystems are formally protected in the Solomon Islands (Wein and Chatterton, 2005). The Solomon government was reported to have restricted export dealer licences to Solomon Islanders; in 1996 there appeared to be four registered exporters of *C. zebrata* (Turner, 1996).

No management measures specific to *C. zebrata* appear to be in place. However, the Solomon Islands' National Biodiversity Strategy Action Plan acknowledges that rapid destruction of habitats through human activities could significantly impact on reptile species, such as *C. zebrata* (Pauku and Lapo, 2009).

Hagen (2011) recommended that efforts should be made to conserve the species and viable habitat on larger islands of Makira, Guadalcanal, Malaita, Isabel and on either Choiseul or the Western Province, and also suggested that population on the Shortland Islands should be given a high conservation priority with efforts to protect the species from over-exploitation and preserve suitable habitat, due to possible presence of the subspecies *C. z. alfredschmidti.* The CITES Management Authority of the Solomon Islands was consulted as part of this review, but no response was received. Through its national

legislation project, the CITES Secretariat categorised the national legislation in Solomon Islands as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

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Naja spp.: *The Lao People's Democratic Republic*

A. Summary

LAO PEOPLE'S DEMOCRATIC REPUBLIC
Suspension valid from:
30 April 2004

N. atra – Globally Vulnerable and declining. Occurrence in Lao PDR uncertain and no information on population status or trends identified for Lao PDR. The only trade reported in 2004-2013 was in confiscated/seized specimens.

N. kaouthia: – Globally Least Concern and declining, with localized depletions but common throughout most of range. No information on population status or trends identified for Lao PDR, although described as potentially at risk in the country. The only trade reported in 2004-2013 was in confiscated/seized specimens.

N. siamensis: Globally Vulnerable and declining. No information on population status or trends identified for Lao PDR, although described as potentially at risk in the country. No trade reported 2004-2013.

No apparent management measures for *Naja* species are in place. It is unclear if the country intends to export the species or address the AC recommendations. Trade in *Naja naja*, which does not occur in the country, indicates issues with misidentification of *Naja* taxa and illegal trade noted to be of concern. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.

RECOMMENDATION:

Suspension may still be appropriate

RST Background

Naja spp.[10] (Cobra species) was included in Phase IV of the RST at AC14 (May, 1998, based on concerns over the population status (AC14 Summary Record). At AC15 (July 1999), it was noted that *Naja* spp. had not yet been reviewed in detail (AC15 Proceedings). At AC16 (December 2000), *Naja* spp. was reviewed and the genus (except *N. sagittifera*) was considered Category 2 (species for which it is unclear from the available information whether Article IV is being fully implemented) (AC16 Summary Record). A letter was sent to all range States in 2001 by the CITES Secretariat, requesting satisfactory information within six weeks on the basis of non-detriment findings in line with Article IV, but no response was received from Lao People's Democratic Republic (hereafter referred to as Lao PDR) [not a Party at the time] (AC18 Summary Record). The country was therefore assessed as urgent concern/Category 1 (species for

[10] At CoP14, the *Naja naja* species complex was split into nine species following adoption of Wüster (1996) in 2007 (CoP14 Doc. 8.5).

which Article IV is not being implemented) and recommendations were formulated (Table 1) (AC18 Summary Record). However, no response was received from Lao PDR by 2003 (AC19 Summary Record).

SC50 (March 2004) therefore recommended that no imports of specimens of *Naja* spp. be accepted from Lao PDR, no matter where they originate (SC50 Doc.23 Annex; SC50 Summary Report). The suspension entered into force on 30 April 2004 (Notification No. 2004/028). Lao PDR became a Party to CITES in 2004.

At AC21 (May 2005) and AC22 (July 2006), the status of reviews for species selected for the RST following CoP11 was assessed (AC21 Doc. 10.1.1 (Rev.1) and AC22 Doc. 10.1) and the status of the RST was confirmed as 'completed', noting that there was an import suspension for *Naja* spp. from Lao PDR. The trade suspension was last confirmed on 12 August 2014 (Notification No. 2014/039).

At SC59 (March 2010), the Secretariat and the AC Chair recommended that the SC keep its recommendation to Parties to suspend trade in specimens of *Naja* spp. from Lao PDR and that the Secretariat again contact Lao PDR to obtain information about progress with implementation (SC59 Doc. 14.2). At SC62 (July 2012), it was noted that during a visit to the country in 2011, the Secretariat was "informed that these species are in Category II of the Wildlife and Aquatic law (December 2007) – species beneficial for national economic, sociality, environment and important for livelihood of multi-ethnic people and educational scientific research, which shall be managed, inspected, preserved and protected and whose use will be controlled. The Secretariat was also informed that it is not the policy of LA to issue export permits for these species for trade purposes and that LA does not envisage any such trade in future" (SC62 Doc. 27.2 (Rev.1)). However, this information was not confirmed in writing by Lao PDR and the Secretariat and the AC Chair therefore recommended that if Lao PDR confirmed a zero export quota for wild-sourced specimens with the Secretariat, then the SC should withdraw its recommendation to suspend trade. The zero quota would be valid until cautious export quotas are established by Lao PDR and a satisfactory scientific basis of these quotas are submitted to the Secretariat (SC62 Doc. 27.2 (Rev.1)). SC65 (July 2014) noted that whilst a conditional removal of the suspension for *Naja* spp. from Lao PDR had been proposed, the country had not complied with the conditions by the SC (SC65 Doc. 26.1). At AC28 (August-September, 2015) it was noted that action was still outstanding by Lao PDR before the trade suspension could be removed (AC28 Doc. 9.2).

Table 1: Recommendations by the Animals Committee (SC50 Doc.23 Annex).

Range State	Recommendations and deadlines resulting from AC18 (April 2002)
Lao People's Democratic Republic	**Within six weeks, the competent authority should advise the Secretariat that it accepts the following recommendation, and within a further 90 days should comply with the recommendation:** The competent authority of Lao PDR should not issue export permits until it has established a cautious export quota and provided a satisfactory scientific basis for this quota to the Secretariat.

A. Species characteristics

Taxonomic note: The taxonomy of the Asiatic cobra species complex was noted to have long remained controversial, in part because of the extreme variability in pattern and coloration even within populations (Wüster, 1996; Wüster *et al.*, 1997; Teynié and David, 2007). Previously all Laotian specimens of the genus *Naja* were referred to in the literature and recognised by CITES as *Naja naja* (Linnaeus, 1758). Since CITES CoP12 in 2002, 11 species of the genus *Naja* have been recognised by CITES (Wüster 1996; Slowinski and Wüster, 2000), two, or possibly three of which are likely to occur in Lao PDR. However, the CITES Asian snake trade workshop recommended in 2011 that clarification was required as to the treatment of these taxa as species or subspecies (AC25 Doc. 18).

Biology: Asiatic cobras (genus *Naja*) are medium-sized venomous snakes inhabiting forest, grassland and cultivated areas across Asia (Wüster, 1998).

N. atra: *N. atra* inhabits a diverse range of habitats in the lowlands to the mid-hills, such as wet rice fields, coastal lowlands and the proximity of human habitations. It occurs at an elevation of up to 2000 m (Das, 2010). Females are oviparous, and have been found to lay 5-28 eggs (Ji and Wang, 2005).

N. kaouthia: *N. kaouthia* "inhabits more mesic [habitats with a moderate/well balanced moisture supply] regions than related species" (Das, 2010). It was reported to occur in disturbed evergreen forest near human habitation, up to 600 m (Stuart, 1999). In India, it was reported to be common in rice fields and plantations and to adapt well to human presence, unless persecuted excessively (Wüster, 1998). *N. kaouthia* is oviparious, laying clutches of 16-33, with incubation periods of 55-73 days in captive, wild-sourced females (Chanhome *et al.* 2001).

N. siamensis: The species has been recorded in deciduous dipterocarp forest in central Lao PDR (Chan-ard *et al.,* 2000) and at the border between forest and a large marsh in the far south of the country (Teynié and David, 2007). In general, the species was reported to survive well in agricultural areas, such as in rice fields, and in or near human settlements (Wüster *et al.,* 1997). According to Das (2010) *N. siamensis* inhabits dry plains and low hills. Captive, wild-sourced females have been found to lay clutches of 3-30 eggs, with incubation periods of 58-72 days (Chanhome *et al.* 2001).

B. Country reviews

Lao People's Democratic Republic

Distribution: ***N. atra:*** Range maps indicate the occurrence of *N. atra* in southern China, Taiwan, Province of China, northern Viet Nam and northeast Lao PDR (Wüster *et al.,* 1995; Wüster, 1996). Wüster *et al*. (1995) noted that the precise distribution limits of *N. atra* in Laos, southwestern China, central Vietnam and parts of Burma were unclear. While this species has been noted as occurring in Lao PDR (Wüster, 1996), it is unclear whether this species indeed occurs in the country: *N. atra* was not included in Stuart's (1999) list of reptiles occurring in Lao PDR, and was noted as only being present in China and northern Viet Nam by Teynie and David (2007). Stuart (pers. comm. to Bowles, 2015) also noted that he was unaware of confirmed records of the species from the country, although the species may potentially occur in northern Lao PDR.

N. kaouthia: *N. kaouthia* was reported to occur in southern Viet Nam, Cambodia, Thailand, northern Malaysia, southern China, Myanmar, Bangladesh, eastern India, and probably southern Lao PDR, Bhutan and southern Nepal (Wüster *et al.,* 1995; Wüster, 1996; Wüster, 1998). Within Lao PDR, specimens have been collected in and around Vientiane [close to the southern border of Lao PDR with Thailand] (Chan-ard *et al.,* 2000; J. Deuve unpublished in: Teynié and David, 2007) and near Taveng in the vicinity of the border town Ban Lak 20, Bolikhamsai province [central Lao PDR] (in 1996) (Chan-ard *et al.,* 2000). Stuart (1999) reported that its range centred in the Annamite foothills [central Lao PDR, close to northern border with Viet Nam], but it probably occurs throughout Lao PDR.

N. siamensis: *N. siamensis* was reported to have a wide distribution across Indochina, occurring throughout northern, central and eastern Thailand, Cambodia and South Viet Nam (Wüster *et al.,* 1997; Teynié and David, 2007).

In Lao PDR, Wüster *et al. (*1997) reported that "there are no verified records from Laos, but the species almost certainly occurs at least in the lowlands of the Mekong drainage, along the Thai border." Chan-ard *et al.* (2000), however, recorded the species in 1997 from Dong Phou Vieng National Biodiversity

Conservation Area (NBCA), Savannakhet Province in central Lao PDR. A second specimen was collected in 2005 from Xépian National Biodiversity and Conservation Area in Champasak Province, southern Lao PDR (about 250 km southeast of the previous location), extending the known distribution of the species (Teynié and David, 2007). Based on some unpublished notes containing detailed descriptions of 11 *Naja* specimens collected in Lao PDR 1960-1962 (Deuve, 1985), Teynié and David (2007) concluded that: "*Naja siamensis* is now known from at least four localities in Laos (from north to south: Vientiane and its vicinity; Thakhek, Khammuan Province; Muang Phin District, Savannakhet Province; and Xépian NBCA, Champasak Province. One may suspect that *Naja siamensis* occurs throughout the lowlands of the Mekong Valley. However, it is unclear to us why a snake species as conspicuous as can be a cobra remains so rarely observed." Stuart (pers. comm. to Bowles, 2015) noted that the species was likely to occur throughout the lowlands of southern Lao PDR.

Population status and trends: Although *Naja* species were considered to be widespread across Lao PDR (Deuve, 1970, cited in Teynié and David, 2007), there are few specific reports, and few major collections appear to have *Naja* specimens collected from this region (Teynié and David, 2007). The CITES Asian snake trade workshop recognised that the conservation status of most Asian snake species was poorly known (AC25 Doc 18).

N. atra: Globally, *N. atra* was classified as Vulnerable by the IUCN, and although considered common overall, its population was reported to be decreasing (Ji and Li, 2014). No information on the species' population status or trends in Lao PDR was identified.

N. kaouthia: Globally, *N. kaouthia* was classified as Least Concern by the IUCN, due to its wide distribution and reported abundance, combined with its tolerance of modified habitats (Stuart and Wogan, 2012). While the species was reported to have been subject to localized declines and the global population was noted to be decreasing, it was considered to be common thorough most of its range (Stuart and Wogan, 2012). Bain and Hurley (2011) claimed that the presence of humans had a positive effect on the distribution of *N. kaouthia*. However, Bain and Hurley(2011) also reported that it was unclear if the species' range had been more restricted before human colonization. In Lao PDR, *N. kaouthia* was classified as 'Potentially At Risk' (Stuart, 1999).

N. siamensis: Globally, *N. siamensis* was categorised as Vulnerable by the IUCN, with a decreasing population trend and high rates of declines across its range (Stuart *et al.* 2012). While the species was noted to have a very wide range throughout Southeast Asia, no population information or formal estimates of declines were reported not to be available (Stuart *et al.* 2012). Previously, Wüster et al. (1997) reported that it was relatively common in many areas throughout its wide range, based on its importance in snakebite statistics. In Lao PDR, *N. siamensis* was classified as 'Potentially At Risk' (Stuart, 1999).

Threats: Species of the genus *Naja* were reported to be considered medically and toxinologically important (Wüster, 1996; Wüster, 1998; Teynié and David, 2007). The greatest threat to herpetofauna in Lao PDR in general was reported to be harvest for domestic consumption, internal trade and for unregulated export (Stuart, 1999). All *Naja* species were reported to be persecuted and killed, with some captured alive for export to China and Viet Nam for medicinal purposes (Stuart pers. comm. to Bowles, 2015).

N. atra: The main threats to the species globally were thought to be overexploitation and pollution (Ji and Li, 2014). However, according to CITES (2011), it is unclear if trade poses a threat to the survival of local populations of *N. atra*.

N. kaouthia: The species was thought to be threatened by overexploitation across much of Indochina (Stuart and Wogan, 2012). However, according to CITES (2011), it was unclear if trade poses a threat to the survival of local populations of *N. kaouthia*. Stuart (1999) reported that threats to the species in Lao PDR were unclear, but that it may be heavily traded. No further information on threats to *N. kaouthia* in Lao PDR was identified.

N. siamensis: Heavy harvest of the species was noted to be a threat in a number of its range states (Stuart *et al.*, 2012). *N. siamensis* was described as one of the Asian cobras which was commonly imported for herpetoculturists (Wüster *et al.,* 1997). Wüster *et al.* (1997) also noted that the *N. siamensis* was subject to severe persecution by humans, both being killed as a pest or threat, for food and traditional medicine. Apart from local persecution, trade in *N. siamensis* was thought to create a further impact on the species; however, more research was considered to be required (CITES, 2011). The species was reported to be threatened by the levels of in Lao PDR, where it was reported to be used in traditional Chinese medicine (Stuart *et al.*, 2012).

Trade: *Naja atra, N. kaouthia* and *N. siamensis* were listed in CITES Appendix II on 18 January 1990 (as *N. naja*). With the exception of 2004 and 2005, all CITES annual reported have been submitted by Lao PDR for the period 2004-2013. Lao PDR has not published any export quotas for *any Naja* species 1997-2015.Live *Naja* spp. were noted to be worth a relatively large amount of money, with trade widespread in Lao PDR; export to China and Viet Nam for medicinal purposes were thought to be mostly illegal (Stuart pers. comm. to Bowles, 2015). (Stuart pers. comm. to Bowles, 2015). The CITES Asian snake trade workshop noted that action was needed on the issue of illegal trade in Asian snake species in the Asian region (AC25 Doc 18).

N. atra: According to data from the CITES Trade Database, the only direct trade in *N. atra* from Lao PDR 2004-2013 consisted of two confiscated (source 'I') bodies traded for personal purposes in 2009 and 2010, as reported by the importers only. No indirect export of *Naja atra* originating in Lao PDR was reported 2004-2013.

N. kaouthia: According to data from the CITES Trade Database, the only direct trade in *N. kaouthia* from Lao PDR 2004-2013 consisted of one confiscated (source 'I') body traded for personal purposes in 2009 and 20 confiscated bodies traded in 2012, also for personal purposes, as reported by the importers only. No indirect export of *Naja kaouthia* originating in Lao PDR was reported 2004-2013. TRAFFIC reported that in January 2014, park rangers in Thailand seized 462 *Naja kaouthia* individuals from two Laotian and one Thai trader (TRAFFIC, 2015).

N. siamensis: According to data from the CITES Trade Database, no direct exports in *N. siamensis* from Lao PDR was reported 2004-2013. No indirect export of *Naja siamensis* originating in Lao People's Democratic Republic was reported 2004-2013.

***Trade at genus level and in Naja naja*:** According to data from the CITES Trade Database, the only direct export of *Naja* spp. from Lao PDR 2004-2013 comprised one body reported as confiscated/seized (source 'I') by the United Kingdom in 2004. No indirect trade in *Naja* spp. originating in Lao PDR was reported 2004-2013. Although *Naja naja* does not occur in Lao PDR, some trade was reported under this name. According to data from the CITES Trade Database, direct exports in *N. naja* from Lao PDR primarily comprised live specimens traded for commercial purposes (Table 2).

Table 2: Direct exports of *Naja naja* from Lao People's Democratic Republic, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
bodies (kg)	I	P	Exporter											
			Importer							1.030				1.030
bodies	I	P	Exporter											
			Importer						5					5
	W	P	Exporter											
			Importer			4								4
		T	Exporter											
			Importer			8								8
live	R	T	Exporter				2,000							2,000
			Importer											
	W	T	Exporter											
			Importer		2,400									2,400
skin pieces	W	P	Exporter											
			Importer			67								67

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *N. naja* originating in Lao PDR comprised live specimens traded for commercial purposes, with specimens primarily of wild-sourced origin (Table 3).

Table 3: Indirect exports of *Naja naja* originating in Lao People's Democratic Republic, 2004-2013. All trade was in live specimens for commercial purposes.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
R	Exporter					2,000	2,400			149,000	22,500	175,900
	Importer											
W	Exporter		3,800	1,000								4,800
	Importer											
-	Exporter								5,000			5,000
	Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: The principal environmental legislation in Lao PDR is the Environmental Protection Law of 1999 (Lao PDR, 1999), while the protection of certain wildlife in the country is governed by the Lao Wildlife and Aquatic Law of 2007, which groups species into three categories:

- Prohibited category: includes species considered rare, near-extinct, of high value or of special socio-economic, environmental, educational or scientific importance; use of these species required permission by the Government;
- Managed category: includes species considered beneficial for economic, social or environmental national interests, which are important for livelihoods and research; use of these species is controlled; and
- General category: includes species which reproduce widely in nature and which are important for socio-economic development and research; these species can be used in accordance with the legislation (Lao PDR, 2008).

It is unclear into which category *Naja* spp. fall.

The Management of National Biodiversity Conservation Areas, Aquatic Animals and Wildlife Regulations of 2011 was reported to specify that it is illegal to sell wildlife (DLA Piper, 2015). Furthermore, a number of Decrees exist which were considered to contain loopholes and inconsistencies, including on trade and export of wildlife (DLA Piper, 2015).

No further information was found on the management of *Naja* spp. in Lao PDR.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao PDR as "legislation that is believed generally not to meet the requirements for the implementation of

CITES". Furthermore, Lao PDR was reported to be considered by Non-governmental organisations to have a "poor record in protecting its biodiversity" (DLA Piper, 2015).

The CITES Authority of Laos PDR was consulted as part of this review, but no response was received at the time of writing.

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Cuora galbinifrons: Lao People's Democratic Republic

A. Summary

LAO PEOPLE'S DEMOCRATIC REPUBLIC: Suspension valid from: 27 July 2009	Global population severely depleted and assessed as Critically Endangered, with collection for trade the primary threat. Overexploitation for food and medicine considered the main threats in Lao PDR. No trade reported by Lao PDR 2004-2013, although 1500 live ranched individuals from Lao PDR were reported by an import country in 2006. Fully protected in the country although hunting documented within national parks. Zero quota established for all range States for this species with adoption of Prop.32 at CoP16, therefore the trade suspension appears no longer warranted.	RECOMMENDATION: Suspension appears no longer warranted – zero quota established through other CITES process

RST Background

Cuora galbinifrons (Indochinese Box Turtle) was included in the RST at AC18 (April 2002) based on information provided in document AC18 Doc. 7.1. The Working Group noted that the document did not include reported trade in the species, which may have been because the review was undertaken soon after the species was first listed in the Appendices (AC18 Summary Record). *C. galbinifrons* was categorised as of "possible concern" (AC18 Summary Record) and initial recommendations were formulated (Table 1). At AC19 (August 2003) it was concluded that *C. galbinifrons* should be categorised as of "urgent concern" for Lao People's Democratic Republic (hereafter referred to as Lao PDR), and recommendations were formulated (AC19 Summary Report).

No response to the recommendations was received, and the Secretariat recommended, "In view of the unsatisfactory conservation status of this species and the indication of some continuing exports from Lao PDR, the SC should request the Secretariat to pursue contacts with the Lao PDR about the implementation of Article IV, paragraphs 2 (a) and 3 for this species and report to the 59th meeting of the Committee" (SC58 Doc. 21.1). The SC agreed to suspend trade for *C. galbinifrons* from Lao PDR (SC58 Summary Record). The suspension entered into force on 27 July 2009 (Notification No. 2009/032).

At SC62 (July 2012), it was noted, "During a visit to LA in October 2011, the Secretariat was informed that *C. galbinifrons* is included in Category I of LA's Wildlife and Aquatic law (December 2007) – rare, near-extinct and special importance species. The Secretariat was shown a copy of a letter (in Laotian) issued by the Management Authority to all provincial wildlife staff on 9 March 2010 informing them that trading in this species was banned. Also the Secretariat understands that LA has no intention of issuing export permits for wild specimens of this species. However, repeated attempts to have this information confirmed in writing by LA have not been successful. There has been no reported trade in this species from LA since 2006." (SC62 Doc. 27.2 (Rev.1)).

The Secretariat commented, "The recommendations of the Animals Committee appear to have been complied with and compliance with Article IV, paragraphs 2 (a) and 3 would seem to be achieved. However, this information has not been supplied in writing to the Secretariat. The Secretariat will post a zero export quota for this species for LA on the CITES website." (SC62 Doc. 27.2 (Rev.1)).

The Secretariat and AC chair recommended that, "The Standing Committee should withdraw its recommendation to suspend trade if LA notifies the Secretariat of a voluntary zero export quota for wild specimens." (SC62 Doc. 27.2 (Rev.1)). The suspension remained in force following SC62 (Notification No. 2012/059). At SC65 (July 2014) it was noted that Lao PDR had not complied with the conditions agreed by the Standing Committee (SC65 Doc. 26.1).

On 29/03/2015, all commercial trade in specimens of CITES-listed species was suspended from Lao PDR (CITES Notif. No. 2015/013).

Table 1: Recommendations by the Animals Committee (AC18 Summary Record).

Range State	Recommendations and deadlines resulting from AC18 (April 2002)
Lao People's Democratic Republic	**The AC agreed to:** Ask Range States if there has been any reported trade since the completion of the desk based review. Ask Lao PDR to clarify the legal requirements for the exports of turtles from its territory. [Review any further trade data at its next meeting in 2003 – *no longer relevant*]

B. Species characteristics

Taxonomic note: It was noted that the majority of recent taxonomic works concerning the genus *Cuora* do not follow the CITES standard Nomenclature for turtles in treating the taxa *bourreti* and *picturata* as subspecies of *C. galbinifrons*; instead recent checklists were reported to treat these as distinct, valid species, *Cuora bourreti* and *Cuora picturata* (AC28 Doc. 20.3.8). Consequently, Vietnam and the Nomenclature Specialist for Zoology are to propose, for adoption at CoP 17, an additional Standard Reference, for nomenclature of *C. bourreti*, *C. galbinifrons*, and *C. picturata* (AC28 Doc. 20.3.8).

Biology: *Cuora galbinifrons* was reported to inhabit upland (Das, 2010) moist, closed-canopy forest (Ly *et al.*, 2011) at elevations from 300-1700 m above sea level (Turtle Conservation Coalition, 2011; CoP16 Prop. 33). The species is diurnal and terrestrial (Das, 2010) and its diet was reported to consist of vegetation and animal matter (Das, 2010). Natchev *et al.* (2010) reported that the species could feed both on land and in water.

The natural history of *C. galbinifrons* was reported to be poorly known (Stuart and Parham, 2004) and its reproductive habits were reported to be unstudied (Das, 2010). Populations of *C. galbinifrons* and *C. bourreti* were reported to have low reproductive outputs, which was considered to make them particularly at risk from over-collection (Hagen *et al.*, 2011). Individuals were reported to reach maturity at 12-15 years, and females produce a single clutch of 1-3 eggs per year. Egg and hatchling mortality were reported to be high and recruitment slow (CoP16 Prop. 33).

C. Country reviews

Lao People's Democratic Republic

Distribution: *C. galbinifrons* was reported to occur in China (Guangxi, Hainan), Lao PDR and Viet Nam (van Dijk *et al.*, 2012).

In Lao PDR, *C. [g.] galbinifrons* was reported to occur in the north of the country (A28 Doc.20.3.8) in the Annamite mountains and Nakai Plateau of the Central Region (Duckworth *et al.*, 1999 in AC18 Doc. 7.1). Stuart and Platt (2004) also attributed specimens from eastern-central Lao PDR to *C. galbinifrons*. In 1998, a specimen of *C. galbinifrons* was collected from Khammouan Province, Nakai District, Nakai-Nam Theun National Biodiversity Conservation Area at 600-900 m above sea level, from wet evergreen forest

in leaf litter, and a carapace only was found in Khammouan Province, Yommalat District, Khammouan Limestone (Stuart and Platt, 2004), suggesting that the species occurs at lower elevations (AC18 Doc 7.1).

C. [g.] bourreti was documented in Lao PDR by Stuart *et al.* (2011) in eastern Savannakhet Province (SE Lao PDR) within a protected area.

Difficulties in distinguishing *C. bourreti* from *C. galbinifrons* was considered to contribute to uncertainty over the species distribution (Stuart *et al.*, 2011). The majority of records of turtle species in Lao PDR were reported to have been obtained from markets, villages, and hunters (Stuart and Platt, 2004), and consequently the geographic distributions and habitat use of these species in Lao PDR was considered poorly known (Stuart *et al.*, 2011).

Population status and trends: *C. galbinifrons* was categorised as Critically Endangered in the IUCN Red List in 2000 (Asian Turtle Trade Working Group, 2000). An annotation in the listing notes that the species assessment needs updating (Asian Turtle Trade Working Group, 2000). *C. galbinifrons* and *C. bourreti* were also categorised as Critically Endangered in the 2011 draft Red List evaluations by the IUCN Tortoise and Freshwater Turtle Specialist Group (TFTSG) (van Dijk *et al.*, 2012).

Based on available field surveys, *C. galbinifrons* was considered to be uncommon and populations severely depleted in recent decades (CoP16 Prop. 33). No population size estimates were reported to be available and population density data were reported to be anecdotal only (CoP16 Prop. 33). However, it was considered that the species now requires extensive search effort to encounter (CoP16 Prop. 33). Even with intensive survey methods (trained hunting dog) in prime habitat, encounter rates in 1993-1999 field seasons averaged at one turtle per day in Lao PDR (Stuart and Timmins, 2000).

Threats: *C. galbinifrons* was considered to be heavily exploited within its range (Bonin *et al.*, 2006) for food, the international pet trade and for traditional medicine purposes (Stuart and Timmins, 2000; Fiebig and Lehr, 2000 in Stuart and Parham, 2004). Habitat loss and degradation was also considered a threat (Stuart and Timmins, 2000; Fiebig and Lehr, 2000 in Stuart and Parham, 2004). It was reported to feature extensively in the international pet trade (Bonin *et al.*, 2006), however, as it requires specialised conditions in captivity, it often dies quickly (Bonin *et al.*, 2006). The Turtle Conservation Coalition (2011) reported that, although the species was once considered to be very hard to maintain in captivity, "in recent years breeding has occurred to an increasing extent". Larger adults were reported to be preferred for the food trade (CoP11 Prop. 11.36).

The primary threat to *C. [g.] galbinifrons* and *C. [g.] bourreti* was reported to be collection for trade. *C. [g.] bourreti* was considered in high demand in the international pet trade and the Asian consumption trade (AC28 Doc. 20.3.8) and over-harvesting for food markets was considered to have decimated wild populations of *C. bourreti* (Turtle Conservation Coalition *et al.*, 2011). Populations of *C. [g.] galbinifrons* were widely perceived to have declined severely as a result of over-collection (AC28 Doc. 20.3.8).

Specifically in Lao PDR, threats were reported to include over-exploitation for food and traditional medicine purposes (Stuart and Timmins, 2000; Stuart *et al.*, 2011) and Lao PDR was considered a major source of turtles for markets in China, with extensive trade networks occurring throughout the country (Stuart and Timmins, 2000; Stuart *et al.*, 2000). *C. galbinifrons*, and likely *C. bourreti*, was reported to be hunted with dogs and commands a high trade value (Stuart and Timmins, 2000). *C. galbinifrons* was considered more susceptible to exploitation than some other species due to its restricted range (Stuart and Timmins, 2000).

In general, it was suspected that wild-caught individuals of this species may be laundered as 'captive-bred' (van Dijk *in litt*. to UNEP-WCMC, 2015).

Trade: *C. galbinifrons* was listed in CITES Appendix II on 19 July 2000 (under the genus listing for *Cuora* spp.). Direct trade in *C. galbinifrons* from Lao PDR 2004-2013 comprised of 1500 live, ranched individuals exported for commercial purposes in 2006 (as reported by the country of import only). With the exception of 2004 and 2005, CITES annual reports have been received from Lao PDR for every year 2004-2013. Lao PDR has not published any export quotas for this species.

No indirect trade in *C. galbinifrons* originating in Lao PDR was reported 2004-2013.

Management: *C. galbinifrons* was reported to be legally protected from exploitation (or under evaluation for inclusion under strict protective legislation) in all range countries, however, it was noted that enforcement may be insufficient (CoP16 Prop. 33). In Laos PDR, *C. galbinifrons* was listed under Prohibited Category I (highest protective category) in the Wildlife and Aquatic Species Law (No.07/NA 24 December 2007). Prohibited Category I bans hunting and collection year round (AC28 Doc. 20.3.8). The species was also reported to occur in some protected areas within Lao PDR, but evidence of hunting within them was reported (AC18 Doc 7.1).

Populations of *C. galbinifrons* were not known to be managed in any part of the species range (CoP16 Prop. 33). Stuart and Timmins (2000) reported that no species management programme existed for turtles in Lao PDR. Key priorities for management of this species were considered by Hagen *et al.* (2011) to include detailed genetic studies of the *C. galbinifrons* complex and habitat conservation, along with *ex- situ* captive management.

Lao PDR was reported to have ceased all legal exports of wild animals of *C. galbinifrons* (van Dijk *in litt*. to UNEP-WCMC, 2015). At CoP16, a proposal for a zero quota on wild specimens for commercial purposes for 15 taxa in Appendix II, including *C. galbinifrons* (CoP16 Prop. 32) was adopted (CoP16 Com. I Rec. 9); this quota came into effect from 12 June 2013 (Notification No. 2013/012). At Ac28, the Animals Committee agreed with Viet Nam's recommendation in the Periodic Review process to transfer *C. galbinifrons* to Appendix I (Ac28 Doc 20.3.8; AC28 Sum 2 (Rev. 1)).

The CITES Management Authority of Lao PDR was consulted as part of this review, but no response was received. Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao DRR as "legislation that is believed generally not to meet the requirements for the implementation of CITES.".

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Heosemys annandalii: Lao People's Democratic Republic

A. Summary

LAO PEOPLE'S DEMOCRATIC REPUBLIC: Suspension valid from: 7 September 2012	Globally Endangered with a declining population. Restricted distribution in southern Lao PDR Republic, with no population estimates available, but populations considered greatly reduced. Threatened by overharvesting for domestic consumption and domestic/international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade is permitted. No trade reported by Lao PDR (first CITES annual report was submitted in 2006), however two importers reported imports of 25,000 live ranched and 1000 live, wild-sourced individuals from Lao PDR. No information to indicate the existence of any ranching facilities within the country. Zero quota established for wild-sourced specimens from all range States for this species with adoption of Prop.32 at CoP16, therefore the trade suspension appears no longer warranted.	RECOMMENDATION: Suspension appears no longer warranted – zero quota established through other CITES process

RST Background

Heosemys annandalii (Yellow-headed Temple Turtle) was selected for the RST at AC23 (April 2008) on the basis of trade data and other information provided in document AC23 Doc. 8.5.1 (AC23 WG2 Doc. 1). At AC25 (July 2011), *H. annandalii* was categorised as of "possible concern" for Lao People's Democratic Republic (hereafter referred to as Lao PDR) (AC25 Summary Record) and recommendations were formulated (Table 1).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record).

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Lao People's Democratic Republic	**Within 90 days** The Management Authority should clarify what legal protection is afforded to this species in the Lao People's Democratic Republic and liaise with the Management Authority of Viet Nam to provide an explanation for the perceived discrepancies between reported Vietnamese import data and Lao export data referred to in document AC25 Doc. 9.4; and either i) If there is no intent to allow export of wild caught specimens of this species for the foreseeable future, establish a zero quota which should be communicated to Parties by the Secretariat; or ii) If it is intended to permit trade, provide a justification for, and details of, the scientific basis by which it has been established that any specimens to be exported will not be detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3.

No response to the recommendations was received (SC62 Doc. 27.1 (Rev. 1)). At SC62 (July 2012) it was noted: "*No response has been received by the Secretariat in relation to the recommendations of the Animals Committee. The Animals Committee based its categorization and recommendations on reported imports from LA of 1,000 live wild specimens between 2003 and 2008, but since that time there appears to have been a significant increase in trade. The CITES Trade Database shows that 4,500 live ranched specimens of Heosemys annandalii were imported from LA in 2009, and 20,500 live ranched specimens and 1,800 live captive bred specimens in 2010. A non-detriment finding should be made for all exports of*

specimens declared to be of source 'R' (ranched). During a mission to LA in October 2011, the Secretariat was advised by the Management Authority that there were no registered breeders of H. annandalii in the country" (SC62 Doc 27.1 (Rev 1)). SC62, therefore, agreed to recommend all Parties suspend trade in specimens of *H. annandalii* from Lao PDR (SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

B. Species characteristics

Taxonomic note: Following the adoption of Fritz and Havaš (2007) as the CITES standard nomenclatural reference for turtles and tortoises at CoP14 (CoP14 Doc. 8.5), the accepted scientific name of this species was changed from *Hieremys annandalii* to *Heosemys annandalii*. However, many of the literature sources referred to the species as *H. annandalii* (e.g. Moll and Moll, 2004; Stuart and Platt, 2004; Bonin *et al*., 2006; Auliya, 2007).

