CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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UNEP-WCMC REPORT ON WEST AFRICAN VULTURES (*ACCIPITRIDAE* SPP.)

The attached document has been submitted by the Secretariat in relation to agenda item 20 on West African Vultures (*Accipitridae* spp.). It contains the report submitted by UNEP-WCMC, reviewing the trade and sentinel poisoning of West African vultures (Accipitridae spp.)

UNEP-WCMC technical report

WEST AFRICAN VULTURES: A REVIEW OF TRADE AND SENTINEL POISONING

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West African vultures: A review of trade and sentinel poisoning

Prepared for The European Commission and the CITES and CMS Secretariats

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The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) is a global Centre of excellence on biodiversity. The Centre operates as a collaboration between the UN Environment Programme and the UK-registered charity WCMC. Together we are confronting the global crisis facing nature.

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Executive Summary

Vultures perform an essential role in the ecology of their environments and are considered likely to play a part in human disease prevention. Despite this, they are collectively one of the most threatened groups of birds worldwide, and several species have undergone dramatic recent declines. In document CoP18 Doc. 97, Burkina Faso, Niger and Senegal highlighted significant vulture declines across Africa, as well as the prominent role that belief-based use and sentinel poisoning had played in causing them. Noting the connections to international trade, a number of Decisions (18.186-192) were adopted at CITES CoP18 in 2019, with the aim of increasing understanding of the threats posed to West African vultures and identifying actions to stop declines and allow population recovery. In particular, Decision 18.190 called for the Animals Committee (AC) to establish a working group on West African vultures to provide relevant recommendations.

This document is intended to contribute to the completion of Decisions 18.186-192 and support the AC working group on West African vultures in fulfilling its mandate, with a particular focus on the six West African focal species[1] and on the two threats highlighted in Decision 18.188: trade for belief-based use and sentinel poisoning. It provides the following: a global overview of legal and illegal international trade in vultures (according to the CITES Trade Database, CITES Illegal Trade Reports, and incidents recorded in TRAFFIC International's Wildlife Trade Portal); in-depth reviews of the biology and distribution of the six West African focal species; an overview of the scale of threat posed by domestic and international trade in vultures as well as sentinel poisoning in West Africa[2]; an overview of the legislation relevant to vulture management in place in West African countries; and a suite of recommendations for consideration by the AC working group.

Key findings

International protection: All 16 Old World vulture species were listed in CITES Appendix II in 1979 as part of the order listing for Falconiformes. No such higher-level listing applies to New World vultures, where only three of the seven species are included in the Appendices: *Gymnogyps californianus* (Californian vulture) and *Vultur gryphus* (Andean condor) are included in CITES Appendix I, and *Sarcoramphus papa* (King vulture) is in CITES Appendix III. All vulture species are also included in CMS Appendix II, with a subset also included in CMS Appendix I.

The six focal species of this report are listed in CITES Appendix II and in CMS Appendix I. As the latter requires Parties that are range States to strictly protect Appendix I species and prohibit any "take"[3] from the wild with very few exceptions, these multilateral measures are not wholly compatible. These six species are additionally included in the Multi-species Action Plan to Conserve African-Eurasian Vultures (MsAP), which was adopted by CMS Parties in 2017.

All sixteen West African countries considered in detail in this report are CITES Parties, and all except Sierra Leone are party to CMS. Nine of the sixteen countries are also signatories of the CMS Raptors

[1] *Gyps africanus* (Whitebacked vulture), *Gyps rueppelli* (Rüppell's vulture), *Necrosyrtes monachus* (Hooded vulture), *Neophron percnopterus* (Egyptian vulture), *Torgos tracheliotos* (Lappet-faced vulture), and *Trigonoceps occipitalis* (White-headed vulture).

[2] Defined by reference to the UN West African subregion: includes Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

[3] Defined as taking, hunting, fishing, capturing, harassing, or deliberate killing of an animal, or attempting to engage in any such conduct.

MOU, which aims to promote internationally coordinated actions to conserve migratory birds of prey and reverse their population declines.

Status: All six of the focal species of this report are threatened with extinction according to the IUCN Red List, and all are estimated to have undergone dramatic population declines of over 80% over three generations (a period of c. 50 years). Although global population estimates exist for all species, many estimates in use date from the 1990s; current populations may therefore be considerably smaller given rapid rates of decline. At the regional scale, information on the status of populations is patchy, although data that are available indicate that rates of decline are variable across different countries. Given the current trajectory of the population trend of all six focal species, national and regional extirpations are likely unless threats to these species are effectively addressed and proactive steps are taken to reverse trends.

Threats: Vultures in West Africa face a numerous and diverse range of threats, including habitat loss, degradation, and fragmentation; declines in food availability; disturbance as a result of human activities; disease; climate change; electrocution and collisions with energy infrastructure; intentional and unintentional poisoning; and trade in their parts and meat. While each of these threats is important, studies have shown that poisoning and trade in vultures and their body parts (primarily for belief-based use) are the two largest causes of vulture mortality in Africa.

> ***Poisoning*** can occur through a variety of methods and for a variety of different reasons. Sometimes vultures are the target species, and sometimes they are the unintended victims of poisons laid out to target other species, such as jackals. The primary motivation behind poisoning events is often difficult to disentangle; while there are recent examples of mass poisonings believed to have been primarily driven by demand for belief-based use, there is also evidence of body parts being harvested opportunistically from vultures that have been killed for other reasons. While ***sentinel poisoning*** (the deliberate poisoning of vultures in order to prevent detection of illegal killing of other species, such as elephants) is a key issue highlighted for the working group to consider in Decision 18.190 and is a concerning issue in southern and eastern Africa, its incidence in West Africa is currently believed to be low.
>
> ***Trade for consumption and belief-based use:*** Trade in vulture parts for belief-based use and for wild meat has a well-established history in West Africa. While trade for these purposes has in the past been considered to be more of a domestic issue, evidence has begun to emerge of cross-border trade to supplement supply in areas where local populations have declined. Nigeria and Benin are considered to be the key centres of West African regional trade in vultures and their parts, although markets in other countries remain poorly characterised. All six of the focal species of this report are traded, but the hooded vulture is traded most commonly.
>
> Annual offtakes for belief-based use and consumption for many species has been estimated to be considerable and to equate to an important percentage of each species' population. In Nigeria, the price for a whole vulture has increased over 100-fold between 2001 and 2021 to reach NRN 35 000 (~USD 92) for a whole carcass and NRN 80 000 (~USD 210) for a live vulture; large vulture species are believed to have been largely extirpated from the country as a result of this trade. Interviews with 113 market traders in northern Nigeria indicate that vultures are being sourced from countries such as Niger, Benin, Sudan, Cameroon, and Chad; much of this trade is believed to be in contravention of national laws and is not recorded in the CITES Trade Database, but its scale is unclear. Trade in vultures for belief-based use also occurs in Southern and Eastern Africa, with southwest South Africa, Lesotho and Eswatini considered to be areas where there is high demand in particular. However, no information could be found regarding whether parts taken in these areas are only traded locally or are more widely traded across sub-regions.

Management: The majority of West African range States have prohibited the killing and harvest of vultures and their eggs. Legal protection was confirmed in 10 of the 16 range States under review and was considered likely to be in place for a further two range States (in the remainder, no current information regarding legal protection could be located). Most cross-border trade in vultures that is reported in interviews with market traders, and which is implied given the volumes of vultures being sold in markets where vultures are now considered to be nationally rare, is therefore considered to be illegal and is being conducted without the issuance of CITES permits. While there have been multiple incidents of vulture poisoning in West Africa, some of which are thought to be motivated primarily by trade for belief-based use, only two records of seizures/prosecutions involving vulture trade in West Africa were located. This suggests that enforcement of national laws may be low, however these data should be treated with caution due to potential reporting biases. Several projects are in place that aim to reduce demand and build enforcement capacity; a two-year project by the Nigerian Conservation Foundation launched in 2019, for example, aims to raise awareness among traditional healers of herbal alternatives to vulture parts and to seek collaboration with security agencies on law enforcement.

Recommendations for consideration by the AC WG on West African vultures

The AC working group could consider:

- **Drafting a suite of Decisions urging Parties, West African range States and relevant intergovernmental and non-governmental organizations to undertake key actions needed to conserve West African vultures.** These include, *inter alia*, actions to fill knowledge gaps identified by this review, develop specific identification materials to strengthen enforcement, share experiences of demand reduction strategies, and develop public awareness campaigns. Draft text for possible Decisions is provided on pages iii-v. In some cases these draft Decisions align with some of the actions called for by Senegal in their response to CITES Notification 2020/034 (Senegal's full set of recommendations is available in AC31 Inf. 5). Several of the actions also complement those outlined in the CMS MsAP to Conserve African-Eurasian Vultures; where this is the case, the corresponding MsAP action point number is shown in superscript.

- **Encouraging Parties to ensure the issue of illegal vulture trade is fully embedded in the actions and plans developed by the International Consortium on Combatting Wildlife Crime (ICCWC), as well as existing regional plans to combat illegal wildlife trade.** In particular, West African Parties could be encouraged to consider illegal vulture trade in their implementation of Decisions 18.88-93 on Wildlife crime enforcement support in West and Central Africa (in particular, Decision 18.88 b)[4] and 18.89[5]), as well as in the implementation of the West Africa Strategy on Combatting Wildlife Crime.

[4] "Identifying priority actions from the suite of Decisions that could benefit from support, and present these to the International Consortium on Combatting Wildlife Crime (ICCWC) and donors in order to seek support to implement them"

[5] "Parties in West and Central Africa identified as affected by illegal trade in wildlife within the region should engage in regional and bilateral activities to share information on their national legislative and regulatory measures to address such illegal trade, exchange experiences and best practices, and identify opportunities for regional and cross-border cooperation and joint actions, including where appropriate the formulation of national or regional action plans as anticipated by paragraph 14 a) ii) and 10 f) of Resolution Conf. 11.3 (Rev. CoP18) on *Compliance and enforcement*, taking into consideration the provisions of paragraph 15 q) of the same Resolution."

- **Encouraging Parties to complete and submit CITES illegal trade reports** in order to strengthen data on illegal trade to inform decision making.

- **Referring issues of non-compliance to the CITES Standing Committee.** Discrepancies exist between the volumes of the six focal vulture species traded according to the CITES Trade Database and reports from market traders, indicating that cross-border **trade in vultures/ vulture parts is occurring in non-compliance with CITES and CMS, as well as national laws**. It is also notable that at the time of writing, two range States (Liberia and Sierra Leone) had not yet submitted CITES annual reports for three consecutive years[6].

- **Referring the need for enhancement of national legislation to the CITES Standing Committee.** Only four of the 16 West African range States (25%) considered in detail in this report have legislation placed in Category 1 under the CITES National Legislation Project. Of the remaining range States, six (38%) have legislation in Category 2, and six (38%) have legislation in Category 3. In CoP18 Doc. 34 Annex 2, Parties in West and Central Africa with Category 2 and 3 legislation were recommended to reach out to the Secretariat for advice in order to work towards improving their CITES implementing regulations.

- Consider potential approaches for bringing **more coherence to the implementation of resolutions and decisions adopted by both CITES and CMS in relation to vulture species**, as has been done through the action plan concerning the conservation, restoration and sustainable use of the saiga antelope. This could include, for instance, considering mechanisms for CITES Parties to actively support, contribute, cooperate and collaborate in the implementation of relevant activities in the CMS MsAP to Conserve African-Eurasian Vultures, subject to the availability of resources.

Suggested text for draft Decisions

19.AA

Decision directed to Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

Parties that are West African vulture range States are urged to:

a) Cooperate and collaborate with other West African range States **to integrate illegal vulture trade** considerations into their **implementation of Decisions 18.88-93** on Wildlife crime enforcement support in West and Central Africa (in particular, Decision 18.88 b)[7] and 18.89[8] or related Decisions adopted at CoP19), as well as in

[6] Reports not yet received for 2017, 2018 and 2019; see SC2020 Inf.2. Annual reports for 2017 and 2018 were also only available from 11 and 10 of the 16 range States, respectively. A lack of data hampers analysis and monitoring of legal, international trade.

[7] "Identifying priority actions from the suite of Decisions that could benefit from support, and present these to the International Consortium on Combatting Wildlife Crime (ICCWC) and donors in order to seek support to implement them"

[8] "Parties in West and Central Africa identified as affected by illegal trade in wildlife within the region should engage in regional and bilateral activities to share information on their national legislative and regulatory measures to address such illegal trade, exchange experiences and best practices, and identify opportunities for regional and cross-border cooperation and joint actions, including where appropriate the formulation of national or regional action plans as anticipated by paragraph 14 a) ii) and 10 f) of Resolution Conf. 11.3 (Rev. CoP18) on *Compliance and enforcement*, taking into consideration the provisions of paragraph 15 q) of the same Resolution."

the implementation of the West Africa Strategy on Combatting Wildlife Crime (WASCWC)[5.1.1];

b) ensure that existing **national laws** to protect vultures and controls on the import and export of vulture parts and derivatives are effectively implemented**,** and ensure that penalties for non-compliance are sufficient to deter illegal trade;

c) **submit non-detriment findings for review by the Animals Committee** in cases where there is an interest in exporting globally threatened vulture species, and share them with the Secretariat for inclusion on the CITES website;

d) work with relevant experts/organisations on implementing **demand reduction strategies** for vultures and their parts and derivatives for belief-based use and consumption, and where appropriate, expand the implementation of projects that have been successful[4.1.4];

e) work with relevant organisations to initiate **wide-scale public awareness campaigns** at regional, national and local levels about the importance of vulture species to ecology and human health, and on the existing national legislation that protects them[4.2.2];

f) provide information to the Secretariat on the implementation of this Decision to allow it to report to the Animals Committee and Standing Committee, as appropriate.

19.BB

Decision directed to Parties, West African range States and relevant intergovernmental and non-governmental organizations.

Parties, West African range States and relevant intergovernmental and non-governmental organizations (for example, BirdLife International and its partners in West African range States), are encouraged, subject to resources, to undertake work to:

a) collaborate in the conservation and restoration of West African vultures and take proactive approaches to support the implementation of the CMS MsAP to conserve African-Eurasian Vultures;

b) gather and exchange scientific knowledge and expertise on West African vultures, with a particular focus on the following:

i) better characterising **the scale of vulture trade** by surveying markets outside and within West Africa (particularly those outside of Nigeria that may not have received sufficient research attention)[4.2.1];

ii) better characterising **links between poisoning and trade**, as well as international and inter-regional **trade routes**[4.2.1];

iii) updating the **global population estimates** available for white-backed vultures, Rüppell's vultures and lappet-faced vultures in particular.

19.CC

Decision directed to the International Consortium on Combating Wildlife Crime (ICCWC)

The International Consortium on Combating Wildlife Crime (ICCWC) shall, where relevant and feasible, consider vultures in the context of its enforcement and capacity building efforts in West Africa, and, subject to available resources, produce **identification materials focusing on parts and derivatives of vulture species**, that are accessible in terms of format, translated into local languages, and can be easily disseminated to customs and border officials[4.3.1].

19. DD

Decision directed to the Secretariat

The Secretariat shall prepare and submit a summary report on the implementation of Decisions 19.AA and 19.CC with draft recommendations to the Animals Committee and Standing Committee, as appropriate for their consideration.

19. EE

Decision directed to the Animals Committee

The Animals Committee shall:

a) if requested, consider any reports submitted by Parties with respect to making of non-detriment findings for trade in globally threatened vulture species;

b) analyse and review the results of any activities under Decisions 19. AA- DD and develop recommendations as appropriate.

19.FF

Decision directed to the Standing Committee

The Standing Committee shall analyse and review the results of any activities under Decisions 19.AA - EE and develop recommendations as appropriate.

19. GG

Decision directed to Parties, donor organizations and relevant intergovernmental and non-governmental organizations.

Donor Parties and other relevant intergovernmental and non-governmental organizations are encouraged to provide financial resources for the purpose of implementing Decisions 19.AA-CC in support of efforts to ensure the survival of West African vultures.

1. Introduction

As "nature's most successful scavengers", vultures play an important role in the ecology of their environments but also provide an important public health service through their consumption of carrion (Ogada *et al.*, 2012a). Healthy vulture populations are not only important for maintaining the flow of energy through food webs (Wilson and Wolkovich, 2011; DeVault *et al.*, 2003), but they likely play a key role in disease prevention by reducing the risks posed by carcasses (Pain *et al.*, 2003) and by keeping in check populations of scavengers such as feral dogs and rats that can themselves pose a disease risk to humans and livestock (Ogada *et al.*, 2012b).

At the 18th Conference of the Parties (CoP) to CITES, Burkina Faso, Niger and Senegal presented a document highlighting significant vulture declines across Africa, as well as the prominent role that belief-based use[9] and sentinel poisoning had played in causing these declines (CoP18 Doc. 97). As both of these issues have close links to international trade, the document called for the adoption of a number of Decisions, with the ultimate aim of increasing understanding of the threats posed to West African vultures, as well as establishing a way forward to stop declines and allow population recovery.

In response to the document, the CoP adopted seven Decisions (see Annex I) relating to West African vultures, including one directed to the Animals Committee to establish a working group on West African vultures (Accipitridae spp.). The mandate of this group is to address key gaps in knowledge as it relates to the biological and trade issues highlighted in the Multi-species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP; this was produced in 2017 as mandated by the 11th CoP to the Convention on the Conservation of Migratory Species of Wild Animals (CMS)), including but not limited to trade in vulture parts of belief-based use and sentinel poisoning by poachers. The Decisions particularly call for attention to be focused on the West African region and on the following six species:

- *Gyps africanus* (White-backed vulture/ African white-backed vulture)
- *Gyps rueppelli* (Rüppell's vulture)
- *Necrosyrtes monachus* (Hooded vulture)
- *Neophron percnopterus* (Egyptian vulture)
- *Torgos tracheliotos* (Lappet-faced vulture)
- *Trigonoceps occipitalis* (White-headed vulture)

In order to support the implementation of these Decisions as well as the work of the Animals Committee working group on West African vultures, the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) has produced a summary of relevant information on the six species above, with a particular focus on West Africa. This assessment was funded by the European Commission and the CITES Secretariat, and provides:

- an **overview of global legal and illegal trade** in all vulture species based on three datasets: the CITES Trade Database, CITES illegal trade reports, and open-source wildlife seizure and incident data available through TRAFFIC's Wildlife Trade Portal (section 3);

[9] There are a number of terms in use in the literature denoting the use of vultures as a treatment for disease or to bring good fortune, including traditional medicine (although Botha *et al.* 2017 note that no evidence of medicinal benefits is known), fetish, juju and muthi; these latter three are generally used in specific sub-regions (Botha *et al.* 2017). For the purposes of this report, we use the term 'belief-based use' to denote this practice, unless directly quoting from a source.

- **in-depth reviews** of the biology, distribution, and population status of all six focal species, as well as a summary of global trade in each species according to the CITES Trade Database (section 4);
- an **overview of the scale of threat posed by domestic and international trade** in vultures in West Africa, as well as the scale of sentinel poisoning in West Africa compared to its incidence elsewhere (section 5);
- an overview of the **legislation relevant to vulture management** in place in West African countries[10] (section 6).

Sixteen West African range States are considered in this report; they are all Parties to CITES and all except Sierra Leone are a Party to CMS. The date on which CITES and other key agreements relating to vulture management (CMS and the CMS Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (CMS Raptors MOU)) entered into force in these range States is provided in Table 1.1 The table also include the category assigned to each Party in the CITES Legislation Project (as of October 2020); this is an assessment of whether CITES Parties have adequate legislation in place allowing them to implement and enforce all aspects of the Convention, as expressed in Resolution Conf. 8.4 (Rev. CoP15).

Table 1.1: Overview of West African States considered in this review. CITES legislation categories are as follows - **Category 1:** legislation that is believed generally to meet all four requirements for effective implementation of CITES; **Category 2:** legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES; **Category 3:** legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES.

Country	Entry into force of CITES	CITES legislation project category	Entry into force of CMS	CMS Raptors MoU signatory?
Benin	28/05/1984	2	1986	No
Burkina Faso	15/01/1990	2	1990	Since 2017
Cabo Verde	08/11/2005	3	2006	No
Côte d'Ivoire	19/02/1995	3	2003	Since 2017
Gambia	24/11/1977	2	2001	Since 2008
Ghana	12/02/1976	3	1988	Since 2011
Guinea	20/12/1981	2	1993	Since 2008
Guinea-Bissau	14/08/1990	1	1995	No
Liberia	09/06/1981	3	2004	No
Mali	16/10/1994	2	1987	Since 2008
Mauritania	11/06/1998	1	1998	No
Niger	07/12/1975	3	1983	Since 2012
Nigeria	01/07/1975	1	1987	No
Senegal	03/11/1977	1	1988	Since 2008
Sierra Leone	26/01/1995	3	Non-party	No
Togo	21/01/1979	2	1996	Since 2008

[10] Defined by reference to the UN West African subregion

2. Methods

The following provides an overview of the taxonomy, trade datasets and consultations with range States carried out in relation to this report.

Taxonomy

Vultures are defined by a common behaviour and morphology rather than a single taxonomic grouping. Taxonomically, they fall into two groups that are not closely related (Winkler *et al.*, 2020): Old World vultures, which are distributed across Eurasia and Africa and are part of the wider family Accipitridae, and New World vultures, which are distributed across the Americas and form the family Cathartidae (Amadon, 1977; Billerman *et al.*, 2020). For the purposes of this study, we follow the taxonomy and nomenclature of the Handbook of the Birds of the World (HBW) and BirdLife International, version 5 (2020); the full list of species considered to be vultures in this report is shown in Table 2.1.

Table 2.1: Vulture species of the world and their inclusion in the CITES and CMS Appendices. Non-CITES species are shaded. **Global threat status**: Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) and Least Concern (LC). **Population trend**: increasing (↑), stable (→) and decreasing (↓).

Species	CITES Appendix	CMS Appendix	Global threat status*	Population trend*
Old world vultures				
Gypohierax angolensis (Palm-nut vulture)	II	II	LC	→
Gypaetus barbatus (Bearded vulture)	II	II	NT	↓
Neophron percnopterus (Egyptian vulture)	II	I/II	EN	↓
Sarcogyps calvus (Red-headed vulture)	II	I/II	CR	↓
Trigonoceps occipitalis (White-headed vulture)	II	I/II	CR	↓
Necrosyrtes monachus (Hooded vulture)	II	I/II	CR	↓
Gyps himalayensis (Himalayan griffon)	II	II	NT	→
Gyps bengalensis (White-rumped vulture)	II	I/II	CR	↓
Gyps africanus (White-backed vulture)	II	I/II	CR	↓
Gyps indicus (Indian vulture)	II	I	CR	↓
Gyps tenuirostris (Slender-billed vulture)	II	I	CR	↓
Gyps coprotheres (Cape vulture)	II	I	EN	↓
Gyps rueppelli (Rüppell's vulture)	II	I	CR	↓
Gyps fulvus (Griffon vulture)	II	II	LC	↑
Aegypius monachus (Cinereous vulture)	II	II	NT	↓
Torgos tracheliotos (Lappet-faced vulture)	II	I	EN	↓
New world vultures				
Cathartes aura (Turkey vulture)	Not listed	II	LC	→
Cathartes burrovianus (Lesser yellow-headed vulture)	Not listed	II	LC	→
Cathartes melambrotus (Greater yellow-headed vulture)	Not listed	II	LC	↓

Species	CITES Appendix	CMS Appendix	Global threat status*	Population trend*
Coragyps atratus (American black vulture)	Not listed	II	LC	↑
Sarcoramphus papa (King vulture)	III (Honduras)	II	LC	↓
Gymnogyps californianus (California condor)	I	II	CR	↑
Vultur gryphus (Andean condor)	I	II	VU	↓

Consultations

In order to fulfil Decisions 18.188 and 18.189, the CITES Secretariat issued Notification 2020/034 in April 2020, which requested Parties to submit information concerning trade in and conservation of the six vulture species considered in detail in this report. One West African range States of the six focal species (Senegal) responded to this Notification. Relevant information from Senegal's response has been incorporated into this report, and the full response is available in AC31 Inf. 5.

The CITES Management Authorities and CMS focal points of the remaining 15 West African range States of the six focal species were contacted by UNEP-WCMC. Authorities were asked to provide information on population size, status and trends of the six species; threats including belief-based use and sentinel poisoning; harvest levels and legal and illegal trade of vultures and their parts (including domestic and international trade); enforcement actions taken; and any conservation actions underway. Responses were received from three range States (see Table 2.2) by the time of report submission (February 2021).

Trade Data

Global overview of international trade in all CITES-listed vulture species

Trade data for the latest 10-year period for which full data were available at the time of writing (2009-2018) for use in the global overview of international trade in all CITES-listed vultures were downloaded from the CITES Trade Database (trade.cites.org) on 5 January 2021. Data from CITES Illegal Trade Reports relating to vultures were requested and incorporated for 2016-2018 (these are the only three years for which data are currently available).

Data were also downloaded from TRAFFIC's International's Wildlife Trade Portal (wildlifetradeportal.org) on 6 January 2021. A search was entered for all species of vulture listed in Table 2.1; all other search criteria were left as default.

Species-specific trade sections for the six focal species

While an overview of trade is provided for all CITES-listed vulture species, more detailed assessments of trade according to the CITES database are provided for the six species highlighted in Decision 18.188. All six species were listed in CITES Appendix II on 28/06/1979, as part of the order listing for Falconiformes. Trade data for the latest 10-year period for which full data are available at the time of writing (2009-2018) were downloaded from the CITES Trade Database on 10 November 2020. Table 2.2 shows the years for which Annual Reports had been received from the 16 West African range States of these species at the time of download. Unless otherwise specified, trade tables within the species assessments include all direct trade (i.e. excluding re-export data) in the taxon under review and include all sources, terms and units reported in trade; re-export data are noted separately where appropriate. Trade volumes are provided as reported by both exporters and importers.

Table 2.2: Overview of CITES Annual Report submissions at the time of data downloads (10 November 2020 and 5 January 2021), and range State responses to the consultation. Asterisks indicate reports that have since been received.

Country	Annual reports received										Response to Notif. 2020/34 or UNEP-WCMC consultation
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Benin	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Burkina Faso	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Cabo Verde	✓	✓	✓	✓	✓	✓	✓	✓	*	*	
Côte d'Ivoire	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓ (UNEP-WCMC)
Gambia	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Ghana	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Guinea	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Guinea-Bissau	✓	✓	✓	✓	✓	✓		✓	*	*	
Liberia	✓	✓	✓	✓	✓	✓	✓	✓			
Mali	✓	✓	✓	✓	✓	✓	✓	✓	✓	*	✓ (UNEP-WCMC)
Mauritania	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓ (UNEP-WCMC)
Niger	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Nigeria	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Senegal	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓ (Notif. 2020/034)
Sierra Leone	✓	✓	✓	✓	✓	✓	✓	✓			
Togo	✓	✓	✓	✓	✓	✓	✓	✓	✓		

3. Global overview of international trade in all CITES-listed vulture species

3.1 Legal trade in CITES-listed vulture species

This analysis of legal, international trade in vultures is based on data held in the CITES Trade Database covering 2009 to 2018, which at the time of writing was the latest 10-year period for which complete data were available. All 16 Old World vulture species were listed in the CITES Appendices in 1979, as part of the order listing for Falconiformes. No such higher-level listing applies to New World vultures, where only three of the seven species are included in the Appendices: *Gymnogyps californianus* (Californian vulture) and *Vultur gryphus* (Andean condor) were included in Appendix I in 1975, and *Sarcoramphus papa* (King vulture) was listed in CITES Appendix III by Honduras in 1987. As such, international trade in the remaining four non-CITES New World vulture species will not be captured in this analysis. In total the analysis includes 19 CITES-listed species (Table 2.1) and covers three main areas: the key vulture species in international trade, the principal terms (i.e types of commodity) and purposes in trade, and the key trade routes. Trade data reported with source 'I' (confiscated and seized specimens) were excluded from this analysis, unless noted otherwise.

As it is difficult to draw equivalency between trade in different commodities, some of the analyses contained in this section focus on the number of shipments, rather than the number of items traded. Attention should be given to which metric each analysis is using, bearing in mind that a single shipment can contain multiple items. It should also be noted that it is not uncommon for exporter- and importer- reported CITES data to exhibit discrepancies. This can be for several reasons; for example, Parties do not have to report imports in Appendix II listed taxa (although many do), which can result in higher levels of trade reported by exporters than by importers. Other reasons include shipments being exported and imported in different years and under different trade terms – a detailed discussion of these nuances can be found in Robinson and Sinovas (2018). For all sections, "direct trade" indicates trade exported directly from the country of origin, and "indirect trade" indicates trade that was re-exported following the item leaving the country of origin.