Biology: *Heosemys annandalii* (Yellow-headed Temple Turtle) is a large turtle inhabiting ponds, canals, swamps, lakes and rivers (Moll and Moll, 2004). Bonin *et al.* (2006) reported its habitat as wetlands, inundated fields, wet forests and swamps as well as saline habitats. It was reported to be herbivorous, feeding on aquatic and land plants, fruits and flowers (Bonin *et al.*, 2006). Nesting was reported to occur from December to January, with an average of four eggs in a clutch (Bonin *et al.*, 2006). Platt *et al.* (2008) reported that according to fishermen in Tonle Sap Lake in Cambodia, females reached sexual maturity upon attaining a body mass of around 4 kg.

C. Country reviews

Lao PDR

Distribution: Van Dijk *et al.* (2014) mapped the distribution of *H. annandalii* through parts of Peninsular Malaysia, Thailand, Cambodia, southern Viet Nam and Lao PDR. *H. annandalii* was reported to occur in Mekong trans-boundary river (Moll and Moll, 2004).

H. annandalii was reported to occur in southern Lao PDR (Duckworth *et al.,* 1999; Stuart and Timmins, 2000; Teynié *et al.,* 2004; Fritz and Havaš, 2007; Auliya, 2007). Stuart and Platt (2004) described two records for *H. annandalii* from Attapu Province [south-eastern Lao PDR] and Teynie *et al.* (2004) reported the species' occurrence in the Xepian National Biodiversity Conservation Area, Champasak Province [south-western Lao PDR]. Duckworth and Timmins (2015) noted that *H. annandalii* was likely to occur Beung Kiat Ngong Ramsar site [also Champasak Province].

Population status and trends: In 2000, *H. annandalii* was assessed as Endangered due to trade exploitation in Cambodia, Lao PDR and Viet Nam (Asian Turtle Trade Working Group, 2000). This assessment was considered to need updating (Asian Turtle Trade Working Group, 2000). Touch *et al.* (2000) reported the *H. annandalii* population in Lao PDR to be "greatly reduced" and Stuart and Timmins (2000) reported that the species was "very reduced in numbers from collection pressure". Duckworth *et al.* (1999) categorised the species as 'at risk' in Lao PDR and as a species of 'High National Priority', which they defined as a species that can still be maintained at viable levels in Lao PDR, but only if immediate and effective action to address the threats to them is taken. The authors believed the global significance of Laotian population to be 'moderate' (Duckworth *et al.,* 1999). Duckworth and Timmins (2015) noted that if the species was present at Beung Kiat Ngong Ramsar site, it was likely to be depleted. Horne *et al.* (2012) reported that there were no estimates of wild populations for this species.

Threats: This species was reported to be highly threatened by harvesting and trade, with habitat loss posing a minor threat (Duckworth *et al.*, 1999). Turtles in Lao PDR were reported to be heavily exploited for domestic consumption, internal trade and export to Viet Nam and on to China (for food and as a traditional medicine) (Stuart, 1998; 1999).

In Xe Pian National Protected Area (where *H. annandalii* was reported to occur), local people were reported to consume turtles and their eggs (Xe Pian National Protected Area Office, 2010). The main threats to wildlife in this area were reported to be activities of commercial wildlife traders and local consumption and trade, which have increased over the last few decades due to high rates of population growth and an expansion of the cash economy (Xe Pian National Protected Area Office, 2010 cited in AC25 Doc. 9.4 Annex).

Trade: *H. annandalii* was listed in CITES Appendix II on 13 February 2003. Lao PDR submitted CITES annual reports for all years 2006-2013; Lao PDR became a Party to CITES in 2004, submitting its first annual report in 2006. Lao PDR has not published any export quotas for *H. annandalii* over the period 2004-2015.

According to data from the CITES Trade Database, no direct exports of *H. annandalii* were reported by Lao PDR 2004-2013, while two countries of import reported the import of 35,800 live specimens from Lao PDR, predominantly as ranched specimens (Table 2).

Table 2: Direct exports of *Heosemys annandalii* from Lao People's Democratic Republic, 2004-2013. All trade was in live specimens for commercial purposes.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
C	Exporter											
	Importer							1800				1800
R	Exporter											
	Importer						4500	20,500				25,000
W	Exporter											
	Importer		1000									1000
-	Exporter											
	Importer								8000			8000

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

High levels of indirect trade originating in Lao PDR were recorded 2004-2013, all of which reported by Viet Nam (Table 3). All indirect trade during this period was in live individuals re-exported for commercial purposes; the trade was not reported by the importer, China.

Table 3: Indirect exports of *Heosemys annandalii* from Lao People's Democratic Republic, 2004-2013. All trade was in live specimens for commercial purposes.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
R	Exporter						26,500	22,000		88,000		136,500
	Importer											
W	Exporter		9000									9000
	Importer											
-	Exporter								38,100			38,100
	Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

The species was reported to be subject to illegal trade, with large quantities of the species reported seized (Horne *et al.* 2012). TRAFFIC reported that in January 2014, 30 individuals of *H. annandalii* were seized in Thailand from two Laotian and one Thai traders (TRAFFIC, 2015).

Management: *H. annandalii* is included in List II ('managed species') in the National Biodiversity Conservation Areas, Aquatic and Wild Life Management Regulations (Ministry of Agriculture and Forestry, 2003). Managed species are defined as those still found in substantial number in nature for which subsistence use by local populations is permitted within specified seasons. The removal of

managed species between villages, districts and provinces requires authorization from various administrative authorities, hunting of managed species during the hunting restriction season is forbidden and "No commercial transactions of wild and aquatic life species described in List I or List II will be permitted" (Ministry of Agriculture and Forestry, 2003).

Horne *et al.* (2012) identified *H. annandalii* as a priority for field surveys due to the species being largely unknown and being at risk of imminent extinction. It was also reported that targeted local enforcement and international cooperation was needed to prevent international trade to China; inclusion of the species in CITES Appendix I was advocated to assist in this (Horne *et al.*2012).

At CoP16, a proposal for a zero quota on wild specimens for commercial purposes for 15 taxa in Appendix II, including *H. annandalii* (CoP16 Prop. 32) was adopted (CoP16 Com. I Rec. 9); this quota came into effect from 12 June 2013 (Notification No. 2013/012). No information on any ranching facilities within the country was located.

The CITES Management Authority of Lao PDR was consulted as part of this review, but no response was received. Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao PDR as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

D. References

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Heosemys grandis: Lao People's Democratic Republic

A. Summary

LAO PEOPLE'S DEMOCRATIC REPUBLIC: Suspension valid from: 7 September 2012	Reported to occur in central and southern Lao PDR, with little information on population status. Reported in 1999 as 'Potentially at Risk' in the country, but localised depletions or even extirpation suspected in one protected area. Threatened by overharvesting for domestic consumption and international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade in wild-sourced specimens is permitted. Lao PDR reported exports of 10,000 ranched individuals in 2008 only (first annual report was submitted in 2006), however countries of import reported substantially higher trade levels 2004-2013 (36,500 ranched, 6500 wild-sourced and 2100 captive-bred individuals). Management measures, including the basis for making non-detriment findings, and the impact of trade on wild populations, are not known. It is unclear if the country intends to export the species or address the AC recommendations. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Heosemys grandis (Giant Asian Pond Turtle) was selected for the RST at AC23 (April 2008) on the basis of trade data and other information provided in document AC23 Doc. 8.5.1 (AC23 WG2 Doc. 1). At AC25 (July 2011), *H. grandis* was categorised as of "possible concern" for Lao People's Democratic Republic (hereafter referred to as Lao PDR) (AC25 Summary Record) and recommendations were formulated (Table 1). No response to the recommendations was received (SC62 Doc. 27.1 (Rev. 1)). The SC agreed to recommend all Parties suspend trade in specimens of *H. grandis* from Lao PDR (SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

At SC62 (July 2012) it was noted: "*No response has been received by the Secretariat in relation to the recommendations of the Animals Committee. The Animals Committee based its categorization and recommendations on reported imports from LA of 10,000 live ranched specimens between 2003 and 2008. The CITES trade database shows that 7,000 live ranched specimens of Heosemys grandis were imported from LA in 2009, and 23,500 live ranched specimens and 2,100 live captive bred specimens in 2010. During a mission to LA in October 2011, the Secretariat was advised by the Management Authority that there were no registered breeders of H. annandalii in the country*" (SC62 Doc 27.1 (Rev 1)). SC62, therefore, agreed to recommend all Parties suspend trade in specimens of *H. annandalii* from Lao PDR (SC62 Summary Record). The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

Table 1: Recommendations by the Animals Committee (AC25 Summary Record)

Range State	Recommendations and deadlines resulting from AC25 (July 2011)
Lao People's Democratic Republic	**Within 90 days** a) The Management Authority should clarify what legal protection is afforded to this species in the Lao People's Democratic Republic and liaise with the Management Authority of China to provide an explanation for the perceived discrepancies between reported import data and reported export data referred to in document AC25 Doc 9.4; and b) Provide full details of the ranching facilities in the Lao People's Democratic Republic, including stock numbers and source, annual production of eggs and hatchlings, as well as an assessment of the impact of this facility on wild populations; and either: i) If there is no intent to allow export of wild caught specimens of this species for the foreseeable future, establish a zero quota which should be communicated to Parties by the Secretariat; or ii) If it is intended to permit trade, provide a justification for, and details of, the scientific basis by which it has been established that any specimens to be exported will not be detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Biology: *Heosemys grandis* was reported to be one of the largest semi-aquatic turtles of Asia, reaching a weight of 12 kg and a length of 480 mm (Bonin *et al.*, 2006). It was described as a widespread, omnivorous species, found in wetland habitats (including rivers, swamps, lakes, creeks, and ponds), from lowlands up into the mountains (Moll and Moll, 2004; Bonin *et al.*, 2006). The species was reported to spend much time on land, hidden under vegetation (Bonin *et al.*, 2006), and to half-bury itself in muddy substrates of ponds (Davidson, 2006). Clutch sizes were reported to range from four to eight elliptical eggs, with incubation lasting 80-100 days (Bonin *et al.*, 2006).

C. Country reviews

Lao People's Democratic Republic

Distribution: *H. grandis* was reported to have a fragmented distribution from southern Myanmar westwards to southern Viet Nam (including Thailand, Cambodia and Lao PDR), and southwards to Peninsular Malaysia (Bonin *et al.*, 2006). Of eight representative rivers in the Oriental Region, *H. grandis* was reported to occur in the Rivers Irrawaddy, Chao Phraya, Perak and Mekong (Moll and Moll, 2004).

Within Lao PDR, Stuart and Platt (2004) gave twelve distribution records 1994-1998 from Khammouan Province, Savannakhet Province, Salavan Province and Champasak Province, in central and southern Lao PDR. Teynié *et al.* (2004) reported records of the species' occurrence in the Xepian National Biodiversity Conservation Area, Champasak Province and other unspecified areas in southern Lao PDR. Duckworth and Timmins (2014) also reported occurrence of *H. grandis* in Beung Kiat Ngong Ramsar site in Champassak Province in southern Lao PDR. Streicher (2014) reported an individual rescued during the Nam Theum 2 Hydropower Project in the Khammouan Province.

Population status and trends: In 2000, *H. grandis* was assigned the global threat status of Vulnerable, with Cambodia, Lao PDR and Viet Nam meeting the criteria due to an observed/estimated/inferred/suspected population reduction of at least 20 per cent over the previous ten years, and an observed/estimated/inferred/suspected population reduction of at least 20 per cent over the next ten years, based on actual or potential levels of exploitation (Asian Turtle Trade Working Group, 2000). Horne *et al.* (2012) recommended that the conservation status of *H. grandis* be categorised as Endangered.

Bonin *et al.* (2006) reported that "the status of the species is poorly known, but this turtle is often caught and consumed, and its numbers seem to be dropping." *H. grandis* was reported to be 'Potentially At Risk' in Lao PDR (Stuart, 1999). Duckworth and Timmins (2014) noted that all turtle species at Beung Kiat Ngong Ramsar site were very likely to be highly depleted or verging on extirpation.

Threats: *H. grandis* was reported to be hunted for domestic consumption, as well as sold to traders for the Vietnamese and Chinese consumption trade (Stuart, 1999). Bonin *et al.* (2006) reported that in China it was imported extensively, its large size making it a desirable food item and in other countries it was placed in temple ponds. Ly *et al.* (2011) reported that many species of Asian turtles are over-harvested for food and trade. Illegal trade of tortoises and turtles was reported in CoP15 Inf. 22.

Trade: *Heosemys grandis* was listed in CITES Appendix II on 13 February 2003. Lao PDR submitted annual reports for all years 2006-2013; Lao PDR became a Party to CITES in 2004, submitting its first annual report in 2006. Lao PDR has not published any export quotas for *H. grandis* over the period 2004-2015.

According to data in the CITES Trade Database, direct trade in *H. grandis* from Lao PDR 2004-2013 comprised of 10,000 live ranched specimens reported by Lao PDR; countries of import reported 1000 wild-sourced specimens, 36,500 ranched specimens, 2100 captive-bred specimens and 5500 specimens with no source traded for commercial purposes (Table 2).

Table 2: Direct exports of *Heosemys grandis* from Lao People's Democratic Republic, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2004, 2006-2007 and 2012-2013.

Source	Reported by	2005	2008	2009	2010	2011	Total
C	Exporter						
	Importer				2100		2100
R	Exporter		10,000				10,000
	Importer		6000	7000	23,500		36,500
W	Exporter						
	Importer	1000					1000
-	Exporter						
	Importer					5500	5500

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

High levels of indirect trade originating in Lao PDR were recorded 2004-2013 (Table 3), all of which reported by Viet Nam. All indirect trade during this period was in live individuals re-exported for commercial purposes; the trade was not reported by the importer, China.

Table 3: Indirect exports of *Heosemys grandis* from Lao People's Democratic Republic, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2004, 2006-2007 and 2013.

Source	Reported by	2005	2008	2009	2010	2011	2012	Total
R	Exporter		4000	15,500	14,000		29,500	63,000
	Importer							
W	Exporter	9000						9000
	Importer							
-	Exporter					32,500		32,500
	Importer							

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

H. grandis was among the species recorded in Yuehe Pet Market in Guangzhou, China, 2006-2008 (101-500 individuals recorded during seven surveys); the authors estimated that "50% of the species (CITES I and II listed) and c. 20% of individuals in Yuehe Pet Market are illegally traded" (Gong *et al.*, 2009). As the Chinese CITES Authorities were reported not to have permitted commercial importation of

chelonians since 2003, except for some common species, Gong *et al.* (2009) speculated that most of the non-native Appendix I and II species traded in large numbers in these markets were wild-caught individuals entering Chinese wildlife markets illegally.

Management: *H. grandis* was included in List II ('managed species') in the National Biodiversity Conservation Areas, Aquatic and Wild Life Management Regulations (Ministry of Agriculture and Forestry, 2003). Managed species are defined as those still found in substantial number in nature for which subsistence use by local populations is permitted within specified seasons. The removal of managed species between villages, districts and provinces requires authorization from various administrative authorities, hunting of managed species during the hunting restriction season is forbidden and "No commercial transactions of wild and aquatic life species described in List I or List II will be permitted" (Ministry of Agriculture and Forestry, 2003). No information on any ranching facilities within the country was located.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao PDR as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

The CITES Authority of Lao PDR was consulted as part of this review, but no response was received at the time of writing.

D. References

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Malacochersus tornieri: United Republic of Tanzania

A. Summary

UNITED REPUBLIC OF TANZANIA: Suspension valid from: 20 April 1993. Amended 20 June 1998 to allow for export of quotas of ranched or captive bred specimens.	A low fecundity species with a restricted distribution in United Republic of Tanzania, with no estimates of population size or trend. Considered to have become threatened throughout the country due to intensive collection, and illegal trade persists. Trade predominantly in captive-produced specimens (source F). However, 50 live wild-sourced specimens reported exported in 2009, with 300 specimens reported by countries of import. Unclear if the species is currently protected in the country. Tanzania has indicated that trade in wild-sourced specimens is not anticipated; however, given that exports have been reported in the past five years, the trade suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Malacochersus tornieri (Pancake Tortoise) was selected for the RST Phase I at AC5. At AC7, the species was categorized as of 'possible concern' for the United Republic of Tanzania (hereafter referred to as Tanzania) and recommendations were formulated at AC7 (March 1992) (see SC57 Doc. 29.2 Annex 2) (Table 1). No response to the recommendations was received by the Secretariat. The SC recommended Parties suspend imports of *M. tornieri* at SC29 (March 1993), and the suspension entered into force on 20 April 1993 (Notification No. 737).

Table 1: Recommendations by the Animals Committee (SC57 Doc. 29.2 Annex 2).

Range State	Recommendations and deadlines resulting from AC7 (March 1992)
United Republic of Tanzania	**Within 3 months the Management Authority should:** a) Introduce a moratorium on trade, pending evaluation of the results of a population survey and establishment of a sustainable-use management programme; and **Within 12 months the Management Authority should:** b) Initiate a population survey of the species; and develop a sustainable-use management programme.

In March 1995, Tanzania informed the Secretariat that export of the species had been banned but that it wished to export the species from four breeding facilities. Following a workshop and inspection of four breeding facilities, agreement was reached that the remaining stock of captive-born specimens could be exported in 1999, and thereafter exports would only be permitted for specimens of carapace length no more than 5 cm. It was agreed that Tanzania was to report annually on the production of breeding facilities concerned and quantities exported before a new quota would be established. At SC40 (March 1998), the Standing Committee agreed to a request from Tanzania to export specimens of the species produced from ranching or captive-breeding operations, for which the annual export quota has to be agreed between the Management Authority (MA) and the Secretariat (Notification No. 1998/25).

Since that time, in agreement with the Secretariat, Tanzania has established annual export quotas for F1 specimens of less than 8 cm in length. At SC57 (July 2008), the Secretariat and AC Chair proposed that the Committee withdraw its recommendation to Parties not to accept imports of specimens of *M. tornieri* from Tanzania if the MA confirmed to the Secretariat that it would maintain its export moratorium on wild-caught specimens until it has established a process for making non-detriment findings to the satisfaction of the Secretariat and Chair of the AC (SC57 Doc.29.2). However, but this was not agreed by the Committee, and the suspension remained in place (SC57 Summary Record).

At SC62 (July 2012), it was reported that no response to the recommendations had been received (SC62 Doc. 27.2 (Rev. 1)). It was noted that there had been no further developments in this case but that, since 2002, only 50 specimens of wild [origin] had been reported in trade (in 2009) and these were reported by Hong Kong SAR, not TZ" (SC62 Doc. 27.7 (Rev. 1)) [however, see trade section for further analysis of this trade]. At SC62, concerns were raised about the sustainability of the trade, particularly of specimens of ranched origin (SC62 Summary Record). The Secretariat commented that the proposal made at SC57 (July 2008) would still seem appropriate, and whilst the SC agreed to reconsider the suggestion at SC63 (March 2013) (SC62 Summary Record), no record of a discussion having taken place was located.

B. Species characteristics

Biology: *M. tornieri* is a small, soft-shelled, terrestrial tortoise (Loveridge and Williams, 1957). The compressible soft-shell enables the species to push and wedge itself into rock crevices (Loveridge and Williams, 1957). It inhabits small hills with rocky outcrops in savannah or arid thornbush, from an altitude of 30 to 1800 m above sea level (Broadley, 1989). The species does not move far from these areas and is therefore less capable of recolonising depopulated areas (Howell *in litt*., cited in WCMC and IUCN/SSC Trade Specialist Group, 1992). During daylight hours, *M. tornieri* hides in crevices and is difficult to remove (Broadley, 1989). It reaches a carapace length of up to around 170 mm (males) and 180 mm (females) (Broadley, 1989), and weighs up to 580 g (Kabigumila, 2002).

The species occurs in East Africa in Kenya and Tanzania (Spawls *et al.*, 2002), and was considered characteristic of the Somalia-Masai floristic region (Chansa and Wagner, 2006). It has also been reported from Zambia in southern Africa (Chansa and Wagner, 2006). In the wild, the species has been reported to consume dry grass, and is likely to consume a variety of vegetation (Pritchard, 1979 in WCMC and IUCN/SSC Trade Specialist Group, 1992). One or two clutches may be laid per year (Pritchard, 1979 in WCMC and IUCN/SSC Trade Specialist Group, 1992), with a clutch comprising a single egg (Spawls *et al.*, 2002).

C. Country reviews

Tanzania

Distribution: *M. tornieri* was reported to occur in north-central Tanzania from Tarangire, Lake Eyasi and Lake Manyara south to the Ruaha National Park (Spawls *et al.*, 2002). Isolated records of the species were also reported from the Serengeti and west of Smith Sound in northern Tanzania (Spawls *et al.*, 2002), although Spawls *et al.* (2002) noted that these populations may be connected to the central Tanzanian population. Older records of the species occurrence from Tanga in coastal Tanzania and Lindi in southern Tanzania were considered by Spawls *et al.* (2002) to be unlikely due to unsuitable habitat.

Population status and trends: Recent data on population status and trends for *M. tornieri* could not be located. The species was categorised as Vulnerable in the IUCN Red List, but the assessment was considered in need of updating (Tortoise and Freshwater Turtle Specialist Group, 1996).

The species was reported to be quite frequently encountered in Ruaha National Park, Tanzania (Howell *in litt*., cited in WCMC and IUCN/SSC Trade Specialist Group, 1992). Eleven individuals were once found under one rock indicating locally high densities (Loveridge, 1923 in WCMC and IUCN/SSC Trade Specialist Group, 1992). Howell (*in litt*., cited in WCMC and IUCN/SSC Trade Specialist Group, 1992) reported the species could readily be seen near Dodoma and Ruaha. However, he cautioned that these may reflect a large number of isolated populations scattered throughout the suitable habitats and that this might give a misleading indication of population size.

Later, preliminary survey results indicated that in less than 10 years of intensive collection, the species had become severely threatened throughout its range in Tanzania (Klemens and Moll, 1995; Klemens, 1996 in CoP11 Prop. 11.39).

Threats: The main threats to *M. tornieri* were reported to be collection for the international pet trade and habitat destruction (CoP11 Prop. 11.39). The species' peculiar physical characteristics make it an appealing addition for zoological institutions and private collections (Kirkpatrick, 1997; Moll and Klemens, 1996 in CoP11 Prop. 11.39). *M. tornieri* has been found in illegal trade: it has been observed at Chatuchak Market, Bangkok, as well as in Malaysia in Petaling Jaya (Selangor State) (Shepherd and Nijman, 2008). An investigation into the illegal tortoise trade in Britain revealed that *M. tornieri* can fetch a price of £1500-3000 (Pendry and Allan, 2003). Hadza women living in the Yaedachini Game Controlled Area above Lake Eyasi were also reported to eat the species (Klemens and Moll, 1995 in CoP11 Prop. 11.39).

Trade: *M. tornieri* was listed on CITES Appendix II on 1 July 1975 (genus listing). Tanzania published export quotas for captive-born (source 'F') *M. tornieri* every year 1997-2015, except 2006 (Table 2).

Table 2: Export quotas published by Tanzania for captive-born (source 'F') *Malacochersus tornieri* with a carapace length of 8cm or less, 1997-2015.

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0	0	1190	719	833	756	552	470	392	-	342	400	404	404	500	500	510	530	900

With the exception of 2007, all CITES annual reports have been submitted by Tanzania for the period 2004-2013. According to data from the CITES Trade Database, direct exports in *M. tornieri* from Tanzania 2004-2013 consisted of 1632 live captive-born specimens (source F) as reported by Tanzania, and 2321 live captive-born (source 'F') specimens reported by countries of import (Table 3). In 2009, Tanzania reported the export of 50 live, wild-sourced specimens for commercial purposes to Hong Kong, Special Administrative Region of China. Countries of import reported a total of 300 live wild-sourced specimens imported in the same year.

Table 3: Direct exports of *Malacochersus tornieri* from Tanzania, 2004-2013. All trade was in live specimens.

Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
C	T	Exporter											
		Importer				10		30					40
F	P	Exporter											
		Importer	10		15								25
	T	Exporter	327	189	85		96	246	400	170		94	1607
		Importer	365	306	115	125	101	250	575	220	200	64	2321
I	T	Exporter											
		Importer										90	90
	-	Exporter											
		Importer				20							20
W	T	Exporter						50					50
		Importer						300					300

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *M. tornieri* originating in Tanzania 2004-2013 consisted of live captive-born and captive-bred (source 'F' and 'C') specimens traded for commercial purposes (Table 4).

Table 4: Indirect exports of *Malacochersus tornieri* originating in Tanzania, 2004-2013. All trade was in live specimens for commercial purposes.

Source	Reported by	2004	2005	2006	2007	2008	2009	2011	2012	2013	Total
C	Exporter				40						40
	Importer					50	100				150
F	Exporter		50					50	2		102
	Importer		20					4	4		28

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: *M. tornieri* was listed as protected under the Wildlife Conservation (National Game) Order, 1974 (SC57 Doc. 29.2), however this legislation has since been repealed[11]. Much of the population is located outside protected areas, which increases their vulnerability to over-exploitation (Malonza, 2003). However, *M. tornieri* has been recorded in Serengeti National Park (Broadley and Howell, 1991 in Malonza, 2003), Tarangire and Ruaha National Parks (Moll and Klemens, 1996 in Malonza, 2003) and Mkomazi Game Reserve (F. Mturi, *pers. comm*. in Malonza, 2003).

Tanzania reported that it has no plans to authorise export of wild specimens of *M. tornieri* (Ministry of Natural Resources and Tourism *in litt*. to UNEP-WCMC, 2015). Through its national legislation project, the CITES Secretariat categorised the national legislation in Tanzania as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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[11] http://faolex.fao.org/cgi-bin/faolex.exe?database=faolex&search_type=query&table=result&query=ID:LEX-FAOC097858&format_name=ERALL&lang=eng

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Stigmochelys pardalis: Democratic Republic of Congo

A. Summary

DEMOCRATIC REPUBLIC OF CONGO: Suspension valid from: 9 July 2001	Unclear distribution, population size or trend for DR Congo, but provisionally considered to be of Least Concern within the country. Threats include collection for trade and habitat fragmentation leading to smaller, non-viable populations. No trade reported 2004-2013 during the period of the suspension. Previously DRC reported 3150 live specimens exported (wild-sourced and source unreported) in 1995-1999; with 900 live wild-sourced specimens reported by countries of import over the same period. No information on protection or management within the country located. It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Stigmochelys pardalis (Leopard Tortoise) was included in Phase IV of the RST at AC14 (May 1998). At AC15 (July 1999), concerns relating to non-detriment findings for trade from the Democratic Republic of Congo (hereafter referred to as the DRC) were raised (AC15 Proceedings, Annex 6). At AC16 (December 2000), recommendations were formulated by the AC, as summarised in Table 1. No response to the recommendations was received by 2001, and the Secretariat proposed that SC45 (June 2001) recommend that no imports of specimens of the species should be accepted from the DRC (AC17 Doc. 7.1; SC45 Doc 12); this was agreed by SC45 (SC45 Summary Report). The suspension entered into force on 9 July 2001 (Notification No. 2001/043). At SC57 (July 2008), it agreed that the suspension would be withdrawn, if the MA of DRC confirmed that no export permits would be issued for this species until the country had established non-detriment findings (SC57 Doc. 29.2). No reply was received from the DRC (SC58 Doc. 21.3 and SC62 Doc. 27.2) and the conditions set out by SC were not considered to have been complied with by DRC (SC65 Doc. 26.1); the suspension was therefore confirmed in 2014 (Notification No. 2014/039). AC28 in August-September 2015 noted that action was expected from the DRC prior to the SC reviewing the suspension (AC28 Doc. 9.2).

Table 1: Recommendations by the Animals Committee

Range State	Recommendations and deadlines resulting from AC16 (December 2000)
Democratic Republic of the Congo	The Management Authority of the Democratic Republic of the Congo should provide the CITES Secretariat with detailed information on: i) the distribution and abundance of this species in its country; and ii) the justification, or the scientific basis by which it has established that the quantities currently exported will not be detrimental to the survival of the species

B. Species characteristics

Taxonomic note: *S. pardalis* was previously included in the genus *Testudo* and more recently, in the genus *Geochelone* (Iverson, 1992; Fritz and Havaš, 2007). Based on an analysis of mitochondrial and nuclear DNA, Le *et al.* (2006) included it in the genus *Psammobates*. However, based on morphological differences, Fritz and Bininda-Emonds (2007) placed it in the genus *Stigmochelys*, which is accepted by the current CITES Standard Nomenclature reference for Testudines (Fritz and Havaš, 2007). Fritz and Havaš (2007) also distinguished two subspecies: *S. p. pardalis* and *S. p. babcocki*. However, in a more recent study focusing on mitochondrial phylogeography (Fritz *et al.*, 2010) found no evidence to support this.

Biology: *S. pardalis* is the largest of southern Africa's tortoise species (McMaster and Downs, 2013). The species was reported to be widely distributed in sub-Saharan Africa, where it occurs in semi-desert, grassland, savannah, shrub land, thicket and woodland (but not forest) (Broadley, 1989; Spawls *et al.*, 2002; Vetter, 2005). *S. pardalis* was found to prefer dry and hot biomes in rocky landscapes (Vetter, 2005) and it was reported to inhabit areas from sea-level to around 1500m above sea level (Broadley, 1989), although locally also at altitudes of up to 2900m (Vetter, 2005).

The largest individuals can have a carapace length of almost 80 cm and a weight in excess of 40 kg (Baker and Grubb, 2011), although considerable variability in average sizes and weights across its range were reported . Sexual dimorphism has been documented, with the females larger than males (Hailey and Lambert, 2002). McMaster and Downs (2006) found a natural bias towards male individuals in the population. *S. pardalis* is oviparous (Broadley, 1989), with females reaching sexual maturity at the age of 12-15 years in the wild (Razzetti and Msuya, 2002; Baker and Grubb, 2011) and 6-8 years in captivity (Highfield and Martin, 2014). Males may reach sexual maturity at five years (Baker and Grubb, 2011). The reproductive potential of *S. pardalis* was considered to be high, due to its ability to lay three or more clutches of 5-15 eggs per season (Highfield and Martin, 2014). Eggs typically take 18 months to hatch (Pritchard, 1979) and the clutch size was found to increase with the size of the female (Baker and Grubb, 2011). The species was thought to live for up to 100 years in the wild (Baker and Grubb, 2011).

C. Country review

Democratic Republic of Congo

Distribution: *S. pardalis* was reported to range from southern Sudan and Ethiopia south through eastern Africa to South Africa, and west to southern Angola and Namibia (Broadley, 1989; Fritz and Havaš, 2007). While the presence of *S. pardalis* in the DRC was questioned by Broadley (1989), van Dijk *et al.* (2011), however, listed the DRC as being within the distribution range of *S. pardalis*.

Population status and trends: Although widely distributed globally, the species' population density was reported to be generally low (Vetter, 2005), with lower population densities generally expected in xeric [extremely dry] areas, compared to mesic [well-balanced moisture supply] areas, likely as a result of lower recruitment rates and limited availability of food (McMaster and Downs, 2006).

The global status of the species has not yet been assessed by the IUCN. The species' status was assessed as 'Least Concern' in southern Africa in a preliminary regional assessment in 2010 (van Dijk *et al.*, 2012). No current quantitative data on the global population size appear to be available, but Broadley (1989) previously indicated that the species seemed to be "in no danger", and was "protected in numerous national parks and other reserves throughout its range". Spawls *et al.* (2002) observed that the species occurred "over a large, often arid range and within a number of conservation areas", and also bred well

in captivity, and hence was "not under any present threat". However, protected areas of less than 3000 hectares [30 km²] have been reported as insufficient to contain viable populations, which is estimated to be around 500 individuals for *S. pardalis*, except in cases where the conditions are particularly favourable (Vetter, 2005). Bonin *et al.* (2006) described its populations as "still numerous". As both the tortoises and its eggs are used for food throughout its range, *S. pardalis* was considered rare in densely populated areas (Broadley, 1989).

In the DRC, *S. pardalis* was provisionally categorised as Least Concern in 2013 during a workshop that assessed African tortoise species for the IUCN Red List, although the Red List status for the species has not yet been published (Mallon *et al.*, 2015). Van Dijk (*pers. comm.* to UNEP-WCMC, 2015) noted that there appears to be no information on the status and trade of this species in DRC. No further information on the population status and trends of *S. pardalis* in the DRC was identified.

Threats: The main threat to *S. pardalis* globally was considered to be habitat fragmentation, leading to smaller, non-viable populations with reduced gene pools (Vetter, 2005). Hunting for food by indigenous populations was thought to be infrequent was not believed to significantly affect population abundance (Baker and Grubb, 2011). For decades the species was prominent in the pet trade industry (Vetter, 2005), resulting in local population declines (Ernst *et al.*, 2006). For this reason, CITES introduced export quotas for a range of countries in the 1990's, complemented by regulations on size and regulations that specimens must be captive bred, in some countries (Vetter, 2005).

No information on specific threats to *S. pardalis* in the DRC was identified.

Trade: *S. pardalis* was listed on CITES Appendix II on 01 July 1975. The DRC submitted CITES annual reports for all years 2004-2013. DRC published 'zero' export quotas in 1999 and 2001 for this species; no export quotas have been published since 2001.

According to the CITES Trade Database, no direct or indirect exports of *S. pardalis* from DRC was reported 2004-2013. Previously DRC reported 3150 live specimens exported (wild-sourced and source unreported) in 1995-1999; with 900 live wild-sourced specimens reported by countries of import over the same period.

Management: The Hunting Law of 1982 protects wildlife and addresses poaching and illegal trafficking in the DRC and there are several implementing laws: implementing Decree 014 of 2004; Law 48 of 1983 on the Conservation and Exploitation of Wildlife; Law 003 of 1991 on the Protection of the Environment; the Criminal Code of 2004; and Law 37 of 2008 on Wildlife and Protected Areas (Figueroa, 2013). The DRC reportedly has a "comprehensive legislative framework that criminalizes poaching; dealing in illegal trophies; and importing, exporting, and transferring trophies in violation of substantive and procedural legal requirements" (Figueroa, 2013). Through its national legislation project, the CITES Secretariat categorised the national legislation in DRC as "legislation that is believed generally to meet the requirements for implementation of CITES".

Wild animals are classified in three categories: fully protected, partially protected, and not protected; Decree 014 of 2004[12], implementing the Hunting Law, contains three annexes on fully, partially, and non-protected flora and fauna (Figueroa, 2013). The status of *S. pardalis* in this legislation is unclear. The CITES Authority of the DRC was consulted as part of this review, but no information regarding the management *S. pardalis* was provided at the time of writing. No further information on species specific

[12] http://www.leganet.cd/Legislation/Droit%20economique/Chasse/A041.29.04.2004.htm

management in the DRC was identified. *S. pardalis* was considered well-suited for captive production (Highfield and Martin, 2014).