Main sources, commodities and purposes of trade in vultures

Sources: Between 2009 and 2018 there were 293 direct shipments involving CITES-listed vulture species, as reported by exporters. The number of annual shipments peaked at 43 in both 2009 and 2015, since declining to 20-30 annual shipments in recent years. Of these direct shipments, approximately 49% comprised wild-sourced items/individuals and 49% comprised captive-produced items/individuals (Fig. 3.1.1a), with shipments of pre-Convention and ranched items/individuals accounting for the remaining 1%. Equivalent trade in importer-reported shipments (not displayed), exhibited a similar source composition and trend over time to that shown in Figure 3.1.1.a, except for an absence of ranched shipments and an increase in pre-Convention shipments.

The 169 indirect shipments over this time period as reported by re-exporters displayed a higher proportion of shipments of pre-Convention items/individuals than direct trade (Fig. 3.1.1b.). A sharp increase in trade is apparent in 2015, driven by a high number of pre-Convention shipments that were predominantly feathers for scientific purposes; however, the number of shipments each year has otherwise remained relatively low.

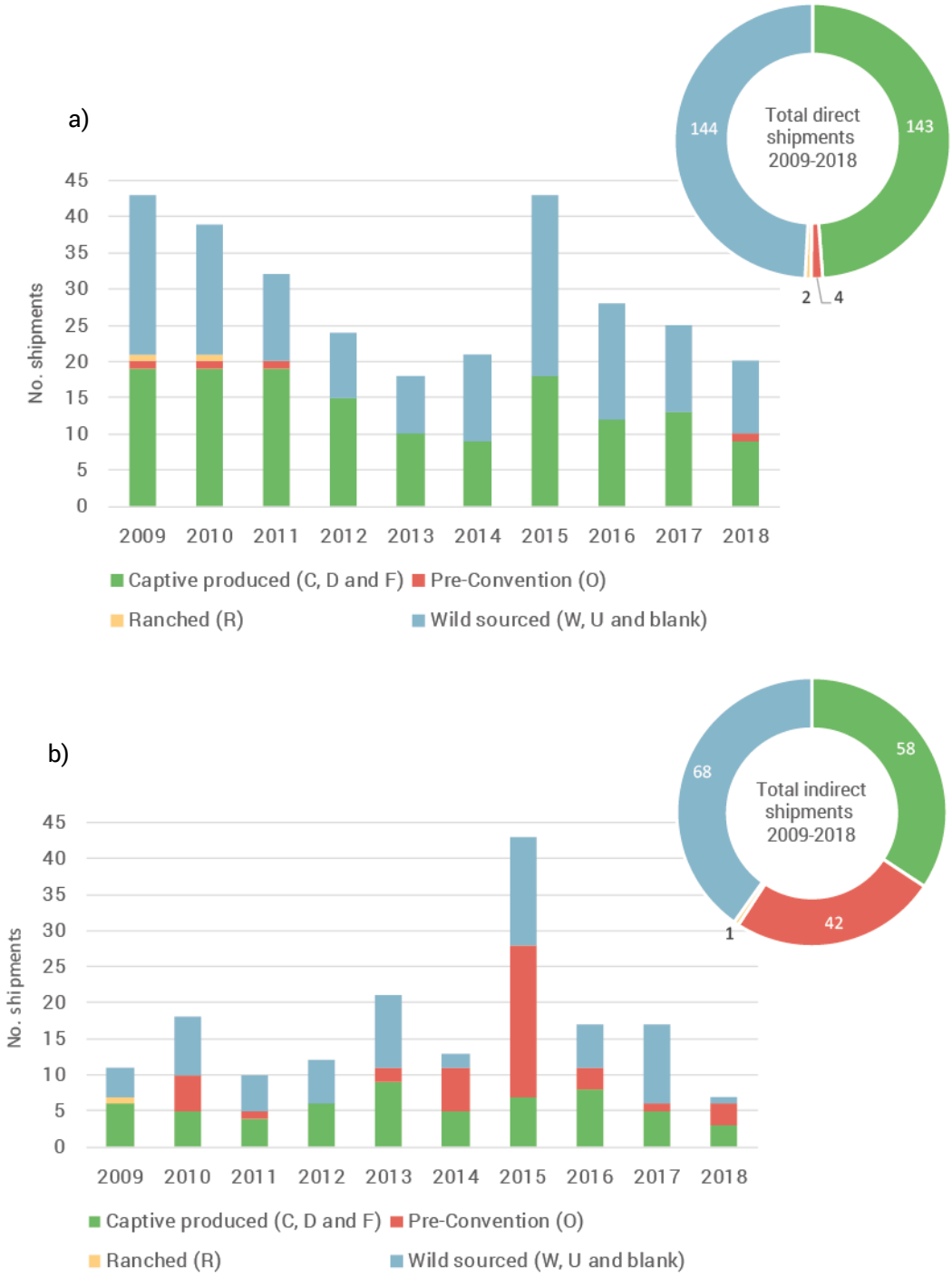


Figure 3.1.1: Source of a) direct and b) indirect shipments in all CITES-listed vulture species, 2009-2018, as reported by (re-)exporters. Top-right inserts display proportion and total shipment number for each trade source. Shipments of confiscated or seized specimens (source I) have been excluded.

Commodities and purposes of trade: The vast majority of trade in vultures was reported in terms of the number of items traded (only 10 out of 293 exporter-reported direct shipments in the dataset and only two of the 317 importer-reported direct shipments were reported by weight; all of these shipments related to very low volumes). Figures in this section therefore relate to trade reported in terms of number of items only; a short summary of trade reported by weight is provided where appropriate.

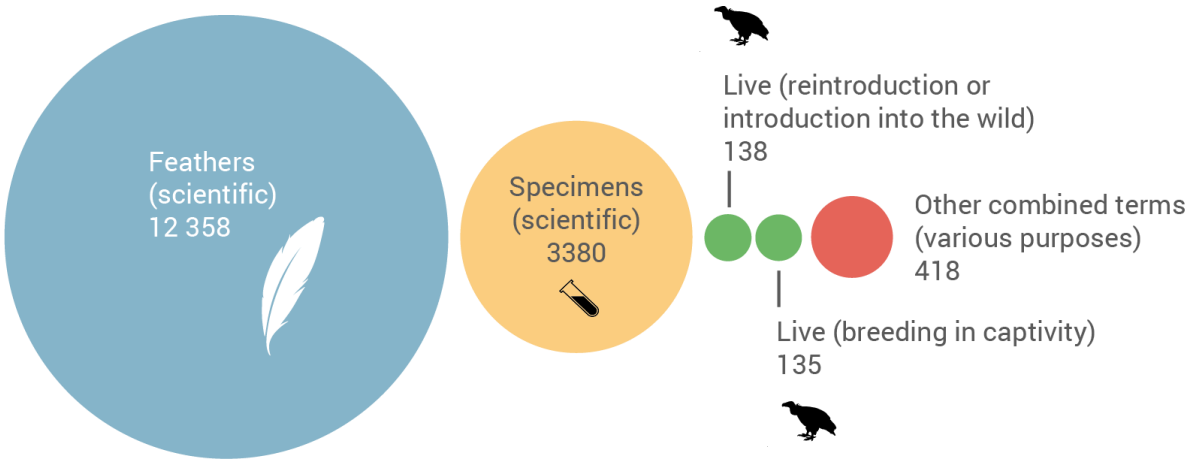
The principal commodity/purpose combinations in direct trade of vultures between 2009 and 2018 (according to both exporter and importer reported data) were feathers and specimens, both traded for scientific purposes (Fig. 3.1.2a). A total of 468 live vultures (59% captive-produced and 40% wild-sourced) were reported by exporters in direct trade over this period, mainly for re-/introduction (29%), captive-breeding (29%), and zoological (23%) purposes, with only 14% traded for commercial purposes (Fig. 3.1.2.a). Trade according to exporters also included 60 trophies (77% wild-sourced, 20% captive-produced), 34 bodies (83% wild-sourced, 15% captive-produced), 15 live eggs (all wild-sourced), and minimal numbers of skeletons, skins, and skulls.

According to importers, a total of 479 live vultures were traded over this period (30% wild-sourced, 35% captive-produced, and 35% without a source specified) predominantly for unspecified purposes (42%) as well as zoological (29%) and commercial (12%) purposes.

Direct trade reported by weight and volume (instead of by number of items) over the period consisted of three shipments totalling 0.15 kilograms of feathers and specimens for scientific purposes, six shipments totalling 0.04 litres of specimens for scientific and medicinal purposes, and one shipment of a specimen of <0.001 cm^3 for scientific purposes, as reported by exporters.

Indirect trade in vultures between 2009 and 2018 predominantly consisted of scientific specimens and live individuals, with low levels of trade in bodies, feathers, and other parts and derivatives, as reported by re-exporters. A total of 194 live vultures (78% captive-produced, 21% wild-sourced) were reported in trade, predominantly for commercial (64%) and zoological (14%) purposes. Importers reported similar commodities in trade, but reported only 79 live vultures (58% wild-sourced, 38% captive-produced) traded for mainly zoological (43%) and commercial (24%) purposes. The only indirect trade reported by weight or volume comprised one shipment containing 0.1 kilograms of specimens for scientific purposes.

a) Principal terms and purposes of exporter-reported **direct** trade



b) Principal terms and purposes of exporter-reported **indirect** trade

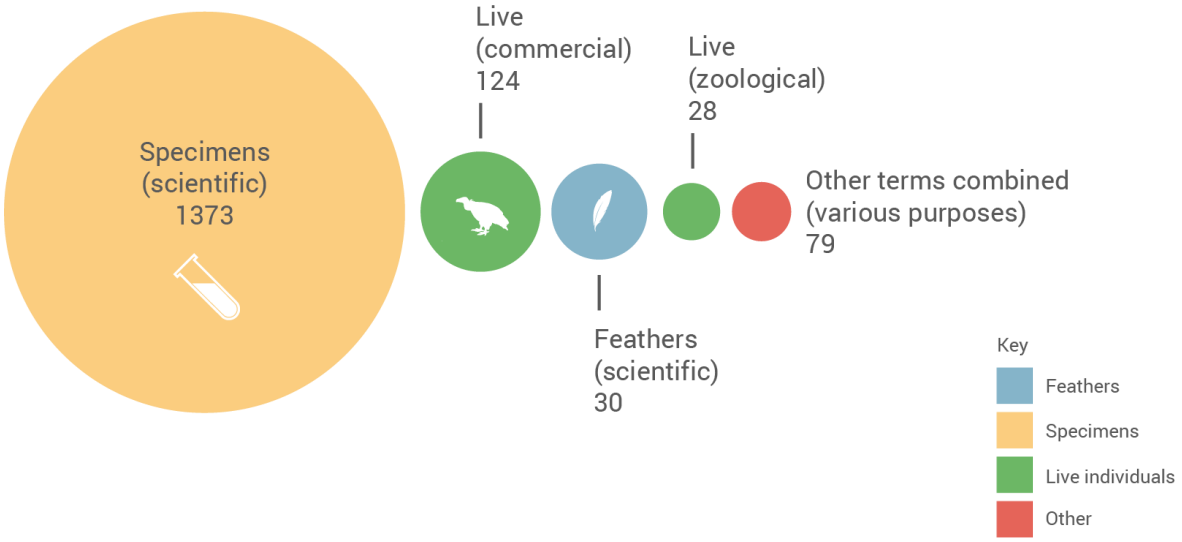


Figure 3.1.2: Principal terms and purposes of a) direct and b) indirect trade in all CITES-listed vulture species, 2009-2018, reported by number. Shipments in in confiscated or seized specimens (source I) have been excluded.

Vulture species in commercial trade

This section looks at which species were most traded internationally **for commercial purposes (i.e. purpose T) only**. Across all CITES-listed vulture species, only four commodities were traded for commercial purposes between 2009-2018: live vultures, bodies, trophies, and skins.

Based on exporter-reported data, direct commercial trade in **wild-sourced vultures** between 2009-2018 was highest in two Old World species: Palm-nut vultures (*Gypohierax angolensis*; 14 live individuals) and hooded vultures (*Necrosyrtes monachus*; 14 trophies) (Fig 3.1.3.). While palm-nut vultures are categorised as Least Concern by the IUCN, hooded vultures are categorised as Critically Endangered. According to importers, wild-sourced direct trade was highest in Palm-nut vultures

(*Gypohierax angolensis*), Rüppell's vulture (*Gyps rueppellii*), and Lappet-faced vulture (*Torgos tracheliotus*) (seven live individuals of each species; Fig. 3.1. 3); species which are categorised as Least Concern, Critically Endangered, and Endangered, respectively.

Direct trade in **captive-produced vultures** according to exporter-reported data was highest in Cape vultures (*Gyps coprotheres*; six live individuals and five trophies) and King vultures (*Sarcoramphus papa,* eight live individuals) (Fig. 3.1.4), whereas the top species according to importers included King vultures (*Sarcoramphus papa*) and Cinereous vulture (*Aegypius monachus*) (eight and seven live individuals, respectively.

Trade routes (according to exporter-reported data only)

Exporter-reported direct trade in wild-sourced[11] individuals for **commercial purposes** over the ten-year period was exclusively in two commodities: live individuals and trophies. According to this data Ghana and Togo were the top two exporters over the 10-year period (Fig. 3.1.5a.); however, trade across the two countries consisted of only 26 individuals. The top two importers were the United States of America (93% imported from Ghana) and Ghana (which imported vulture species exclusively from Togo). Equivalent indirect trade in vulture species was reported to have predominantly originated in the West African countries of Togo and Guinea; lower levels of trade also originated from Côte d'Ivoire. Ghana re-exported the highest number of vultures, which all originated from Togo and were imported by South Africa (Fig 3.1.5b.).

Direct trade in wild-sourced in vultures for **trophy and personal purposes** (purpose codes H and P) totalled 100 items according to exporter-reported data and 34 items according to importer-reported data; all trade was in eggshells, live individuals, bodies, trophies. Trade in the latter three terms consisted of 11 individuals according to exporters and 34 individuals according to importers (Table 3.1.1), with Mozambique as the top exporter of these terms according to importer-reported data and Togo as the top exporter according to exporter-reported data. Indirect trade in wild-sourced vultures for these purposes totalled 6 items according to exporters and 10 items according to importers; trade was in feathers and live individuals only.

Table 3.1.1 Direct trade in wild-sourced vultures (live, bodies and trophies only), traded for trophy and personal purposes (purpose codes H and P), 2009-2018.

Taxon	Exporter	Exporter reported quantity	Importer reported quantity
Gypohierax angolensis	Mozambique		2
Gyps africanus	Mozambique		7
	South Africa	1	
	Togo	5	
Gyps coprotheres	South Africa	1	
Gyps rueppellii	United Republic of Tanzania	3	3
Necrosyrtes monachus	Ghana		7
	Mozambique		7
Sarcogyps calvus	Canada		3
Torgos tracheliotos	United Republic of Tanzania	1	1
Trigonoceps occipitalis	Mozambique		4

[11] Includes sources W, U, and unreported

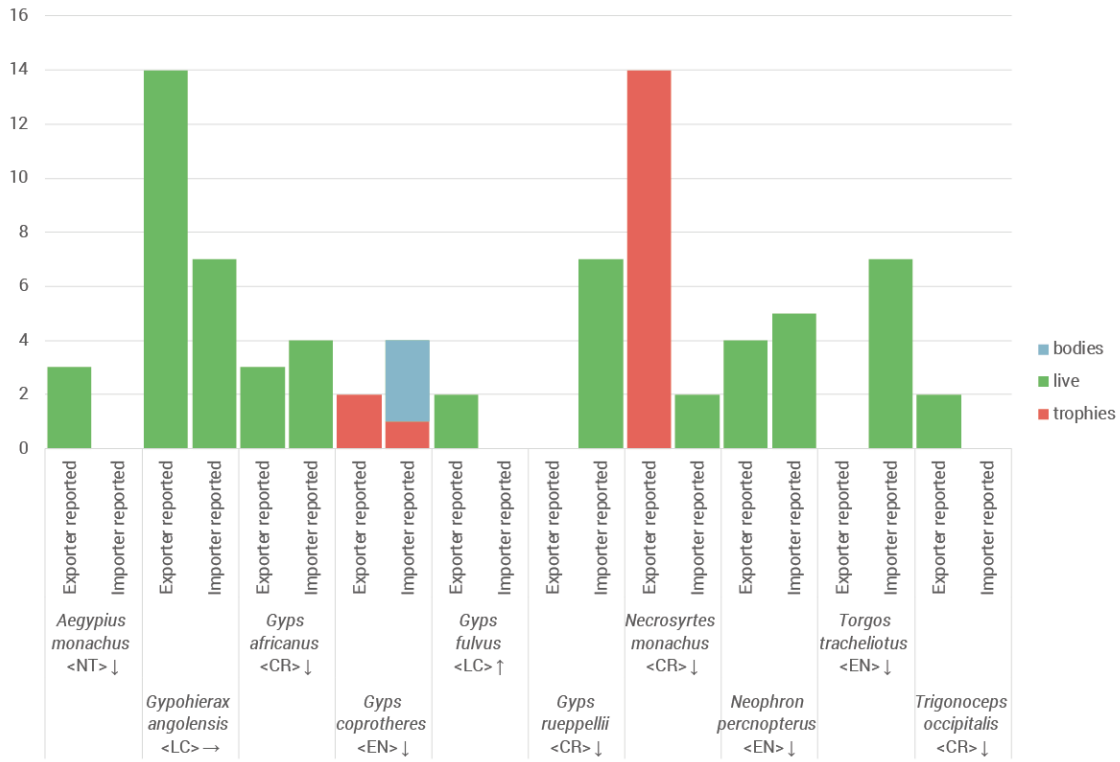


Figure 3.1.3: Direct trade in **wild-sourced** CITES-listed vulture species for commercial purposes according to exporter-reported data, 2009-2018. All terms were reported by number. Wild-sourced trade includes wild (W), unknown (U) and unreported (blank) sources.

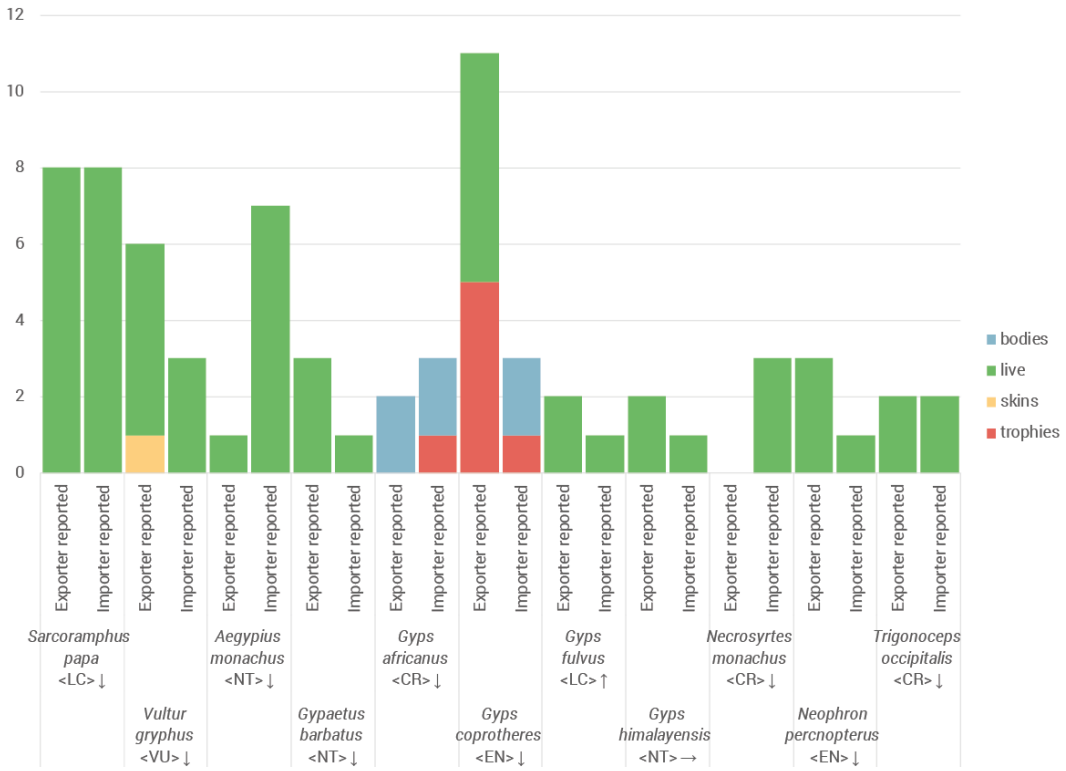
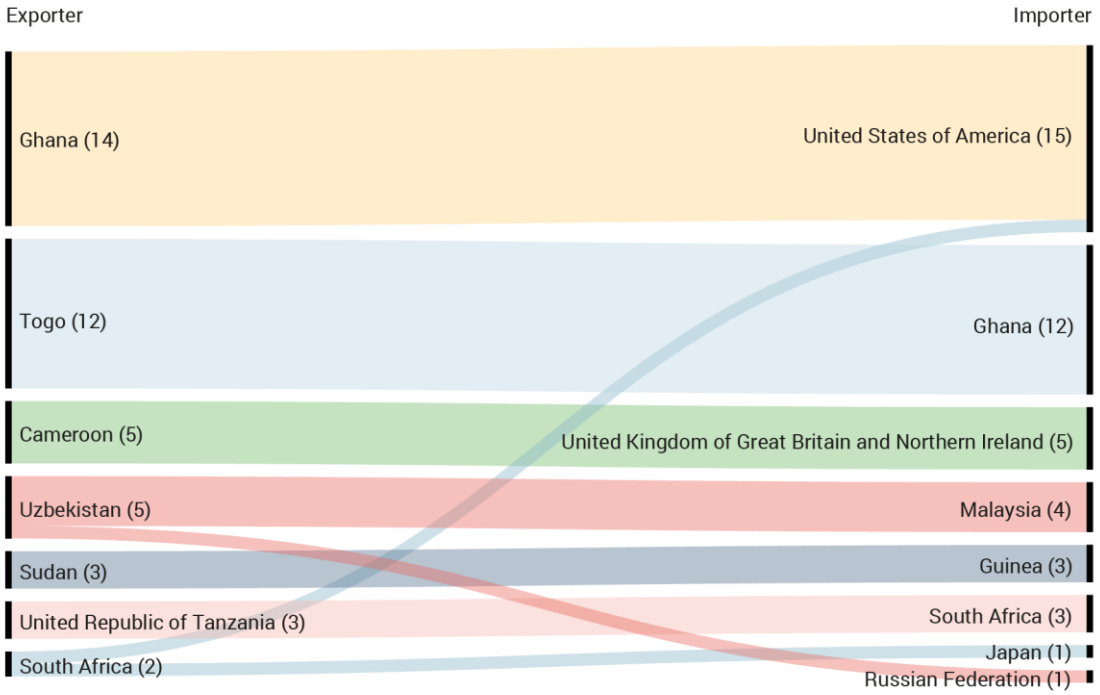


Figure 3.1.4: Direct trade in **captive-produced** CITES-listed vulture species for commercial purposes according to exporter-reported data, 2009-2018. All terms were reported by number. Captive-produced trade includes captive-bred (C), Appendix-I animals bred in captivity for commercial purposes (D) and captive-born animals (F).

a) Direct trade in wild-sourced CITES-listed vulture species for commercial purposes only



b) Indirect trade in wild-sourced CITES-listed vulture species for commercial purposes only

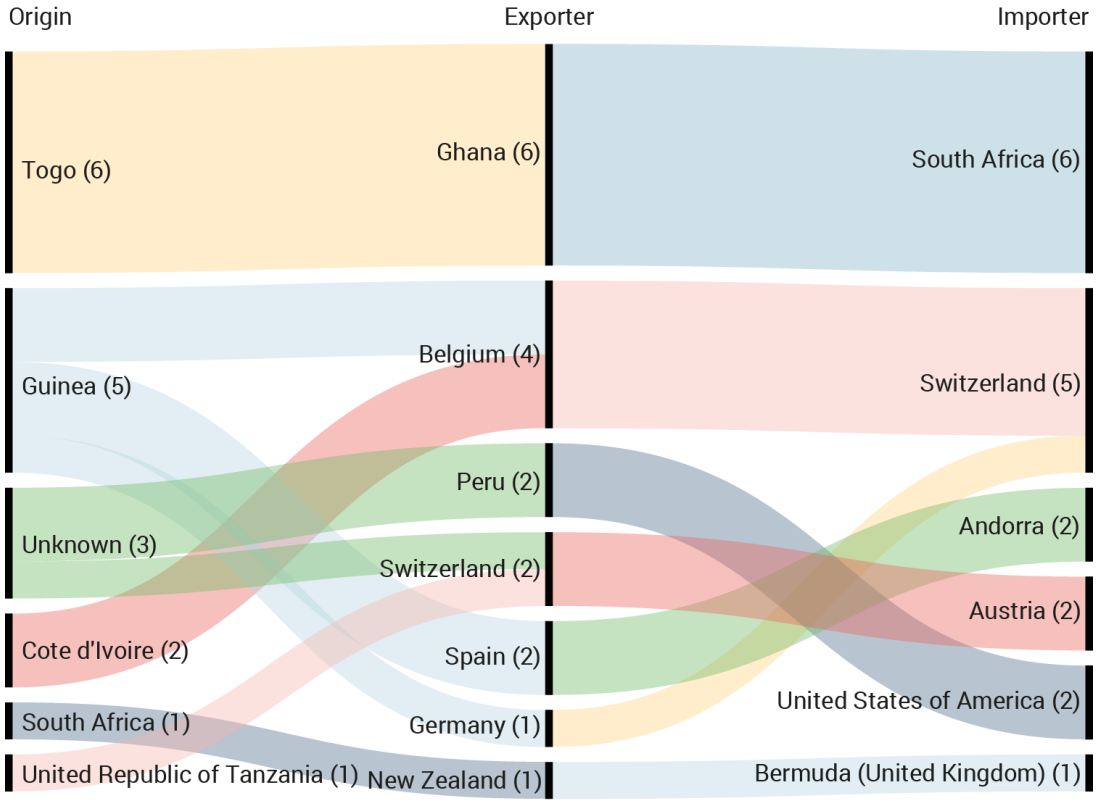


Figure 3.1.5: a) Direct and b) indirect trade routes in wild-sourced CITES-listed vulture species for commercial purposes, 2009-2018, reported by number and by exporters. All trade was in live individuals and trophies. Wild-source trade includes wild (W), unknown (U) and unreported (blank).

3.2 Illegal trade data

This section sets out data on illegal trade in vultures from two sources: CITES Illegal Trade Reports and the TRAFFIC International Wildlife Trade Portal. Estimating the scale of illegal trade and other illegal activities such as poisoning and illegal killing is a notoriously challenging practice, with substantial biases coming into play around enforcement effort, detection, reporting, and the quality of data received (see Sas-Rolfes *et al.*, 2019; UNODC, 2020). **The patterns described within this section should therefore be interpreted with caution**. Seizure data, for example, can demonstrate both the presence of a problem as well as the presence of enforcement (UNODC, 2020), so a large number of seizures in a particular country does not necessarily indicate that it is part of one of the principal illegal trade routes. It should also not be assumed that each data source offers a complete list of incidents; for example, a 2012 incident in which two Burkinabe people and a Nigerian woman were given suspended sentences in Ouagadougou for trafficking 71 vultures and three vulture heads (with Nigeria as the intended destination) (Fondation 30 million d'amis, 2012) was not located in either of the datasets analysed in this section.

CITES Illegal Trade Reports

CITES Illegal Trade Reports 2016-2018 relating to vultures comprised 21 seizure records, of which 12 occurred in 2016, six occurred in in 2017, and three occurred in 2018. Table 3.2.1 provides a summary of reported seizures: The United States reported the highest number of seizures, followed by South Africa and Germany, while Griffon vultures (*Gyps fulvus)* and Andean condors *(Vultur gryphus)* were the most commonly reported species. Feathers were the most frequently recorded items seized (34 items reported by number plus 100g of feathers reported by weight), followed by live individuals.

Table 3.2.1: Summary of seizures involving vultures as contained in CITES Illegal Trade Reports, 2016-2018.

Reporting Party	No. seizure events	Species involved	Commodities	Alleged country of origin	Country of export (number of items)
United States of America	6	*Aegyptus monachus, Vultur gryphus*	Feathers (29), foot (1), unspecified items (10)	-	Mongolia (11), Peru (24, Unknown (5)
South Africa	3	*Gyps coprotheres*	Bones (100g), feathers (100g), skull (1)	South Africa (all)	-
Germany	3	*Gyps africanus, Vultur gryphus*	Feathers (5)	Switzerland (4 feathers), United States of America (1 feather)	-
Bangladesh	2	*Gyps fulvus*	Live animals (3)	Bangladesh (all)	-
Israel	1	*Gyps fulvus*	Live animals (1)	-	-
France	1	*Gyps fulvus*	Live animals (1)	-	-
New Zealand	1	*Vultur gryphus*	Feathers (2)	Chile (all)	-

Sourced with permission from UNODC and CITES Secretariat.