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Huso huso: Kazakhstan, Russian Federation

A. Summary

KAZAKHSTAN: Suspension valid from: 2 May 2013	Categorized as Critically Endangered (CR) globally as a consequence of overfishing and loss of spawning sites. Natural spawning sites remain in the Ural River. It is unclear if the status of the species is improving. Illegal trade remains a threat. Relatively high level of international trade reported in wild-sourced caviar 2004-2010; trade in meat was also reported. However, commercial fishing reported to be prohibited since 2010, and no trade reported since then. Since 2011, no export quotas for wild-sourced sturgeon products from Kazakhstan were communicated to the Secretariat; therefore, in line with Resolution Conf. 12.7 (Rev. CoP16), zero quotas were published for all such products. Based on on-going CITES measures for the management of sturgeons of shared-stocks and the intention not to harvest or export in 2015 or 2016, the removal of the suspension may be warranted.	RECOMMENDATION: Suspension may no longer be appropriate – zero quota established through other CITES process
RUSSIAN FEDERATION: Suspension valid from: 2 May 2013	Spawning sites have been disrupted by dams (Volga River) in Russian Federation with drastic declines observed. It is unclear if the status of the species is improving. Population of Sea of Azov consists of entirely hatchery-raised fish. Illegal trade remains a threat. Relatively high level of international trade reported in wild-sourced caviar 2004-2010. However, commercial fishing reported to be prohibited since 2010, and no trade reported since then. Since 2011, no export quotas for wild-sourced sturgeon products from Russian Federation were communicated to the Secretariat; therefore, in line with Resolution Conf. 12.7 (Rev. CoP16), zero quotas were published for all such products. Based on on-going CITES measures for the management of sturgeons of shared-stocks and the intention not to harvest or export in 2015 or 2016, the removal of the suspension may be warranted.	RECOMMENDATION: Removal of suspension appears to be warranted

RST Background

At AC24 (April 2009), *Huso huso* (Beluga Sturgeon) was included in the RST (AC24 Summary Record). At AC25 (July 2011), seven range States, including the Kazakhstan and the Russian Federation, were retained (AC25 Summary Record). At AC26 (March 2012), *H. huso* was categorised as of "possible concern" for Kazakhstan and the Russian Federation (AC26 Summary Record), and recommendations were formulated (Table 1). No response to the recommendations was received, and the Secretariat and AC Chair determined that recommendations had not been complied with (SC63 Doc. 14). The SC agreed to suspend trade covered by Article IV of the Convention for *H. huso* from Kazakhstan and the Russian Federation (SC63 Summary Record). The suspensions entered into force on 2 May 2013 (Notification No. 2013/13).

Table 1: Recommendations by the Animals Committee (AC26 Summary Record).

Range State	Recommendations and deadlines resulting from AC26 (March 2012)
Kazakhstan	**Within 90 days, the Management Authority should:** a) Provide the Secretariat with written confirmation that the commercial catch of Huso huso is prohibited during 2012. **Within 2 years, the Management Authority should:** **b)** If planning to resume the commercial catch and export of wild *Huso huso* in 2013, provide to the Secretariat with a justification for, and details of, the scientific basis by which it has been established that any proposed export quota for *Huso huso* will not be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3.
Russian Federation	**Within 90 days, the Management Authority should:** a) Provide the Secretariat with written confirmation that the commercial catch of Huso huso is prohibited during 2012. **Within 2 years, the Management Authority should:** **b)** If planning to resume the commercial catch and export of wild *Huso huso* in 2013, provide to the Secretariat with a justification for, and details of, the scientific basis by which it has been established that any proposed export quota for *Huso huso* will not be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Biology: *H. huso* is the largest species of sturgeon, with some adults reaching 100 years of age, more than 1000 kg in weight (Billard and Lecointre, 2001; Catarci, 2004), and 5 m in length (Catarci, 2004). It is a migratory anadromous species, spending most of its life in the large brackish waterbodies of the Caspian and Black Seas, but swimming upstream to freshwater rivers to spawn (Billard and Lecointre, 2001; Kottelat and Freyhof, 2007).

The age at which sexual maturity is reached has been reported variably. For males, sexual maturity occurs between 10–16 years (Billard and Lecointre, 2001; Vecsei *et al.,* 2002; Bloesch *et al.,* 2005; Ciolac and Patriche, 2005), and for females between 13–22 years (Billard and Lecointre, 2001; Vecsei *et al.,* 2002; Bloesch *et al.,* 2005; Ciolac and Patriche, 2005). Spawning intervals were reported to range from 3–7 years for males and 5–7 years for females (Billard and Lecointre, 2001; Vecsei *et al.*, 2002).

The location of spawning sites depends on conditions such as bottom substrate and velocity of the current, rather than distance from the river mouth (Bloesch *et al.,* 2005). Spawning migration was reported to peak in late winter to spring, and again in late summer to autumn (Bloesch *et al.,* 2005, Kottelat and Freyhof, 2007). Fish migrating in the spring spawned within a few weeks of entering natal rivers, whilst those migrating in the autumn overwintered near spawning sites and spawned the following spring (Vecsei *et al.,* 2002; Kottelat and Freyhof, 2007).

Distribution: *H.* huso was historically widespread, inhabiting the basins of the Adriatic, Black, Azov and Caspian Seas (Vecsei et al., 2002; Kottelat and Freyhof, 2007; Gesner et al., 2010). However, virtually all spawning grounds have been lost since the construction of dams in most major rivers (Caspian Environment Programme, 2002; Graham and Murphy, 2007). In the Caspian Sea approximately 90% of spawning grounds are estimated to have been lost as a result of dams in the surrounding rivers (Barannikova et al., 1995). Current distribution is now restricted to the Black Sea (and River Danube) and Caspian Sea (and River Ural); occurrence in the Azov Sea and River Volga now relates primarily to stocked fish (Gesner et al., 2010).

Population status and trends: Most Black Sea populations are suspected to be nearly extirpated due to overfishing and impoundment of spawning rivers (Vecsei *et al.,* 2002; Kottelat and Freyhof, 2007; Gesner *et al*., 2010). The last wild population in the Black Sea reportedly migrates up the Danube River (Gesner *et al*., 2010), where it still reproduces in the lower Danube (Vecsei *et al.,* 2002; Kottelat and Freyhof, 2007), although stocks were feared to be under threat of collapse due to overharvesting (Bloesch *et al.,* 2005).

The species is believed to be extinct in the Adriatic Sea, whereas populations in the Sea of Azov are thought to consist entirely of hatchery-raised fish (Birstein *et al.,* 1997; TRAFFIC International *et al.,* 2000; Billard and Lecointre, 2001; Graham and Murphy, 2007; Gesner *et al*., 2010). In the Caspian Basin, both the number of spawning individuals and catches of *H. huso* have declined dramatically (Khodorevskaya *et al.,* 1997; Ivanov *et al.,* 1999; Pikitch *et al.,* 2005; Ludwig, 2008), with more than 90 per cent of the current Caspian Sea stock reported to originate from hatcheries (Gesner *et al*., 2010). The last 'wild' population in the Caspian Basin migrates up the Ural River, with the Volga River population reportedly dependent on restocking (Khodorevskaya *et al.,* 1997; Kottelat and Freyhof, 2007; Lagutov and Lagutov, 2008a; Gesner *et al*., 2010). This problem is reported exacerbated in the last few years by the smaller number of fish being caught for controlled breeding and restocking (J. Geßner, *pers. comm.* to UNEP-WCMC, 2015).

H. huso was categorised as Critically Endangered in the IUCN Red List, due to the estimated decline in the wild native population of over 90 per cent over the past three generations (at least 60 years for this long-lived species), as a consequence of overfishing and loss of spawning sites due to dams (Gesner *et al*., 2010). It was reported that "overfishing for meat and caviar will soon cause global extinction of the remaining natural wild populations", with survival in the immediate future dependent on stocking and effective fisheries management as well as combating illegal fishing (Gesner *et al*., 2010).

Total abundance estimates for the Caspian Sea decreased from a peak of over 10 million in 1983-1988 to less than 2 million in 2006-2010 (Khodorevskaya and Kalmykov, 2014). This pattern was also present at the local level: in the Volga River abundance estimates decreased from 26,000 individuals in 1981-1985 to 2,800 individuals in 1998-2002, despite annual input of juveniles from hatcheries (Khodorevskaya *et al.,* 2009).

Threats: *H. huso* was reported to be threatened by overfishing, poaching, by-catch, pollution (including pesticide contamination) and loss of spawning habitats due to dam construction (Billard and Lecointre, 2001; Vecsei *et al.,* 2002; Catarci, 2004; Graham and Murphy, 2007; Khodorevskaya *et al.,* 2009; Gesner *et al*., 2010; Ludwig *et al.* 2015). Life-history characteristics, such as late maturation, are believed to make the species particularly sensitive to overfishing (Graham and Murphy, 2007). The threats to natural recruitment appeared unchanged at the time of writing, and were expected to remain this way into the future unless present stocking programmes and threats from pollution and illegal harvest were more rigorously addressed (J. Geßner, *pers. comm.* to UNEP-WCMC, 2015).

Overview of trade and management: *H. huso* was listed in CITES Appendix II on 1 April 1998 (Acipenseriformes spp. listing). Resolution Conf. 12.7 (Rev. CoP16) on "Conservation of and trade in sturgeons and paddlefish" requires that range States establish export quotas for caviar and meat of Acipenseriformes from shared stocks (starting from 1 March and ending on the last day of February the following year), derived from catch quotas based on an appropriate regional conservation strategy and monitoring regime, that is not detrimental to the survival of the species in the wild. Since 2011, no export quotas for wild-sourced sturgeon products from Kazakhstan or the Russian Federation have been communicated to the Secretariat; therefore, in line with Resolution Conf. 12.7 (Rev. CoP16), zero quotas were published for all such products.

Resolution Conf. 12.7 (Rev. CoP16) also requires that: range States license legal exporters of specimens of sturgeon and paddlefish species and maintain a register of such persons or companies and provide a copy of this register to the Secretariat; Parties supply to UNEP-WCMC directly or to the Secretariat copies of all export permits and re-export certificates issued to authorize trade in caviar, no longer than one month after they have been issued, for inclusion in the UNEP-WCMC Caviar Database; and Parties implement the universal labelling system for caviar outlined in Annexes 1 and 2 of the Resolution; and importing Parties do not accept shipments of caviar unless they comply with these provisions.

Poaching and illegal trade of sturgeon species, mainly for caviar, were considered to have increased following the dissolution of the Soviet Union (Khodorevskaya *et al.,* 1997; TRAFFIC International *et al.* 2000; Catarci, 2004; Pikitch *et al.,* 2005; Pourkazemi, 2006; Khodorevskaya and Kalmykov, 2014; Ludwig *et al.* 2015). At an international workshop to combat illegal trade in caviar held in 2006, illegal trade in sturgeon products was noted to be a "serious and growing concern" (Knapp *et al.,* 2006).

Although there are a large number of measures in every Caspian country aimed at reducing illegal harvest, distribution and consumption, harvest through illegal uncontrolled and unreported fishing in the Caspian Sea was still considered to have "substantially exceeded" legal harvest (Sharov, 2011). At AC25 (July 2011), the Secretariat reported having received relatively little intelligence relating to the illegal trade in caviar (in comparison with previous years), which may be due to the increasing difficulty for poachers in finding significant numbers of gravid females, as well as the demand for caviar increasingly being supplied by extensive aquaculture operations, which were spreading throughout many parts of the world (AC25 Doc. 16.1). It was noted that progress had not been made in improving the status of sturgeons, with ongoing decline in Caspian Sea stocks of particular concern, and illegal, unreported and unregulated (IUU) fishing and illegal domestic and international trade in sturgeon products being serious problems (AC25 Summary Record).

The Commission on Aquatic Bio-resources of the Caspian Sea was formed in 1992 (with the membership of the Russian Federation, Azerbaijan, Kazakhstan, Turkmenistan and, in 2001, Iran) to monitor and manage shared stocks of sturgeon and other Caspian Sea species (CABCS, 2003; Pourkazemi, 2006). The Commission was reported to have approved the methods for total allowable catch (TAC) allocation of aquatic resources, including sturgeon species, to Caspian range States, based on their contribution to the reproduction and conservation of bioresources (Khodorevskaya *et al.,* 2006, cited in Sharov, 2011). In December 2013, a one-year moratorium on commercial sturgeon fishing in the Caspian Sea was agreed at the 34th meeting of the Commission (AC28 Doc. 16.3), and an agreement to prolong the ban into 2015 and 2016 was confirmed at the 35th meeting of the Commission in May 2015 (AC28 Doc. 16.3).

In 2006, the Caspian countries adopted the "Interstate Programme on the study of the distribution, abundance, stocks assessment, food supply and TAC determination of Caspian Sea sturgeons in 2007–2009" (Anon., 2006, cited in Sharov, 2011). According to the Programme, the Caspian-wide trawl survey was defined as the principal method of sturgeon stock assessment, with a total of 450 fixed stations sampled across the Caspian Sea during summertime (Sharov, 2011). All former Soviet Union member countries employ a fixed transect trawl survey, whereas Iran has adopted a stratified random survey design, following FAO's recommendation (Sharov, 2011).

Sturgeon stock assessment and total allowable catch (TAC) methodologies were reviewed for the Caspian range States at the 25th meeting of the CITES Animals Committee (AC24 Doc. 12.2; AC25 Doc. 16.2). The Committee concurred that current stock assessment methods were inadequate and agreed that insufficient sturgeon stock assessment expertise in the region and appropriate institutional structure to support such activities were major impediments to progress (AC25 Summary Record), and a number of recommendations were made (AC25 WG4 Doc. 1; AC25 Summary Record; IISD, 2011).

The immediate future of *H. huso* has been suggested to be dependent upon restocking (Kottelat and Freyhof, 2007). However, the use of aquaculture and hatcheries to support wild populations of sturgeons has been subject to criticisms, including: the emphasis of hatchery output over fisheries management and reducing fishing mortality (Doukakis *et al.,* 2010); difficulties in genetic management and lack of wild stock (Abdolhay, 2004; Doukakis *et al.,* 2010); hatchery-reared specimens lacking homing fidelity (which is needed to find the natal river and also to arrive at the spawning site at the correct time; Lagutov and Lagutov, 2008b); issues with interactions between hatchery-reared fish and native populations (including genetic erosion, behavioural changes and the introduction of disease; Abdolhay, 2004); low survival rates of fingerlings from some hatcheries (Lagutov and Lagutov, 2008b); and the opportunity to launder illegally-obtained caviar in aquaculture operations (Sellar, 2006).

C. Country Reviews

Kazakhstan

Distribution: *H. huso* migrates into brackish waters of the Caspian Sea and spawns naturally in the Ural River in Kazakhstan, where spawning sites have remained intact due to the absence of dams (Khodorevskaya *et al.,* 1997; Billard and Lecointre, 2001). The wild distribution of the species was reported to now be restricted to this river (Chebanov *et al.*, 2011).

Population status and trends: Billard and Lecointre (2001) commented that the population of the Ural River was abundant. However, Doukakis *et al.* (2010) reported that 2500 *H. huso* spawned in the Ural in 2002, compared with tens of thousands that would historically spawn each year. Since 1979, the number and biomass of *H. huso* entering the Ural has exceeded those entering the Volga (Khodorevskaya *et al.*, 1997).

Catches of *H. huso* in Kazakhstan in the early 1930s did not exceed 1000 tonnes per year; after the 1962 moratorium at sea, this species was harvested in the Ural River at a rate of about 400–600 tonnes per year (Khodorevskaya *et al.*, 2009), peaking at over 750 tonnes in the mid-1960s (Doukakis *et al.*, 2010). However, the spawning stock in this river decreased since 1987, with the annual average catch not exceeding 50 tonnes (Khodorevskaya *et al.*, 2009), and decreasing to 27 tonnes in 2007 (Mamina, 1995 and unpublished data of the Research and Production Center of Fish Industry, cited in Doukakis *et al.*, 2010).

Threats: Overfishing was reported to be a threat in Kazakhstan. In an analysis of the Ural River, Doukakis *et al.* (2010) advised that harvest rates were 4–5 times higher than rates needed to sustain population abundance. It was noted that the fishery was dominated by first-time spawners, and recommended that yield would be maximised by raising minimum size limits and reducing illegal take of subadults. Other possible threats specific to Kazakhstan were reported to be pollution from oil fields, especially the Tengiz oil field (Sagers, 1994, cited in TRAFFIC International *et al.*, 2000), and radioactive contamination from a nuclear reactor (Dumont, 1995).

Trade: Kazakhstan published export quotas for *Huso huso* caviar and meat most years 2000-2010; no quotas were published prior to 2000 and no quota was communicated to the CITES Secretariat 2011-2015 (Table 2). CITES annual reports have been submitted by Kazakhstan for the period 2005-2010, but not for the years 2004 and 2011-2013. Kazakhstan has not consistently reported on caviar exports to either UNEP-WCMC or the CITES Secretariat.

Table 2: Export quotas for wild-sourced *Huso huso* from Kazakhstan, 2000–2015. No quotas were published prior to 2000 and 2011-2015. From 2008 onwards, the quota year runs from 1 March to 28 February of the following year.

Quota	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
caviar (kg)	8300	4200	5956	8531.78	2360	2555§	-	1700§	1700§	0#	1500§
meat (kg)	56,000	27,900	25,650	52,100	52,100	27,000§	-	21,900	21,400§	0#	15,900§

§ Excludes quota allocated to Turkmenistan. * no export quota communicated to the Secretariat.

According to data from the CITES Trade Database, direct exports in *H. husa* from Kazakhstan 2004-2013 consisted of 3036 kg wild-sourced caviar and 19,084 kg meat reported by Kazakhstan, and 7267.51 kg caviar as reported by countries of import (Table 3). Trade levels appear to have been within quota in most years 2004-2013, according to both Kazakhstan and countries of import, except for 2005, where according to importers the quota appears to have been exceeded.

Table 3: Direct exports of *Huso huso* from Kazakhstan, 2004-2013. Values rounded to two decimals.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
caviar (kg)	I	P	Exporter											
			Importer				0.22	1.2	1.26		0.17		0.11	2.97
	W	P	Exporter											
			Importer				0.5							0.5
		T	Exporter	693.09			949.55	949.79	443.7					3036.13
			Importer	209	4602.6	198.93	530.49	1286.35	436.51	3.63				7267.51
meat (kg)	I	T	Exporter											
			Importer									2		2
	W	T	Exporter			15,000	4084							19,084
			Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Indirect trade in *H. huso* originating in Kazakhstan 2004-2013 comprised of caviar (kg) traded primarily for commercial purposes (Table 4).

Table 4: Indirect exports of *Huso huso* originating in Kazakhstan, 2004-2013. All trade was in caviar (kg). Values rounded to two decimals. No trade was recorded for 2011-2013.

Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	Total
C	T	Exporter						0.35		0.35
		Importer						1.5		1.5
I	P	Exporter								
		Importer			0.33			0.05		0.38
R	T	Exporter								
		Importer		274						274
W	P	Exporter								
		Importer			0.13					0.13
	T	Exporter	153.72	1506.25	959.15	31.62	1245.03	60.57	217.95	4174.28
		Importer	107.36	574.94	847.84	19.39	1118.91	20.66	3.83	2692.93
	-	Exporter		7						7
		Importer								

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Management: Kazakhstan was reported to have put in place a total ban on sturgeon fishing in 2010 (Anon., 2010, cited in Sharov, 2011; M. Pourkazemi, *pers. comm.* to UNEP-WCMC, 2011), with the exception of harvesting for controlled reproduction and restocking programmes (J. Geßner, *pers. comm.* to UNEP-WCMC, 2015). The Sturgeon Management Authority of the Russian Federation reported that the Caspian littoral countries, including Kazakhstan, had not carried out any commercial catch of sturgeons in 2014, and that all Parties to the Commission on Aquatic Bioresources [including

Kazakhstan] would not be carrying out any commercial catch of sturgeons in the Caspian Sea in 2015 and 2016, and that export quotas for caviar and other sturgeon products would not be established (AC28 Doc. 16.3).

According to FAO (2009), the most important fisheries laws in Kazakhstan were the "Law on Protection, Recovery and Use of Wild Life" and the "Law on Specially Protected Natural Areas". The Ministerial Decree No. 493 of 29 April 2004 No. 493 "regulations on the sales of sturgeon caviar, produced in Kazakhstan", was reported to have been issued to control trade of sturgeon caviar and prevent its illegal turnover (FAO, 2009).

Patrols were previously reported to be undertaken in the Ural–Caspian to curtail poaching and protect valuable species during the spawning migration (FAO, 2009). During 2008 inspections, more than 3500 cases of fisheries violations (not limited to *H. huso*) were detected; 2475 kg of sturgeon and 6.5 kg of caviar were seized (FAO, 2009). It was unclear whether enforcement effort was consistent throughout countries of the Ural-Caspian.

Two hatcheries, Uralo-Atyrau and Atyurau, were reported to have been operational since 1998, with annual release of *H. huso* rising from 300 000 to over two million fingerlings per year between 1998 and 2002 (CITES Secretariat, 2003). A total of approximately 13.2 million *H. huso* fingerlings were reported to have been produced at the Atyrau hatchery during the period 1998–2009 (Timirkhanov *et al*., 2010).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Kazakhstan as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

The CITES Authority of Kazakhstan was consulted as part of this review in 2015, but no response was received at the time of writing.

Russian Federation

Distribution: *H. huso* was reported to occur in the Caspian Sea, the Volga River and the Sea of Azov (Kottelat and Freyhof, 2007). The species was believed to no longer use the Terek and Sulak Rivers (Khodorevskaya *et al.,* 1997).

Population status and trends: The population of the Volga River was considered the largest population of *H. huso* in the Russian Federation (Vlasenko, 1990 in TRAFFIC International *et al.* 2000). Natural reproduction of the species in the Volga River was however reported to have declined following construction of the Volgograd dam (Khodorevskaya *et al.,* 1997; Ivanov *et al.,* 1999; Gesner *et al.,* 2010; Veshchev *et al*., 2012), with the amount of spawners harvested annually decreasing from 630 tonnes in 1991 to 140 tonnes in 1995 (Ivanov *et al.,* 1999). Similarly, Lepilina *et al*. (2010, cited in Khodorevskaya and Kalmykov, 2014) reported a 50 per cent decrease in the total biomass of spawners over 15 years, and Khodorevskaya *et al.* (2009) indicating that spawning numbers decreased from 26 000 during 1961–1965 to 2800 during 1996–2002. In 2000, it was reported that fishermen had been unable to find enough sturgeon to meet their quotas (Speer *et al.,* 2000). During 2003–2007, Veshchev *et al*. (2008, cited in Khodorevskaya and Kalmykov, 2014) suggested that on average just 500 *H. huso* reached the spawning grounds, and Khodorevskaya and Kalmykov (2014) reported that in 2009–2010 the yield to the fishery from natural reproduction was just 30 tonnes (compared to 1200 tonnes prior to the construction of the Volgograd dam).

In an effort to counter declines, the Soviet Union initiated an extensive stocking programme in the early 1950s that, together with strict control of the fishery, maintained harvests (Vecsei *et al.,* 2002). Declines in natural reproduction placed increasing reliance on artificial reproduction, yet by the mid-1990s,

several hatcheries along the Volga were reported to have closed due to lack of funding and insufficient numbers of broodstock, which led to "a severe decline in the number of young fish released and an inability to compensate for the lack of natural reproduction" (Graham and Murphy, 2007).

A long-term study of the natural reproduction of sturgeons in the lower reaches of the Volga (Veshchev *et al.*, 2012) found that during 1991–2000 – when overall reproductive success depended mainly on hydrological conditions, not the number of breeders reaching the spawning grounds – the estimated annual abundance of *H. huso* larvae migrating downstream averaged 2.5 million during both high- and medium-water periods, whereas during 2001–2009 – when overall numbers of spawning sturgeon and spring-flood flow volume were both notably lower – the equivalent estimates were 1.3 and 0.6 million larvae respectively.

Observations of individuals from the Volga revealed that spawning migrations were comprised almost entirely of first-time spawners (Vecsei *et al.,* 2002). Populations in the Sea of Azov were believed to consist entirely of hatchery-reared fish (Volovik *et al.,* 1993, cited in TRAFFIC International *et al.,* 2000).

Threats: Uncontrolled overfishing and poaching were reportedly major threats to sturgeons in the northern part of the Caspian Sea basin (Khodorevskaya *et al.,* 1997). TRAFFIC International *et al.* (2000) noted that, from 1992 to 1997, about 50 per cent of the Russian sturgeon catches in the Caspian Sea comprised *H. huso,* however, the illegal harvest was thought to be six to ten times greater than the legal catch (see also Khodorevskaya and Kalmykov, 2014), with illegal fisheries mainly consumed domestically.

Water pollution was also a threat (Dumont, 1995; Khodorevskaya *et al.,* 1997), as was the change in salinity due to decreasing water levels, which were considered a particular threat to juveniles (Khodorevskaya *et al.,* 1997)

Trade: The Russian Federation published export quotas for *Huso huso* caviar, canned products and meat for a number of years 1997-2015; no quota was published in 1997 and 2011-2015 (Table 5). With the exception of 2006 and 2013, all CITES annual reports have been submitted by the Russian Federation for the period 2004-2013.

Table 5: Export quotas for wild-sourced *Huso huso* from the Russian Federation, 1997–2015. No export quotas were published 2011-2015. From 2008 onwards, the quota year runs from 1 March to 28 February of the following year.

	Quota	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Azov Sea	caviar (kg)												0+	0+	0+
	meat (kg)												0+	0+	0+
Caspian Sea	caviar (kg)				3500	3800*	1800*	2500*	800	600		700	700	0+	700
	meat (kg)						5000		2800				9000	0+	9000
	canned products (kg)				13,000	14,000*			5000	20,000					
Not specified	caviar (kg)		5000	3000 600** 6000^	700**										
	meat (kg)				700**										

* Includes part of the previous years' quota.

** re-exports from Azerbaijan.

+ No quota communicated to the CITES Secretariat.

^re-export from Kazakhstan.

According to data from the CITES Trade Database, direct exports in *H. husa* from the Russian Federation 2004-2013 consisted of caviar and live eggs, primarily traded for commercial purposes (Table 6). Trade levels appear to have been within quota all years according to both the Russian Federation

and countries of import, except in 2009, were a zero quota had been applied, as no quota had been communicated to the CITES Secretariat.

Table 6: Direct exports of *Huso huso* from the Russian Federation, 2004-2013. Values rounded to two decimals.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
caviar (kg)	I	P	Exporter											
			Importer	1.18	5.09	9.35	1.60	1.17	2.76	0.61	1.02	0.42	0.66	23.86
		T	Exporter											
			Importer		5.45									5.45
		-	Exporter											
			Importer	1.5										1.5
	W	P	Exporter											
			Importer	0.11	2.14	3.29	0.92							6.46
		T	Exporter											
			Importer	258.13	0.23									258.35
eggs (live) (kg)	C	T	Exporter											
			Importer					20	20					40

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Indirect trade in *H. husa* originating in the Russian Federation 2004-2013 consisted of caviar, extract and live specimens, primarily traded for commercial purposes (Table 7).

Table 7: Indirect exports of *Huso huso* originating in the Russian Federation, 2004-2013. Values rounded to two decimals.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2013	Total
caviar (kg)	I	P	Exporter								
			Importer			1.5	0.11	1.15	0.68	0.48	3.93
		-	Exporter								
			Importer		34						34
	W	P	Exporter								
			Importer		0.50	1	0.79				2.29
		T	Exporter	576.57	0.52						577.09
			Importer	487.06	0.52						487.58
		-	Exporter	35.24							35.24
			Importer								
extract	C	T	Exporter								
			Importer							2850	2850
live	O	T	Exporter	10							10
			Importer	10							10

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

No trade in *H. huso* originating in the Russian Federation has been recorded within the Caviar Database.

Management: Fishing for sturgeon in the Sea of Azov was reported to have been banned since 1986, with the exception of capture for breeding (Sokolov, 2010) and commercial harvesting of *H. huso* was prohibited in the Russian Federation since 2000 (T.V. Vasilyeva, *in litt* to UNEP-WCMC, 2011; Khodorevskaya and Kalmykov, 2014). The CITES Secretariat encouraged the Russian Federation to submit to the Secretariat a notification concerning their ban on commercial sturgeon fishing in the Caspian Sea (IISD, 2011; AC25 Summary Record). The Sturgeon Management Authority of the Russian Federation reported that all Caspian littoral countries, including the Russian Federation, had not carried out any commercial catch of sturgeons in 2014, and that all Parties to the Commission on Aquatic Bioresources [including the Russian Federation] would not be carrying out any commercial catch of sturgeons in the Caspian Sea in 2015 and 2016, and that export quotas for caviar and other sturgeon products would not be established (AC28 Doc. 16.3).

It was also reported that the Russian Federation had approved a state sub-programme addressing the conservation of sturgeons and that consideration of ways to improve trawl surveys of the Caspian were planned, with a possible workshop to be held in the Russian Federation in 2016 (AC28 Doc. 16.3).

In tackling poaching and illegal trade, the Russian government was previously reported to be bringing the caviar trade under State control and stiffening punishments for poachers (Faulconbridge, 2008). At an international sturgeon enforcement workshop, Vorobjiov (2006) reported that measures taken by authorities had led to substantial decrease of illegal trade level. It was reported that in 2013, a special article had been introduced into the criminal code relating to the catch of valuable fish species including sturgeon (AC28 Doc. 16.3).

The Russian Federation was reported to produce seven sturgeon taxa by aquaculture, including *H. huso* (Bronzi, 2007). The country operated 250 sturgeon farms producing 3.5 tons of caviar (2400 tons of meat) during the period 2005–2006, predicted to rise to 12-15 tons of caviar (3000–4500 tons of meat) in the subsequent 5–10 years (Bronzi, 2007).

According to Khodorevskaya and Kalmykov (2014), ten sturgeon hatcheries continued to function in the Russian part of the Caspian basin, releasing 2.5 million juveniles of *H. huso* during 2006–2010 (compared with 11.3 million during 1997–2000). However, catch quotas for hatcheries have reportedly increased annually for all sturgeon species in the Volga-Caspian Basin (e.g. from 47.4 tons in 2007 to 126.1 tons in 2009) to ensure sufficient adults (particularly females) were caught for breeding (Khodorevskaya and Kalmykov, 2014). In the period 2007-2009 catch zone, fishing gear and fishing were also reportedly increased, however this drastically reduced the number of spawners that reached their natural spawning grounds, so that few females, particularly for *H. huso*, were reported to reach their spawning grounds (Khodorevskaya and Kalmykov, 2014). As consequence, "preparation of spawners [...] by lines of net in coastal areas of the northern part of the Caspian Sea" was banned in 2010, and capture of spawners was concentrated in just two fishing grounds "under constant observation of fishing inspection" (Khodorevskaya and Kalmykov, 2014).

Through its national legislation project, the CITES Secretariat categorised the national legislation in the Russian Federation as "legislation that is believed generally to meet the requirements for implementation of CITES".

The CITES Authority of Russia was consulted as part of this review in 2015, but no response was received at the time of writing.

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Hippocampus kuda: Viet Nam

A. Summary

VIET NAM: Suspension valid from: 2 May 2013.	Nationally Endangered with 'significant' declines reported. By-catch and localised overharvest were considered threats, and illegal trade also reported. High levels of international trade 2005-2013, particularly in 2005-2007. Viet Nam published a quota of 77,000 and 60,000 captive-bred specimens in 2011 and 2012, respectively. The country confirmed that trade in wild specimens would not be permitted until a non-detriment finding had been made. Progress in addressing a number of the AC recommendations has been achieved; an Action Plan lays out the next steps required to work towards non-detriment-findings. Support to assist Viet Nam in complying with the remaining AC recommendations may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Hippocampus kuda (Spotted Seahorse) was proposed for inclusion in the RST at AC23 (April 2008) on the basis of trade data provided in document AC23 Doc. 8.5, but was not retained. The AC decided to include *H. kuda* in the Workshop on Non Detriment Findings to be held in 2008 (AC23 WG1 Doc. 1). The species was included in the RST at AC24 (April 2009) (AC24 Summary Record). At AC25 (July 2011), a response had been received from Viet Nam (AC25 Doc. 9.5). At AC25, 25 range States, including Viet Nam, were retained (AC25 Summary Record). At AC26 (March 2012), *H. kuda* was categorised as of "possible concern" for Viet Nam (AC26 Summary Record), and recommendations were formulated (Table 1). The Secretariat and AC Chair determined that recommendations a) to d) had not been complied with (SC63 Doc. 14), and the SC agreed to suspend trade covered by Article IV of the Convention for *H. kuda* from Viet Nam (SC63 Summary Record). The suspension entered into force on 30/04/2013 (Notification No. 2013/13).

Table 1: Recommendations by the Animals Committee

Range State	Recommendations and deadlines resulting from AC
Viet Nam	**Within 90 days the Management Authority should:** a) Clarify what legal protection is afforded to the species and inform the Secretariat whether the present policy allows for export of wild-taken specimens; b) If there is no intent to allow export of wild specimens of this species for the foreseeable future establish a zero export quota which should be communicated to the Parties by the Secretariat; or c) If trade is to be allowed, provide a justification for, and details of, the scientific basis by which it has been established that export is not detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3, taking into account any potential unregulated and/or illegal off-take and trade; d) Initiate measures to ensure that descriptions on all CITES permits are standardized such that trade is only permitted at **species level** and that, in compliance with Resolution Conf. 12.3 , XIV e), trade ceases to be reported or permitted at higher taxon levels (genus or family).

Within 2 years the Management Authority should:

e) If trade in wild specimens is anticipated in the future conduct a study of the life history parameters of *H. kuda*, including growth rate, size and age at maturity, average annual reproductive output and annual survivorship of different age classes and make the results available to the Secretariat. Based on the outcome of this study, model population responses to exploitation pressures in order to review and revise export quotas; and if they *intend* to trade the species in the future,

f) Provide to the Secretariat a justification for, and details of, the scientific basis by which it has been established that any proposed export quota for wild specimens of *H. kuda* will not be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3;

g) If trade in wild specimens is anticipated in the future, establish a detailed monitoring program of landings of *Hippocampus kuda* at representative sites, taking into account different gear types and means of extraction and recording catch and effort metrics and provide a report to the Secretariat.

B. Species characteristics

Taxonomic note: Several taxonomic revisions of the genus *Hippocampus* have taken place, including revisions to *H. kuda* (Lourie *et al.*, 1999, 2004). All non-spiny *Hippocampus* specimens used to be traded under the name *H. kuda*, prior to the isolation of *H. barbouri*, *H. borboniensis*, *H. comes*, *H. fisheri*, *H. fuscus* and *H. kelloggi* as distinct species (Lourie *et al.*, 2004). *H. kuda* was nevertheless considered a species complex with unresolved taxonomy (Koldewey and Martin-Smith, 2010) and further research into the relationships among the species involved was considered to be required (Lourie *et al.*, 2004; Scales, 2010). Vincent *et al.* (2011) noted the likelihood of misidentification of various species in trade.

Biology: *Hippocampus kuda* occurs in coastal bays and lagoons, containing seagrass, floating weeds (Kuiter and Debelius, 1994, cited in Lourie *et al.*, 2004), macroalgae (*Caulerpa* sp.) and eelgrass (*Enhalus acroroides*) (Choo and Liew, 2003), on sandy and muddy sea floors (Lee, 1983; Nguyen and Do, 1996, cited in Lourie *et al.*, 2004). The species can tolerate brackish water and is found in estuaries, lower reaches of rivers and harbours (Kuiter, 2000). *H. kuda* also uses artificial habitats, such as fishnets and cages (Choo and Liew, 2003). The species has been recorded in depths of up to 50 m (Lourie *et al.*, 1999) but is most commonly found in depths of up to 8 m (Lourie, 2001).