TRAFFIC International Wildlife Trade Portal

TRAFFIC's open-access repository included a total of 40 incidents involving vulture species between 2009 to 2020; 42.5% were animal injury/mortality/welfare incidents, 28% were poaching /illegal harvesting incidents, 20% of incidents were seizures, and the remainder were human-wildlife conflict, and enforcement action/prosecution incidents (Fig. 3.2.1). The number of individual

vultures involved across the 40 incidents totalled 2408; on average, far more individuals were involved in animal injury/mortality/welfare events (66% of all individuals recorded) and poaching/illegal harvesting events (31%) than in human-wildlife conflict, enforcement, and seizure-type incidents, which each accounted for just over 3% of the individuals involved. It should be noted, however, that while the category assigned is that which is considered to best match the incident, there is likely to be considerable overlap between the criteria for a poaching/illegal harvesting event and an animal injury/mortality/welfare event, especially if the incident includes poisoning. It should also be noted that the primary motive behind poisoning is often unknown. Examples of each sort of incident classification that were included in the dataset downloaded are shown in Table 3.2.2.

Incidents involving vultures were reported as "originating" or "discovered" in 18 countries, with the highest number of incidents reported in South Africa (12), Zimbabwe (4) and Botswana (3). A single incident apiece was reported in the West African countries of Guinea-Bissau and Niger (a mass poisoning reported in 2020 and eight vultures harvested using a rifle, respectively), and two incidents were reported in Senegal (one poisoning event involving 35 vultures of unknown species, and one confiscation).

Table 3.2.2: Examples of incidents reported under each incident classification.

Incident classification	Examples
Seizure	Specimens seized in a certain location
Poaching/illegal harvesting	Deaths recorded as a result of poisoned carcasses, individuals found dead due suspected poisoning, vultures found dead but no likely cause of death reported
Animal injury/mortality/welfare	Vultures found poisoned, discovery of a vulture mass grave, vultures found dead but no likely cause of death reported
Human-wildlife conflict	Vultures found poisoned through a cattle carcass
Enforcement action/prosecution	Suspects arrested or convicted for killing or poisoning birds

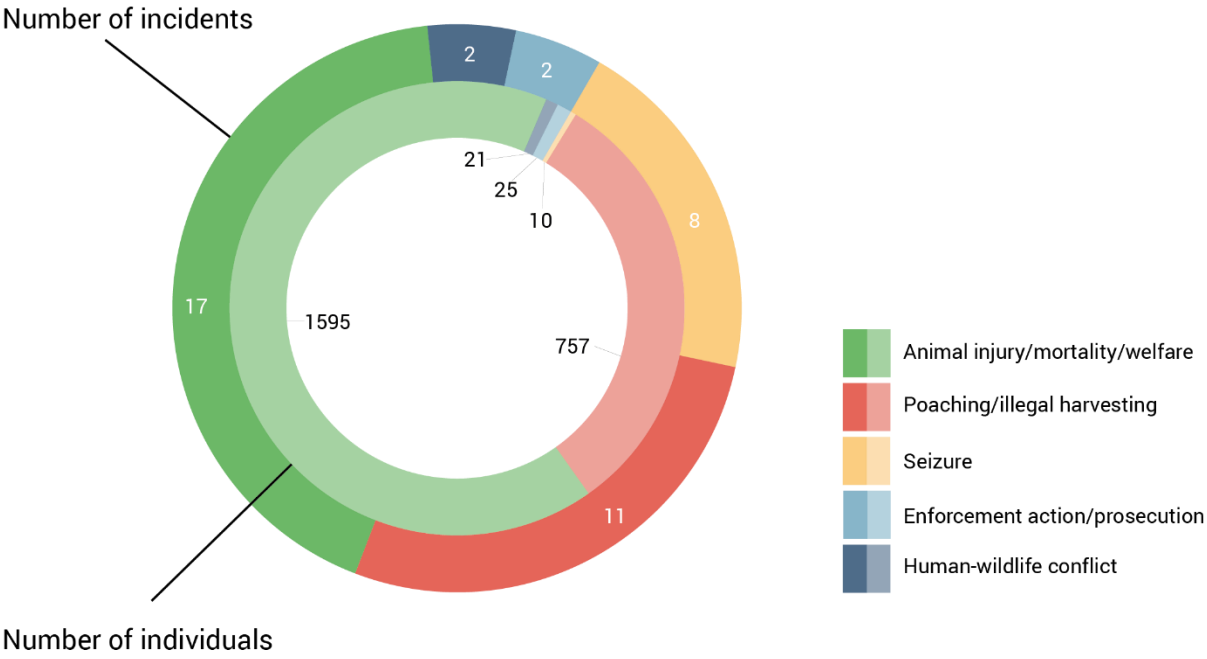
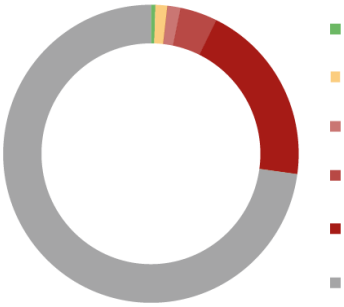


Figure 3.2.1: Incidents involving vulture species included in TRAFFIC's open-access repository, 2009-2020. Outer ring shows the proportion of incidents in each category, whereas the inner ring shows the proportion of total number of individuals involved.

Only a small proportion (27%) of individuals reported in these incidents were identified to species level; however, in cases where the species was identified, most individuals were of Old World species. The top three were the Critically Endangered White-backed vulture (*Gyps africanus*) which accounted for 53% of individuals involved in incidents where identification was available to species level, followed by the Critically Endangered White-headed vulture (*Trigonoceps occipitalis,* 20%) and the Endangered Cape Vulture (*Gyps coprotheres*, 14.6%) (Fig 3.2.2.).

a)

b)



Vulture species	Number of individuals
Old World	
Gyps africanus	349
Gyps coprotheres	96
Gyps fulvus	11
Gyps himalayensis	31
Gyps rueppellii	1
Neophron percnopterus	1
Torgos tracheliotos	1
Trigonoceps occipitalis	129
New World	
Cathartes burrovianus	1
Vultur gryphus	35

Figure 3.2.2: a) Incidents, 2009-2020, reported at the species level in Old and New World vultures and b) proportion of individual vultures in each IUCN Red List category.

4. Species overviews

This section provides assessments of the biology, distribution, population status and population trends of the six species included in Decision 18.188, as well as details of trade in each species as recorded in the CITES Trade Database over a ten-year period (2009-2018). Table 4 shows a summary of the occurrence of each of these species in West Africa, which are, broadly speaking, wide ranging across the sub-region.

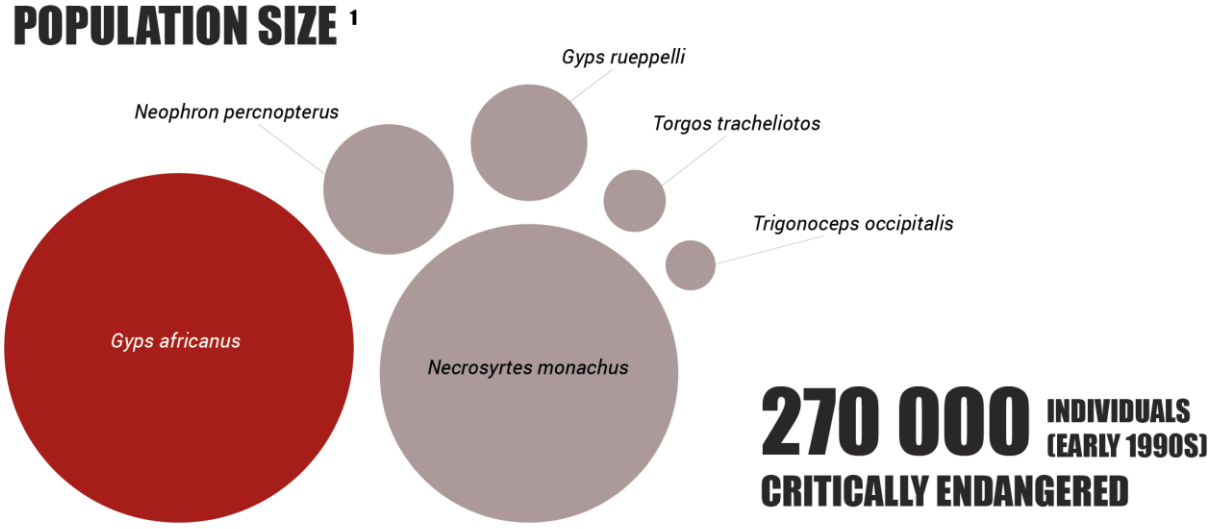
In general, vulture life histories are characterized by delayed maturity and low productivity; factors which make them intrinsically vulnerable to population declines and slow recovery rates (Buij *et al.*, 2016; Ogada *et al.*, 2012a). The six species considered here are all globally threatened with extinction according to the IUCN Red List: four species (*Gyps africanus, Gyps rueppelli, Trigonoceps occipitalis* and *Necrosyrtes monachus)* are categorised as Critically Endangered, and the remaining two (*Torgos tracheliotos* and *Neophron percnopterus)* are categorised as Endangered. All six species are estimated to have undergone dramatic population declines of over 80% over three generations (a period of c. 50 years); the four Critically Endangered species are estimated to have declined by 97%, 96%, 92% and 83%, respectively. Although global population estimates exist for all species, many estimates in use date from the 1990s, and are unlikely to reflect current population sizes that are likely much diminished.

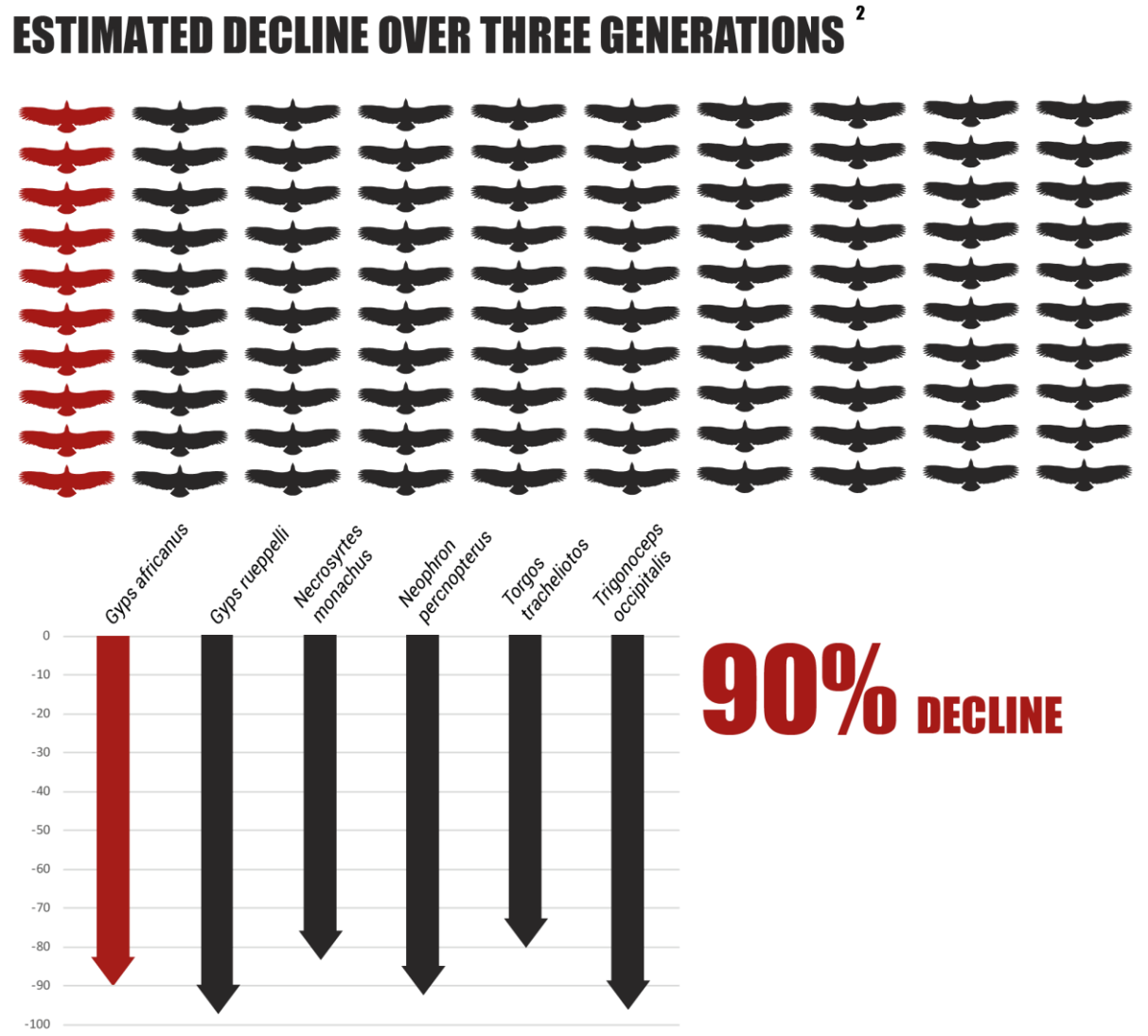
At the regional scale, information of the health of populations is patchy, although data that are available indicate that rates of decline might be variable. However, given the current trajectory of the population trend of all six focal species, national and regional extirpations are likely unless threats to these species are effectively addressed.

Table 4: Distributions of the six species under review in West Africa. Green = resident, Blue = non-breeding, red = extinct as breeding species since 1985, grey = vagrant, white = does not occur. Source: Botha *et al.*, (2017).

Country	*Gyps africanus*	*Gyps rueppellii*	*Necrosyrtes percnopterus*	*Neophron percnopterus*	*Torgos tracheliotos*	*Trigonoceps occipitalis*
Benin						
Burkina Faso						
Cabo Verde						
Cote d'Ivoire						
Gambia						
Ghana						
Guinea						
Guinea Bissau						
Liberia						
Mali						
Mauritania						
Niger						
Nigeria						
Senegal						
Sierra Leone						
Togo						

4.1 Gyps africanus (White-backed vulture)





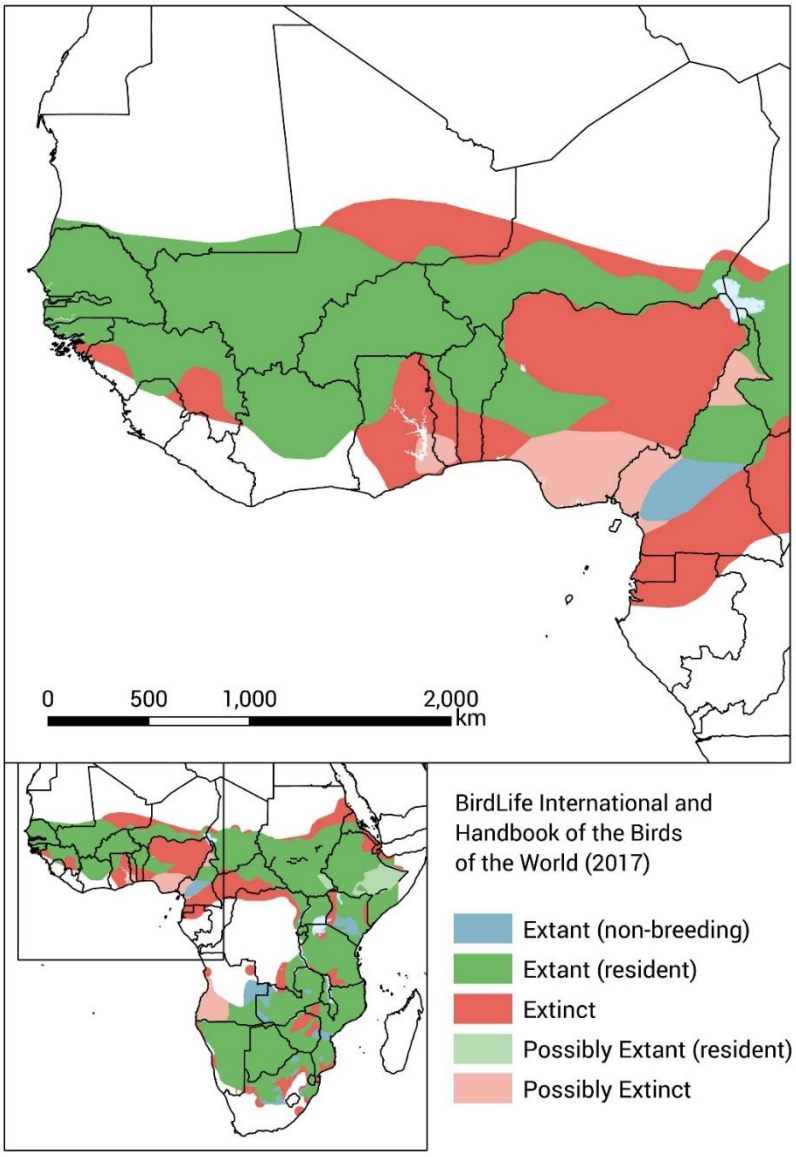
[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Gyps africanus* is a medium-sized vulture species (Ferguson-Lees and Christie, 2001) with a wingspan of 218 cm and an average weight of 5.5 kg (Kemp *et al.*, 2020a). The species has a white lower back and underwing coverts, with a dark eye and neck (Kemp *et al.*, 2020a). Juveniles resemble those of *Gyps rueppelli* (Henriques *et al.*, 2018), but juveniles of the latter species have streakier and paler plumage (Ferguson-Lees and Christie, 2001). *G. africanus* occurs from sea level to 1500 m, and has been recorded up to 3000 m in Kenya and 3500 m in Ethiopia (Ferguson-Lees and Christie, 2001). The species primarily inhabits open areas such as open woodlands, savannas and steppes, and can be found near large wild mammal populations as well as (nomadic) cattle herds (Ferguson-Lees and Christie, 2001; Kemp *et al.*, 2020b). It has been noted to be absent from forests and extreme deserts (Kemp *et al.*, 2020b).

Similar to other species in the genus, *G. africanus* is a scavenger that feeds on carrion, primarily that of large mammals (Ferguson-Lees and Christie, 2001). The species was considered to be a frequent visitor at waste disposal sites where animal remains were discarded from informal butcheries in Southwest Ethiopia (Meles and Bogale, 2018), but it is generally not associated with human settlement (Ferguson-Lees and Christie, 2001; Henriques *et al.*, 2018) and no other records of this behaviour were located. It is highly gregarious and congregates at thermals, roost sites, and carcasses (Ferguson-Lees and Christie, 2001; Kemp *et al.*, 2020a). It is considered to be a sedentary species, however juveniles disperse widely and some adults are known to be nomadic in search of food (Ferguson-Lees and Christie, 2001). Phipps *et al.* (2013) for example recorded foraging trip lengths of up to 267 km daily in immature *G. africanus* in southern Africa, and a total average foraging range of 56 683 ± 9210 km^2 for each individual.

Breeding generally takes place after individuals reach their fourth year of life (Mundy *et al.*, 1992 in Phipps *et al.*, 2013). Laying takes place at different times of the year across the species' range (Ferguson-Lees and Christie, 2001), but in West Africa it usually occurs at the start of the dry season, from October to January (Kemp *et al.*, 2020a). The species uses tall trees over 11 m for nesting (Houston, 1976; del Hoyo *et al.*, 1994 in Botha *et al.*, 2017), often in riparian habitat, and will re-use nesting sites in subsequent years (Kemp and Kemp, 1975). It has additionally been recorded to use electricity pylons (Ferguson-Lees and Christie, 2001; De Swardt, 2018). Nesting occurs either in solitary pairs or in colonies up to 20 pairs (del Hoyo *et al.*, 1994 in Botha *et al.*, 2017; Ferguson-Lees and Christie, 2001). Clutch size can be up to three, but usually only a single egg is laid (Kemp and Kemp, 1975; Houston, 1976; Virani *et al.*, 2010). Hatching occurs after 56-58 days and fledging after 120-130 days (Ferguson-Lees and Christie, 2001). Virani *et al.* (2010) recorded an average nesting success rate of 59% in the Masai Mara National Reserve Kenya between 2003 and 2007, and Kemp and Kemp (1975) recorded a success rate of 58% and 64% in 1967 and 1968 respectively in the Kruger National Park in South Africa.

Distribution: *G. africanus* occurs in sub-Saharan Africa, with resident populations from West to East and in the South (Fig. 3.5.1). The species has also been recorded in the Iberian Peninsula, albeit in small very numbers (Godino and Machado, 2015). It is considered to be monotypic with no different subspecies (Kemp *et al.*, 2020a). According to Botha *et al.* (2017), in West Africa *G. africanus* is resident in 14 counties (Fig. 4.1.1) but has become extinct in Cabo Verde. However, the species' range has declined considerably within the region, with Mateo-Tomás and López-Bao (2020) estimating a decrease in range of over 24% over the last three decades (Fig. 3.5.1). The IUCN assessment for *G. africanus* considers that the species may have been extirpated entirely from Nigeria and Niger (BirdLife International, 2018); there may therefore be discrepancies between the range of *G. africanus* indicated by Figure 4.1.1 and more recent reports.



Country	(A)	(B)
Benin		
Burkina Faso		
Cabo Verde		
Cote d'Ivoire		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		
Senegal		
Sierra Leone		
Togo		

Figure 4.1.1: Distribution of *G. africanus* and occurrence of *G. africanus* in West Africa according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2018) (green = resident, red = extinct, white = does not occur, grey = vagrant).

Population status and trends: Ferguson-Lees and Christie (2001) described *G. africanus* as the most numerous vulture in sub-Saharan Africa. In the early 1990's the population was estimated to number 270 000 individuals, although the methodology used to estimate this figure is unclear (Mundy *et al.*, 1992 in Ferguson-Lees and Christie, 2001). In 2001 the species was described as threatened and declining in some of its range (Ferguson-Lees and Christie, 2001); by 2016, Ogada *et al.* (2016) estimated that the species has undergone a projected median population decline of 90% over three generations (55 years), based on annualised change rate data from eight studies (Table 4.1.3). Only one study included in this calculation was conducted in West Africa: roadside counts carried out by Rondeau and Thiollay (2004) in the Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger in 1969-1973 and 2003-2004. The authors found that the abundance index of *G. africanus* had decreased by 97% in rural areas, based on a count of 455 birds in 1970 (equivalent to 9.8 ±1.6 birds/100 km) and 13 in 2004 (equivalent to 0.3 ± 0.3 birds/100 km). Declines were also noted to have taken place in protected areas, where population densities were calculated to have decreased

from 30.8 ±5.8 birds/100 km to 15.4 ± 8.1 birds/100 km between 1975 and 2004 (Rondeau and Thiollay, 2004).

Other regional estimates include a 3635 km road transect survey of Guinea covering rural, urban and protected areas carried out in 2006 (AC31 Inf. 5), *G. africanus* was found to be the third most abundant species of raptor surveyed, with an overall average density of 6 individuals/100 km, and one of the five main species of raptor observed in rural areas and towns (AC31 Inf. 5). A distribution map produced using the 2006 survey results showed the greatest density of individuals (>20 individuals / 100 km) to be in north-west Guinea (AC31 Inf. 5). The species is considered to have largely disappeared from Ghana aside from Mole National Park (Dowsett-Lemaire and Dowsett, 2014 in BirdLife International, 2018), and there have been no records in Niger since 2012 (J. Brouwer *in litt.* 2017 in BirdLife International, 2018). Within Nigeria, there have been no sightings in the last stronghold of the Yankari Game Reserve "in recent years". P. Hall (*in litt.* 2016 in BirdLife International, 2018) considered the species to have been "probably extirpated" from the country, although given the species' wide ranging behaviour and its occurrence in Cameroon (Buij *et al.*, 2013) close to the border with Nigeria, this might not be the case. A country-wide road survey in Guinea-Bissau conducted in 2016 by Henriques *et al.* (2018) recorded 156 sightings of *G. africanus* with regional densities varying between 0.2 and 0.6 birds per km; the highest density was recorded in the north-west. The authors considered the species to be scarce in suitable habitats due to high mortality caused by poisoning (Henriques *et al.*, 2018).

The species was first categorised as Critically Endangered in the IUCN Red List 2015[12] based on severe population declines as a result of habitat loss, conversion of land to agro-pastoral systems, declines in wild ungulate populations, hunting for trade, persecution, collisions and poisoning (BirdLife International, 2018).

Table 4.1.3: Summary of population trend estimates for *Gyps africanus* used to calculate median population decline by Ogada *et al.* (2016).

Region	Country	Method	Measure	Scale	Time span (years)	% Change	Annualized % change	Source
East	Kenya	Road survey	Birds/ 100 km	3400 km	29	-52%	-2.5%	Virani *et al.*, 2011
East	Uganda	Road survey	Birds/100 km	12 900 km	35.5	-85%	-5.2%	Pomeroy *et al.* unpub.
East	Kenya	Road survey	Birds/100 km	9000 km	29.5	-83%	-5.8%	Ogada *et al.* unpub.
Southern	South Africa	Aerial survey	Nest counts	~900 km^2	29	145%	3.1%	Hitchins, 1980; Bamford *et al.*, 2009
Southern	South Africa	Aerial survey	Nest counts	3500 km^2	27	-50%	-2.5%	Murn *et al.*, 2013
West	Burkina Faso, Mali, Niger	Road survey	Birds/100 km	8000 km	32.5	-97%	-10.2%	Rondeau and Thiollay, 2004
West	Cameroon	Road survey	Birds/100 km	1359 km	27	-60%	-3.3%	Thiollay, 2001
West	Cameroon	Road survey	Birds/100 km	1222 km	36	-83%	-4.8%	Buij unpub.

[12] Full list of IUCN assessments: 2018 CR, 2017 CR, 2016 CR, 2015 CR, 2012 EN, 2008 NT, 2007 NT, 2004 LC, 2000 LR/LC, 1994 LR/LC, 1988 LR/LC.

CITES Trade Database records: There are no published CITES export quotas currently in place for *G. africanus*. The United Republic of Tanzania (hereafter referred to as Tanzania) previously published annual quotas for 100 live wild-taken individuals from 2008 through 2012; trade does not appear to have exceeded the quota in any year 2008-2012, as reported by importers and Tanzania.

According to the CITES Trade Database, direct trade in *G. africanus* between 2009 and 2018 mainly comprised wild-sourced specimens for scientific purposes, and low levels of live individuals, bodies, trophies, and other parts and derivatives (Table 4.1.4).

Over the ten years, a total of 26 live wild-sourced *G. africanus* were traded, with 62% imported by Cuba, as reported by exporters (22 according to importers). Togo was the only West African range State from which direct trade in the species was reported, with Togo reporting exports of five live, wild-sourced birds to Germany for personal purposes in 2009. No live individuals have been reported in trade since 2015.

Indirect trade for commercial purposes over the same period consisted of very low levels of bodies, trophies and live specimens; generally low levels of trade in several commodities also took place for zoological, traveling exhibition, personal, and scientific purposes (Table 3.1.5). Of the West African range States of the species, trade was only reported as originating from Guinea. A total of five live wild-sourced individuals from Guinea were reported in trade over this period: four were exported by France to Thailand for zoological purposes in 2011 (reported by Thailand), and one was exported by Spain to Andorra in 2010 for commercial purposes (reported by Spain).

Table 4.1.4: Direct exports of *Gyps africanus*, from West African Parties (highlighted blue) and others (white), 2009-2018.