Reports of the species' maximum size varied between 15 cm (Kuiter, 2000) and 20.2 cm (Murugan *et al.*, 2011). Sexual maturity is reached at seven to eight months of age (Lourie *et al.*, 1999), at a size of 8-14 cm (S. Job *pers. comm.,* cited in Jones, 2005; Jiaxin, 1990). The breeding season is year round and *H. kuda* may breed repeatedly each year (Jones, 2005). The maximum brood size reported is 1751 young (Okuzawa *et al.*, 2008), with the maximum annual reproductive output estimated at over 29,000 young (Foster and Vincent, 2004). However, the reproductive rates of *Hippocampus* spp. were considered to be limited, due to the combination of small brood sizes and lengthy parental care (Lourie *et al.*, 1999). *H. kuda* specimens have been held in aquaria for more than two years, however the life expectancy is not yet known (Jones, 2005).

C. Country review

Viet Nam

Distribution: The global distribution of *H. kuda* was reported to range from the Central Indian Ocean (near India and Sri Lanka), eastern Indian Ocean, Coral Sea, Tasman Sea (including New Zealand), Banda Sea, Java Sea, Celebes Sea, South China Sea, Philippine Sea, to the Central Pacific (Lourie *et al.*, 1999). However, the use of the name *H. kuda* for a wide range of smooth species was thought to have led to the perception of a wide distribution, although most *Hippocampus* spp. were

considered to be highly localised (Kuiter, 2000). Individual populations of *H. kuda* were described as typically relatively isolated (Lourie *et al.*, 2005).

In Viet Nam, *H. kuda* was reported to occur along the country's coastline, from north to south (T. M. Vuong, *in litt*. to UNEP-WCMC, 2011). It was reported to range from Da Nang [major port city in central Viet Nam], Ba Ria-Vung Tau [province in south-eastern Viet Nam] to Kien Giang [province in south-western Viet Nam], including Con Dao [island district in southern Viet Nam] (Institute for Science and Technology of Vietnam, 2007).

Population status and trends: Global population numbers for the species were considered to be unknown (Aylesworth, 2014). The discontinuous distribution of suitable habitat was considered to be a barrier to dispersal for *H. kuda* (Lourie *et al.*, 2005). Landings of *Hippocampus* spp. in Viet Nam showed geographic variations, with fewer caught in the north of Viet Nam than in the south, although it was unclear whether this was due to variations in abundance or fishing method used (Giles *et al.*, 2006). Observed by-catch in landings of the Cua Be fishing fleet (Central Coast) between 1996 and 2000 consisted of 4 per cent *H. kuda*; this area was then reported to be a major source for *Hippocampus* specimens (Meeuwig *et al.*, 2006). The species was also confirmed from areas in Phu Quoc with active trawling and compressor diving fishing areas (Project Seahorse, 2015).

Surveys of fisheries were considered to be the most appropriate approach to gain further information on the distribution and status of seahorses in Viet Nam (Project Seahorse, 2015), as despite high diving effort, targeted underwater surveys observed very few specimens in the wild (Stocks, 2014). Loh and Thien (2014) found seahorses to be scarce in Viet Nam, and noted that they were primarily found at Hon Ong and Phu Quoc Islands.

Phu Quoc waters were thought to contain some of the highest seahorse stocks in Viet Nam (Stocks, 2014), particularly the eastern coast of the island, which is not included in the Phu Quoc Marine Protected Area (Loh and Thien, 2014). In Phu Quoc, the species was reported to be primarily caught in trawl nets (91% of catches) and by compressor divers (~6% of catches) – both as the targeted to seahorses and as incidental catch (Project Seahorse, 2015). In this area alone, the annual catch of this species was estimated at 63 250 individuals (Project Seahorse, 2015). The mean height of specimens caught in these fisheries was noted to be above 11.5cm and above the height at 50% of maturity for males, which was found to be 10.6cm in Phu Quoc (Project Seahorse, 2015).

H. kuda was categorised as Vulnerable globally in the IUCN Red List, on the basis of suspected declines of at least 30 per cent due to targeted fishing, by-catch and habitat degradation (Aylesworth, 2014). Despite the lack of information on the proportion of the *H. kuda* population harvested for trade, reports of declines were considered to be of concern and the levels of trade were believed to negatively affect wild populations of this species (Aylesworth, 2014).

In the Viet Nam Red Data Book, *H. kuda* was categorised as Endangered (Institute for Science and Technology of Vietnam, 2007) and as Endangered in the "list of endangered aquatic species in Vietnam which need protection, reproduction and development" (Decision No. 82/2008/QD-BNN) issued by the Ministry of Agriculture (T. M. Vuong, *pers. comm.* to CITES Secretariat, 2011). The *H. kuda* population was reported to have declined significantly (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015; Project Seahorse, 2015). Further reductions at a rate of 20 per cent per year expected and the species was therefore considered to be in risk of depletion in the near future (Institute for Science and Technology of Vietnam, 2007). As *Hippocampus* spp. in Viet Nam was reported to be mainly obtained though by-catch, declines in numbers were thought to reflect general fish declines (Vincent, 1996).

The biological characteristics of *Hippocampus* spp. were considered likely to render them vulnerable to over-fishing and unsuitable for intense harvesting (Vincent, 1996; Foster and Vincent, 2004; Aylesworth,

2014). These characteristics were also thought to explain the substantial declines in *Hippocampus* populations observed by fishermen and traders worldwide (Vincent, 1996), although Curtis *et al.* (2007) found that demersal fishing may not reduce numbers in all *Hippocampus* species and Martin-Smith and Vincent (2005) also observed fisheries-independent declines.

A clear understanding of life history and ecology was considered essential for the management of *Hippocampus* spp. (Curtis *et al.*, 2007), with robust monitoring required to assess conservation actions (Martin-Smith and Vincent, 2005).

Threats: *H. kuda* was considered valuable for traditional medicine purposes, curios and aquaria (Perry *et al.*, 2010). Direct exploitation, by-catch and habitat destruction were considered to be major threats globally to this species (Aylesworth, 2014) and other seahorses (Vincent, 1996). Aylesworth (2014) highlighted that despite international regulation of trade, levels of trade have not declined and noted that sub-national and illegal trade were expected to continue. Furthermore, pressures on particular populations or species for the live aquarium trade were considered substantial (Vincent *et al.*, 2011).

The Vietnamese CITES Management Authority (MA) (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015) considered direct harvest and by-catch to be the main threats to the species and also listed habitat destruction, pollution, with pressure through over-harvest for traditional medicine considered high. Non-selective trawling was considered to pose the greatest threat to *Hippocampus* spp. in Viet Nam, rather than trade, although *H. kuda* was noted to be one of the most widely encountered species in trade (Giles *et al.*, 2006). *Hippocampus* spp. by-catch was estimated at about 6.5 tonnes (2.3 million specimens) annually over five coastal provinces (Bac Lieu, Kien Giang, Binh Thuan, Ca Mau and Khanh Hoa) (Giles *et al.*, 2006); *H. kuda* was included in the by-catch from shrimp trawling (Meeuwig *et al.*, 2006). *Hippocampus* spp. were also reported to be collected via compressor diving (K. S. Truong *pers. comm.,* cited in Morgan and Panes, 2008), however only small numbers and mainly *H. kuda* were reported to be hand-caught (Giles *et al.*, 2006).

Vincent (1996) considered the destruction of habitat a possibly larger threat than trade.

Trade: The genus *Hippocampus* was listed in CITES Appendix II on 15 May 2004. Viet Nam submitted CITES annual reports for all years 2004-2013. Viet Nam published export quotas for *Hippocampus kuda* in 2011 (77,000 live seahorses) and 2012 (60,000 live seahorses). No export quotas have been published for this species/country combination since 2012. Trade levels appear to have been within quota for both 2011 and 2012 according to both Viet Nam and countries of import.

According to data from the CITES Trade Database, direct trade in *H. kuda* from Viet Nam 2004-2013 comprised 44,860 live wild-sourced seahorses as reported by Viet Nam and 86,128 live wild-sourced individuals as reported by countries of import (Table 2). However, trade in wild-sourced specimens declined over this period, with trade remaining below 1000 seahorses 2011-2013. Viet Nam also reported exports of 367,240 live specimens and 26,940 bodies that were born in captivity (source 'F'), and 37, 270 live captive-bred specimens (source 'C'). Countries of import reported 8471 bodies and 229,540 live specimens (source 'F') and 19,519 (source 'C').

Table 2: Direct exports of *Hippocampus kuda* from Viet Nam, 2004-2013. All trade was for commercial purposes.

Term	Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
bodies	F	Exporter						26,900	40				26,940
		Importer				71	8250	150					8471
	W	Exporter											
		Importer						8800					8800
live	C	Exporter			37,270								37,270
		Importer			16,443	1530	100	462	184	800			19,519

Term	Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
	F	Exporter			20,550	59,020	74,150	46,030	54,000	65,270	37,980	10,240	367,240
		Importer			150	27,862	42,208	30,006	35,009	42,051	37,012	15,242	229,540
	I	Exporter											
		Importer				17	735	10		55		6	823
	W	Exporter		14,350	28,710			400	1000	400			44,860
		Importer		2902	36,538	26,917	9520	7094	1182	950	925	100	86,128

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *H. kuda* originating in Viet Nam 2004-2013 comprised primarily of live wild-sourced seahorses trade for commercial purposes (Table 3).

Table 3: Indirect exports of *Hippocampus kuda* originating in Viet Nam, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
bodies	W	T	Exporter			20								20
			Importer											
fingerlings	F	T	Exporter											
			Importer									14		14
live	C	T	Exporter											
			Importer			100								100
	F	T	Exporter				50		35	95	80	23	69	352
			Importer				50	155		90	40		140	475
	W	T	Exporter			143	223	346	98	53	151	50	17	1081
			Importer			550	86	21	15	80	110	60		922
specimens	W	S	Exporter											
			Importer								20			20

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Trade in *Hippocampus* spp. has also been reported at the genus level, making the monitoring of trade in individual species difficult. Furthermore, the mixed reporting of units (specimens and weight (kg)) makes it difficult to estimate the total number of specimens in international trade.

The CITES MA of Viet Nam (T. M. Vuong, *in litt*. to UNEP-WCMC, 2015) provided data on trade in *H. kuda* 2006-2013 (Table 4) and confirmed that *H. kuda* exports from Viet Nam were legally sourced from captive-breeding facilities and denoted as source 'F'. The Management Authority noted that the discrepancy between their data and that held within the CITES Trade Database may be due to some of their records having been mislaid, or to permits having been cancelled (T. M. Vuong, *pers. comm*. to UNEP-WCMC, 2011b).

Table 4: Exports of *Hippocampus kuda*, 2006-2013, according to the CITES Management Authority of Viet Nam.

2006	2007	2008	2009	2010	2011	2012	2013
86,530	33,220	74,950	71,580	50,040	32,000	37,980	8850

Source: T.M. Vuong, *in litt*. to UNEP-WCMC, 2015.

Viet Nam was reported to be one of the top five producers of dried *Hippocampus* spp. in the world (Project Seahorse, unpubl. data, cited in Giles *et al.*, 2006). Vincent (1996) estimated the annual exports of dried *Hippocampus* spp. from Viet Nam to be five tonnes. While internal trade in "seahorse tonic" was reported to exist (CoP12 Prop. 37), the majority of specimens were exported into China, "generally through unofficial and unregulated channels" (Giles *et al.*, 2006). Information on the nature and size of the trade was considered insufficient (Giles *et al.*, 2006). The Vietnamese CITES Management Authority (T. M. Vuong, *in litt*. to UNEP-WCMC, 2011) noted that *H. kuda* "may be the most commonly found seahorse species in illegal trade in Vietnam".

It is worth noting that actual global trade in *Hippocampus* spp. was thought to be significantly higher than the legal reported trade (Nijman, 2010; Vincent *et al.*, 2011).

Management: A voluntary minimum height limit of 10 cm for international trade in wild *Hippocampus* specimens was recommended by the Animals Committee at its 20th meeting (CITES Notification No. 2004/033; CITES Notification No. 2005/014). This size limit was believed to afford partial protection to *H. kuda*, given that it's size at maturity ranges from just below 10 cm to above 10 cm (Foster and Vincent, 2005). Curtis and Vincent (2008) recommended a precautionary minimum size limit of 14 cm, pending socioeconomic and management evaluation. No export or re-export permits are required for up to four dead specimens of *Hippocampus* spp. per person for personal or household effects, in accordance with CITES Resolution Conf. 13.7. (Rev. CoP 16).

In 2015, the CITES Ministry Authority (MA) of Viet Nam confirmed that non-detriment findings (NDF) had not been conducted and that export of wild-sourced seahorses was not permitted until such time that NDFs had been completed (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015).

No species-specific monitoring program was in place, except those on the monitoring of biodiversity in general (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015). Harvest of *Hippocampus* spp. within the core zones of the five Marine Protected Areas was reported to be prohibited, with plans to increase the number of MPAs to 15 in 2015 (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015). The species was reported be covered within the following legislation:

- Government Decree No 82/2006/ND-CP of August 10, 2006: Management of export, import, re-export and introduction from the sea, transit, breeding;
- MARD Decision No 82/2008/QD-BNN of July 17, 2008: list of endangered aquatic species in Vietnam which need protection, reproduction and development (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015)**;** and
- Circular No 59/2010/TT-BNNPTNT of October 19, 2010: Ministry of Agriculture and Rural Development (MARD) on Promulgating Lists of wild animals and plants under CITES management (T.M. Vuong, *in litt*. to UNEP-WCMC, 2011).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Viet Nam as "legislation that is believed generally to meet the requirements for implementation of CITES".

Recognizing that the CITES trade suspension for *H. kuda* from Viet Nam stemmed from a combination of lack of information on the species, management capacity and difficulties with the regulation of trade, Project Seahorse (2015) supported Viet Nam through a range of activities aimed at implementing CITES for *Hippocampus* spp. These activities included a training workshop (Nha Trang, 2013) on the making of NDFs for seahorses (AC27 Inf. Doc. 9), which was supported through a revised NDF framework[13] and identification materials for trade in seahorse specimens (Project Seahorse, 2015). The workshop participants were reported to agree that the making of NDFs and a reopening of trade would only be possible if further research and management action would be undertaken first (Project Seahorse, 2015). A number of action points were reported to have been agreed at the workshop (Table 5), which directly link to the recommendations laid out by the Animals Committee (Project Seahorse, 2015). The most critical outstanding action point was considered to be national fisheries and trade surveys, although it was noted that not all required funding had yet been secured (Project Seahorse, 2015). This, combined with a monitoring program for this genus was considered to be the next steps required for Viet Nam to work towards being able to make NDF's for *H. kuda* (Project Seahorse, 2015).

[13] www.projectseahorse.org/NDF

Project Seahorse (2015) considered the following information to be required before any defensible NDFs could be made by Viet Nam:

- Further clarification on the distribution of seahorses in the waters of Viet Nam, through fisheries surveys
- Clarification on how existing marine management in the country applies of seahorses, for example the extent of protection afforded to seahorse by Marine Protected Areas or any fisheries legislation.
- Clarification on the trends in catch-per-unit efforts, by seahorse species

They recommended that seahorses be monitored at key landing sites, three times per year (Project Seahorse, 2015).

Giles *et al.* (2006) believed that regulation of international trade would have little impact on reducing seahorse by-catch or domestic trade in Viet Nam. Similarly, Aylesworth (2014) believed that management action should focus on the identification of the distribution and conservation status of wild populations to identify areas in which to restrict the use of non-selective fishing gear, considering that the majority of seahorses entering trade may originate from by-catch. Yasué *et al.* (2015) too highlighted that the banning of seahorse exports may be less effective for the conservation of these taxa than a focus on the sustainable management of the trade with buy-in of management steps at local level.

Koldewey and Martin-Smith (2010) reported that demand for *Hippocampus* spp. could not yet be met though aquaculture, but noted that *H. kuda* was among the seven species accounting for more than 99 per cent of international trade in live captive-bred specimens. Survival of *H. kuda* to maturity in captive breeding operations was reported to range between 30-70 per cent (Koldewey and Martin-Smith, 2010); the rearing of young to adulthood and until they reproduce was considered difficult (Lourie *et al.*, 1999).

The CITES MA pointed out in that *H. kuda* was legally sourced from captive breeding facilities (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015), which were considered to be in line with Conf. Res. 10.16 (T. M. Vuong, *pers. comm.* to CITES Secretariat, 2011). *H. kuda*, *H. comes* and *H. spinosissimus* were reported to be bred in five facilities in Khanh Hoa province since 2006; mortality rates of 60-64% were reported, with approximately 100 wild individuals collected as breeding stock annually (T.M. Vuong, *in litt*. to UNEP-WCMC, 2015).

Table 5: Comparison of AC recommendations and actions taken and planned by Viet Nam, with support from Project Seahorse.

Recommendations and deadlines resulting from AC	Actions identified by workshop participants (Project Seahorse, 2015)	Status (Project Seahorse, 2015)
a) Clarify what legal protection is afforded to the species and inform the Secretariat whether the present policy allows for export of wild-taken specimens;	**Spatial and temporal protection for seahorses in VN** - Share various maps, including on current/proposed MPAs, distribution of seahorse habitat, current spatial and temporal fishing closures - Request relevant stakeholders to indicate spatial distribution of *H. kuda* - Map *H. kuda* distribution in Viet Nam, based on information above and map overlay of *H. kuda* distributions and MPAs (and other spatial management) (also covers Recommendation f) - Work on publicizing iSeahorse (citizen science site for seahorses) (also covers Recommendation g)	- Status of mapping unclear - Progress on understanding of seahorse distribution in VN - iSeahorse publicizing under way
b) If there is no intent to allow export of wild specimens of this species for the foreseeable future establish a zero export quota which should be communicated to the Parties by the Secretariat; or		
c) If trade is to be allowed, provide a justification for, and details of, the scientific basis by which it has been established that export is not detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3, taking into account any potential unregulated and/or illegal off-take and trade;	**NDF framework for seahorses (also covers Recommendation f)** - Project Seahorse to revise NDF framework and CITES Viet Nam to consider - Review revised NDF framework - Finalise NDF for AC27	- NDF framework revised by PS, but unclear whether translated into Vietnamese - Unclear whether NDFs have been made by VN for seahorses
d) Initiate measures to ensure that descriptions on all CITES permits are standardized such that trade is only permitted at **species level** and that, in compliance with Resolution Conf. 12.3 , XIV e), trade ceases to be reported or permitted at higher taxon levels (genus or family).		
e) If trade in wild specimens is anticipated in the future conduct a study of the life history parameters of *H. kuda*, including growth rate, size and age at maturity, average annual reproductive output and annual survivorship of different age classes and make the results available to the Secretariat. Based on the outcome of this study, model population responses to exploitation pressures in order to review and revise export quotas; and if they *intend* to trade the species in the future	**Biological research – in situ** - Develop proposal and find funding for seahorse research in strategic areas of VN - Execute field work in strategic areas of VN (possibly Phu Quoc, Con Dao or Phu Yen)	- Funding secured by Project Seahorse (PS) for research in Phu Quoc; research was carried out in 2014 – results being prepared
f) Provide to the Secretariat a justification for, and details of, the scientific basis by which it has been established that any proposed export quota for wild specimens of *H. kuda* will not be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3;	**Biological research – *ex situ* (also covers Recommendation e)** - Develop list of questions for industry on matters on wild populations - Coordinate with industry to collate biological information on wild populations, based on accessing broodstock (where/how captured, what sizes, times of year, reproductive state, brood size, etc.)	- Questions developed by PS and sent to VN; not clear whether VN sent to industry - VN Dept. of Fisheries will collect data from breeding operations
g) If trade in wild specimens is anticipated in the future, establish a detailed monitoring program of landings of Hippocampus kuda at representative sites, taking into account different gear types and means of extraction and recording catch and effort metrics and provide a report to the Secretariat.	**Research on trade**: - Develop proposal for trade research in Viet Nam, secure funding, carry out field research, analyse data and write up results **Fisheries research** - Explore whether seahorses can be added to existing fisheries dependent monitoring in VN - Develop and send landing sampling protocol - Use sampling protocol to document seahorse landing in Phu Quoc and two other islands in Vung Tau - Prepare report on seahorse landing, by time and space	- PS developed proposal for research - Portion of funds for research secured - Remaining funding required to start research and analysis

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Pandinus imperator: Benin, Togo

A. Summary

BENIN: Suspension valid from: 2 May 2013	Status in Benin is unclear; considered abundant by exporters but reported to be threatened by overcollection by some authors. Possibly erroneous use of source codes and one author expressing doubts that either captive breeding or ranching are properly developed in the country. Relatively high quotas and levels of trade from the country prior to the import suspension (in total over 35,000 ranched specimens reported in trade by Benin and countries of import 2004-2012). It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
TOGO: Suspension valid from: 2 May 2013	Status in Togo unclear, but apparently common. High quotas and levels of trade in ranched and wild-sourced specimens from the country reported prior to the import suspension (with quotas apparently exceeded). It is unclear if the country intend to export the species or address the AC recommendations. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At AC15 (July 1999), concerns were expressed about claims that the species was ranched and about the lack of protection or management of the species throughout its range (AC15 Proceedings). It was concluded that its status in the main exporting countries (Ghana, Togo and Benin) was "completely unknown" and that it required "further investigation" (WCMC *et al.*, 1999). Ivan Ineich (French National Natural History Museum) undertook two missions, one in 2004 to Benin and Togo and another in 2006 to Ghana and Togo, to assess the captive breeding, ranching and trade of reptiles and *Pandinus imperator* (Emperor Scorpion) from those countries and prepared a report for the CITES Secretariat based on his findings (Ineich, 2006).

Pandinus imperator (Emperor Scorpion) was discussed at AC23 (April 2008) on the basis of trade data provided in document AC23 Doc. 8.5. Inclusion of the species in the RST, however, was postponed due to the fact that the abovementioned report on the trade in this species was promised to be published shortly. Since this report was not available at AC24, the species was included in the RST as an urgent case (AC24 Summary Record). At AC25 (July 2011), eight range States, including Benin and Togo were retained in the Review. At AC26 (March 2012), *P. imperator* was categorised as of "urgent concern" for Benin, and of "possible concern" for Togo, and recommendations were formulated as summarised in Table 1 (AC26 WG7 Doc. 1). The Secretariat and AC Chair determined at SC63 (March 2013) that recommendations a) to h) had not been complied (SC63 Doc. 14) and the Standing Committee agreed to suspend trade covered by Article IV of the Convention for *P. imperator* from Benin and Togo (SC63 Summary Record). The suspensions entered into force on 2 May 2013 (Notification No. 2013/13).

Table 1: Recommendations by the Animals Committee (AC26 WG7 Doc.1)

Range State	Recommendations and deadlines resulting from AC26 (March 2012)
Benin	**Within 90 days the Management Authority should:** a) Provide the Secretariat with available information on the status, distribution and abundance of *Pandinus imperator* in Benin; b) Provide a justification and the scientific basis by which the current export quotas of 1,000 (source W) and 7,000 (source R) live specimens were established and considered not to be detrimental to the survival of the species in the wild and in compliance with Article IV, paragraphs 2 (a) and 3; c) Provide the CITES Secretariat with detailed information on the control measures used to differentiate between ranched and wild-caught specimens to ensure that the authorized exports of ranched specimens are not augmented by mis-declared wild specimens; and d) As a precautionary measure, impose a size restriction of a maximum total length of 10 cm (or maximum body length, excluding the tail, of 5 cm) for live specimens of source code R to be exported and which should be published with the annual export quota. **Within 120 days the Management Authority should:** e) Provide full details of all known ranching facilities in Benin for this species including (but not restricted to): i) Name and address of all known ranching facilities in Benin and date established. ii) A full description of the facilities at each ranching operation including: number and size of enclosures (indoor and outdoor) available for holding, or production of, *Pandinus imperator*, and associated outbuildings. iii) A description of the husbandry practices employed at each ranching operation including how specimens are kept and feeding arrangements. iv) Annual production levels for last five years for each facility v) Mortality rates of both the juveniles and wild collected specimens f) Confirm whether any specimens are released into the wild and if so, provide full details of the number of specimens released, their life stage, the location they are released into, and information on the success of these releases. g) Provide details of how the ranching facilities and collection and/or release of wild specimens are monitored and regulated, and provide information to demonstrate how the impact of ranching operations on the wild population is assessed. h) If the Management Authority is unable to demonstrate, to the satisfaction of the Secretariat in consultation with the Chairman of the Animals Committee, that the current quotas are not detrimental to the survival of the species and in compliance with Article IV, paragraphs 2 (a) and 3 , the Management Authority should establish an interim conservative export quota for this species of zero (source W) and 1,500 (source R) specimens (or lower) and provide details to the Secretariat. **Within 2 years the Management Authority should:** i) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Benin); j) Establish revised annual export quotas (if appropriate) for wild taken and ranched specimens based on the results of the assessment; and k) provide a justification for, and explanation of, the scientific basis by which it is determined that these quotas would not be detrimental to the survival of the species in the wild and is in compliance with Article IV, paragraphs 2 (a) and 3.
Togo	**Within 90 days, the Management Authority should:** a) Inform the Secretariat that Togo will maintain an annual export quota at a level not higher than the current published export quota (1000 wild and 16,500 ranched specimens) and as a precautionary measure, maintain the current size restriction of a maximum total length of 10 cm (or maximum body length, excluding the tail, of 5 cm) of live specimens of source code R to be exported which should be published with the export quota; and b) Provide the CITES Secretariat with detailed information on the control measures used to differentiate between ranched and wild-caught specimens to ensure that the authorized exports of ranched specimens are not augmented by mis-declared wild specimens. **Within 2 years the Management Authority should:** c) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Togo); d) Establish revised annual export quotas (if appropriate) for wild taken and ranched specimens based on the results of the assessment; and e) Provide a justification for, and explanation of, the scientific basis by which it is determined that these quota(s) would not be detrimental to the survival of the species in the wild and are in compliance with Article IV, paragraphs 2 (a) and 3.

B. Species characteristics

Taxonomic note: In 2003, Lourenço & Cloudsley-Thompson (1996) was adopted as the CITES standard reference for scorpions of the genus *Pandinus*. The authors noted that the taxonomic position of the 20-25 species within the genus *Pandinus* was not fully established (Lourenço & Cloudsley-Thompson, 1996). The genus *Pandinus* was later reported to include 24 species and two subspecies (Prendini *et al.*, 2003). Distinguishing *Pandinus* species was considered to be "extraordinarily difficult even for an expert"; for example, *P. gambiensis* and *P. dictator* were considered to be similar large *Pandinus* species from West Africa, with reliable identification only possible by their patterns of tarsan spines and trichobothrial hairs on their pincers or chelae (CoP9 Prop. 64).

Biology: *P. imperator* is a large scorpion that reaches lengths of up to 18 to 20 cm and can exceed 60 g in weight (Polis, 1990; Brownell and Polis, 2001). It was reported to live in groups of up to 15 or 20 individuals, in burrows under termite mounds and under stones or logs (CoP9 Prop. 64; Ineich, 2006; Lourenço & Cloudsley-Thompson, 1999; Mahsberg, 1990; Prendini *et al.*, 2003; Prendini, 2004) and is mainly diurnal (Toye, 1970; Hadley, 1974; Prendini, 2004).

Scorpion embryos undergo a viviparous development and, once born, the young climb onto the mother's back to continue development and moult for the first time (Polis, 1990). According to Brownell and Polis (2001), the time from insemination to birth was typically around one year, but can be up to around three years. Litter sizes of 19 (Brownell and Polis, 2001) and 32 (Larrouy *et al.*, 1973; Lourenço, 2000) have been reported. Ineich (2006) noted that exporters in Togo reported a production of 5 to 42 juveniles per female, with an average of 20. Mahsberg (1990) highlighted the importance of family cohesion to the survival of the young and considered the species to be an "intermediate subsocial scorpion".

Age to maturity was reported to be at least 2.5 years and the species' longevity was reported to be more than 10 years (Brownell and Polis, 2001). Ineich (2006) stated that in captivity, sexual maturity could be achieved in one year, that captive-bred specimens reach a marketable size at the age of 8 to 10 months and that the adult size is reached at around three years of age.

Polis (1990) noted that several scorpion species do not follow the r-selection life strategy typical of terrestrial invertebrates, resembling instead long-lived vertebrates in several aspects of their life history (i.e. K-selection strategy), "probably because of the stability and predictability of their subterranean habitat".

Distribution: The species was reported to occur in tropical West Africa and to inhabit woodland, savannah and rainforest habitats (CoP9 Prop. 64; Casper, 1985; Mahsberg, 1990; Prendini, 2004; Toye, 1970). Its occurrence was confirmed from Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, Togo and Nigeria (Lourenço and Cloudsley-Thompson, 1996). Records of the species from Bioko (Equatorial Guinea), Ethiopia, Somalia and Senegal reported by Lamoral and Reynders (1975) were considered to probably be based on misidentification with other *Pandinus* species (Lourenço and Cloudsley-Thompson, 1996).

Population status and trends: Lourenço and Cloudsley-Thompson (1996) noted that "little research has been carried out on *Pandinus* spp." More recently, Prendini (*pers. comm.* to UNEP-WCMC, 2011) noted that very little was known about the conservation status of *P. imperator*, but the author believed that is was "in a bad state". In 2015, Prendini (*pers. comm.* to UNEP-WCMC, 2015) noted that the population trend trajectory could be assumed not to be improving. The species was thought to be declining, at least locally, due to overharvest (CoP9 Prop. 64). However, Prendini *et al.* (2003) and Prendini (2004) suggested that the decline in the species may be partially alleviated by its listing in CITES Appendix.

Threats: Wild populations were considered to be threatened by the exotic pet trade and by habitat destruction through deforestation (Prendini, 2004; Prendini *et al.*, 2003). *P. imperator* was considered to be highly vulnerable to over-collecting for the pet trade as it is a highly social animal with small brood sizes, lengthy gestation periods and age to sexual maturity, parental care, and generally low reproductive output (CoP9 Prop. 64; Lourenço, 2004; Prendini *et al.*, 2003; Sissom, 1994). Its habit of living in groups under termite mounds was considered to make them easy to locate and to facilitate capture of several individuals at once (CoP9 Prop. 64; Ineich, 2006). Ineich (2006) noted that *P. imperator* was exported "in huge quantities" from West Africa.

Overview of trade and management: *P. imperator* was listed in CITES Appendix II on 16 February 1995.

Whilst Prendini (2004) noted that "this species is readily obtained from pet stores in Europe, the USA and Japan", one hobbyist, Taylor (2010), pointed out that "it is widely accepted and acknowledged that most of the Emperors *Pandinus imperator* in captivity today are wild caught imports". Prendini (*pers. comm.* to UNEP-WCMC, 2015) also noted that *P. imperator* was difficult to breed in captivity and pointed out that most specimens in trade may be of wild origin. However, other sources reported that *P. imperator* was reported to be relatively easy to rear (CoP9 Prop. 64; Brownell & Polis, 2001; Ineich, 2006; Sissom, 1994; Taylor, 2010) and breed (CoP9 Prop. 64; Ineich, 2006; Taylor, 2010). Prendini *et al.* (2003) and Prendini (2004) suggested that captive-bred specimens may be increasingly preferred in the pet trade.

No species-specific management and population monitoring appears to be in place in the species' range states (Prendini, *pers. comm.* to UNEP-WCMC, 2015).

C. Country reviews

Benin

Distribution: Occurrence in Benin reported by Ineich (2006), Lourenço and Cloudsley-Thompson (1996), Prendini (2004), Vignoli and Prendini (2008) and Vignoli, Tchibozo and Prendini (2006). The map in Lourenço and Cloudsley-Thompson (1996) suggested its distribution to be confined to the southern half of the country, while the map in Prendini (2004) suggested a wider distribution throughout the country. Vignoli and Prendini (2008) reported the species from the Department of Atakora, in the north-west of Benin.

Population status and trends: Ineich (2006) noted that exporters considered the species to be very abundant in Benin. No further information on the population status and trends could be located.

Threats: Ineich (2006) expressed concerns regarding the sustainability of the trade from Benin. No additional information appears to be available on specific threats to the species in the country.

Trade: Benin published export quotas for *Pandinus imperator* every year 1997-2012 (Table 2). No quotas were published since 2012. Trade levels appear to have been within quota all years according to both Benin and countries of import.

Table 2: Export quotas for *Pandinus imperator* from Benin, 1997-2015. No quotas have been published since 2012.

Source	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
R	34,000	34,000	30,000	25,000	42,781	22,000	16,000	16,000	10,000	15,000	10,000	10,000	10,000	7000	7000	7000
W														1000	1000	1000

With the exception of 2006 and 2013, all CITES annual reported have been submitted by Benin for the period 2004-2013. According to data from the CITES Trade Database, direct exports in *P. imperator* from Benin 2004-2013 consisted of 1650 live wild-sourced specimens and 35,745 ranched specimens traded reported by Benin and 1350 wild-sourced, 39,766 ranched and 150 captive-bred (source C) as reported by the countries of import (Table 3). Trade was predominantly reported as ranched (source 'R'). Trade in ranched specimens declined over this period, with trade in wild-sourced specimens emerging in recent years.

Table 3: Direct exports of *Pandinus imperator* from Benin, 2004-2012. All trade was in live specimens. No trade was reported in 2013.

Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
C	T	Exporter										
		Importer				100	50					150
I	-	Exporter										
		Importer	300									300
R	T	Exporter	8260	7800		9500	5900	1950	1425	910		35,745
		Importer	7205	6104	10677	5805	4165	2135	1875		1800	39,766
W	T	Exporter								950	700	1650
		Importer			200					150	1000	1350

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade in *P. imperator* originating in Benin 2004-2013 consisted of live specimens traded primarily for commercial purposes (Table 4).

Table 4: Indirect exports of *Pandinus imperator* originating in Benin, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported in 2010.

Source	Reported by	2004	2005	2006	2007	2008	2009	2011	2012	2013	Total
R	Exporter		100	350	4140	25			2900		7515
	Importer	500		580	2300	25			200	150	3755
W	Exporter				515		25		1897		2437
	Importer							500	929		1429

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: Whilst the species was reportedly 'produced' by captive breeding in Benin by exporters in the country, Ineich (2006) considered this impossible in view of the facilities he observed during his visit to the country in 2004. The scorpions were held in outdoor enclosures covered with vegetation and surrounded by a cement wall, and experienced high mortality levels (Ineich, 2006). Ineich (2006) expressed concerns about the erroneous use of source codes in Benin. He considered that while ranching was possible and desirable, there remained a lot of work to do to train both exporters and local CITES authorities in this regard (Ineich, 2006). The author also noted that he could not evaluate any subsequent progress as he was unable to visit again in 2006 (Ineich, 2006).