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Cameroon	Belgium	trophies	-	-	-	Exporter								1			1
						Importer											
	United Kingdom of Great Britain and Northern Ireland	live	-	T	W	Exporter			3								3
						Importer											
France	China	bodies	-	T	F	Exporter											
						Importer										1	1
Mozambique	United States of America	bodies	-	E	W	Exporter									7		7
						Importer											
		trophies	-	H	W	Exporter											
						Importer										7	7
Namibia	Cuba	live	-	Z	W	Exporter				8	8						16
						Importer				8	8						16
	South Africa	specimens	-	S	W	Exporter	14										14
						Importer											
	United States of America	specimens	-	S	W	Exporter			19								19
						Importer		19									19
Netherlands	China	bodies	-	T	F	Exporter											
						Importer										1	1
South Africa	China	bodies	-	E	C	Exporter				1							1
						Importer											
					W	Exporter		4	1								5
						Importer					1						1
				S	W	Exporter											
						Importer			4								4
		specimens	-	E	W	Exporter											
						Importer						2					2
		trophies	-	E	C	Exporter					1						1
						Importer											
					W	Exporter	6				1	2				1	10
						Importer						1					1
				H	W	Exporter						1					1
						Importer											
	Lebanon	trophies	-	P	C	Exporter						2	2				4
						Importer											

Gyps africanus

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
(South Africa cont.)	Malaysia	specimens	l	S	C	Exporter										0.001	0.001
						Importer											
	New Zealand	bodies	-	T	C	Exporter						2					2
						Importer											
	Switzerland	trophies	-	T	C	Exporter											
						Importer			1								1
	United Kingdom of Great Britain and Northern Ireland	eggshell	-	P	W	Exporter								12			12
						Importer											
		specimens	-	S	W	Exporter							400				400
						Importer											
	United States of America	feathers	-	S	W	Exporter											
						Importer			25								25
		specimens	-	S	I	Exporter											
						Importer			29								29
					W	Exporter											
						Importer			50								50
Togo	Germany	live	-	P	W	Exporter	5										5
						Importer											
United Republic of Tanzania	South Africa	live	-	T	W	Exporter											
						Importer							4				4
				Z	W	Exporter	1										1
						Importer	1										1
	United States of America	live	-	Z	I	Exporter											
						Importer	1										1
					W	Exporter	1										1
						Importer											
Zambia	United States of America	trophies	-	S	W	Exporter			1								1
						Importer											

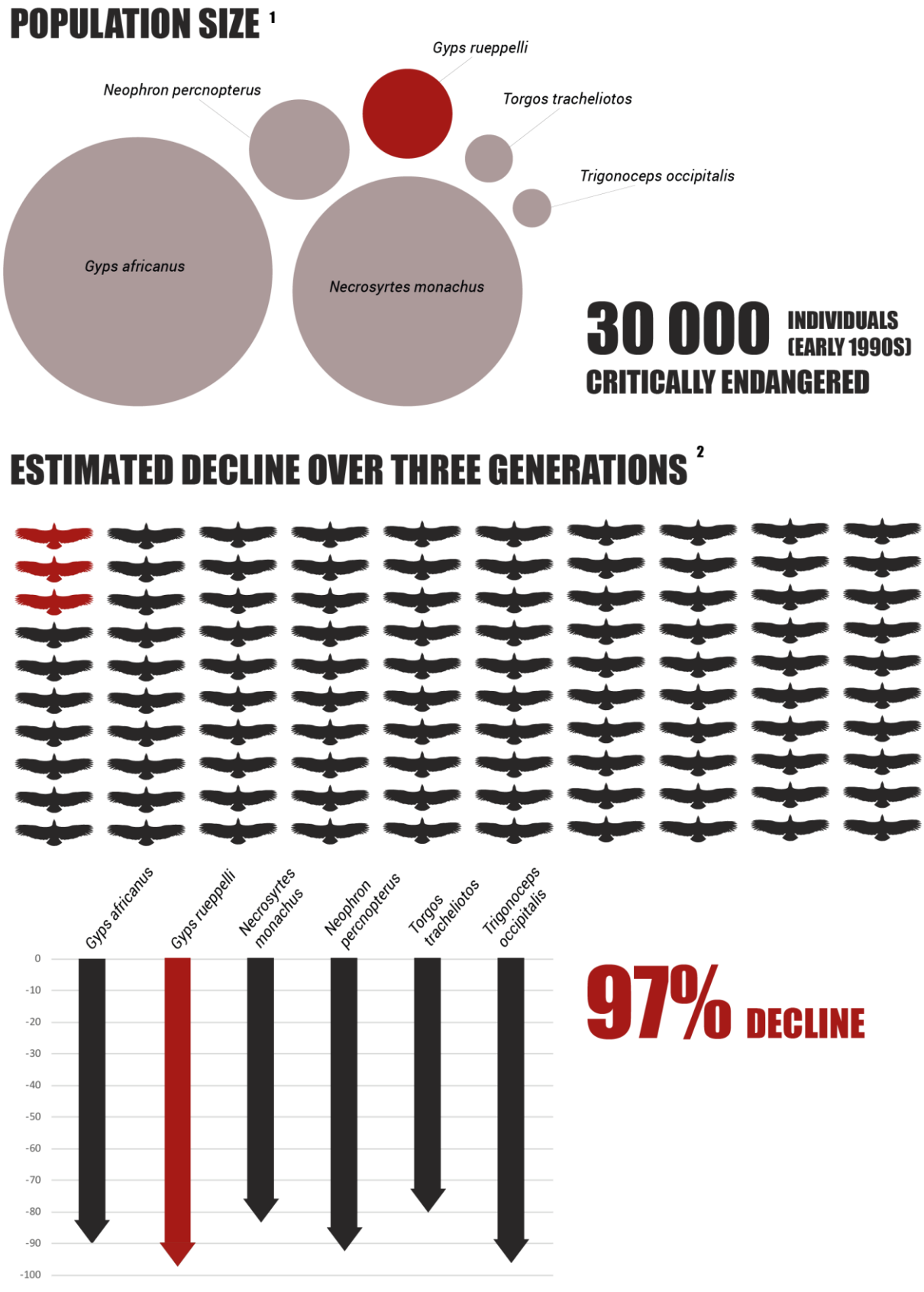
Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

Table 4.1.5: Indirect exports of *Gyps africanus*, 2009-2018. Trade where the origin was a West African Party is highlighted in blue. All trade was reported by number.

Exporter	Importer	Origin	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
France	China	Netherlands	bodies	T	F	Exporter										1	1
						Importer											
	Republic of Korea	Germany	carvings	Q	O	Exporter		1									1
						Importer											
	Thailand	Guinea	live	Z	W	Exporter											
						Importer			4								4
		Macao, SAR	carvings	Q	O	Exporter						1.667					1.667
						Importer											
New Zealand	Bermuda (United Kingdom)	South Africa	trophies	T	W	Exporter										1	1
						Importer											
South Africa	United States of America	South Africa	specimens	S	W	Exporter			1250								1250
						Importer											
Spain	Andorra	Guinea	live	T	W	Exporter		1									1
						Importer											
	United States of America	Unknown	feathers	P	I	Exporter											
						Importer					1						1
Thailand	France	Unknown	carvings	Q	O	Exporter											
						Importer								1.67			1.67
United Republic of Tanzania	Bulgaria	Unknown	live	Z	W	Exporter											
						Importer		3									3

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

4.2 Gyps rueppelli (Rüppell's vulture)



[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Gyps rueppelli* is a large vulture species, with a wingspan of 230 to 250 cm and an average weight of 6.8 to 9 kg (Kemp *et al.*, 2020b). The species can be recognised by its yellow eyes and ivory-tipped bill, as well as dark feathers with white tips which resemble scales (Kemp *et al.*, 2020b). It has been recorded at elevations up to 4500 m, and uses open areas, Acacia woodlands, and grasslands (Ferguson-Lees and Christie, 2001; Kemp *et al.*, 2020b). While it is generally considered a sedentary species (Ferguson-Lees and Christie, 2001), *G. rueppelli* may travel long distances for foraging and occupy large ranges; birds in Kenya and Tanzania for example were reported to have occupied ranges of 71 990 km² over ten days (Virani et al., 2012).

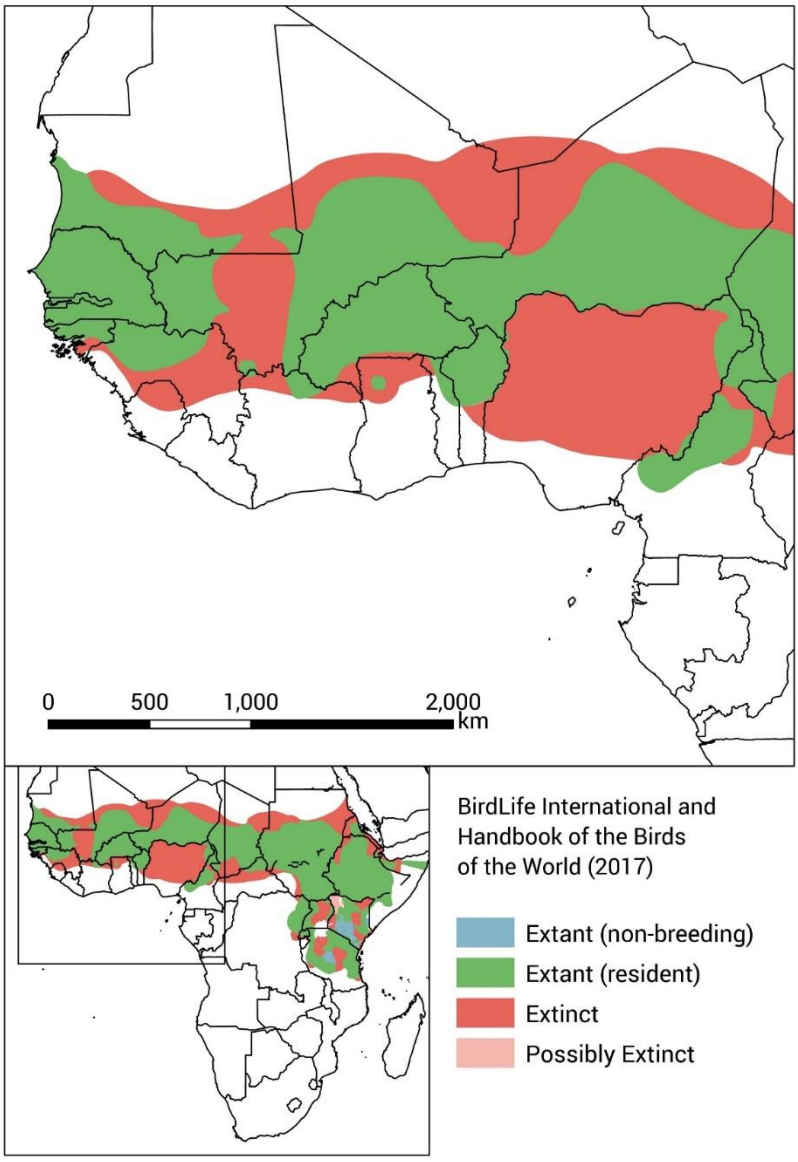
The species feeds on carrion (Ferguson-Lees and Christie, 2001) and relies on large mammals such as ungulates as a food source (BirdLife International, 2017a); for example, in Kenya, *G. rueppelli* relies on ungulate migration in the Masai Mara system (Virani et al., 2012). The species feeds in congregations (often with other *Gyps* species such as *G. africanus* (Shema, 2019; Kendall *et al.*, 2012)), and daily foraging trips of 150 to 200 km have been recorded (Ferguson-Lees and Christie, 2001). It has been noted to generally avoid human settlements, but some associations with people have been recorded (Ferguson-Lees and Christie, 2001). The species has been observed feeding at a waste disposal site in Southwest Ethiopia, for example, but it was considered an "uncommon" visitor (Meles and Bogale, 2018).

G. rueppelli breeds in colonies ranging between tens and thousands of birds from October to May in West Africa, nesting on ledges or crevices (Ferguson-Lees and Christie, 2001) and rarely in trees (Rondeau and Thiollay, 2004; Nikolov, 2014). Breeding is believed to be dependent on rainfall of the previous year, with low rainfall resulting in more food availability due to prey mortality (Virani *et al.*, 2012). In Kenya, the species has been observed to attempt to breed twice in one year (Virani *et al.*, 2012), but no records of this behaviour were located in West African range States. The species has a long nesting period of up to nine months (Houston, 1978), the timing of which may shift in response to ungulate populations (Houston, 1988). *G. rueppelli* has a clutch size of one with an incubation time of approximately 55 days; young fledge after 150 days (Ferguson-Lees and Christie, 2001) at the end of the dry season (Houston, 1988). Generation length was estimated at 18.8 years (BirdLife International, 2017a). In 1970, a fledgling success rate of 82% was recorded at a nesting site in the Serengeti, Tanzania, in what was considered a food-scarce year by the author (Houston, 1988). No estimates of breeding success rates in West Africa could be located.

Distribution: *G. rueppelli* is distributed throughout the Sahelian zone from West Africa to Ethiopia (West) and Somalia to the East as well as Kenya and Tanzania (Ferguson-Lees and Christie, 2001). It has additionally been recorded crossing the Gibraltar Strait onto the Iberian Peninsula with migrating Griffon vultures (*Gyps fulvus*)*;* records of the species in this area have been increasing since the 1990s (Ramírez *et al.*, 2011). HBW Alive (Kemp *et al.*, 2020b) recognises two subspecies:

- *Gyps rueppelli rueppelli*, found from south west Mauritania and Senegambia east to Sudan and West Ethiopia, South to Kenya and Tanzania.
- *Gyps rueppelli erlangeri*, found in Ethiopia (except West), Eritrea, and Somalia.

In West Africa, *G. rueppelli* is distributed throughout the Sahelian zone, and is resident in resident in Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Nigeria, Senegal and Togo according to Botha *et al.* (2017). However, there are large areas where the species is considered to be locally extinct, particularly in Nigeria (Fig. 4.5.1); Mateo-Tomás and López-Bao (2020) calculated a total decrease in distribution of over 33% across the past three decades, based on distribution maps by BirdLife International and the Handbook of the Birds of the World. The global extent of occurrence for *G. rueppelli* has been estimated to be 14.2 million km^2 (BirdLife International, 2021).



Country	(A)	(B)
Benin		
Burkina Faso		
Cabo Verde		
Cote d'Ivoire		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		
Senegal		
Sierra Leone		
Togo		

Figure 4.5.1: Distribution of *G. rueppelli* [13] and occurrence of *G. rueppelli* in West Africa according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2017a) (green = resident, grey = vagrant, white = does not occur).

Population status and trends: Ferguson-Lees and Christie (2001) described *G. rueppelli* as the "commonest vulture of arid Sahel and northeast African mountains" in 2001, with Mundy *et al.* (1992 in BirdLife Interational, 2017 and Botha *et al.*, 2017) estimating a population of 22 000 mature individuals and a total population of c. 30 000 individuals in the early 1990's (the methodology used to generate this estimate is unclear). However, populations have since been estimated to have severely fallen; based on annualised change rate data from seven studies (Table 4.2.2), Ogada *et al.* (2016) projected a median population decline for the species of 97% over three generations (c. 56 years). One study included in their calculation was conducted in West Africa: roadside counts carried out by Rondeau and Thiollay (2004) in the Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger in 1969-1973 and 2003-2004. The study found that the abundance index of *G. rueppelli* decreased by 96% in rural areas, based on a roadside count of 61.3 birds/100 km and 2.5 birds/100 km in 1970 and 2004 respectively. The species was additionally found to have declined in

[13] The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

protected areas (although it was not considered to have been abundant in these areas in the first place), with populations there declining from 3.4 birds/100 km to 2.8 birds/100 km over the same time period (Rondeau and Thiollay, 2004). Rondeau and Thiollay (2004) highlighted that a large breeding colony at the Gandamia cliffs in central Mali, which had previously harboured 2344 nests of which 680 were successful in 1975 (Elósegui, 1975 in Rondeau and Thiollay, 2004), had been "practically deserted" with only a few individuals observed in 2004.