Ineich (2006) stated that "In Benin, quotas are fixed on an empirical basis by the CITES authorities by combining the production capacities of all facilities (according to the number of breeding females) and the potential trade needs and adding 20 per cent for the fraction of juveniles having to be released back into the wild (ranching) and 10 per cent for egg and juvenile mortality. Those quotas are then distributed amongst exporters according to their breeding stock. No reliable scientific information is available for the CITES-listed species traded from Benin; considerable work remains to be done and the country will never succeed without outside help. We can therefore be concerned about the significant 2006 quota increases made by this country." Ineich (2006) also noted that exporters in Benin recognised that the export quotas were excessive and should be reduced and adjusted to the reality of the trade.

Ineich (2006) considered that Benin could not guarantee the sustainability of the trade in scorpions and that the situation in the country did not show signs of improvement. Consequently, Ineich (2006)

recommended that a ranching system similar to that in Togo should be established. No evidence of changes in management have been reported since Ineich (2006).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Benin as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

The CITES Authority of Benin was consulted as part of this review, but they reported that they had insufficient information available to contribute to the review; hey noted that they would compile information and respond later (Kakpo *in litt*. to UNEP-WCMC, 2015). However, no further information was received at the time of writing.

Togo

Distribution: Occurrence in Togo reported by Kovarik and Kovařík (2002), Lourenço and Cloudsley-Thompson (1996) and Prendini (2004). The map in Lourenço and Cloudsley-Thompson (1996) suggested its range was confined to the southern half of the country, while Prendini (2004) suggested a wider distribution throughout the country. The CITES Management Authority (MA) of Togo (*in litt*. to UNEP-WCMC, 2011) reported the occurrence of the species throughout the country.

Population status and trends: Ineich (2006) visited a ranching site in southern Togo, which he described as a highly anthropized area of savannah and cultivated land along a 25 km stretch of road. On the basis of his observations in this site, he considered *P. imperator* concentrations to be probably high and able to withstand collection for trade in ranched specimens. Ineich (2006) estimated that in such habitats, two to three collectors could collect 20-30 gravid females per day. The CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) noted that *P. imperator* was common throughout Togo, particularly in savannah and cultivated areas.

Threats: Ineich (2006) reported that the species had no local threats and that it was not collected for purposes other than ranching. No further information on threats to the species in Togo was located.

Trade: Togo published export quotas for *Pandinus imperator* every year 1997-2012 (Table 5). No quotas were published since 2012. Trade levels appear to have exceeded quotas in most years according to importers and in 2007 (ranched), 2011 (wild-sourced and ranched) and 2012 (wild-sourced and ranched) according to Togo.

Table 5: Export quotas for *Pandinus imperator* from Togo, 1997-2015. No quotas have been published since 2012.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
(R)	10,000	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	16,500	16,500	16,500	16,500
(W)	1000	1000	1000*	1000*	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

*quota published for live specimens.

With the exception of 2006 and 2013, all CITES annual reported have been submitted by Togo for the period 2004-2013. According to data from the CITES Trade Database, direct trade in *P. imperator* from Togo 2004-2013 comprised 107,868 live ranched specimens and 5000 wild-sourced specimens reported by Togo, and 59,710 wild-sourced, 237,257 ranched and 3000 (unreported source) as reported by countries of import (Table 6).

Table 6: Direct exports of *Pandinus imperator* from Togo 2004-2013. All trade was in live specimens traded for commercial purposes.

Source	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
I	Exporter											
	Importer										800	800
R	Exporter	8750	12970		13630	11969	10504	7245	22830	19970		107868
	Importer	23575	21175	31287	21790	16300	13893	28606	22394	34650	23587	237257
U	Exporter											
	Importer		1800		1200							3000
W	Exporter		300		500	500			1700	2000		5000
	Importer	23000	16301	1300	1590	1119	200		10900	4750	550	59710

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

Indirect trade in *P. imperator* originating in Togo 2004-2013 consisted of live specimens traded primarily for commercial purposes (Table 7).

Table 7: Indirect exports of *Pandinus imperator* originating in Togo 2004-2013. All trade was in live specimens.

Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
C	T	Exporter					100			50	65		215
		Importer	75	600						25		40	740
	Z	Exporter											
		Importer									5		5
O	T	Exporter											
		Importer								50			50
R	P	Exporter		2									2
		Importer		2									2
	Q	Exporter		8					2	2			12
		Importer		8						4			12
	T	Exporter	2731	1690	4697	1425	2328	693	1265	7735	4465	2648	29677
		Importer	2968	4170	3623	1977	2370	298	498	2864	7166	3675	29609
W	Q	Exporter					9	2					11
		Importer					4	4					8
	T	Exporter	20	49	25		14		100	350	1385		1943
		Importer	612	1280	100		14		100	350	710		3166
-	T	Exporter											
		Importer			10								10

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

Management: The CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) reported that the collection of *P. imperator* was carried out under the supervision of staff from the CITES MA with the help of specialist collectors; collection was reported to take place at set times, which was considered to provide a precise picture over time of the *P. imperator* populations in the exploited areas. Wild scorpions were reported to be collected from the maritime region and from the plateau between Lomé and Atkpamé (southern third of the country), while gravid females or females with young for ranching were reported to be collected from ranching areas defined by the CITES MA within the maritime region, around 30 km from Lomé (CITES Management Authority of Togo, *in litt*. to UNEP-WCMC, 2011). The country's annual collection quota for ranching purposes was reported to be around 1000 wild-sourced pregnant females or females with young from the ranching zones during two annual collections (CITES MA of Togo, *in litt*. to UNEP-WCMC, 2011).

The CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) reported that the species had been ranched in Togo for many years. Ineich (2006) reported that in Togo, the animals were kept with much more care than in Benin and noted that, following the recommendations he made in 2004, most exporters from Togo developed a system of small plastic boxes for each gravid female and/or its offspring. Indeed, the CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) confirmed that specimens were kept in plastic trays containing a relatively thick layer of substrate, hiding places and a shallow tray of water, and that they

were fed mice or insects and sometimes minced meat or pieces of lung. In case of suspicious deaths, the remaining scorpions were isolated, the substrate removed and the trays disinfected (CITES Management Authority of Togo, *in litt*. to UNEP-WCMC, 2011). Ineich (2006) noted some confusion in one facility regarding the use of source codes W, C and R.

Ineich (2006) considered the 2006 quota of 13,500 ranched specimens to be adequate in relation to the potential production and international demand, but noted that quotas were calculated on the basis of the needs of producers, with very little input from reliable biological information. However, the CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) reported that the country did not exceed its annual quotas of 1000 wild-sourced individuals for ranching and 16,500 ranched individuals for export.

The formula used to determine the quota per farm was reported to be "Q = (y x n) – t – c", i.e. quota = [20 (litter size per female) x total number of pregnant females] – 10 per cent (juvenile mortality) – 10 per cent (individuals returned to the collection site). The quotas of each farm were reported to be added up to obtain the national quota (CITES Management Authority of Togo, *in litt*. to UNEP-WCMC, 2011).

The CITES MA of Togo (*in litt*. to UNEP-WCMC, 2011) suggested that the source W quota would be maintained and that the maximum size for source R individuals be fixed at 10 cm. The CITES Authority was consulted again in 2015 as part of this review, but no response was received at the time of writing.

Through its national legislation project, the CITES Secretariat categorised the national legislation in Togo as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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Strombus gigas: Grenada, Haiti

A. Summary

GRENADA: Suspension valid from: 12 May 2006	No stock assessment has been undertaken and no estimates of abundance are available in Grenada. Grenada reported exports of 12,973 kg from 2009-2011, following the trade suspension in 2006. Overfishing considered a major cause for declines within the species range, and its biology was considered to make it particularly vulnerable to overfishing. A large majority of the harvest was reported to consist of juveniles. Management measures in Grenada include restrictions on size and weight and a closed fishing season, but implementation of a management plan is lacking and enforcement problems were identified. However, the country reported that it intends to carry out an independent, national fisheries *S. gigas* stock assessment. Until further information is provided in line with the draft format and guidelines for NDF assessments for *S. gigas* proposed at AC28, incorporating the status of stocks and addressing the AC recommendations and considering recommendations arising from the 2nd CFMC/OSPESCA/WECAFC/CRFM working group meeting on Queen Conch, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
HAITI: Suspension valid from: 29 September 2003	Surveys in 2007 and 2009 found low densities, with populations composed mostly of juveniles. Stocks appeared to be declining. Densities of mature adults were considered below the critical level required to ensure successful reproduction, however, recruitment of juveniles was reportedly still taking place. Harvests continue, but increasingly involve banned methods (hookah and scuba); no accurate catch data is available. Overfishing (including poaching) was considered to be a major cause of population decline exacerbated by degradation of habitat. From 2005-2007, wild-sourced trade in *S. gigas* products was reported, following the suspension in 2006. Illegal trade, evidenced through seizure data, persists. Although some progress on addressing the AC recommendations has been made and management measures are in place, enforcement of fishing regulations was reported to be very poor or non-existent. The cost of implementation and enforcement was considered to be a significant issue for Haiti. Haiti stated a national moratorium was established, but it is unclear what this covers or the date of its entry. International trade appears to be occurring in the absence of a clear non-detriment finding. Until further information is provided in line with the draft format and guidelines for NDF assessments for *S. gigas* proposed at AC28, incorporating the status of stocks and addressing the AC recommendations and considering recommendations arising from the 2nd CFMC/OSPESCA/WECAFC/CRFM working group meeting on Queen Conch, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Strombus gigas (Queen Conch) was selected for Phase V of the RST (following previous selection in Phase III of the RST) at AC17 (August 2001) (AC17 Summary Record) "largely to provide an update on the current situation in some countries" (SC46 Doc. 16.2). At AC19 (August 2003), *S. gigas* was categorised as of "urgent concern" for three range States, including Haiti, and of "possible concern" for 13 range States, including Grenada (AC19 Summary Record), and recommendations were formulated (Table 1). In an intersessional decision, the Secretariat determined, after consultation with the AC Chairman, that Haiti did not implement the recommended actions within the agreed time-frame, and the SC agreed to suspend trade covered by Article IV of the Convention for *S. gigas* from Haiti (Notification No. 2003/057). The suspension entered into force on 29 September 2003 (Notification No. 2003/057). At its 54th meeting, the SC noted that Grenada had not responded to the Secretariat, and agreed to suspend imports of specimens of *S. gigas* from Grenada (SC54 Doc. 42). The suspension entered into force on 12 May 2006 (Notification No. 2006/034).

Table 1: Recommendations by the Animals Committee (AC 19 Summary Record)

Range State	Recommendations and deadlines resulting from AC19 (August 2003)
Grenada	**Within 12 months:** a) Establish within 12 months cautious catch and export quotas, communicate these to the Secretariat and provide information for the basis of these quotas. b) Establish a standardized minimum meat weight that corresponds to adult specimens of unprocessed and processed meat. c) Design and implement a fishery data collection programme. This programme is designed to collect catch and effort data and shall include 1.) a system of permits and licenses for commercial harvesters and exporters, and 2.) regular reporting of landing and export data. d) Design and implement a long-term population monitoring programme for the designated commercial fishing areas. This programme should provide reliable estimates of adult and juveniles densities within commercial fishing areas, at a minimum. **Within 24 months:** a) Apply adaptive management procedures to ensure that further decisions about harvesting and management of the species concerned will be based on the monitoring of the impact of previous harvesting and other factors. b) Give serious consideration to the recommendations of the June 2003 IQCI meeting and commit specifically to those recommendations on i) development of a regional management regime, including cooperative quota setting, ii) law enforcement capacity and effectiveness iii) population assessments and other research relating to the management of Queen Conch
Haiti	**1) Within 6 months:** a) Establish a voluntary moratorium on the commercial harvest (excluding legal harvest in territorial waters of the Parties concerned) and the international trade of *Strombus gigas* **within four weeks** of this recommendation being made (upon communication by the AC to the Parties); b) Identify areas to be designated for commercial fisheries; c) Undertake density studies in these designated areas; d) Identify and analyse trends in available landing data; e) Establish a standardized minimum meat weight that corresponds to adult specimens of unprocessed and processed meat; f) Based on the results of the density studies, the analysis of landing trends and standardized meat weight establish cautious catch and export quotas in consultation with the Secretariat; g) Demonstrate that items 2a) and 2b) below, have been initiated. **2) Within 18 months:**

a) design and implement a fishery data collection programme. This programme is designed to collect catch and effort data and shall include 1.) a system of permits and licenses for commercial harvesters and exporters, and 2.) regular reporting of landing and export data;

b) Design and implement a long-term population monitoring programme for the designated commercial fishing areas. This programme should provide reliable estimates of adult and juveniles densities within commercial fishing areas, at a minimum.

c) Give serious consideration to the recommendations of the June 2003 IQCI meeting and commit specifically to those recommendations on:

   i) development of a regional management regime, including cooperative quota setting,

   ii) law enforcement capacity and effectiveness

   iii) population assessments and other research relating to the management of Queen Conch.

B. Species characteristics

Biology: *S. gigas* is a commercially valuable large marine gastropod. It usually occurs in clear and shallow waters associated with sandy, mixed algal substrates and seagrass beds, but can occur on gravel, coral rubble and smooth hard coral rock (Randall, 1964). Copulation and spawning occur during the warmer months of the year with females producing egg masses in clean coral sand, which emerge as larvae after approximately five days (Brownell and Stevely, 1981). *S. gigas* become sexually mature after 3 to 3.5 years, but they are of marketable size by 2.5 years (Brownell and Stevely, 1981). They are particularly vulnerable to overfishing because of their slow growth, their occurrence in shallow waters, their late maturation and the tendency to aggregate in shallow waters for spawning (Theile, 2005).

Aldana Aranda *et al.* (2014) observed two distinct reproductive strategies, with significant differences in the timing and intensity of reproductively active stages between populations from the western and eastern sides of the Caribbean region. *S. gigas* reproduction was reported to be negligible at densities below 50 per hectare (Stoner and Ray-Culp, 2000).

Distribution: *S. gigas* is a large, herbivorous marine gastropod that is found throughout the Caribbean, with Bermuda at the edge of its most northern distribution, Panama at the south-western edge, and Barbados at the eastern edge (Prada and Appeldoorn, 2014). The species was reported to be found in the territorial waters of 36 countries and dependent territories in the Caribbean region (Theile, 2005).

Population status and trends: Populations were thought to be declining throughout its range, due to overfishing and illegal harvesting (Theile, 2002; TRAFFIC Europe and IUCN, 2003), with the species being particularly susceptible to over-harvesting due to its sedentary nature (Aiken *et al.*, 1999, 2006). Fishing pressure was reported to have led to population declines, stock collapses and consequently the total or temporary closure of the fishery in a number of range States (AC19 Doc 8.3). Recovery of *S. gigas* populations, following harvesting to below critical thresholds for reproduction (56 ind./ha) (Stoner and Ray-Culp, 2000), was found to be very slow in Florida and other Caribbean regions, and releases of hatchery-reared *S. gigas* in Florida, Mexico, Puerto Rico and the Bahamas were not found to be successful in rebuilding stocks (Stoner *et al.*, 2011).

In the 1970s, surveys undertaken reported adult densities of several hundred to more than a thousand individuals per hectare (TRAFFIC Europe and IUCN, 2003). In 2003, densities were reported as considerably lower in most areas and relatively high adult densities were only reported from a few locations (TRAFFIC Europe and IUCN, 2003). Prada and Appeldoorn (2014) noted that due to the biological complexity of the species, the lack of time series of catch and effort data, the lack of regular species surveys and illegal fishing, the status of *S. gigas* at the regional level could not be estimated well.

In 1994, the IUCN assessed the species as Commercially Threatened, a category no longer used, and it has not been subsequently assessed (AC26/PC 20 Doc. 7).

Threats: The species is of significant economic importance in the Caribbean (Theile, 2005; Aldana Aranda *et al.*, 2014), and is used for subsistence, artisanal and commercial fishing throughout its range (Theile, 2002; TRAFFIC Europe and IUCN, 2003; Theile, 2005; Aiken *et al.*, 2006). It was reported to be harvested primarily for meat, while its shells are used for jewellery and tourist curios (TRAFFIC Europe and IUCN, 2003). There is also a small trade in *S. gigas* pearls (TRAFFIC Europe and IUCN, 2003) and, more recently, the conch opercula, which is largely imported by China and is believed to be used in traditional Chinese medicine (Prada and Appeldoorn, 2014).

Specific threats to *S. gigas* populations in the wider Caribbean were outlined by TRAFFIC Europe and IUCN (2003), with overfishing considered the major cause for declines. Various types of habitat degradation were also thought to play an important role in population declines, affecting particularly juveniles, which require undisturbed nursery sites for their development (TRAFFIC Europe and IUCN, 2003). Human activities, including development and pollution, were noted to impact on nursery sites and were thought to likely lead to mortality and a reduction of recruitment of juveniles, hence reducing population growth (TRAFFIC Europe and IUCN, 2003).

Alleged high levels of illegally harvested and traded *S. gigas* meat were noted (Theile, 2005) and a large number of *S. gigas* were reported to be lost to poachers annually (FAO, 2007). Illegal trade in *S. gigas* shells has been documented. In particular, an 18-month-long investigation conducted jointly by Environment Canada and the U.S. Fish and Wildlife Service found evidence of a smuggling ring unlawfully importing and exporting *S. gigas* (TRAFFIC, 2008b). It was reported that the operation was responsible for importing and exporting 119 978 kg of *S. gigas* meat from several Caribbean and South American countries to and from the USA and Canada between 2004 and 2006 (TRAFFIC, 2008b).

Overview of trade and management: *S. gigas* was listed in CITES Appendix II on 11 June 1992. Most range States were reported to have implemented some measures to manage the national *S. gigas* fishery (Theile, 2001). These measures were reported to include minimum size restrictions, closed seasons and areas, and gear restrictions (FAO Western Central Atlantic Fishery Commission, 2015).

Aldana Aranda *et al.* (2014) recommended that a closed season for the Caribbean should incorporate June to September, at minimum, to provide protection for spawners. Stoner *et al.* (2012) evaluated *S. gigas* maturity with respect to shell length and shell lip thickness and recommended that, while relationships between age, maturity and shell lip thickness vary geographically, to ensure sustainable management, a minimum thickness of 15 mm is required. A review of fishing regulations indicated that immature individuals are harvested legally in most Caribbean nations (Stoner *et al.*, 2012). Following a *S. gigas* expert workshop in 2012, a precautionary density value of 100 adults per hectare within the spawning area was recommended for successful reproduction (Prada and Appeldoorn, 2014).

In 2012, recommendations were made by the Queen Conch Expert Workshop (Miami, United States of America, 22-24 May 2012), which were reviewed, amended and validated by the Working Group on Queen Conch of the Caribbean Fisheries Management Council (CFMC), the Organización del Sector Pesquero y Acuícola del Istmo Centroamericano (OSPESCA), Organization for the Fisheries and Aquaculture Sector of the Central American Isthmus, the Western Central Atlantic Fishery Commission (WECAFC) and the Caribbean Regional Fisheries Mechanism (CRFM), and expressed in the Declaration of Panama City (25 October 2012) (AC28 Doc. 19). Recommendations were made in relation to survey data, CPUE data, catch data, stock assessment models, harvest strategy, precautionary controls, fishing

capacity, ecosystem management, decision-making process, enforcement and compliance, and CITES (CFMC/OSPESCA/WECAFC/CRFM, 2012).

At CITES CoP16 (March 2013), Document CoP16 Doc. 65 (Rev.1) on regional cooperation on the management of and trade in *S. gigas* was discussed and the Parties adopted Decisions 16.141 to 16.148, directed to range States of *S. gigas* and the CITES Secretariat, which are to be implemented between CoP16 (2013) and CoP17 (in 2016) (AC28 Inf. 30). These eight Decisions include: the implementation of recommendations expressed in the Panama Declaration; development of national, sub-regional and regional plans for the management and conservation of *S. gigas*; development, agreement and adoption of conversion factors; exploration of ways to enhance the traceability of specimens in international trade; and development and implementation of joint research programmes to support the making of non-detriment findings and public education programmes (CoP16 Decisions).

At AC27 (May 2014), the final report of the Fifteenth Session of the Western Central Atlantic Fishery Commission (WECAFC) was submitted, which included a recommendation "on the management and conservation of Queen Conch in the WECAFC area", which supported the implementation of the eight CoP16 Decisions, as well as recognising that illegal, unreported and unregulated fishing for queen conch remains a major problem in the region. In addition, it requested that the AC include trade in *S. gigas* in its regular work, which was formally noted (AC28 Inf. 30). Also at AC27, CITES trade data for *S. gigas* for 2002-2012 was analysed and it was concluded that trade met the high volumes, sharp increases and high variability criteria. Nevertheless, it was decided not to select the species within the Significant Trade Review process (AC28 Inf. 30).

From 18 to 20 November 2014, in Panama City, the second meeting of the Queen Conch Working Group was held, which resulted in the establishment of new regional measures for the conservation and management of *S. gigas*. The Working Group reviewed the draft species management and conservation plan, which contained short-term and long-term measures to contribute to the sustainability of the population (AC28 Inf. 30).

According to AC28 Doc.19, measures adopted by the Working Group included:

- A complete regional ban between the months of June and September.
- Restrictions on the possession of *S. gigas* during the ban.
- Improvement of catch and effort monitoring programmes.
- Limiting the minimum shell size.
- Granting of licences to fisherman, processors and exporters.
- Adoption of a regulation for independent diving and promotion of the use of free diving.
- Prohibition of the use of destructive fishing methods.
- Organisation of surveillance patrols.
- Use of satellite monitoring systems.
- Development of education and awareness-raising programmes for different users.
- Adoption of mechanisms and protocols at the sub-regional level to assess *S. gigas*.
- Identification and protection of breeding and growing areas.
- Limiting catching through areas established by national governments, and management and conservation plans at the national level.
- Definition of value chains.
- Development and implementation of a digital system for the entering of catch and effort data.
- Progressively incorporate co-management strategies.

It was noted that many of these measures are already applied at the national level by the majority of range States. The conclusions and draft recommendation from the Working Group will be reviewed by

the Scientific Advisory Group. A final set of regional management measures is expected to be adopted at the 16th session of the Western Central Atlantic Fishery Commission (WECAFC) in 2016 (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015). The meeting also updated the Terms of Reference of the Working Group and prepared a new work plan (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015).

A detailed report of the meeting was produced, which includes regional harmonised conversion factors for the various degrees of processing conch meat, and a format for non-detriment findings (NDFs) assessments (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015). The need for regionally harmonised terminology and conversion factors for *S. gigas* was identified at the first meeting of the CFMC/OSPESCA/WECAFC/CRFM working group on queen conch (October 2012), the 16th meeting of the CITES Conference of the Parties (March 2013), and the 15th session of the WECAFC Commission (March 2014). Based on data from nine countries, regional conversion factors for three standard and most commonly used processing grades were proposed (dirty meat: conversion factor 5.3; 50% clean: 7.9; and 100% clean: 13.2). These were agreed at the second meeting of the Queen Conch Working Group and countries and territories were requested to report as soon as possible to FAO in which processing grade their original data had been submitted or provide the historical data series on queen conch harvest in live weight according either to the national or the regional conversion factors (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015). A non-detriment finding (NDF) guideline format for queen conch producing and trading countries was also proposed, which consisted of ten categories, divided into 57 sub-categories. It was noted in the recommendations to the meeting that queen conch pearls and operculum should be included in the NDF evaluation and that the validity of the NDF should be for a one year period. Experts reached agreement on the proposed draft format and guidance for NDF assessments at the second meeting of the Queen Conch Working Group. Upon completion of the guidance document, it will be published on the CITES website for dissemination and application (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015).

During the 2014 workshop, it was noted by some participants that the market price of *S. gigas* had increased due to CITES trade limitations (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015).

In 2013, a project under the ACP Fish II Programme, specifically on *S. gigas*, was carried out (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015), which was intended to provide support to improve and harmonise the scientific approaches needed to inform sustainable management of *S. gigas* with a focus on five case studies, including Grenada and Haiti (MRAG, 2013; AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015). A regional review of the *S. gigas* fisheries was conducted, and a management options paper was developed. The paper provides recommendations for key elements of the harvest strategy, namely, data collection, data analysis and management. These recommendations, which are consistent with those of the 2012 Queen Conch Expert Workshop, were endorsed by the Caribbean Fisheries Forum and the CRFM Ministerial Council in 2014 (MRAG, 2013; AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015).

On 10th October 2014, the Caribbean Community Common Fisheries Policy (CCCFP) was confirmed as a regional policy document, which sets guidelines for collaboration and cooperation among CRFM member States (including Granada and Haiti) for the conservation, management and sustainable utilisation of shared marine resources (AC28 Inf. 30; FAO Western Central Atlantic Fishery Commission, 2015).

C. Country reviews

Grenada

Distribution: Large areas of sand and coral rubble that support *S. gigas* populations were reported within Grenada's total shelf area of 900 km² (MRAG, 2013). *S. gigas* are primary fished on the Eastern Coast of Grenada from Calliste, Woburn and Petite Bacaye and around the islands of the Grenadines from Hillsborough and Bogles (Harvey *et al.*, 2015).

Population status and trends: The Caribbean Fishery Management Council (CFMC) and the CARICOM Fisheries Resource Assessment and Management Program (CFRAMP) (CFMC and CFRAMP, 1999) reported that the greatest fishing efforts were in the northern parts of the island shelf and in the Grenada Grenadines, as populations in the southern parts of the shelf appear to be overfished and consist mainly of juveniles. MRAG (2013) reported that the main fishing grounds in 2013 occurred on the north, northeast and southern shelves. The majority of *S. gigas* exported from Grenada was reported to come from Calliste [southeast part of Grenada] and the northern island of Carriacou (MRAG, 2013).

Although biological and catch and effort data were collected in 1997 and 1998, inadequate data prevented a reliable stock assessment (CFMC and CFRAMP, 1999). According to MRAG (2013), no other stock assessments have been conducted in Grenada and no estimates of abundance are available (Appeldoorn and Baker, 2013; NMFS, 2014).

Annual production of the *S. gigas* fishery in Grenada was reported to be approximately 25 metric tonnes (mt) [25 000 kg] (MRAG, 2013; Prada and Appeldoorn, 2014) and a large majority of the harvest was reported to consist of juveniles (MRAG, 2013). A significant proportion of the total catch was reportedly unrecorded (estimated 70-80% of the recorded catch), meaning reliable estimates of fishing effort were not available (MRAG, 2013).

Available catch and effort data was applied to a simple biomass dynamic model, which showed a substantial decline from 1988-1995, after which landings remained low until 2012 (MRAG, 2013). The authors interpreted the reduced landings as overexploitation, resulting in a diversion of fishing effort elsewhere allowing the stocks to recover. However, the authors acknowledged that "there is little independent evidence to support this interpretation of the data". They also cautioned that there was considerable uncertainty in the assessment due to the lack of data (MRAG, 2013). If a precautionary approach is applied to the fisheries management, the authors noted that the fishery may still need to be limited to a very low level (MRAG, 2013).

Threats: *S. gigas* is harvested commercially on the island shelf of Grenada and of the Grenada Grenadines. It was reported to be harvested mainly using scuba gear and free-diving (MRAG, 2013). Around 44-55 boats are involved in the commercial fishery (MRAG, 2013). Meat was reported to be used extensively by local people and in the tourist industry, as well as an export product (MRAG, 2013). The level of exploitation is unknown, but it was suspected that the stock is fully exploited or overfished since 1989, however, MRAG (2013) noted that this was based on anecdotal information only.

Trade: Grenada has not published any export quotas for *S. gigas* 1999-2015 (Grenada became a CITES Party in 1999). With the exception of 2004, 2012 and 2013, all CITES annual reported have been submitted by Grenada for the period 2004-2013.

According to data from the CITES Trade Database, direct exports in *S. gigas* from Grenada 2004-2013 consisted primarily of wild-sourced meat traded for commercial purposes (Table 2). Grenada reported the export of 4377.8 kg of meat during the years 2009-2011, all following the entry into force of the trade suspension in 2006. However, no corresponding trade was reported by countries of import.

No indirect trade in *S. gigas* originating in Grenada was reported 2004-2013.

Table 2: Direct exports of *Strombus gigas* from Grenada, 2004-2013.

Term (unit)	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
meat (kg)	I	P	Exporter											
			Importer			11	3			44.654	26	8.5	7	100.154
		T	Exporter											
			Importer							12				12
	W	P	Exporter											
			Importer	1										1
		T	Exporter						497.3	1602.3	2278.2			4377.8
			Importer											
shells	I	P	Exporter											
			Importer			10	3		4	20	2			39
		-	Exporter											
			Importer	2										2
	W	P	Exporter											
			Importer	1		3								4

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Historically, Grenada was reported to have supplied Trinidad, Tobago and Martinique with *S. gigas* meat (Brownell and Stevely, 1981; NMFS, 2014), although the meat was also consumed locally (CFMC and CFRAMP, 1999). Over the period 2002-2012, it was reported that approximately 423,940 lbs of *S. gigas* were harvested in Grenada, with 175 t, valued at XCD $1,854,214, consumed locally (Harvey *et al.*, 2015). Assuming that these figures represent the dirty meat weight (i.e. shell and digestive gland removed), as suggested by Harvey *et al.* (2015) and using the conversion factor[14] proposed in the draft report of the 2nd expert working group meeting on *S. gigas* (AC28 Inf.30), this may equate to approximately 2,246,882 lbs live weight (or 927.5 t) over the period 2002-2012. During the same period, *S. gigas,* valued at XCD $3,275,714, was thought to have been exported to markets in other Caribbean countries, such as St. Lucia and the French Territories, as well as the USA and Canada (Harvey *et al.*, 2015). However, Harvey *et al.* (2015) cautioned that the exact quantity exported could not be determined.

Table 3: Total *Strombus gigas* catch (lbs) in Grenada, 2002-2012, based on Harvey *et al.* (2015).

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
70 049	78 155	64 943	35 980	4618	55 000	6003	4695	2795	40 983	60 720	423 940

Table 4: Total *Strombus gigas* exports (lbs) from Grenada, 2002-2012, based on Harvey *et al.* (2015).

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
-	4973	3558	-	-	-	-	1094	3525	5012	18 975	37 137

Catarci (2004) stated that "it can easily be assumed that 'stromboid conchs nei' or 'conch' data mostly overlap with queen conch data due to the predominance of queen conch landings and trade in comparison to landings and trade of other conchs, and the geographic provenance of data."

Management: According to the 2001 Fisheries (Amendment) Regulations it is an offence to take, sell, purchase or possess immature *S. gigas* (MRAG, 2013). The species may not be landed with a shell size of less than 18 cm or a minimum meat weight of 225 g (AC26/PC20 Doc. 7, Annex 5), or that does not have a flared lip (MRAG, 2013). A closed fishing season in Grenada for *S. gigas* was reported from July-August (Prada and Appeldoorn, 2014).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Grenada as "legislation that is believed generally not to meet the requirements for the implementation

[14] Dirty meat was described in the WG report as "Complete animal extracted from the shell, meat with skin, viscera, penis, organs and nail" (AC28 Inf.30), which differs from the description provided by Grenada (Harvey et al., 2015). As such the estimate of live weight may not be accurate.

of CITES". Following a country visit in 2013 to evaluate the management system for *S. gigas* in Grenada (among other objectives), MRAG (2013) found that regulation of shell size could not be enforced as most are discarded at sea, enforcement of meat weight was considered difficult, and the definition of 'flared lip' was considered imprecise. In addition, it was reported that the closed season had not been implemented. Enforcement activities were reported to be limited by the lack of resources and field officers (MRAG, 2013). MRAG (2013) noted that previous management recommendations for data collection and storage had not been implemented, mainly due to a lack of resources within the Fisheries Division (MRAG, 2013) and uncertainties around the status of the stock in Grenada were not reflected in management advice (MRAG, 2013). A fisheries management plan, which included an Action Plan for the fishery, was drafted, but had not been implemented (MRAG, 2013). A National Fisheries Policy for Grenada was reported to be under review (MRAG, 2013).

According to the national status report from the Fisheries Division, Grenada, catch figures for *S. gigas* are recorded at all the formal landing sites, with Grenville, Melville Street and Carriacou Fish Markets being the most frequently used sites. However, it was noted that *S. gigas* are frequently not brought to a landing site where data are collected, but sold on directly (Harvey *et al.*, 2015).

In 2001, three Marine Protected Areas (MPAs) were formally established, namely; Woburn/Clarks Court Bay Marine Protected Area, Molinière/Beauséjour Marine Protected Area and Sandy Island/Oyster Bed Marine Protected Area (Harvey, 2015). All three are multi-use protected areas, however, *S. gigas* was reported to be fully protected within their boundaries (Harvey *et al.*, 2015). According to Harvey *et al.* (2015), the Fisheries Division includes assessment of *S. gigas* stocks as part of biophysical monitoring programmes conducted within all existing MPAs, as well as part of the baseline surveys conducted as part of the planning process for the establishment of new MPAs.

According to the Fisheries Division, Grenada depends exclusively on fisheries catch data for *S. gigas* as the only indicator to manage the fishery, however, significant quantities are landed at secondary sites, where data collection is minimal or absent (Harvey *et al.*, 2015). Furthermore, "catches per unit effort" (CPUE) data is not collected (Harvey *et al.*, 2015). To combat these deficiencies, the fisheries division uses a precautionary approach to the management of the fishery by protecting critically important habitats, historically utilised by *S. gigas*, within MPAs. Outside of MPAs, Harvey *et al.* (2015) reported that the division is in the planning stages of a comprehensive, independent, national fisheries *S. gigas* stock assessment, to provide information on its current status and to inform the establishment of appropriate harvest control rules (HCRs). Based on local knowledge generated by fishers, Harvey *et al.* (2015) reported that "the status of the stock is in relatively healthy condition throughout its range within the fishery waters of Grenada. Nonetheless, the proposed surveys and assessments would confirm this finding".

The Management Authority of Grenada was consulted as part of this review, but no response was received at the time of writing.

Haiti

Distribution: Badio (2008) listed nine main fishing areas in Haiti**:** Dame marie, Anse d'Hainault, Les Irois, l'Ile de la Gonave, Les Arcadins, Rochelois, Les cayes, Fort Liberte and Ile de la tortue. According to the responses of the Haiti participant at a CRFM (Caribbean Fisheries Management Council) conch management validation workshop in 2013, fishing primarily occurred in two locations: Canal du Sud and Anse a Pitres (MRAG, 2013).

Population status and trends: *S. gigas* populations in Haiti were reported to have been overfished since the late 1970s (Brownell and Stevely, 1981) and were considered largely depleted in the

1990s (Theile, 2001). The first survey of *S. gigas* stock in Haiti was undertaken in 1995 (Posada and Garcia-Moliner, 1997). Three of the seven fishing zones surveyed were considered to have viable populations (Badio, 2007). Populations around the Gonaves Islands, Les Arcadines Islands and Les Cayemites Islands were found to be seriously over-fished. Sub-adult densities at Gonaves Island and Les Arcadines Islands in 1995 were 10.7 ind./ha, and there were no adults; around Cayemites Island no *S. gigas* was found (Wood, 1995). The high levels of juvenile harvesting, the need to harvest at greater depths and the difficulties of fishers to find adult *S. gigas* were seen as clear evidence of over-fishing (Wood, 1995). On the Rochelois Bank, low adult densities of 15 ind./ha were found (Wood, 1995). Higher densities of 160 ind./ha were only found off the western end of the southern peninsular close to Dame Marie where fishing is restricted to local fishermen (Wood, 1995).

Surveys in 2007 and 2009 recorded 349 individuals from 79 transects[15] (Wood, 2010). *S. gigas* were surveyed from Le Mole to Henne, Gonaives, Pointe de St Marc, Cote des Arcadins, Les Arcadins, La Gonave, Rochelois Bank, Petit Goave, Cayemite – NE, Jeremie, Dame Marie, and Anse d'Hainault (no surveys were not carried out at sites along the north and south coasts). The surveys found overall low density and populations composed mostly of juveniles, and stocks appeared to be declining (Wood, 2010). *S. gigas* densities appeared to be "seriously depleted" in several areas. The lowest adult densities (0-6 ind./ha) were recorded between Le Mole (north-west) and Petit Goave (west). Wood (2010) noted that this area had been heavily exploited for decades, which had likely resulted in the low densities. The highest adult densities (10-35 ind./ha) were recorded in the southwest between Cayenmite and Anse d'Hainault (Wood, 2010). Wood (2010) noted that the higher densities in this area may have been due to lower fishing pressure and/or greater availability of suitable habitat. Mature adults were reported to comprise 12% of the population in the 2007 and 2009 surveys compared to 31% in 1995 (Wood, 2010). Although densities of mature adults were considered below the critical level required to ensure successful reproduction, recruitment of juveniles was reportedly still taking place (Wood, 2010). Juvenile *S. gigas* were recorded from 62% of the 79 transects and from all of the 12 geographic areas surveyed in 2007 and 2009. However, density was low, ranging from 2.5 – 80 juveniles/ha with a mean of 38 juveniles per ha (Wood, 2010). MRAG (2013) considered that, if the findings by Wood (2010) are confirmed, catches need to be reduced to allow stocks to rebuild, but that this process may be reasonably rapid. However MRAG (2013) acknowledged that reduced fishing alone would not address the impact of habitat loss on the population size.

Wood (2010) calculated that the average catch per hour of *S. gigas* ranged from 0.5 – 17.5, with a mean catch of 2.46, equivalent to 1.23 lbs of meat. Wood (2010) noted that there were no historical published catch and effort records for Haiti, and therefore no immediate conclusions could be drawn about whether CPUE was stable, increasing or declining, although it was noted that fishermen reported the species was more difficult to find than in the past.

Annual harvest was estimated at roughly 1,224,000 individuals, yielding 612,000 lbs (263,160 kg) of meat annually (Wood, 2010). However, it was noted that this estimate could not be substantiated and a need for surveys on landings to provide accurate data on catch was identified (Wood, 2010). In 2012, data taken from national reports was used to estimate the annual production of the *S. gigas* fishery in Haiti at approximately 200 metric tonnes [200 000 kg] of clean meat (Prada and Appeldoorn, 2014).

Threats: Overfishing and collection of juveniles were identified as serious problems in Haiti (FAO, 2007; Badio, 2008). Wood (2010) noted that over-fishing, both by local fishers and poachers, is assumed to be the major cause of low populations in Haiti, exacerbated by degradation of *S. gigas* habitats as a result of sedimentation. Creary *et al.* (2008) reported that seagrass beds in Haiti continued to be

[15] Surveys were carried out using scuba along 100 m transects (Wood, 2010).

threatened by sedimentation and pollution. Creary *et al.* (2008) also reported that there were currently no Marine Protected Areas in Haiti. Wood (2010) noted that, given the absence of marine protected areas around Haiti and the intensity of fishing efforts for *S. gigas*, it appears that most populations are known and exploited.

Haiti was traditionally one of the largest consumers of *S. gigas* meat in the region (Brownell and Stevely, 1981) and *S. gigas* was reported to be one of the most important fisheries in Haiti (Badio, 2007). The species was reported to have been heavily fished in Haitian waters and domestic demand was reported to have exceeded local supplies (Wood, 1995), with reports of 20 000 kg of meat exported to Haiti between 2000 and 2009, mainly from Cuba (AC 26/PC20 Doc. 7, Annex 5).

Responses from a survey of *S. gigas* fishers[16] in 2007 suggested that there may be around 1000 operating in eight areas surveyed (Wood, 2010), which contrasts with reports of 312 *S. gigas* fishers from a fishery census in 1996 (Badio, 2007). Fishers also reported outsides using Haiti coastal waters to fish for *S. gigas* (Wood, 2010). Badio (2007, 2008) reported that there were significant external impacts on the fishery, with large amounts of *S. gigas* lost to foreign poachers annually.

In the 2007 survey by Wood (2010), methods for collecting *S. gigas*, as reported by fishers, included hookah (66% of fishers), scuba diving and free diving. According to the responses of the Haiti participant at a CRFM workshop in 2013, fishing was mainly carried out by free diving and the use of scuba and hookah was increasing (MRAG, 2013).

Trade: Haiti is not a Party to CITES and is therefore not required to submit annual reports, hence trade data were only available from importers. Haiti has not published any export quotas for *S. gigas* 1999-2015.

According to data from the CITES Trade Database, direct exports in *S. gigas* from Haiti 2004-2013 consisted of 20,074 wild-sourced shells, 15,000 kg of derivatives, 5415 carvings and 149 kg of carvings, and 101 kg of meat (Table 5). Commercial trade in wild-sourced products therefore appeared to take place following the recommendation to suspend trade in 2006. Imports of captive-bred (source 'C') shells (10,000 kg) were also reported. In total, 434 kg of meat and 557 shells were reported as confiscated/seized (source 'I') over this period.

Table 5: Direct exports of *Strombus gigas* from Haiti, 2004-2013, as reported by importers (Haiti is not a CITES Party). Values rounded to the nearest whole number.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
carvings (kg)	W	T	Exporter											
			Importer		149									149
carvings	W	T	Exporter											
			Importer		5415									5415
derivative (kg)	W	T	Exporter											
			Importer				15,000							15,000
		-	Exporter											
		-	Importer					<1						<1
meat (kg)	I	P	Exporter											
			Importer						4	37	8	74	237	360
		T	Exporter											
			Importer						1	22	1	20	30	74
	W	T	Exporter											
			Importer		57	44								101

[16] A total of 72 questionnaires were completed from eight main *S. gigas* fishing areas (Wood, 2010).

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
meat	I	T	Exporter											
			Importer									1		1
shells (kg)	C	T	Exporter											
			Importer									10,000		10,000
shells	I	P	Exporter											
			Importer			1		2	55	139		26	16	239
		T	Exporter											
			Importer			13	13			42	102	130	2	302
		-	Exporter											
			Importer	1	4				11					16
	W	T	Exporter											
			Importer		14,766	5308								20,074

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Indirect trade in *Strombus gigas* originating in Haiti 2004-2013 primarily comprised of wild-sourced carvings and captive-bred shells re-exported for commercial purposes (Table 6).

Table 6: Indirect exports of *Strombus gigas* originating in Haiti, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
carvings	W	T	Exporter	8						1		1		10
			Importer	1316	21972	25187								48475
live	W	T	Exporter											
			Importer									1		1
pearls	W	T	Exporter											
			Importer	4										4
shells (kg)	C	T	Exporter										7300	7300
			Importer											
shells	C	T	Exporter										300	300
			Importer											
	I	P	Exporter											
			Importer							2		1		3
	W	T	Exporter	1521	1209						1			2731
			Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

The main use of *S. gigas* at the national level was reported to be domestic, with exports consisting mainly of shells (Theile, 2005) as a by-product of the domestic consumption of meat (AC26/PC20 Doc. 7 Annex 5). Exports of shells were reported to have almost ceased after the 2003 trade suspension (AC26/PC20 Doc. 7 Annex 5) and the *S. gigas* fisheries were reported to have been closed since 2003 in compliance with CITES recommendations (FAO, 2007). However, between 2004 and 2007, wild-sourced derivatives, shells, carvings and meat continued to be exported by Haiti (Table 5 above). Wood (2010) remarked that "conch meat is a staple food in Haiti and in addition it is likely that there is a flourishing illegal export trade", which has prevented recovery of *S. gigas* populations, despite the CITES suspension. An investigation by the Environment Canada and the U.S Fish and Wildlife Service uncovered illegal shipments of *S. gigas* meat from Haiti that were mislabelled and falsely documented as whelk meat (TRAFFIC, 2008a). There were several reports of unregulated fishing activities by migrant Haitian artisanal fishermen off Navassa Island – a small uninhabited island 50 km southwest of Haiti (Miller *et al.*, 2004; McClellan and Miller, 2005).

Over the period 2004-2013, reported levels of fishery production of Stromboid conchs (including *S. gigas* and *S. raninus*) was 300 tonnes every year from 2004-2007, declining to 200 tonnes every year in 2009 and from 2011-2013 (FAO, 2015, Table 7). Catarci (2004) stated that "it can easily be assumed that 'stromboid conchs nei' or 'conch' data mostly overlap with queen conch data due to the predominance of queen conch landings and trade in comparison to landings and trade of other conchs, and the geographic provenance of data."

Table 7: Total fishery production (in tonnes) of *Strombus* species* in Haiti, 2004-2013.

Country	Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Haiti	Stromboid conchs nei	300	300	300	300	250	200	150	200	200	200	2400

*Stromboid conchs nei refers to *Strombus* spp.; two conch species occur in Haiti (*S. gigas* and *S. raninus*). All values were reported as type 'F' (FAO estimate: Data estimated from available source of information or calculation based on specific assumptions). Source: FAO 2015, Total Fishery production data from Global Production Statistics 1950-2013. Accessed 17 September 2015.

Management: The decree of 1978 covering fisheries and marine resources in Haiti was updated in order to satisfy some CITES recommendations and address the FAO Code of Conduct for Responsible Fisheries (Badio, 2007, 2008). The new regulations were reported to include (Badio, 2008):

- measures to prohibit harvesting of immature *S. gigas* (those with a shell smaller than 180 mm or which do not have a flared lips, or *S. gigas* meat less than 225 g);
- ban on the use of compressor (hookah), scuba gear and dynamite;
- a closed season from 1 April to 30 September;
- restricted entry to the fishery by specific license requirements for all boats and conch fishermen;
- greater enforcement, including increased monitoring and surveillance both inshore and offshore (particularly to detect poaching by foreign fishermen), and all export papers to be approved by the local CITES Management Authority;
- greater protection of the marine shoreline, including restoration of mangroves and sea grass beds (a project in SE Haiti has already restored 376 ha of land).

Overall, enforcement of existing fisheries regulations was reported to be very poor to non-existent due to low law enforcement capacities and consequently illegal fishing practices such as harvest of undersized *S. gigas* or harvesting with hookah gear was common (Wilkinson, 2002; MRAG, 2013). Wood (2010) stated that controls have existed 'on paper' for decade but have apparently not been implemented due mainly to other government priorities and limited surveillance capacity within the Fisheries Department. Wood (2010) considered lack of capacity to be a major problem. Based on information provided by the Haiti participant at a CRFM workshop in 2013, MRAG (2013) considered that the fishery management system in Haiti had not yet been developed. Cost of implementation and enforcement were considered significant issues for Haiti (MRAG, 2013). The CITES trade suspension was reported to have drawn attention to the need for monitoring and management of *S. gigas* populations (Wood, 2010) and prompted action in the form of stock assessments (AC26/PC20 Doc. 7 Annex 5), but had not, apparently, resulted in any reduction in fishing effort or improved population status (Wood, 2010; AC26/PC20 Doc. 7 Annex 5); fishing effort was instead reported to have increased, with more use of scuba gear (Wood, 2010).

In a national draft management plan presented at the Regional Workshop on the Monitoring and Management of *S. gigas* (Jamaica 2006), Haiti reported that problems facing the management of *S. gigas* included financial constraints, education and public awareness, limited surveillance capacity and lack of resources to collect the data that would be required to fully inform management decisions (Badio, 2007; FAO, 2007). It identified a lack of data on: total catch in different localities; catch per unit effort over time; availability of the resource (distribution, density and size of stock); and socio-economic profile of the fishery (Wood, 2010).

Surveys in 2007 and 2009 by Wood (2010) sought to provide information on: the status of *S. gigas* populations in Haiti; fishing effort and landings; and the socio-economic aspects of the *S. gigas* fishery. In addition, it provided the following recommendations to monitor the *S. gigas* fishery and prevent further over-exploitation and allow recovery of stocks (Wood, 2010):

1) Collect and analyse fishery data and establish total allowable catch (TAC);
2) Agree on harvest levels for different areas;

3) Register conch fishermen and implement quota system in close collaboration with local fishing communities;
4) Map the location and extent of queen conch habitats in Haiti and identify conch breeding and nursery grounds;
5) Monitor density and size of queen conch through diving surveys at selected sites;
6) Establish no fishing (closed) areas to protect breeding grounds and allow stocks to recover;
7) Review the 'closed season' regulations and possibly allow year-round collection for local consumption only, but breeding grounds must be protected;
8) Enforce the ban on capture of thin-lipped (immature) conch;
9) Enforce the ban on use of hookah (compressor) and scuba gear;
10) Take action to prevent poaching of queen conch by fishermen from other countries;
11) Take steps to protect watersheds and prevent pollution, sedimentation and damage to conch habitats;
12) Invest in an education and awareness programme for conch fishermen and promote the concept of locally-managed marine areas where the fishermen will see the benefits of resource management.

Wood (2010) noted that these management recommendations had not been implemented.

Badio (2008) reported that *S. gigas* exporters (of shells and meat) in Haiti had set up an association with the aim to produce conservation guidelines regarding CITES recommendations and also to promote and protect the conch trade industry. This association (the Association des Exportateurs de Lambi – AEL), together with the Direction of Fisheries and Aquaculture of the Ministry of Agriculture in Haiti, was reported to be carrying out the following measures (Badio, 2008):

- conducting public awareness and sensitisation of all stakeholders
- identifying *S. gigas* fishing areas and the status of the population
- reviewing the current regulations for *S. gigas*
- addressing socioeconomic issues affecting artisanal fishermen
- assessing the feasibility of mariculture and stock enhancement
- a stock assessment project (abundance surveys conducted in May 2007, but project temporarily suspended due to financial constraints)

In addition, a data collection programme for monitoring catch was reported to have been initiated in 2005 (Badio, 2008), but Wood (2010) noted that the results had yet not been made available and so no conclusions could be drawn about changes in catch and effort.

According to the Ministry Agriculture (*in litt*. to UNEP-WCMC, 2015) the following actions were taken to meet the 2003 CITES trade suspension recommendations:

- Over 1530 fishermen fishing for *S. gigas* were recorded throughout the country for a total of 500 fishing vessels (i.e. 3-4 anglers per boat) and a permit system has been set up in four (4) out of ten (10) departments of the country.
- Evidence of *S. gigas* landings continue to be made in four (4) to five (5) areas of the country and analysis of their data shows that despite the low density collected in adults (40 mature adult per hectare) there is a quantity of very active and very significant recruitment each year.
- Considering the rather weak results of *S. gigas* density studies (40 adult mature and 120 juveniles per hectare in the fishing areas) the Haitian Government, supported by sector stakeholders, have decided to continue with the export suspension for *S. gigas*.
- Over five areas have been designated for commercial fishing.
- A natural moratorium was established.

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Ornithoptera priamus (O. urvillianus) and *Ornithoptera victoriae*: Solomon Islands

A. Summary

SOLOMON ISLANDS:

Suspension valid from: 20 January 1995

***Ornithoptera priamus (O. urvillianus)*:** Widespread in Solomon Islands but no information on population size or trend available. Habitat loss and collection for trade were considered threats, although it was not considered to be threatened by one author. Solomon Islands became a Party in 2007. All occurred following the suspension coming into force in 1995. Moderate levels of trade in ranched specimens reported 2004-2008 according to countries of import, and in wild and ranched specimens in 2008 according to Solomon Islands. No information on management measures or the basis for making non-detriment findings for wild or ranched specimens has been made available, and the concerns that led to the original suspension have not been addressed. Until further information is provided to demonstrate intended exports for wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.

***Ornithoptera victoriae*:** Widespread in Solomon Islands but no information on population size or trend available. Some authors describe it as common and others uncommon, although appears to have disappeared from one region and declined elsewhere, mainly through habitat loss but collection also a threat. Solomon Islands became a Party in 2007. Trade (mainly in ranched bodies) generally declined from 2004-2011; all occurred following the suspension coming into force in 1995. No information on management measures or the basis for making non-detriment findings for wild or ranched specimens has been made available, and the concerns that led to the original suspension have not been addressed. Until further information is provided to demonstrate intended exports for wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.

RECOMMENDATION:

Suspension may still be appropriate

RST Background

Ornithoptera urvillianus (Common Birdwing) and *O. victoriae* (Queen Victoria's Birdwing) were included in Phase II of the RST and categorised as a species of "possible concern" at AC9, at which time Solomon Islands was a non-Party. A recommendation was directed to the Solomon Islands for both species (Table 1). At SC32 (November 1994), the SC recommended all Parties to suspend imports of

O. urvillianus and *O. victoriae* from Solomon Islands (Notification No. 833). The suspensions entered into force on 20 January 1995 (Notification No. 833).

No response to the initial recommendations was received by the Secretariat. After the SC made the recommendation not to accept imports of specimens of the species, Solomon Islands proposed a "cautious quota" of 4000 butterflies, but did not provide the basis for this quota (SC57 Doc. 29.2). The Secretariat and AC Chair recommended that the trade suspension should be retained (SC57 Doc. 29.2). At SC62 (July 2012) it was reported that there had been no recent developments in this case (SC62 Doc.27.2 (Rev.1)).

Table 1: Recommendations by the Animals Committee (AC9)

Range State	Recommendations and deadlines resulting from AC9 (September 1993)
Solomon Islands	**Within 3 months the competent authority of the Solomon Islands should:** Provide details of the biological basis for determining that the exports of specimens of the species will not be detrimental to the survival of the species.

B. Species characteristics - *Ornithoptera urvillianus*

Taxonomic note: D'Abrera (1976) treated *Ornithoptera urvillianus* as "a distinct species on the grounds of its total isolation and marked differentiation, in both sexes, from other *priamus* species", and McAlpine (1970) and Kondo *et al.* (2003) also treated it as a full species. However, most other authors (including Straatman, 1969; Racheli, 1980; Collins and Morris, 1985) have treated the taxon as a subspecies of *Ornithoptera priamus*, and D'Abrera (2003) subsequently acknowledged that the recognition of *urvillianus* as a biological species was "untenable" as it "interbreeds freely and productively with *O. p. bornemanni*, when they meet in natural circumstances".

The CITES Standard Reference (Matsuka, 2001) also considers *urvillianus* to be a subspecies of *O. priamus* (*O. p. urvillianus*). Nevertheless, *O. urvillianus* has to date been treated as an accepted taxon by the CITES community. UNEP-WCMC has highlighted this discrepancy to the CITES Secretariat and to the nomenclature expert for fauna in 2012.

Biology: *O. priamus* (*urvillianus)* is a large (*c.* 170–210 mm wingspan), sexually dimorphic birdwing butterfly, which occurs in lowland forest (including secondary forest), from sea level to approximately 780 m, in eastern Papua New Guinea (St Matthias Group, New Ireland plus offshore islands and Bougainville) and the Solomon Islands (Tennent, 2002; D'Abrera, 2003).

Straatman (1969) noted that – unlike the rarer *Ornithoptera* species, which generally lay fewer eggs – female *O. priamus* (*urvillianus)* "may lay as many as fifty eggs", which he suggested was "more than sufficient to ensure species survival". The larval food-plant has generally been reported to be *Aristolochia tagala* (e.g. Straatman, 1969; D'Abrera, 1976) – which can reportedly grow abundantly, particularly along sandy beaches (Straatman, 1969) – although D'Abrera (2003) noted that *Aristolochia goliathiana* (described by Parsons, 1996) was "remarkably similar in the flower" to *A. tagala*, and that the two species could potentially be confused.

Solomon Islands

Distribution: *O. priamus* (*urvillianus)* occurs throughout most of the Solomon Islands, with reports from the Treasury Islands, Shortland Islands (Shortland and Fauro), Choiseul, the New Georgia group (including Gizo, Rendova and New Georgia), Santa Isabel, Russell Islands, Savo, the Nggela (or Florida) Islands (including Tulagi), Guadalcanal, Malaita and Ulawa (Racheli, 1980; Tennent, 2002; D'Abrera, 2003). Racheli (1980) suggested that the species probably also occurred "on the numerous minor islets",

although it is reportedly absent from Makira (or San Cristobal), Rennell, Bellona and the Santa Cruz Islands (Straatman, 1969; Racheli, 1980; Tennent, 2002; D'Abrera, 2003).

Population status and trends: Straatman (1969) described *O. priamus* (*urvillianus)* as "localized" along stretches of sandy beach with *Aristolochia tagala* (its larval food-plant; see 'Biology') on Banika [=Mbanika] (in the Russell Islands) and on Malaita, but reported "numerous" larvae and pupae on or near *A. tagala* along the eastern shores of Rendova (New Georgia group). Straatman (1969) also noted that reports from Guadalcanal suggested the species had almost completely disappeared from the Honiara region of the island, owing to "extensive cutting of the undergrowth and [...] reckless collecting of adults and their early stages". D'Abrera (1976) made reference to the species "common occurrence", noting that it was "not a shy" species. Collins and Morris (1985) treated *urvillianus* as a subspecies of *O. priamus*, which they did not considered to be threatened, and neither taxon is included among the *Ornithoptera* species that currently appear on the IUCN Red List (based on assessments last updated in 1996; IUCN, 2015). Tennent (2002) noted that where *O. priamus* (*urvillianus)* and *O. victoriae* coexist in the Solomons (i.e. most of the larger islands north and west of Makira), *O. priamus* (*urvillianus)* was usually more abundant.

Threats: *O. priamus* (*urvillianus)* has reportedly been affected by habitat loss, at least locally, on Guadalcanal (Straatman, 1969; D'Abrera, 1976), and habitat destruction was also highlighted as "a problem in some areas" in WCMC *et al*. (1993). Leary (1991) emphasised the threat posed by habitat loss to the Solomon Islands fauna as a whole, noting that the country had one of the highest rates of population growth in the world, and that lowland forests below 400 m were under particular pressure, from the increasing area needed for food production in subsistence gardens (typically slash-and-burn agriculture), large-scale agricultural projects (e.g. copra and cocoa plantations) and commercial logging.

In addition to habitat loss, collection of adults and pupae for trade was also implicated by Straatman (1969) in the near-disappearance of the species from the Honiara region of Guadalcanal. More generally, Leary (1991) suggested that intensive collection of fauna in the Solomon Islands could cause serious depletion of populations, particularly on small offshore islands, which have "little potential for recolonization through natural dispersal". On the other hand, Macfarlane (1985, cited in Parsons, 1992) suggested that birdwings in the Solomon Islands were an "unexploited resource", only being endangered when their habitat was destroyed, and WCMC *et al*. (1993) suggested that, overall, as a "relatively common species", *O. urvillianus* was "unlikely to be harmed by moderate levels of wild trade".

Trade: *Ornithoptera priamus* (including ssp. *urvillianus*) was listed on CITES Appendix II on 28 June 1979 (genus listing of *Ornithoptera*). The Solomon Islands submitted annual reports for all years 2008-2010 but not for 2011-2013; the Solomon Islands became a Party to CITES in 2007, submitting its first annual report in 2006. The Solomon Islands has not published any export quotas for *O. priamus* 1997-2015.

According to data from the CITES Trade Database, direct exports of *O. priamus* (including spp. *urvillianus*) from the Solomon Islands 2004-2013 comprised 40 wild-sourced live individuals and 200 wild-sourced derivatives, in addition to 37 live specimens, 80 bodies and 681 derivatives that were ranched (source 'R'), as reported by Solomon Islands, and 2040 ranched bodies as reported by the countries of import (Table 2). Trade was primarily for commercial purposes. No trade was reported 2010-2013.

Table 2: Direct exports of *Ornithoptera priamus* and *O. p. urvillianus* from the Solomon Islands, 2004-2013. No trade was reported for 2010-2013.

Taxon	Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	Total
Ornithoptera priamus	bodies	I	T	Exporter							
				Importer	210						210
		R	P	Exporter							
				Importer	206	6					212
			S	Exporter							
				Importer		10					10
			T	Exporter							
				Importer	756	682	100	280			1818
	derivatives	R	T	Exporter					681		681
				Importer							
Ornithoptera priamus	derivatives	W	T	Exporter					200		200
				Importer							
	live	R	T	Exporter					37		37
	live	R	T	Importer							
		W	T	Exporter					40		40
				Importer							
Ornithoptera priamus urvillianus	bodies	R	T	Exporter						80	80
				Importer							

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Indirect trade originating in the Solomon Islands 2004-2013 primarily comprised of ranched (source 'R') bodies traded for commercial purposes, although trade in other sources was also reported (Table 3).

Table 3: Indirect exports of *Ornithoptera priamus* and *O. p. urvillianus* from the Solomon Islands, 2004-2013. No trade was reported for 2009-2010 and 2012-2013.

Taxon	Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2011	Total
Ornithoptera priamus	bodies	C	T	Exporter							
				Importer			4				4
		I	P	Exporter							
				Importer				5			5
		R	P	Exporter	14	8					22
				Importer							
			T	Exporter	64		16	67	2	4	153
				Importer				1			1
		W	T	Exporter							
				Importer		50					50
Ornithoptera priamus urvillianus	bodies	C	P	Exporter		5					5
				Importer							
			T	Exporter		35					35
				Importer							
		F	T	Exporter	2	9	4				15
				Importer							
		R	P	Exporter		2					2
				Importer		1					1
			T	Exporter	28						28
				Importer							

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: At the time of her study, Leary (1991) indicated that the Solomon Islands had "no comprehensive fauna protection legislation" (nor any "effective regulation of trade"), with the insect trade "administered under policy guidelines (not legislation), by the Environment and Conservation Division, Ministry of Natural Resources", who were responsible for issuing the General Export Permit for Wildlife required for export consignments. According to Leary (1991), there was no farming or ranching of butterflies, and the volume and extent of illegal trade (i.e. trade without export permits) was "unknown". Parsons (1992) reported that initial attempts to establish an IFTA-style butterfly farming system in the Solomon Islands in the 1980s had stalled due to lack of funding, and suggested that the country still lacked "a cohesive system of sustainable utilization of its butterfly resources". WCMC *et al.* (1993) reported that "legislation should soon be in place" according to M. Biliki (Solomon Islands

Ministry of Natural Resources, *in litt*. to CITES Secretariat, 1993), and suggested that butterfly ranching in the Solomon Islands "should be encouraged", and that "this should be facilitated within the new legal framework".

In November 1998, the Solomon Islands government enacted the Wildlife Protection and Management Act 1998, "to provide for the protection, conservation and management of wildlife in Solomon Islands by regulating the export and import of certain animals and plants". *O. urvillianus* was listed (as "*Ornithoptera priamus urvillianus*") on Schedule II of the Act, which encompassed "regulated and controlled species" that cannot be exported without a valid permit (issued by the Environment and Conservation Division of the Ministry of Environment, Conservation and Meteorology). In August 2006, the government reportedly suspended all trade in the country's wildlife to allow "time to develop necessary regulations for both the Environment Act 1998 and the Wildlife Protection and Management Act" (MECM, 2008),which was then lifted in 2007 (Parsons *et al.*, 2010).

Ranched specimens of *O. priamus* (*urvillianus)* were reported to have been exported from the Solomon Islands since 1997 (UNEP-WCMC, 2007; Mulliken, 2008). The Australian Foundation for the Peoples of Asia and the Pacific (AFAP) and the Solomon Islands Development Trust (SIDT) promoted butterfly farming initiatives as an income generation activity for communities (ACFOA, 2003; SIDT 2015), but Tennent (2002) suggested that efforts "had met with only limited success".

Through its national legislation project, the CITES Secretariat categorised the national legislation in the Solomon Islands as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

The CITES Authority of the Solomon Islands was consulted as part of this review, but no response was received at the time of writing.

C. Species characteristics - ***Ornithoptera victoriae***

Taxonomic note: Seven subspecies have been described: *Ornithoptera victoriae victoriae*, *O. v. reginae*, *O. v. regis*, *O. v. isabellae*, *O. v. epiphanes*, *O. v. rubianus* and *O. v. archeri* (Ohya, 2001), although Racheli (1980) noted that specimens were sometimes difficult to assign to subspecies, and Tennent (2002) suggested that most subspecies were poorly defined.

Biology: *O. victoriae* is a large (*c.* 150–200 mm wingspan), sexually dimorphic birdwing butterfly occurring in lowland forest (including disturbed forest and gardens), up to 1500 m above sea level, in eastern Papua New Guinea (Bougainville) and the Solomon Islands (Tennent, 2002; D'Abrera, 2003).

D'Abrera (1976) suggested that *O. victoriae* was "nowhere near as prolific a breeder" as *O. urvillianus* or most of the [other] races of *O. priamus*, and Collins and Morris (1985) noted that, in general, *Ornithoptera* species were "unusual in generally laying no more than 30 eggs per brood". The larval food-plants are *Aristolochia* spp., with Straatman (1969) reporting *O. victoriae* larvae feeding on *Aristolochia tagala* – which he suggested could be locally abundant along sandy beaches on Malaita and San Cristobal [=Makira] – and a second *Aristolochia* species "with corky stems" [possibly *A. goliathiana*, described subsequently by Parsons, 1996?], which he reported as growing "in numbers" (albeit locally) on Malaita, in "areas along the beach or a little inland on poor, rocky soil with light undergrowth". P.B. Clark (*in litt*., 1983; cited in Collins and Morris, 1985) also noted that the larvae fed on "the common and easily grown *Aristolochia tagala*" on Bougainville.

Solomon Islands

Distribution: *O. victoriae* occurs throughout most of the Solomon Islands, with reports from Shortland (subspecies *regis*), Choiseul (ssp. *archeri*), the New Georgia group (including Vella Lavella, Ranongga, Gizo, Kolombangara, Rendova, Roviana [or "Rubiana"] and New Georgia; ssp. *rubianus*), Santa Isabel (ssp. *isabellae*), the Nggela (or Florida) Islands (including Tulagi) and Guadalcanal (ssp. *victoriae*), Malaita (ssp. *reginae*) and Makira (or San Cristobal) and offshore islands (ssp. *epiphanes*) (Racheli, 1980; Calderara, 1984; Tennent, 2002; D'Abrera, 2003). The species is reportedly absent from the Russell Islands, Rennell, Bellona and the Santa Cruz Islands (Straatman, 1969; Racheli, 1980; D'Abrera, 2003).

Population status and trends: Straatman (1969) described *O. victoriae* as "localized" on San Cristobal [=Makira], where larvae were found on *A. tagala* (one of its larval food-plants; see 'Biology') in "sandy areas not far from the beach", and reported "a few" larvae on the rocky western shore of Rendova (New Georgia group), but none along the eastern shore (where larvae of *O. urvillianus* were reportedly numerous). Straatman (1969) also noted that reports from Guadalcanal suggested the species had almost completely disappeared from the Honiara region of the island, owing to "extensive cutting of the undergrowth and [...] reckless collecting of adults and their early stages".

D'Abrera (1976) described the species as "not common wherever it occurs", noting that the males were particularly rarely seen, whereas Racheli (1980) included *O. victoriae* among four species of papilionid butterfly that he described as "common and widespread" in the Solomon Islands. R. Macfarlane (*in litt*., 1983; cited in Collins and Morris, 1985) described the species as "not rare", but – although they did not consider the species to be threatened – Collins and Morris (1985) noted that it was apparently "declining rapidly on Malaita due to intense deforestation" according to Racheli (1984).

Acknowledging that some of the lowland habitat of *O. v. victoriae* had "been reduced due to extensive clearance of vegetation in coastal and urban areas", Tennent (2002) noted that the race ranged "over a wide area of Guadalcanal where its haunts [were] protected effectively by the topography", and that it was "seen commonly", up to at least 1200 m above sea level, in forest north of Mount Popomanaseu (south-central Guadalcanal) in 1996. On Malaita, Tennent (2002) suggested that *O. v. reginae* had "become less common in some coastal localities [...] than on other islands", and that "large numbers [had] reached the international collectors market, especially in Japan". On Choiseul, meanwhile, the species was reportedly "quite common" in disturbed forest in 1997 (Tennent, 2002).

O. victoriae is not included among the *Ornithoptera* species that currently appear on the IUCN Red List (based on assessments last updated in 1996; IUCN, 2015).

Threats: *O. victoriae* has reportedly been affected by habitat loss on Malaita (Racheli, 1984) and, at least locally, on Guadalcanal (Straatman, 1969; Tennent, 2002), with R. Macfarlane (*in litt*., 1983; cited in Collins and Morris, 1985) also indicating that the species "may be threatened by agriculture and forestry in localized sites". Leary (1991) emphasised the threat posed by habitat loss to the Solomon Islands fauna as a whole, noting that the country had one of the highest rates of population growth in the world, and that lowland forests below 400 m were under particular pressure, from the increasing area needed for food production in subsistence gardens (typically slash-and-burn agriculture), large-scale agricultural projects (e.g. copra and cocoa plantations) and commercial logging.

In addition to habitat loss, collection of adults and pupae for trade was also implicated by Straatman (1969) in the near-disappearance of the species from the Honiara region of Guadalcanal, and Collins and Morris (1985) indicated that *O. victoriae* was "in demand by collectors" and that – although the species was not threatened overall – "Vulnerable status could be applied to some subspecies". More generally, Collins and Morris (1985) noted that one of the circumstances in which heavy exploitation could have a serious impact on invertebrate populations was if the species had "a low reproductive rate and low

juvenile recruitment", as they suggested was the case for the *Ornithoptera* species (see also 'Biology'). On the other hand, Macfarlane (1985, cited in Parsons, 1992) suggested that birdwings in the Solomon Islands were an "unexploited resource", only being endangered when their habitat was destroyed, and Tennent (2002) also suggested that commercial collecting of *O. victoriae* pupae, reportedly carried out by local people for many years, was "unlikely at present to have a significant effect on populations anywhere in the Solomons".

Trade: *Ornithoptera victoriae* was listed in CITES Appendix II on 4 February 1977. The Solomon Islands submitted annual reports for all years 2008-2010 but not for 2011-2013; the Solomon Islands became a Party to CITES in 2007, submitting its first annual report in 2006. The Solomon Islands has not published any export quotas for *O. victoriae* 1997-2015.

According to data from the CITES Trade Database, direct exports of *O. victoriae* from the Solomon Islands 2004-2013 comprised primarily of ranched (source 'R') bodies and derivatives traded for commercial purposes (Table 4).

Table 4: Direct exports of *Ornithoptera victoriae* from the Solomon Islands, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Bodies	I	P	Exporter											
			Importer		26		2							28
		-	Exporter											
			Importer								27			27
	R	P	Exporter											
			Importer	201	82			22						305
		S	Exporter											
			Importer		36			1					800	837
		T	Exporter						70					70
			Importer	442	324	320	624							1710
	U	P	Exporter											
			Importer					40						40
	W	S	Exporter											
			Importer										16	16
		T	Exporter											
			Importer			100								100
derivatives	R	T	Exporter					498						498
			Importer											
	W	T	Exporter					294						294
			Importer											
	-	T	Exporter					20						20
			Importer											
Live	R	T	Exporter					13						13
			Importer											
	W	T	Exporter					6						6
			Importer				8							8

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Indirect trade originating in the Solomon Islands 2004-2013 primarily comprised of ranched (source 'R') bodies traded for commercial or personal purposes (Table 5).

Table 5: Indirect exports of *Ornithoptera victoriae* from the Solomon Islands, 2004-2013.

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Bodies	C	P	Exporter		8	4								12
			Importer											
		T	Exporter		21	7								28
			Importer											
	F	P	Exporter	12										12
			Importer											
		T	Exporter	14										14
			Importer											
	I	P	Exporter											
			Importer				2							2

Term	Source	Purpose	Reported by	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
	O	Z	Exporter		3									3
			Importer											
	R	P	Exporter	57	74	12	18	8						169
			Importer				2				4			6
		T	Exporter	79	59	35	37	1	2	1				214
			Importer	4	1									5
	W	P	Exporter											
			Importer			4								4
		T	Exporter		2		2	2						6
			Importer											
live	C	T	Exporter	2										2
			Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015.

Management: At the time of her study, Leary (1991) indicated that the Solomon Islands had "no comprehensive fauna protection legislation" (nor any "effective regulation of trade"), with the insect trade "administered under policy guidelines (not legislation), by the Environment and Conservation Division, Ministry of Natural Resources", who were responsible for issuing the General Export Permit for Wildlife required for export consignments. According to Leary (1991), there was no farming or ranching of butterflies, and the volume and extent of illegal trade (i.e. trade without export permits) was "unknown". Parsons (1992) reported that initial attempts to establish an IFTA-style butterfly farming system in the Solomon Islands in the 1980s had stalled due to lack of funding, and suggested that the country still lacked "a cohesive system of sustainable utilization of its butterfly resources". WCMC *et al.* (1993) reported that "legislation should soon be in place" according to M. Biliki (Solomon Islands Ministry of Natural Resources, *in litt.* to CITES Secretariat, 1993), and suggested that butterfly ranching in the Solomon Islands "should be encouraged", and that "this should be facilitated within the new legal framework".

In November 1998, the Solomon Islands government enacted the Wildlife Protection and Management Act 1998, "to provide for the protection, conservation and management of wildlife in Solomon Islands by regulating the export and import of certain animals and plants". *O. victoriae* was listed on Schedule II of the Act, which encompassed "regulated and controlled species" that cannot be exported without a valid permit (issued by the Environment and Conservation Division of the Ministry of Environment, Conservation and Meteorology). In August 2006, the government reportedly suspended all trade in the country's wildlife to allow "time to develop necessary regulations for both the Environment Act 1998 and the Wildlife Protection and Management Act" (MECM, 2008).

Ranched specimens of *O. victoriae* were reported to have been exported from the Solomon Islands since 1997 (UNEP-WCMC, 2007; Mulliken, 2008). The Australian Foundation for the Peoples of Asia and the Pacific (AFAP) and the Solomon Islands Development Trust (SIDT) promoted butterfly farming initiatives as an income generation activity for communities (ACFOA 2003;SIDT , 2015), but Tennent (2002) suggested that efforts "had met with only limited success".

Through its national legislation project, the CITES Secretariat categorised the national legislation in the Solomon Islands as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

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Cycadaceae, Stangeriaceae and Zamiaceae: Mozambique

A. Summary

MOZAMBIQUE: Suspension valid from: 6 December 2006	Only one Appendix II species of these families occurs in Mozambique: *Cycas thouarsii*. The species is globally widespread and abundant, with a stable population of over 10,000 individuals, but no detailed population data for Mozambique was located. Relatively high level of trade reported in 2005 only (3100 wild-sourced specimens) and some artificially propagated trade reported in 2004. Details of protection or management within the country are unknown, and it is unclear whether the country intends to export the species. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

A review of cycads was proposed at PC8 (1997) (Doc. PC 8.9). At PC10 (December 2000), taxa were selected for the RST based on previously identified priorities, projects carried out to date, their conservation status and CITES trade data 1994-1999. It was noted that the review of Cycadaceae, Stangeriaceae and Zamiaceae had still not been carried out, and that recent levels of trade in wild plants indicated that this group remained a priority. Therefore, the three families were suggested as 'Priority 1' in the Significant Trade process (PC10 Doc. 10.10.1.1).

At PC14 (February 2004), cycads and stangerias were categorised as of "urgent concern" for three range States, including Mozambique, and the recommendation was formulated that within six months the Management Authority should provide the CITES Secretariat with information on the measures that are in place or were taken to monitor and regulate trade in cycads (SC54 Doc. 42). At PC15 (May 2005), in consultation with the PC Chair, the Secretariat revised the recommendations regarding four taxa from East Africa used as extracts (PC15 Doc. 10.1.1 (Rev.1) Annex 1) including cycads from Mozambique (Table 1).

No response was received (SC54 Doc. 42), and the SC agreed to recommend that all Parties suspend trade in all specimens of cycads from three range States, including Mozambique. The suspension entered into force on 6 December 2006 (Notification No. 2006/072).

Ten species of cycad are reported to occur in Mozambique (Hill *et al.*, 2007), including nine species of *Encephalartos* listed in CITES Appendix I and *Cycas thouarsii* listed in Appendix II. No species of Appendix II Stangeriaceae or Zamiaceae are known to occur in Mozambique. This review therefore focuses on *Cycas thouarsii*.

Table 1: Recommendations by the Plants Committee (PC15 Doc. 10.1.1 (Rev.1 Annex 1).

Range State	Recommendations and deadlines resulting from PC15 (May 2005)
Mozambique	**Within 6 months:** a) The Management Authority should provide the CITES Secretariat with information on seizures of specimens of Cycads, including on shipments coming from South Africa and on plants confiscated within the country. b) b) The Management Authority should provide the CITES Secretariat with information on the measures that are in place or were taken to monitor and regulate trade in Cycads.

B. Species characteristics

Biology: *Cycas thouarsii* occurs as solitary plants or in small groups in open woodland and forest margins, generally on sand and coral formations, and usually near the coast (Whitelock, 2002; Hill *et al.*, 2004). The species was reported to occur at elevations up to 200 m asl (Golding and Hurter, 2010). The species was reported to have an annual rainfall range of 1000 to 3000 mm (Golding and Hurter, 2010).

In general, cycads are relatively slow growing and dioecious (plants that produce either male or female cones) (Donaldson, 2003). Individual plants often reproduce infrequently with many species reliant on specialised beetles for pollination (Donaldson, 2003). Individuals have been known to live for over 1,000 years (Whitelock, 2002), though for many their lifespan is considerably shorter (Donaldson, 2003).

C. Country reviews

Mozambique

Distribution: *C. thouarsii* was reported to occur on the eastern coast of Africa from Madagascar to Kenya, with subpopulations occurring along the coast of Mozambique, from the Zambezi delta, northwards along the coast of Tanzania (Golding and Hurter, 2010). In Mozambique, it was reported from Zambezia Province, and associated with the Zambezi valley and coastline (Bandeira *et al.*, 2011)

Population status and trends: *C. thouarsii* was considered to be a widespread and abundant species occurring at several locations along the east coast of Africa (Golding and Hurter, 2010). It was listed as Least Concern in the IUCN Red List of Threatened Species, and although some threats were reported, these were not considered significant enough to warrant the species in a threatened category (Golding and Hurter, 2010). The species was considered to be locally abundant, with a global population of more than 10,000 individuals and with a stable population trend (Golding and Hurter, 2010). *C. thouarsii* was considered to be a low risk species by several authors (Donaldson, 2003; Hill *et al.*, 2007)

Threats: Golding and Hurter (2010) reported that there were no major threats to the species, although it was considered that plants would have been impacted in places due to a range of activities including collection, coastal developments and agricultural expansion.

Trade: *Cycas thouarsii* was listed in CITES Appendix II on 4 February 1977 (*Cycadaceae* spp. listing). Mozambique has not published any export quotas for *C. thouarsii* 1997-2015 or for any other species of Cycadaceae, Stangeriaceae or Zamiaceae. Mozambique submitted CITES annual reports for all years 2004-2013.

According to data from the CITES Trade Database, direct exports of *C. thouarsii* from Mozambique 2004-2013 consisted of 3100 live wild-sourced specimens and 3000 artificially propagated plants as reported by Mozambique, and 3000 artificially propagated plants as reported by countries of import (Table 2). No exports of the species were reported since 2005.

No indirect trade in *C. thouarsii* originating in Mozambique was reported 2004-2013.

Table 2: Direct exports of *Cycas thouarsii* from Mozambique, 2004-2013. All trade was in live specimens for commercial purposes. No trade was reported 2006-2013.

Source	Reported by	2004	2005	Total
A	Exporter	3000		3000
	Importer			
W	Exporter		3100	3100
	Importer	2000		2000

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Trade in artificially propagated seeds and live plants in a number of Appendix I Cycadaceae (*Cycas beddomei*) and Zamiaceae (various *Encephalartos* species) was reported in 2004 and 2005, but no further trade in these taxa was reported since 2005. The import of 2500 wild-sourced *Encephalartos* spp. seeds for personal purposes was reported in 2005; this trade was not reported by Mozambique.

Management: The relevant legislation is the Forestry and Wildlife Law of 1999 (10/99) and Law Regulations of 2002 (12/02) (Mahanjane, *in litt*. to UNEP-WCMC, 2009; Johnstone *et al.*, 2004), but it is not known whether this establishes any controls on harvesting and trade in Appendix II Cycadaceae. Through its national legislation project, the CITES Secretariat categorised the national legislation in Mozambique as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

No information was found on the management of *C. thouarsii* in Mozambique and it is not known whether the species occurs in any protected areas. The CITES Authority of Mozambique was consulted as part of this review for all species subject to trade suspensions in place longer than two years, however Mozambique provided responses on only the animal taxa. It is therefore unclear whether the country intends to export the species.

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Pericopsis elata: Côte d'Ivoire

A. Summary

CÔTE D'IVOIRE: Suspension valid from: 7 September 2012	Considered to have virtually disappeared within the country, with remaining populations localised and isolated. Logging and forest fragmentation reported as the main threats. Reported to be protected, although harvest reported to be authorized in plantations. Trade levels of around 4000 m^2 reported in both 2006 and 2007 by countries of import. Whilst there was no reported trade since 2007 by either Côte d'Ivoire or countries of import according to CITES annual reports, the CITES Authorities confirmed that trade had occurred in 2012-2014 without export permits, and that there was insufficient monitoring of export products at the countries ports. Côte d'Ivoire has not set a zero quota for the species as recommended by the PC, and there has been international trade reported subsequent to the trade suspension. Based on on-going trade and insufficient management in place, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Pericopsis elata (African Teak) was selected following CoP11 at PC17 (April 2008) (on the basis of trade data provided in document PC17 Doc. 8.5 and information available to the Committee (PC17 summary record). The Secretariat consulted the range States concerned, but did receive a reply from Côte d'Ivoire (PC18 Doc 8.4) and it was retained in the review (PC18 Summary record). At PC19 (April 2011), *P. elata* was categorised as of "urgent concern" for Côte d'Ivoire (PC19 summary record) and recommendations were formulated (Table 1). No response to the recommendations was received (SC62 Doc. 27.1 (Rev. 1)). The SC agreed to recommend that all Parties suspend trade in *P. elata* from Côte d'Ivoire. The suspension entered into force on 7 September 2012 (Notification No. 2012/057).

Table 1: Recommendations by the Plants Committee (PC19 Summary Record).

Range State	Recommendations and deadlines resulting from PC19 (April 2011)
Côte d'Ivoire	**Within three months:** The Management Authority should set a zero quota and inform the CITES Secretariat, so that it can be included in the national export quotas on the CITES website. Before trade resumes, the Management Authority should clarify with the Secretariat how it determines that the level of trade is not detrimental to wild populations.

B. Species characteristics

Taxonomic note: *P. elata* was classified in the genus *Ormosia* Jacks, until Harms (1913) created the genus *Afrormosia* to separate the African species from those native to Asia and America. *Afrormosia* was later reduced to *Pericopsis* (Knaap-van Meeuwen, 1962), which comprises of five species; four African and one Asian (Bourland et al., 2012).

Biology: *P. elata* is a long-lived, semi-gregarious, and light-demanding species of tree (Fayolle et al. 2015), which grows in Central and Western African semi-deciduous forests (Bourland et al., 2012). It favours the drier areas of forests with annual rainfalls of 1000-1500 mm (Bourland et al., 2012), and

seedlings are reported to be drought tolerant (Dickson, 2005). This species is noted for its poor natural regeneration, although seedlings have been shown to perform well in poor soil, and particularly in forest gaps (Swaine and Whitmore, 1988; Forni, 1997), when planted as seedlings (Ouedraogo et al. 2014). When conditions are suitable, saplings may grow rapidly by up to 1 cm diameter per year (PC14 Doc. 9.2.2 Annex 3), and form into spreading, bushy structures (Dickson, 2005).

P. elata reproduces by producing ripe, indehiscent pods at the beginning of the dry season (August – November) (Hawthorne, 1995). Pods contain 1-3 flat seeds each, and are thought to be wind-dispersed in strong winds (Hawthorne, 1995). Years of abundant seed generation have been recorded but in many fruiting years germination is said to be poor (Howland, 1979). When fully mature, *P. elata* can exceed 130 cm in diameter and 40 m in height (Fayolle et al. 2015).

C. Country reviews

Côte d'Ivoire

Distribution: *P. elata* is native to Central and West Africa, mainly occurring in Cameroon, Congo, the Democratic Republic of Congo (the DRC), Ghana and Nigeria (Howland, 1979; Bourland et al., 2012). A small number of specimens have also been recorded in Côte d'Ivoire and the Central African Republic (the CAR) (Bourland, 2012).

In Côte d'Ivoire the species is reported to have a small and patchy distribution, with a number of isolated sub-populations (Bourland *et al.*, 2012; Fayolle *et al.* 2015). It is thought to remain mainly in localised pockets in the east (Abengourou), and northeast (Bondoukou) of Côte d'Ivoire, and along its frontier with Ghana. Some isolated populations have been reported in the west (Guiglo) and in the Forêt Classée de Yapo in the south (Kouame, *pers. comm.* with CITES Secretariat, 2003).

The CITES Management Authority (MA) of Côte d'Ivoire reported that *P. elata* is present in five reforestation sites, as outlined in Table 2 (*in litt*. to UNEP-WCMC, 2015).

Table 2: Distribution and population size of *P. elata* in Côte d'Ivoire

Site	Location	Year of plantation	Area (ha)	Density (plants/ha)	Diameter (cm)
Bossématié Classified Forest	South-eastern	1992	1.8	278	20-25
Sangoue Classified Forest	South-central	1967	1.5	40	60-90
Ira Classified Forest	West-central	2015	20*	-	-
Irobo Classified Forest	South-central	Experimental plots carried out by Centre Technique Forestier Tropical (CTFT) now a subsidiary of the Centre National de Recherche Agronomique de Côte d'Ivoire (CNRA)			
Mopri Classified Forest	South-central				
Téné Classified Forest	Central				
Forêt de Sap la ME	-		-	-	-

*area is combination of forest and agriculture
Source: CITES Management Authority of Côte d'Ivoire (*in litt.* to UNEP-WCMC, 2015) [translated and modified]

Population status and trends: *P. elata* was reported to be declining across much of its range, largely due to logging for international trade (African Regional Workshop, Conservation and Sustainable Management of Trees, Zimbabwe, 1998; Dickson et al., 2005). This decline appeared to be particularly prominent in Ghana, Cote d'Ivoire, Nigeria and the CAR (Dickson, 2005). The species was assessed as "Endangered" by the IUCN Red List (African Regional Workshop, Conservation and Sustainable Management of Trees, Zimbabwe, 1998).

At PC14 (February 2004), *P. elata* was considered locally rare in Côte d'Ivoire (PC14 Doc 9.2.2. Annex 3), and in 2008, was reported to be "virtually extinct" in the country (K. Amian/CITES Management Authority of Côte d'Ivoire, *pers. comm*., cited in Betti, 2008). A later report confirms the species to be "close to disappearance" within Côte d'Ivoire (Bourland *et al.,* 2012).

P. elata was included in a list of threatened species of Côte d'Ivoire published in 1988 (Ake Assi, 1988).

Threats: *P. elata* is amongst the most economically important hardwood species in tropical Africa (Foli et al. 2009). Bourland *et al.* (2012) considered the main threats in Côte d'Ivoire to be increased pressure from logging and agricultural expansion. Recovery of the population was considered exacerbated by the species slow regeneration and poor recruitment (Ouedraogo et al., 2014; Bourland, 2015), as well as its localised and isolated distribution (Kouame, *pers. comm.* with CITES Secretariat, 2003; Bourland et al., 2012).

In 1992 (at the time of listing on Appendix II), it was noted that whilst protected, felling of individual trees could be authorised in plantations (CoP8 Prop. 92). *P. elata* continues to be threatened by extant harvesting (Saunders and Reeve, 2014). There is also concern that deforestation will increase in Côte d'Ivoire due to changes in land ownership legislation following the introduction of the new Forest Law in 2014 (Wily, 2015).

In 2015, the CITES Management Authority (MA) of Cote d'Ivoire reported that the level of threat to *P. elata* is very high, primarily due to clearing for agriculture, which has extended to a large proportion of the Classified Forests in the East of the country (*in litt.* to UNEP-WCMC, 2015). It was also reported that reforestation programs are limited due to financial constraints (CITES Management Authority *in litt.* to UNEP-WCMC, 2015).

Trade: *P. elata* was listed in CITES Appendix II on 11 June 1992, designating saw-logs, sawn wood and veneers. Since 13/09/2007 the CITES Appendix II listing designated logs, sawn wood and veneer sheets. Côte d'Ivoire submitted CITES annual reports for all years 2004-2013, except 2010 and 2006. Côte d'Ivoire have not published any export quotas for *P. elata* 1997-2015.

According to the data in the CITES Trade Database, direct trade in *P. elata* from Côte d'Ivoire 2004-2013 comprised primarily of wild-sourced veneer traded for commercial purposes (8052 m^2 veneer as reported by the countries of import) (Table 3).

Table 3: Direct exports of *Pericopsis elata* from Côte d'Ivoire, 2004-2013. All trade was in wild-sourced specimens traded for commercial purposes. No trade was reported in 2004-2005 and 2008-2013.

Term	Reported by	2006	2007	Total
Carvings	Exporter		15	15
	Importer			
timber (m^3)	Exporter		13.795	13.795
	Importer			
veneer (m^2)	Exporter			
	Importer	4098.754	3953.375	8052.129

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

No indirect exports of *P. elata* originating in Côte d'Ivoire were reported 2004-2013.

The CITES MA of Cote D'Ivoire (*in litt.* to UNEP-WCMC, 2015) provided data on trade in *P. elata* 2012-2014 (Table 4) and commented that log exports are prohibited, but *P. elata* products have been exported in the form of secondary processed wood products (namely, flooring) without CITES export permits. They also added that the forestry departments at Cote D'Ivoire's ports do not have sufficient information to monitor whether or not exported products have CITES export permits (CITES Management Authority of Cote D'Ivoire, *in litt.* to UNEP-WCMC, 2015).

Table 4: Exports of *Pericopsis elata*, 2012-2014, according to the CITES Management Authority of Côte d'Ivoire.

Year	Area of extraction	Volumes extracted (m3)	Volumes exported (m3)
2012	Agnibilekro-Abengourou	429.079	0
2013	Koun-fao-Agnibilekro	411.416	38,298
2014	Koun-fao-Agnibilekro	158.443	34,750
TOTAL		998,938	73,048

Source: Ministry of Water and Forests, *in litt*. to UNEP-WCMC, 2015.

Management: *P. elata* was included in a list of protected species given by Decree No. 66-122, 31 March 1966. Under this Decree, uprooting and damage to the species was prohibited, as was the destruction of their seeds and fruit. Felling could be authorized, however, on sites of industrial plantations (CoP8 Prop. 92).

The CITES MA of Côte d'Ivoire (*in litt*. to UNEP-WCMC, 2015) reported that, since 1965, Côte d'Ivoire's legislation in relation to harvesting has grouped species depending on their utility in secondary processed wood products. *P. elata* is currently promoted for use in timber products (CITES Management Authority of Côte d'Ivoire *in litt*. to UNEP-WCMC, 2015). The Ministry of Forest and Water also stated that a new forest code had been adopted on 14 July 2014, and that implementing regulations were being prepared, which may take into account the categorisation of the protection of the country's plant species (CITES Management Authority of Côte d'Ivoire *in litt*. to UNEP-WCMC, 2015). The presence of this species in any protected areas in the country remains unconfirmed.

It was noted in PC14 Doc. 9.22 Annex 3 that "In general the range States for *Pericopsis elata* have policies and legislation in place which could be used to regulate the harvesting of the species at appropriate levels for export in accordance with CITES. It is not clear, however, whether procedures are in place to make non-detriment findings".

The CITES MA of Côte d'Ivoire (*in litt*. to UNEP-WCMC, 2015) reported that research on *P. elata* is currently being carried in association with SODEFOR (Société de Développement Forestier, or Forest Development Corporation). Research was reported to focus on harvesting and seed conservation, and although results of germination and growth research were available, they were yet to be disseminated. It was also reported that *P. elata* seed plots are kept in Classified Forests to continue propagation of the species via agroforestry (CITES Management Authority of Côte d'Ivoire *in litt*. to UNEP-WCMC, 2015).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Côte d'Ivoire as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

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Dendrobium nobile: Lao People's Democratic Republic

A. Summary

LAO PEOPLE'S DEMOCRATIC REPUBLIC: Suspension valid from: 3 February 2009.	No information on population size, but reported to be endangered in the country. No reported trade from 2004-2013, however illegal trade in this species from Lao PDR remains a threat. In 2011, Lao PDR verbally indicated to the Secretariat that there was no intention to resume legal trade, however no written confirmation was received and Lao PDR was deemed to not have complied with the SC recommendations. Given that illegal trade persists in this species, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

Dendrobium nobile was selected for the RST at PC14 (February 2004) on the basis of trade data provided in document PC14 Doc. 9.3 (PC14 WG 3.3 Doc. 1). At PC15 (May 2005), two countries, including Lao People's Democratic Republic (hereafter referred to as Lao PDR), were retained in the review (PC15 Summary Record). At PC16 (July 2006), *D. nobile* was categorised as of "possible concern" for Lao PDR (PC16 Summary Record), and recommendations were formulated (Table 1). The Standing Committee extended the deadline for implementation of the recommendations until 31 December 2008 (SC57 Summary Record). At Sc58 (July 2009) it was reported that no reply had been received by the Secretariat. The SC agreed to suspend trade covered by Article IV of the Convention for *D. nobile* from Lao PDR and the suspensions entered into force on 3 February 2009 (Notification No. 2009/003).

At SC62 (July 2012), it was noted that: "during a visit to LA in October 2011, the Secretariat was advised that these recommendations pre-dated the revised implementation procedures for CITES in LA which began in 2007. The Secretariat understood that LA does not intend to export this species in future. However, repeated attempts to have this information confirmed in writing by LA have not been successful." (SC62 Doc 27.2 (Rev. 1)). The Secretariat Commented: "The Plants Committee's recommendations were based on a trade review up to the end of 2003 and, in fact, there has been no reported trade from LA since 2001. In view of this and the fact that there is reportedly no intention to resume international trade, compliance with Article IV, paragraphs 2 (a) and 3 would seem to be achieved. However, the future intentions of LA in this regard have not been communicated in writing to the Secretariat." (SC62 Doc 27.2 (Rev. 1)). The Secretariat and Plants Committee Chair went on to recommend: "The Standing Committee should withdraw its recommendation to suspend trade if LA notifies the Secretariat of a voluntary zero export quota for wild specimens. This zero quota would apply until, to the satisfaction of the Secretariat in consultation with the Chair of the Plants Committee, it has established a cautious export quota and provided a satisfactory scientific basis for this quota to the Secretariat". (SC62 Doc 27.2 (Rev. 1)). At SC65 (July 2014) it was noted that Lao PDR had not complied with the conditions agreed by the Standing Committee (SC65 Doc. 26.1).

Table 1: Recommendations by the Plants Committee (PC16 Summary Record)

Range State	Recommendations and deadlines resulting from PC16 (July 2006)
Lao People's Democratic Republic	**Within 6 months the Management Authority should:** Report to the Secretariat its actions to implement the provisions of Article IV, and how the Scientific Authority determines that levels of export are not detrimental to the populations concerned. Clarify and standardize the units and terms used in reporting trade in parts and derivatives and inform the Secretariat when it has completed this task. **Within 1 year:** Carry out a preliminary inventory of standing stock, establish estimates of sustainable off-take and establish a scientific monitoring system of the harvested and un-harvested populations. Establish a conservative export quota based on the inventory of standing stock and estimates of sustainable off-take.

B. Species characteristics

Biology: *D. nobile* is a pseudobulb epiphytic or lithophyte orchid (Govaerts *et al.*, 2015) that inhabits seasonally deciduous forests (La Croix, 2008).

C. Country reviews

Lao People's Democratic Republic

Distribution: *D. nobile* was reported to occur in Nepal, China, Taiwan, Province of China, Lao PDR, Viet Nam, Bhutan, India, Myanmar and Thailand (Roberts *et al.*, 1997). In Lao PDR the species was reported to inhabit humid evergreen montane ridge forest and the lowlands at elevations from 170 to 1365 m above sea level (Schuiteman *et al.*, 2008). Schuiteman *et al.* (2008) reported records of *D. nobile* from seven provinces, namely: Bolikhamxai; Phongsali; Saravan; Vientiane; Xaignabouri; Xaisomboun and Xiang-khoang. Schuiteman *et al.* (2008) remarked that few botanical records existed for some provinces.

Population status and trends: *D. nobile* was reported to be endangered (Bhattacharyya *et al.*, 2013; Yan *et al.*, 2015). No specific information on the status of *D. nobile* in Lao PDR was found.

Threats: In general, *D. nobile* was reported to have been overexploited due to its ornamental and biopharmaceutical value (Singh *et al.*, 2001 in Bhattacharyya *et al.*, 2013). The species was reported to be widely used in traditional Chinese medicine (Kong *et al.*, 2003; Yan *et al.*, 2015). Collection of certain species of *Dendrobium*, including *D. nobile*, was reported to be undertaken on a large scale in Lao PDR by Schuiteman *et al.* (2008) who noted that one exporter in central Lao PDR sent more than 100 000 kg of dried *Dendrobium* stems of wild-sourced plants to China in a single year. Schuiteman *et al.* (2008) considered that this likely represented only a fraction of the total number collected.

Orchids were reported to be collected on a massive scale by the local population in Lao PDR, for sale to collectors from Thailand and Vietnam (Schuiteman *et al.*, 2008). Surveys of markets in Thailand undertaken by Phelps and Webb (2015) found a large, previously undocumented trade in wild ornamental plants. Lao PDR was reported by to be the main source country of orchids at two of the marketplaces investigated: Jatujak and Mukdahan (Phelps and Webb, 2015). *Dendrobium* was by far the most frequently traded orchid genus reported from these markets at (Phelps and Webb, 2015). During market surveys in 2011-2012, Phelps and Webb (2015) recorded five units (0.04% of observed trade) of *D. nobile* at Mukdahan and 77 units (0.14% of observed trade) at Jatujak. Phelps and Webb (2015) considered the species possibly threatened by regional trade based on a threat analysis.

Habitat loss was also considered a general threat to orchids, with forests reportedly being rapidly converted for timber or agriculture (Schuiteman *et al.*, 2008).

Trade: *D. nobile* was listed on CITES Appendix II on 01 July 1975. No direct or indirect exports of *D. nobile* from Lao PDR were reported 2004-2013. With the exception of 2004 and 2005, CITES annual reports have been submitted by Lao PDR for very year 2004-2013. Lao PDR has not published any export quotas for this species.

Management: There does not appear to be any monitoring of population sizes or trends of *D. nobile* in Lao PDR, and Schuiteman *et al.* (2008) highlighted the need for a better knowledge of the Lao PDR orchid flora, for the implementation of sound management policies and for effective protection. The CITES Management Authority of Lao PDR was consulted as part of this review, but no response was received. Through its national legislation project, the CITES Secretariat categorised the national legislation in Lao PDR as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

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Myrmecophila tibicinis: Belize

A. Summary

BELIZE: Suspension valid from: 15 June 2010	No population estimates are available for Belize, and the status of the species in the country is unclear. Almost 3000 wild-sourced specimens reported in trade 2004-2009. Efforts to undertake surveys appear to have been limited due to lack of financial resources and compounded by the confusion with other species of the genus. Support to assist Belize in conducting comprehensive surveys and species identification may be merited. Until further information is provided to demonstrate intended exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At PC15 (May 2005), *Myrmecophila tibicinis* was selected for review on the basis of trade data from the CITES Trade Database and information available to the Committee (PC15 Summary Record; PC16 Doc. 10.3). The Secretariat consulted Belize and received a reply (PC16 Doc. 10.3). *M. tibicinis* was considered as of "possible concern" for Belize (PC17 summary record), and recommendations were formulated (Table 1). No response was received by the Secretariat in relation to the PC recommendations, and the Secretariat and the PC Chair determined that the short term recommendations had not been complied with (SC59 Doc. 14.1). The SC agreed to suspend trade covered by Article IV of the Convention for *M. tibicinis* from Belize (SC59 Summary Record). The suspension entered into force on 15 June 2010 (Notification No. 2010/012). At SC62 (July 2012) it was reported that there had been no recent developments in this case (SC62 Doc.27.2 (Rev.1)).

Table 1: Recommendations by the Plants Committee (PC17 Summary Record).

Range State	Recommendations and deadlines resulting from PC17 (April 2008)
Belize	**Within 3 months** The Management Authority should confirm to the Secretariat that they will not issue export permits for *M. tibicinis* until surveys have been made to confirm the species being traded and status of the species. The Secretariat should include this information on the list of voluntary export quotas. **Within 2 years** In relation to *Myrmecophila tibicinis* and other species in this genus, probably confused with *M. tibicinis:* - Carry out a preliminary inventory of standing stock, establish estimates of sustainable off-take and establish a scientific monitoring system of the harvested and unharvested populations. - Establish a revised conservative export quota based on the inventory of standing stock and the estimates of sustainable off-take. - The Management Authority should report to the Secretariat the result of the above points with an explanation of how the Scientific Authority determines that levels of export are not detrimental to the populations concerned.

B. Species characteristics

Taxonomic note: Initially described as *Epidendrum tibicinis*, but transferred to the genus *Schomburgkia* shortly afterwards (Jones, 1965a), with the name *Schomburgkia tibicinis* still used quite frequently in the orchid trade (PC17 Doc. 8.4). Included amongst the species transferred from *Schomburgkia* to a new genus *Myrmecophila* by Rolfe (1917), and now treated as *Myrmecophila tibicinis*

by most authors (e.g. Catling and Catling, 1988; McLeish *et al.*, 1995; Carnevali *et al.*, 2003; Govaerts *et al.*, 2015). Two taxa formerly considered to be varieties of *M. tibicinis* (e.g. Jones, 1965b), *exaltata* and *grandiflora*, are now usually treated as separate species (e.g. Kennedy, 1979; Carnevali *et al.*, 2001; Govaerts *et al.*, 2015).

Based on an analysis of the morphology, leaf anatomy and DNA sequences of *Myrmecophila* species, Carnevali *et al.* (2003) suggested that *M. tibicinis* was most closely related to *M. brysiana*, *M. grandiflora* and *M. christinae*, and that this "complex" of species – which they suggested showed mutually exclusive distributions or ecological specialisations when they occurred parapatrically – was still actively evolving. McLeish *et al.* (1995) also noted that *M. tibicinis* and *M. brysiana* were "very closely allied", and that they sometimes hybridised in the wild.

Biology: *M. tibicinis* (Fluteplayer's Schomburgkia) is an epiphytic orchid, which occurs on trees or shrubs in mangroves, sand dunes, savannas and xerophytic or humid forest, up to 600 m above sea level (Ames and Correll, 1985), from the Gulf coast of southern Mexico, through Central America to Costa Rica (Jones, 1965b; Carnevali *et al.*, 2003) and (according to some authors, e.g. Ames and Correll, 1985) Panama. The species is large-flowered (8–9 cm diameter), self-compatible and pollinated by large bees (Malo *et al.*, 2001), and has hollow pseudobulbs that are often inhabited by ants (Rico-Gray *et al.*, 1989).

A study of *M. tibicinis* populations in coastal Yucatán, Mexico, found densities of 394, 269 and 81 plants per hectare – apparently decreasing with levels of human disturbance (urbanisation and partial thinning of scrubland) – in the larger (9–40 ha) ones, but isolated individuals and densities of 1.2–13 plants per hectare in the three smaller (0.6–8 ha) populations (Malo *et al.*, 2001).

C. Belize

Distribution: E. Baron (*pers. comm.* to UNEP-WCMC, 2015) noted that four species of *Myrmecophila* occurred in Belize; the pseudobulbs and leaves appeared very similar for all and none were considered well studied. Catling and Catling (1988) listed three species of *Myrmecophila* for Belize – *M. brysiana*, *M. tibicinis* and *M. wendlandii* (the latter based on Jones, 1974) – noting that *M. tibicinis* and *M. brysiana* were "characteristic" of coastal mangrove swamps and the areas of open sand where mangrove gives way to pineland, and also occurred in Calabash *Crescentia cujete* trees and larger oaks (with branches "high enough to avoid the heat of the pineland fires") within the low-elevation pinelands themselves. E. Baron (*pers. comm.* to UNEP-WCMC, 2015) also reported *M. christinae* to occur in Belize, and noted that the 1974 observation of *M. wendlandii* was not supported by a location or a herbarium specimen.

McLeish *et al.* (1995) reported *M. tibicinis* to be "found in all districts" of Belize, but suggested that it usually occurred "in coastal pine ridge, savannah and mangrove swamp".

Population status and trends: McLeish *et al.* (1995) described *M. tibicinis* as "common" in Belize; it was "at least regionally common (e.g. in 'bajo' forests in the district of Corozal)", according to B. Sayers (2007, cited in PC17 Doc. 8.4). Bijleveld (1998) recorded two individuals of *M. tibicinis* in "mangrove savannah" during surveys of seven 100-m² vegetation plots at Shipstern Nature Reserve (Corazal district) in 1997. More generally, J. Meerman (2007, cited in PC 17 Doc. 8.4) noted that, although they used to be common in Belize, *Myrmecophila* spp. as a whole had become less easy to find.

G. Carnevali (2007, cited in PC17 Doc. 8.4), however, suggested that most records of '*M. tibicinis*' actually referred to *M. christinae* – a new species, described by Carnevali and Gómez-Juárez (2001) based on specimens from Mexico (Yucatán, Campeche and Quintana Roo states) and Belize (Belize district) – which he considered to be common in Belize, whereas "true" *M. tibicinis* was rare.

E. Baron (*pers. comm*. to UNEP-WCMC, 2015) noted that the Caves Branch Botanical Garden, Marie Selby Botanic Gardens and the University of Belize were working to undertake inventories of epiphytes in Belize. *Myrmecophila* were observed from the Bacalar Chico Marine Reserve in Corozal District in December 2014 by with five colonies and 239 individual plants recorded, however it was not possible to determine the individual species present since they were not in bloom E. Baron (*pers. comm*. to UNEP-WCMC, 2015).

Threats: Catling and Catling (1988) implied that periodic fires in pineland areas could constrain the occurrence of epiphytic orchids such as *M. tibicinis*, but did not indicate whether fire *per se* constituted a threat. However, the CITES Management Authority (MA) of Belize (2007, cited in PC17 Doc. 8.4) reported habitat loss as a threat to the species, and J. Meerman (2007, cited in PC17 Doc. 8.4) suggested that *Myrmecophila* spp. were less common largely because of coastal development by the aquaculture industry and tourism sector. No information was available on the potential impacts of habitat fragmentation, which was reportedly accelerating, due to development of coastal areas, further north in the species' range, in Yucatán, Mexico (Malo *et al*., 2001).

McLeish *et al*. (1995) noted that *M. tibicinis* was "commonly cultivated", and B. Adams (2007, cited in PC17 Doc. 8.4) suggested that "nearly every house and hotel" in Belize had *Myrmecophila* orchids in their gardens, mostly of wild origin. Despite this significant local market demand, there appeared to be no information on the extent of harvest for domestic use, as this was undertaken by local collectors with small-scale operations (CITES Management/Scientific Authority of Belize, 2007, cited in PC17 Doc. 8.4). Bridgewater (2012) also suggested that many of the orchids enlivening "verandas and hotels across Belize" had not been legally obtained, noting that – in addition to regulated, legal enterprises – there were "informal illegal businesses supplying markets" with orchids. The relative importance of collection for export compared with that for the ("evidently substantial") domestic market was considered "unclear" (PC17 Doc. 8.4).

Trade: *Myrmecophila tibicinis* was listed on CITES Appendix II on 1 July 1975. With the exception of 2013, all CITES annual reported have been submitted by Belize for the period 2004-2013. Belize did not publish any export quotas for *M. tibicinis* 1997-2013.

According to data from the CITES Trade Database, direct exports in *M. tibicinis* from Belize 2004-2013 consisted of 2920 live wild-sourced specimens traded for commercial purposes, and four artificially propagated specimens for personal purposes as reported by Belize, and 2068 wild-sourced live specimens as reported by countires of import (Table 2).

No indirect trade in *M. tibicinis* originating in Belize was reported over the period 2004-2013.

The CITES MA of Belize (*pers. comm*. to UNEP-WCMC, 2015), confirmed that the country had not issued any exports of the species since the introduction of the trade suspension.

Table 2: Direct exports of *Myrmecophila tibicinis* from Belize, 2004-2013. All trade was in live specimens. No trade reported in 2008.

Source	Purpose	Reported by	2004	2005	2006	2009	Total
A	P	Exporter	4				4
		Importer					
W	T	Exporter	1470	250	600	600	2920
		Importer	1218	250	600		2068

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10 July 2015

Management: According to the CITES MA of Belize (*pers. comm.* to UNEP-WCMC, 2015), the country has not carried out any inventory of standing stock of the species, primarily due to a lack of financial resources to undertake a survey, and consequently no export quota has been set. Through its

national legislation project, the CITES Secretariat categorised the national legislation in Belize as "legislation that is believed generally not to meet the requirements for the implementation of CITES".

The Scientific Authority (SA) of Belize (*pers. comm*. to UNEP-WCMC, 2015) have consulted with the Botanic Gardens and University of Belize relating to ongoing survey work to obtain information on *M. tibicinis* to support non-detriment findings. However, difficulties with species identification were noted, and the current trade restriction was also noted to limit the opportunities for identify the species (E. Baron, *pers. comm*. to UNEP-WCMC, 2015).

It was reported to be "common practice for collectors to salvage orchids prior to and after development of coastal lands and CITES export permits have been issued on the basis that specimens have been collected from areas cleared for agriculture or other development" PC17 Doc. 8.4. Export was reportedly carried out almost exclusively by one collector, and it was suggested that there was "quite high post-collection mortality, which creates a continuous demand for the species" (CITES MA and SA of Belize, 2007, cited in PC17 Doc. 8.4).

B. Adams and B. Sayers (2007; cited in Pc17 Doc. 8.4) indicated that they were unaware of any commercial cultivation of *M. tibicinis*, and the CITES MA and SA of Belize (2007, cited in PC17 Doc. 8.4) noted that there was no investment in artificial propagation as the species could readily be collected from the wild.

G. Carnevali (2007, cited in PC17 Doc. 8.4) suggested that most *Myrmecophila* exports from Belize were actually of *M. christinae* or *M. brysiana* (described as "rare" in Belize by McLeish *et al*., 1995), and that *M. christinae* was the most commonly collected species in the country. According to J. Meerman (2007, cited PC17 Doc. 8.4), most people, including collectors, considered all *Myrmecophila* spp. to be *M. tibicinis*, and the CITES MA and SA of Belize (2007, cited in PC17 Doc. 8.4) indicated that the inability to distinguish between species was a challenge, both for them and collectors.

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Prunus africana: Equatorial Guinea, United Republic of Tanzania

A. Summary

EQUATORIAL GUINEA: Suspension valid from: 3 February 2009	Occurs on Bioko island, with a potential distribution of around 21,000 ha. Harvesting for bark is the main threat and impacts of unsustainable harvesting (dead trees) were apparent in the country in 1999 and in 2008. High levels of exports (bark) reported 2004-2009 (prior to the suspension) with countries of import reporting over four times the quantity reported by Equatorial Guinea. A pilot project for a management plan took place in 2006, however no plan has been adopted. Inventory studies and an NDF are still required. There is the potential for an NDF to be produced through the CITES-ITTO project with funding provided by a trade organisation within the country. It is recommended that the CITES Authorities in Equatorial Guinea fully participate to facilitate this process. Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate
TANZANIA: Suspension valid from: 3 February 2009	Widespread occurrence in the country although only found in forest areas, so extent of occupancy is limited. National population considered as Data Deficient. In some locations considered to be common but declining (in 2006) but elsewhere appears rare. High levels of exports (bark) reported 2004-2009 (prior to the suspension), with countries of import reporting over five times the quantity reported by Tanzania. Illegal logging and domestic use also reported as threats. Plans are underway to conduct an inventory of the species (funding dependent). Until further information is provided to demonstrate exports would not be detrimental to the survival of the species in compliance with Article IV, the suspension may still be appropriate.	RECOMMENDATION: Suspension may still be appropriate

RST Background

At PC16 (July 2006), *Prunus africana* (African Cherry) was categorised as of "urgent concern" for seven range States, including Equatorial Guinea and the United Republic of Tanzania (hereafter referred to as Tanzania) (PC16 Summary Record) and recommendations were formulated (Table 1). Tanzania responded in a letter of 24 April 2008, indicating that some steps had been taken to implement the recommendations, including that only part of the bark of trees over 40 years old were harvested and no

trees were felled in the process of collecting bark (SC57 Doc. 29.1 (Rev.2)). The letter reported that Tanzania was looking forward to implementing the recommendations and indicated that a stock assessment would be undertaken over the next 2 months (SC57 Doc. 29.1 (Rev. 2)).

Equatorial Guinea reported that once other production areas were opened and a non-detriment finding had been completed, they proposed to establish an annual export quota of 197 tons of bark and derivatives (SC57 Doc. 29.1 (Rev. 2)). For both range States, the SC concluded that little progress had been made in complying with the recommendations, and decided to extend the deadline for implementation of all the recommendations until 31 December 2008 (SC57 Doc. 29.1 (Rev. 2)). Having reviewed the available information, the Secretariat and the Chair of the PC were not satisfied that the recommendations had been implemented by Equatorial Guinea and Tanzania, and agreed to suspend trade covered by Article IV of the Convention for *P. africana* from these range States (Notification No. 2009/003). The suspensions entered into force on 3 February 2009 (Notification No. 2009/003).

Table 1: Recommendations by the Plants Committee (PC16 Summary Record).

Range State	Recommendations and deadlines resulting from PC16 (July 2006)
All range States with populations of "urgent concern"	**Within 3 months the Management Authorities should:** Report to the Secretariat their proposed actions to implement the provisions of Article IV, and how the Scientific Authority determines that levels of export are not detrimental to the populations concerned. Report to the Secretariat the actions proposed in their management plans to train resource harvesters in techniques that will conserve the resource. **Within 1 year the Management Authorities should:** Liaise with the range States to organize a workshop for all range States that will compile a work programme for the full implementation of points 1 to 5 (under 'At the international level' in document PC16 Doc. 10.2.1). Report to the Secretariat the results of their actions to implement the provisions of Article IV, and how the Scientific Authority determines that levels of export are not detrimental to the populations concerned. **With no time limit, the Management Authorities should:** Effectively foster implementation of management plans in range States − Coordinate complete studies of the populations of *Prunus africana* across the whole of its range. Coordinate the future studies in the range area with methods used on Bioko for evaluating *P. africana* production in natural ecosystems (document PC16 Doc. 10.2.1). Ensure the quality of studies and follow-up of management plans for the species. Encourage international cooperation projects that promote the use of *Prunus africana* in agroforestry systems and plantations, using proper genetic diversity and optimizing propagation and agroforestry cultivation techniques.
Equatorial Guinea (Bioko)	**Within 3 months:** In consultation with the CITES Secretariat and the Chairman of the Plants Committee, establish a conservative quota for export of *P. africana* bark and other parts and derivatives exported. This quota should be based on results of studies conducted in the new harvesting areas. Clarify reported exports of extract which are likely to be powder, and inform the Secretariat of any facilities to produce extract within the country. **Within 1 year:** Carry out a preliminary inventory of standing stock, establish estimates of sustainable off-take, taking into account the need to conserve large seed-producing trees, and establish a scientific monitoring system of the harvested and unharvested *P. africana* populations. Establish a revised conservative export quota based on the inventory of standing stock and the estimates of sustainable off-take. Provide a timetable to carry out peer-reviewed ecological studies and appropriate population modelling of *P. africana* in order to establish a long-term management plan for the sustainable use of this species. **Within 2 years:** The Management and Scientific Authorities should report to the Secretariat the final version of the long-term management plan and progress made against that plan.

Range State	Recommendations and deadlines resulting from PC16 (July 2006)
United Republic of Tanzania	**Within 3 months:** In consultation with the CITES Secretariat and the Chairman of the Plants Committee, establish a conservative quota for export of *P. africana* bark and other parts and derivatives exported. This quota should be based on results of studies conducted in the new harvesting areas. Clarify reported exports of extract which are likely to be powder, and inform the Secretariat of any facilities to produce extract within the country. **Within 1 year:** Carry out a preliminary inventory of standing stock, establish estimates of sustainable off-take, taking into account the need to conserve large seed-producing trees, and establish a scientific monitoring system of the harvested and unharvested *P. africana* populations. Establish a revised conservative export quota based on the inventory of standing stock and the estimates of sustainable off-take. Provide a timetable to carry out peer-reviewed ecological studies and appropriate population modelling of *P. africana* in order to establish a long-term management plan for the sustainable use of this species. **Within 2 years:** The Management and Scientific Authorities should report to the Secretariat the final version of the long-term management plan and progress made against that plan.

B. Species characteristics

Biology: *Prunus africana* is an evergreen tree species (Kalkman, 1965; Orwa *et al.*, 2009), which typically grows at altitudes between 900-3400 m, with increasing elevation range towards lower latitudes (Vinceti *et al.*, 2013). The species was reported to be restricted to montane and afromontane forest habitats (PC16 Doc. 10.2; (Stewart, 2003; Jimu, 2011). *P. africana* was considered to be a light-demanding species (PC16 Doc. 10.2; (Stewart, 2003; Kiama and Kiyiapi, 2001), most abundant along forest margins and in disturbed areas (Stewart, 2003).

P. africana was considered to be an important element in the ecosystem (Oldfield *et al.*, 1998), including in the diet and shelter of pollinators and rare fauna, and the support of canopy epiphytes (Fashing, 2004; Vinceti *et al.*, 2013). The species was considered to respond well to cultivation (Orwa *et al.*, 2009) and to regenerate well (Oldfield *et al.*, 1998), with "a remarkable ability to withstand bark removal" (Cunningham and Mbenkum, 1993). However, it was reported that poor harvesting methods may lead to tree death (Orwa *et al.*, 2009).

P. africana was reported to be a long-lived species, which "can grow up to 14 m high and 37 cm diameter at breast height in 18 years" (PC16 Doc. 10.2). The species was reported to reproduce primarily from seed (PC16 Doc. 10.2). Genetic studies of *P. africana* throughout Africa identified five distinct regions (Kadu *et al.*, 2011, 2012).

Distribution: The species was considered to have a broad but highly fragmented distribution (Vinceti *et al.*, 2013). *P. africana* was reported to be widely distributed in Africa, although restricted to montane and afromontane forest habitats (White, 1983; Stewart, 2003) cited in (Jimu, 2011). The species occurrence was reported from Angola, Burundi, Cameroon, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Sao Tomé and Principe, South Africa, Sudan, Swaziland, Uganda, Tanzania, Zambia and Zimbabwe (PC16 Doc. 10.2); (Hall *et al.*, 2000; Betti, 2008). The species was also reported from Comoros by (Hall *et al.*, 2000) and a single known sighting and one collection record were reported for Lesotho (PC16 Doc. 10.2).

Population status and trends: *P. africana* was categorised as Vulnerable in the IUCN Red List in 1998, however, it was noted that the listing needs updating and that further consultation with all

parties is required to determine the threat status of the species (World Conservation Monitoring Centre, 1998).

According to (Stewart, 2003), prior to the discovery of its use of an herbal remedy in 1966, *P. africana* was relatively common, but never abundant. The species was not considered in danger of extinction due to its very large geographical range (Cable and Cheek, 1998 in World Conservation Monitoring Centre, 1998; Jøker, 2003). However, unsustainable exploitation was reported to have resulted in population declines over much of its geographic range (Cunningham and Mbenkum, 1993; Oldfield *et al.*, 1998; Bodeker *et al.*, 2014). The species was reported to be locally common in montane regions (Vinceti *et al.*, 2013).

Threats: The main threat to the species was considered to be the large-scale unsustainable harvesting for international trade, driven by demand for the bark of *P. africana* for the pharmaceutical market (Cunningham and Mbenkum, 1993; Oldfield *et al.*, 1998; Bodeker *et al.*, 2014). Commercial harvesting of *Prunus* bark was reported from the 1960s, and in the late 1990s, the international market for *P. africana* bark extract (used in the treatment of benign prostatic hyperplasia (BPH)) was estimated to be worth approximately US$220 million; over 3300 tons of bark were reported to have been collected annually (Cunningham *et al.*, 1997) cited in (Bodeker *et al.*, 2014). Loss of habitat was also considered to pose a threat to *P. africana* (Jimu, 2011; Bodeker *et al.*, 2014). The species was reported to be restricted to increasingly isolated 'islands' of tropical montane habitats (Cunningham and Mbenkum, 1993) and over-exploitation was considered to pose a threat to the genetic distinctness and diversity of populations (Cunningham and Mbenkum, 1993; Dawson *et al.*, 2000).

The species was found to be highly vulnerable to a warming climate (Mbatudde *et al.*, 2012) and (Vinceti *et al.*, 2013) predicted that by 2050, the climate will no longer be suitable for *P. africana* over about half of its current distribution.

Overview of trade and management: *P. africana* was listed in CITES Appendix II on 16 February 1995. This listing was formerly annotated by #1[17] and is now annotated by #4[18]. The Panel of Experts of the FAO on Forest Genetic Resources was reported to have included *P. africana* as one of the eighteen priority species for conservation action in Africa (FAO, 1997 in Navarro, 2008; Cheboiwo, 2014). Vinceti *et al.* (2013) noted that policies to ensure the sustainable management of *P. africana* had been established in various African countries, but that enforcement issues and control problems persisted. While, Cheboiwo (2014) thought that most producer countries had "yet to make concrete efforts to enact policies and legal structures to promote planting, sustainable harvesting procedures, appropriate extraction technologies and legal trade in its bark."

A rotation period of five years was considered too short. Based on a detailed survey by Nkeng (2009), a 7-8 year minimum rotation was considered to be needed for wild harvest to continue (Cunnigham *et al.*, 2014). At PC16 in 2006, the *P. africana* Working Group was established and tasked with the provision of guidance regarding the implementation of recommendations outlined in the Review of Significant Trade for *P. africana* to the seven countries categorised as 'urgent concern'. The Working Group workshop was held in 2008 with the aims of improving the skill set of CITES Management and Scientific Authorities (MA/SA) of the priority countries including; conducting non-detriment findings, collecting baseline data, formulating quotas and developing management techniques. In addition, the workshop aimed to

[17] #1 refers to the all parts and derivatives, except: seeds, spores and pollen (including pollinia); seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; cut flowers of artificially propagated plants.

[18] #4 refers to all parts and derivatives except: seeds, spores and pollen; seedling or tissue cultures obtained in vitro, in solid or liquid media, transported in sterile containers; cut flowers of artificially propagated plants.

assist in the development of communication channels and collaborative mechanisms between CITES MA/SA of priority countries, importing countries, the CITES PC and the CITES Secretariat (CITES Secretariat, 2008).

C. Country reviews

Equatorial Guinea

Distribution: *P. africana* was reported to occur on the island of Bioko (PC16 Doc. 10.2). In 2005, an evaluation of the harvest of *P. africana* bark on Bioko Island by the Spanish CITES SA estimated the potential distribution of the species at 21,620.12 ha, mostly located on Pico de Basilé on the north side of the Island (14,492.37 ha) and the remainder in the Moca-Gran Caldera de Luba area [in the south of the Island] (Clemente Munoz *et al.*, 2006). *P. africana* was reported to be distributed within an altitudinal range of 1400 to 2500 m above sea level (PC16 Doc. 10.2.1) at densities of 7.18 stem ha^{-1} (Navarro-Cerrillo *et al.*, 2008). It was noted that the distribution in Moca was probably lower as a result of deforestation (PC16 Doc. 10.2.1).

Population status and trends: Sunderland and Tako (1999) observed that 68% of exploited *P. africana* on Pico Basilé were either dead or showed canopy die-back (Sunderland and Tako, 1999). Navarro-Cerrillo *et al*. (2008) found that harvesting practices used had a strong negative impact on *P. africana* population structure and dynamics. Extraction in new areas, combined with a lack of recruitment or establishment of new seedlings, was believed to pose a risk of commercial extinction of the species in Bioko (Navarro-Cerrillo *et al.*, 2008).

Threats: Sunderland and Tako (1999) reported that levels of harvesting of *P. africana* bark on Bioko Island in Equatorial Guinea were unsustainable despite relatively modest levels of harvest (PC16 Doc. 10.2). On Bioko Island, commercial harvesting was reported to have begun in the early 1990s (Sunderland & Tako, 1999). Bark was primarily harvested from two key sites: Pico de Basilé and around the village of Moca (in the south) (Sunderland & Tako, 1999). Traditional use of *P. africana* on Bioko was reported to include a number of medicinal uses (Terry *et al*., 1999). Onde (2008) reported that local harvesters felled whole trees in order to maximise profit.

The montane forests of Bioko were reported to be under increasing threat from human activities (Cronin, 2014). In the period 2000-2005, Bioko montane forests experienced a high percentage of mean forest loss (2.4%) (Buchanan et al., 2011, cited in Cronin 2014), although the higher elevations were reported to remain relatively intact (Cronin, 2014).

Trade: According to data from the CITES Trade Database, direct exports of *P. africana* from Equatorial Guinea, 2004-2013, consisted of 137,396 kg of wild-sourced bark as reported by Equatorial Guinea (all trade reported in 2004), and 651,232 kg of wild-sourced bark as reported by countries of import (Table 2). Annual reports have been received from Equatorial Guinea for very year between 2004 and 2013 except for 2013. No export quotas have ever been published for this species/country combination.

Exports began in 1992 and an average of 210 tonnes of bark per year was exported from Bioko between 1992 and 1998, (based partly on data from one exporting company) although official trade data is only available from 1995 (Sunderland & Tako, 1999). Exports reported in accordance with CITES regulations began in 1998.

Table 2: Direct exports of *Prunus africana* from Equatorial Guinea 2004-2008. No trade was reported in 2007. All trade was in wild-sourced bark (kg), for commercial purposes.

Reported by	2004	2005	2006	2008	Total
Exporter	137,396				137,396
Importer	141,228	309,214	172,800	27,990	651,232

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

Indirect trade of *Prunus africana* extract originating in Equatorial Guinea comprised of 230 kg reported in 2004 according to the re-exporters, and 9 kg in 2005 according to the countries of import.

Management: The 1997 Appendix to the Forestry Law (1995) of Equatorial Guinea (Reglamento de Aplicacion de la Ley Sobre el Uso y Manejo de los Bosques EQG/96/002) regulates the sustainable use of non-timber forest products and the harvest of *P. africana* in particular (Sunderland and Tako, 1999; Clemente Munoz *et al.*, 2006), however, a lack of baseline information and the absence of monitoring systems was reported to limit regulation of bark exploitation (Sunderland and Tako, 1999; Clemente Munoz *et al.*, 2006).

In 2006, a pilot project for a species management plan was devised to determine the current and potential range of *P. africana* on Bioko (Clemente Munoz *et al.*, 2006). The project objectives were:

1. Survey of the distribution of dominant types of vegetation by means of a Landsat 7 ETM+ image
2. Characterisation of the forests where *P. africana* occurs in current and potential harvest areas, in terms of their structure, composition of the vegetation, wealth and diversity of tree species
3. Estimate of bark yield, and
4. Establishment of silvicultural criteria for sustainable use of *P. africana* forests.

The results would enable stocks to be assessed, bark harvest to be evaluated and recommendations made that could be taken forward in a management plan for sustainable use of the species (Clemente Munoz *et al.*, 2006).

A vegetation survey was conducted using remote sensing techniques, along with an inventory of a representative area of Bioko *P. africana* forests (Clemente Munoz *et al.*, 2006). Bark yield estimates were made, and a quota and harvest guidelines were proposed (Clemente Munoz *et al.*, 2006)However a management plan was reportedly not adopted (Ingram *et al.*, 2015; Esono, *pers. comm.* to J. Legarde, visit to Equatorial Guinea, this project).

J. Legarde (visit to Equatorial Guinea, this project) stated that while specific objectives (1), (2), and (4) can be considered as totally completed, the specific objective (3) could be considered as partially tackled. Whilst the estimation of bark yield was considered acceptable at the level of individual trees, it could not be made for the whole population of *P. africana* on Bioko Island (Legarde visit to Equatorial Guinea, this project). Sampling design limitations were considered by Legarde (visit to Equatorial Guinea, this project) to be the orientation of lines (transects/plots) and the intensity of sampling. On Bioko island, lines were oriented parallel to the slopes, while studies conducted in other African countries orientated lines perpendicular to the slopes, to better understand the impact of elevation on the distribution of *Prunus* stands (Legarde visit to Equatorial Guinea, this project). In addition, only five ha was completely sampled (sampling rate of 0.023%), which was considered too low for management inventories (Legarde visit to Equatorial Guinea, this project). The project authors recognised the methodological limits, and recommended that the Equatorial Guinean Ministries responsible for forestry management and CITES/APRA "take inventory of the two new areas before beginning harvest" (Clemente Munoz *et al.*, 2006). However, the pilot project was not continued to two new sites due to political issues and the proposed quota of 197 tons in 2008 could not be confirmed (Legarde visit to Equatorial Guinea, this project).

At the 2008 *P. africana* Working Group workshop, Equatorial Guinea noted that it had few *P. africana* trade activities and these were primarily conducted with a Spanish company (CITES Secretariat, 2008). Equatorial Guinea provided details of *P. africana* management measures, including a minimum diameter for harvesting of 20 cm, and an annual quota of 500 tonnes (Onde, 2008). It was reported that in order to export *P. africana*, certificates of origin must be issued by the Agricultural and Trade Office of Bioko (Onde, 2008).

J. Lagarde (visit to Equatorial Guinea, this project) reported that, since the February 2009 suspension, the authorities in Equatorial Guinea had not made any efforts to comply with the recommendations of the CITES PC. In early 2015, the authorities in the country had reportedly begun discussions with the Spanish trading company, EUROMED, in order to pursue inventories initiated in 2005 to establish realistic quotas (J. Lagarde, visit to Equatorial Guinea, this project). Attempts were made to engage with the CITES Authorities, both during the visit to Equatorial Guinea by J. Lagarde (August, 2015) and subsequently, however no responses have been received.

Given that the recommendations of the CITES Plants Committee have not been met, Lagarde (2015, visit to Equatorial Guinea, this project) considered that the trade suspension for *P. africana* should be retained. Some additional recommendations were made:

- Equatorial Guinean authorities should delimitate clearly the *Prunus* Allocation Units (PAUs) in the country. For the Bioko island, there can be four PAUs including; Pico De Basile 1, Pico De Basilé 2, Moca, and Caldeira de Luba;
- Conduct management inventories using appropriate sampling design and rate in each PAU;
- Based on inventory data recorded and socio economic surveys, develop for each PAU, a simple management plan (SMP) for *P. africana* together with a report of impact assessment studies (required for any harvesting activities occurring inside or in the periphery of a protected area);
- Develop relevant efforts to effectively implement the guidelines to be defined in different documents of the SMP.

Given appropriate engagement by the Equatorial Guinea CITES Authorities, there appears to be a significant opportunity for the country to prepare its non-detriment-finding report on *Prunus africana* with the assistance of the CITES-ITTO programme (J. Lagarde, visit to Equatorial Guinea, this project).

The CITES-ITTO programme on tree species aims to ensure that international trade in CITES listed tropical tree species is non-detrimental to their conservation. In 2010, an NDF was developed for *P. africana* from the North West region of Cameroon with the assistance of the programme, and it was reported that a similar process would be used to develop an NDF report for Equatorial Guinea (J. Lagarde, visit to Equatorial Guinea, this project). Equatorial Guinea is not a member of ITTO, however, there is scope for the country to receive assistance in both the development and implementation of an NDF for *P. africana* through the CITES-ITTO programme (J. Lagarde, visit to Equatorial Guinea, this project).

Funds for this process can be provided by the trade companies (J. Lagarde, visit to Equatorial Guinea, this project). If so, a proposal addressing the main concerns of a NDF is developed by the local CITES authorities (MA and SA) and the Regional Coordinator and sent to the ITTO for consideration. If approved, the proposal is then submitted to the trading company for approval for funding.

If the proposal is approved for funding, a MoU is signed between the company and ITTO, and funds are transferred to ITTO. A second MoU is then signed between ITTO and the forest administration of the country for execution of the project. A work plan is submitted to ITTO and a coordination team assembled, including representatives from the Steering Committee and the Scientific Committee. Funds

are provided by ITTO to support the implementation of specific activities required to complete an NDF. The results of these activities are presented to the Scientific Committee for validation and used to draft the NDF report (J. Lagarde, visit to Equatorial Guinea, this project).

It was reported that EUROMED, a Spanish trade company, has agreed to provide finding for the continuation of the *Prunus* inventories on Bioko Island with the aim of completing the non-detriment finding (NDF) report, under the supervision of the CITES-ITTO programme. The CITES MA was reported to be in agreement and authorisation for the inventories was received from the Prime Minister of Equatorial Guinea. Experts will be assisting Equatorial Guinea in the preparation of a proposal to submit to ITTO for assistance with developing an NDF report (J. Lagarde, visit to Equatorial Guinea, this project).

The range of *P. africana* on Bioko was reported to coincide with two protected areas: Pico de Basilé National Park (IUCN PA category 2[19]) and Caldeira de Luba/Gran Caldera-Southern Highlands Scientific Reserve (IUCN PA category 1b[20]) (Clemente Munoz *et al.*, 2006; Cronin *et al.*, 2014). However, both areas were reported to lack management plans and law enforcement was considered weak (Cronin *et al.*, 2014).

Through its national legislation project, the CITES Secretariat categorised the national legislation in Equatorial Guinea as "legislation that is believed generally to meet the requirements for implementation of CITES".

United Republic of Tanzania

Distribution: In Tanzania, *P. africana* was reported to occur in Arusha, the Eastern Arc Mountains (Pare, East and West Usambara, Uluguru mountains, Mahenge escarpment, Udzungwa mountains) Kilimanjaro, Mufindi escarpment, Southern highlands and west and central Tanzania (Kapinga and Hussein, 2008; Mugaka *et al.*, 2013). The species was reported to occur in montane forest at altitudes of 1500-2300 m above sea level (Kapinga and Hussein, 2008).

Population status and trends: Cunningham (2006) categorised the status of *P. africana* in Tanzania as Data Deficient (PC16 Doc. 10.2). In the Rombo and Mwanga districts of Kilimanjaro, *P. africana* was considered to be common but declining, with sparse stocks recorded at lower elevations, but increasing in abundance with altitude (Madofe *et al.*, 2006). In the Kondoa Irangi Hills (central Tanzania) *P. africana* was found to occur at very low densities and was considered to be rare and declining (Lyaruu *et al.*, 2000). In the Eastern Arc Mountains, *P. africana* was reported to be scarce and vulnerable (Ministry of Natural Resources and Tourism, 2007). Overall, montane forests in Tanzania are considered not abundant (Stewart, 2003).

Vinceti *et al.* (2013) identified Tanzania as a priority area for the conservation of *P. africana* to maximise genetic and climatic diversity.

Threats: In the Eastern Arc, *P. africana* was reported to be one of the main timber species targeted for illegal logging (Ministry of Natural Resources and Tourism, 2007). It was also reported to be commonly used for firewood and charcoal in the Eastern Arc, where it was reported to be "scarce,

[19] Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

[20] Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

valuable and in high demand for both subsistence and commercial purposes" (Ministry of Natural Resources and Tourism, 2007). In West Usambara in the Eastern Arc, *P. africana* was listed as one of the most targeted medicinal plants. (Ministry of Natural Resources and Tourism, 2007). A survey of *P. africana* harvesters in a Tanzania forest reserve by Maximillian and O'Laughlin (2009) found 78% used unsustainable harvesting practices and most did not plant trees (Maximillian and O'Laughlin, 2009). In addition, an estimate of the total net annual income for harvesters by (Maximillian and O'Laughlin, 2009) was found to be substantially more than Tanzanian government's minimum salary.

Local uses of *P. africana* in Tanzania were reported to include fuel wood, timber, fodder and medicine (Dino, 2005; Maximillian and O'Laughlin, 2009). The Tanzanian Ministry of Natural Resources and Tourism, Forestry and Beekeeping Division (2007) stated that although the local market for *P. africana* "has not reached alarming rates, chances are that it is going to increase in the foreseeable future and enhance unsustainable harvesting" (Ministry of Natural Resources and Tourism, 2007).

General threats to species and habitats identified as conservation targets in the Eastern Arc Mountains (including *P. africana*) were reported to include: fire, the conversion of natural habitats to agriculture, illegal logging, unsustainable collection of wood, mining, illegal grazing, unsustainable collection and invasive species (listed in order of extent, severity and urgency) (Forestry and Beekeeping Division, 2006; Kilahama *et al.*, 2009).

Trade: According to data from the CITES Trade Database, direct exports of *P, africana* from United Republic of Tanzania, 2004-2013, consisted of 25,000 kg of wild-sourced bark as reported by United Republic of Tanzania, and 133,885 kg of wild-sourced bark as reported by countries of import (Table 3). No export quotas have ever been published for this species/country combination. Annual reports have been received from Tanzania for every year 2004-2013.

Table 3: Direct exports of *Prunus africana* from United Republic of Tanzania 2004-2008. No trade was reported in 2006. All trade was in wild-sourced bark (kg) for commercial purposes.

Reported by	2004	2005	2007	2008	Total
Exporter		25000			25000
Importer	57125	36760	20000	20000	133885

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

Indirect trade of *Prunus africana* originating in Tanzania comprised of 223.87 kg of bark reported from 2004 to 2012 according to the re-exporters, 3800 kg of powder according to the re-exporters and 492 kg of derivatives according to both the re-exporters and the countries of import (Table 4).

Table 4: Indirect exports of *Prunus africana* originating in the United Republic of Tanzania 2004-2013. No trade was reported in 2007, 2008 and 2013. All reported trade was wild-sourced and for commercial purposes.

Exporter	Term	Reported by	2004	2005	2006	2009	2010	2011	2012	Total
Belgium	bark (kg)	Exporter	3.5							3.5
		Importer								
France	bark (kg)	Exporter	0.37							0.37
		Importer								
	powder (kg)	Exporter				3800				3800
		Importer								
Germany	bark (kg)	Exporter					100	10	110	220
		Importer								
Spain	derivatives (kg)	Exporter			492					492
		Importer			492					492
	extract (kg)	Exporter		50						50
		Importer								

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/07/2015

Management: *P. africana* is not listed under United Republic of Tanzania Wildlife Management Authority Act, 2013 or The Wildlife Act, 2013. Vinceti *et al.* (2013) estimated that only ca. 4% of the potential distribution of the species in Tanzania is inside protected areas.

P. africana was included in the Eastern Arc Mountains Strategy and Action Plan commissioned by the Forestry and Beekeeping Division (FBD), under conservation target 9: "By 2017, the trade in Eastern Arc species [including *P. africana*] is effectively controlled" (Forestry and Beekeeping Division, 2006).

During the 2008 *Prunus africana* Working Group workshop, Tanzania stated that no procedures exist for harvest but there is a minimum tree size for exploitation (CITES Secretariat, 2008). Harvesting procedures provided by the Ministry of Natural Resource and Tourism specify that bark extraction is restricted to mature trees of a minimum of 40 years of age (Kapinga and Hussein, 2008). An estimated 50-75% of bark is removed after which the tree is left "for some years" to recover (Kapinga and Hussein, 2008).

As of 2008, only two companies were undertaking harvesting but, due to being located upon private farms, no inventory had been undertaken (CITES Secretariat, 2008). Although financial constraints affect inventories, the Tanzanian Forest Institute (TAFORI) has been assigned with this task (CITES Secretariat, 2008). As a control measure, Tanzania reported that harvesting had been suspended until inventories have been conducted (CITES Secretariat, 2008). In addition, licences are required from district forest officers (CITES Secretariat, 2008). Monitoring of permits and shipment inspections are carried out at the point of export (CITES Secretariat, 2008). No incentives were reported to exist for local communities to cultivate *P. africana* (CITES Secretariat, 2008).

In 2009, the National Forest Resources Monitoring and Assessment project (NAFORMA) was launched to assess and monitor national forest resources. Data from the forest inventory were to be used to support the development of policies for the sustainable management of forest resources in Tanzania. *P. africana* was included in the tree species checklist to be used in the data entry and analysis phases of the project (Ministry of Natural Resources and Tourism, 2010).

In 2015, the CITES MA of Tanzania (*in litt*. to UNEP-WCMC, 2015) reported that the country was soliciting funding to conduct an inventory of *P. africana.*

Through its national legislation project, the CITES Secretariat categorised the national legislation in Tanzania as "legislation that is believed generally not to meet all of the requirements for the implementation of CITES".

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