Other regional and local records of decline include Cook and Mundy (1980), who noted that a nesting and roosting site that had previously held "over a hundred" birds (Serle, 1943) in Kotorkoshi (northwest Nigeria), held only 3 to 8 nests and 3 to 25 adults annually between 1970 and 1973. The species was marked as extinct in the same area in a 2017 distribution map by BirdLife International (2017) (Fig. 4.5.1). Henriques *et al.* (2018) described the species as "rare" in Guinea-Bissau, especially in the south, based on a country-wide road survey study conducted in 2016; however no trend data were available to indicate whether this has always been the case. Populations in Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea-Bissau and Togo were described in the 2017 IUCN assessment of the species as "very limited" (Thiollay *in litt.* 2016 BirdLife International, 2017a). An exception to the trend may be The Gambia, where the species population was described as "apparently stable" (BirdLife International, 2017a). In Guinea, a road transect survey covering 3635 km of rural, urban and protected areas found *G. rueppelli* to be "common" (sighted 15-50 times) in 2006, with an overall average density of 1.3 individuals / 100 km (AC31 Inf. 5). The species was also found to be one of the five most-observed raptors in towns, although it was noted that the species "remains more abundant in rural areas" (AC31 Inf. 5). A distribution map for *G. rueppelli* produced using the 2006 survey results showed the greatest density of individuals (11-20 individuals/ 100 km) to be in north-east Guinea (AC31 Inf. 5).

The species was first uplisted to Critically Endangered in the IUCN Red List in 2015[14], due to severe declines across its range and in particular in West Africa caused by habitat loss, prey declines, poisoning, and hunting for trade (BirdLife International, 2017a).

Table 4.2.3: Summary of population trend estimates for *Gyps rueppelli* used by Ogada *et al.* (2016).

Region	Country	Method	Measure	Scale	Time span (years)	% Change	Annualized % change	Source
East	Kenya	Road survey	Birds/100 km	3400 km	29	-52%	-2.5%	Virani *et al.*, 2011
East	Uganda	Road survey	Birds/100 km	12 900 km	35.5	-82%	-4.7%	Pomeroy, Thiollay, Opige & Kaphu unpub.
East	Kenya	Road survey	Birds/100 km	9000 km	29.5	-83%	-5.8%	Ogada, Thiollay & Virani unpub.
West	Cameroon	Road survey	Birds/100 km	1359 km	27	-87%	-7.3%	Thiollay, 2001
West	Burkina Faso, Mali, Niger	Road survey	Birds/100 km	8000 km	32.5	-96%	-9.4%	Rondeau and Thiollay, 2004
West	Cameroon	Breeding census	Breeding pairs	-	17	-99.9%	-33.4%	Buij and Croes, 2014
West	Cameroon	Road survey	Birds/100 km	1222 km	36	-84%	-5%	Buij unpub.

CITES Trade Database records: There are no published CITES export quotas currently in place for the species; the only Party which has previously published quotas is Guinea, which previously published annual quotas of 60 live *G. rueppelli* from 2001 through 2005.

[14] Full list IUCN of assessments: 2017 CR, 2016 CR, 2015 CR, 2014 EN, 2012 EN, 2008 NT, 2007 NT, 2004 LC, 2000 LR/LC, 1994 LR/LC, 1988 LR/LC.

According to the CITES Trade Database, direct trade in *G. rueppelli* consisted of low levels of trade in live birds, trophies, and scientific specimens (Table 4.2.4). Importers reported a total of 42 live birds from 2009 to 2018, of which 57% were captive-bred, 38% were wild-sourced, and 5% were captive-born. Over the same time period, exporters reported only trading two live *G. rueppelli* in 2009: one wild-sourced bird imported by South Africa from Tanzania for zoological purposes, and one captive-born bird imported by Switzerland from France for breeding purposes.

Guinea was the only West African country reported as exporting *G. rueppelli* over this period. Four live, wild-sourced birds were imported for zoological purposes by both the United Arab Emirates in 2009 and the United States in 2013, as reported by importers only.

Indirect trade from 2009 to 2018 comprised very low levels of trade in bodies, live birds, and carvings (Table 4.2.5). Indirect trade originating from West African range States consisted of a total of nine live wild-sourced birds: five live wild-sourced birds originating from Guinea were reported in trade over this period: one bird imported by Switzerland via Belgium for commercial purposes in 2010, and four birds imported by Thailand via France for zoological purposes in 2011 (as reported by Thailand only). Two live wild-sourced birds from Côte d'Ivoire were imported by Germany for personal purposes via the United Arab Emirates in 2009, as reported by the exporter only.

Table *4.2.4:* Direct exports of *Gyps rueppelli* from West African Parties (highlighted blue) and others (white), 2009-2018.

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Cameroon	Belgium	trophies	-	-	-	Exporter								1			1
						Importer											
France	South Africa	live	-	P	C	Exporter											
						Importer			1								1
				Q	F	Exporter											
						Importer			1								1
	Switzerland	live	-	B	F	Exporter	1										1
						Importer	1										1
Guinea	United Arab Emirates	live	-	Z	W	Exporter											
						Importer	4										4
	United States of America	live	-	Z	W	Exporter											
						Importer					4						4
Italy	Kenya	specimens	I	M	C	Exporter											
						Importer						0.006					0.006
Netherlands	United Arab Emirates	live	-	Z	C	Exporter											
						Importer		2									2
South Africa	United States of America	live	-	T	W	Exporter											
						Importer		1									1
United Kingdom of Great Britain and Northern Ireland	Kenya	live	-	Q	C	Exporter											
						Importer			1								1
United Republic of Tanzania	South Africa	live	-	T	W	Exporter											
						Importer							6				6
				Z	W	Exporter	1										1
						Importer	1										1
	United States of America	trophies	-	H	W	Exporter							3				3
						Importer							3				3
Unknown	Sudan	live	-	-	C	Exporter											
						Importer					20						20

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

Table 4.2.5: Indirect exports of *Gyps rueppelli*, 2009-2018. Trade where the origin was a West African Party is highlighted in blue.

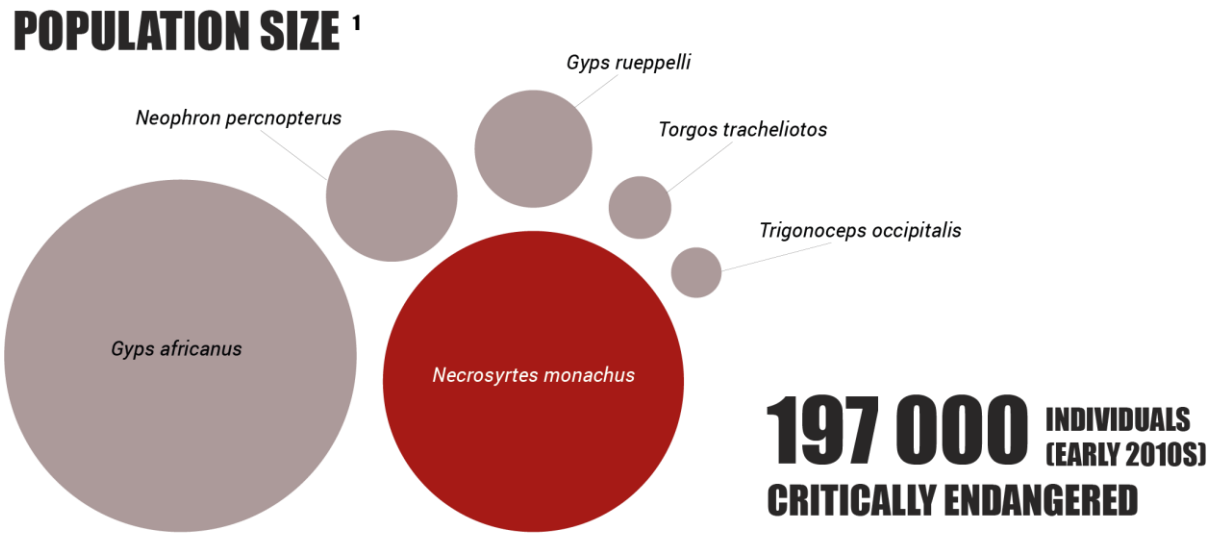
Exporter	Importer	Origin	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Belgium	Switzerland	Germany	live	-	T	C	Exporter								1			1
							Importer								1			1
		Guinea	live	-	T	W	Exporter		1									1
							Importer		1									1
Canada	United States of America	United States of America	live	-	Z	F	Exporter											
							Importer										2	2
France	Kenya	United Kingdom of Great Britain and Northern Ireland	live	-	T	F	Exporter			1								1
							Importer											
	Republic of Korea	Germany	carvings	-	Q	F	Exporter		1									1
							Importer											
	Thailand	Guinea	live	-	Z	W	Exporter											
							Importer			4								4
		Macao, SAR	carvings	-	Q	O	Exporter						1.667					1.667
							Importer											
Kenya	Zimbabwe	France	live	-	Q	C	Exporter			1								1
							Importer											
Netherlands	United States of America	France	bodies	-	E	C	Exporter											
							Importer						1					1
					T	C	Exporter						1					1
							Importer											
South Africa	United States of America	United Republic of Tanzania	live	-	Z	W	Exporter		2									2
							Importer											
Switzerland	Germany	France	live	-	T	F	Exporter											
							Importer				1							1
					Z	F	Exporter				1							1
							Importer											
Thailand	France	Unknown	carvings	-	Q	O	Exporter											
							Importer								1.67			1.67
United Arab Emirates	Germany	Côte d'Ivoire	live	-	P	W	Exporter	2										2
							Importer											
United States of America	Netherlands	France	bodies	-	Q	C	Exporter							1				1
							Importer											
					T	C	Exporter											
							Importer							1				1

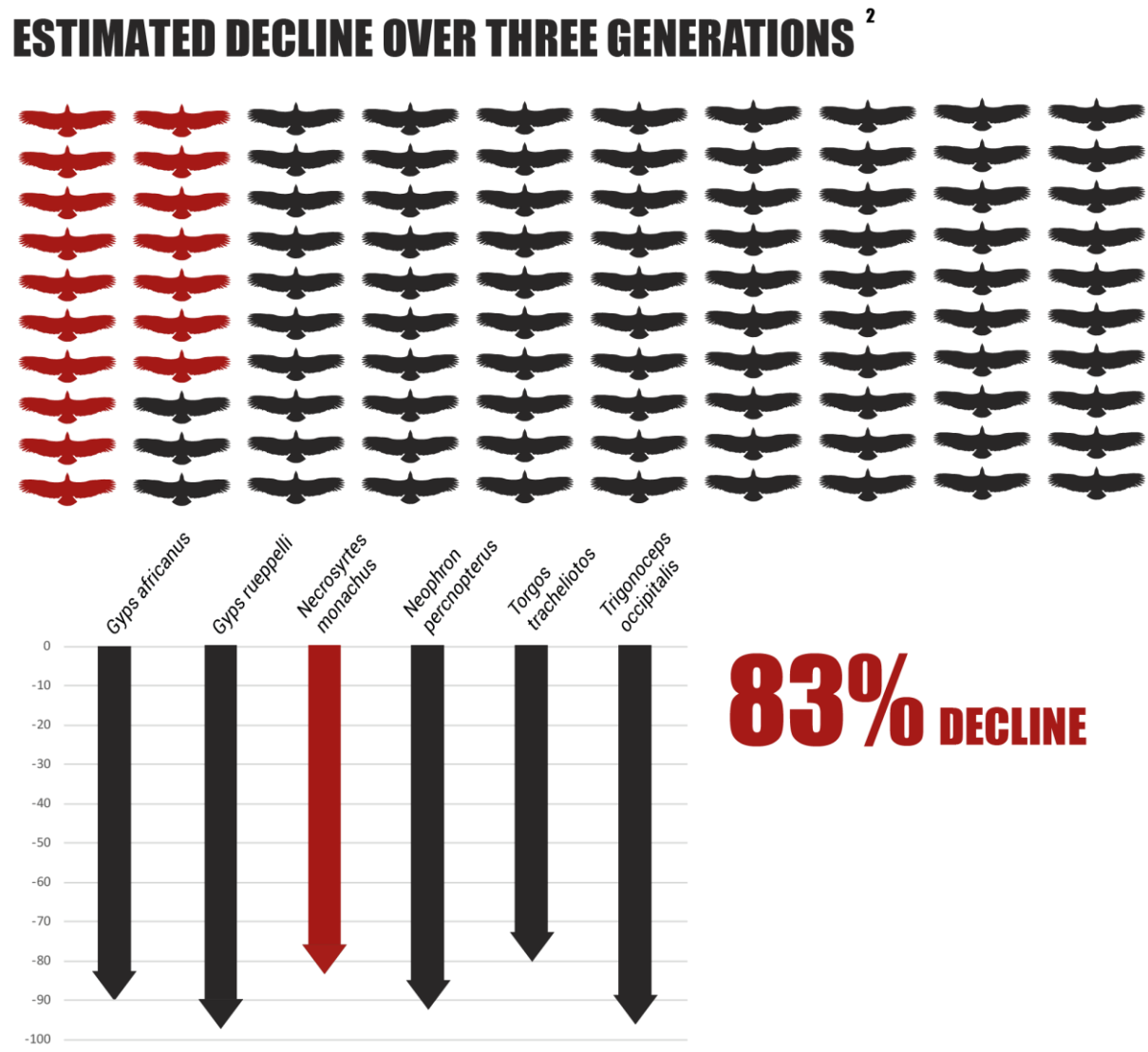
Gyps rueppelli

Exporter	Importer	Origin	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Zimbabwe	France	United Kingdom of Great Britain and Northern Ireland	live	kg	Q	F	Exporter											
							Importer			5								5

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

4.3 Necrosyrtes monachus (Hooded vulture)





[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Necrosyrtes monachus* (hooded vulture) is a small vulture species, with a wingspan of 150-180 cm and an average weight of 1.5 to 2.6 kg (Ferguson-Lees and Christie, 2001). It resembles the lappet-faced vulture *Torgos tracheliotos*, but is much smaller and finer-billed (Ferguson-Lees and Christie, 2001; Kemp *et al.*, 2020c). *N. monachus* is considered to be sedentary in most areas, but regional movements in parts of the West African Sahel have been reported in response to rains, with the species being more numerous in these areas during the dry season (Ferguson-Lees and Christie, 2001). Immature individuals and non-breeders have been described as "somewhat dispersive" (Ferguson-Lees and Christie, 2001); Kemp *et al.* (2020a) noted that the species may range over 200km when not breeding, with juveniles considered to be especially mobile.

The species' habitat preferences vary across its range (Ferguson-Lees and Christie, 2001), but it is principally found in human settlements across much of its range north of the equator; elsewhere it is solitary and inhabits open woodland and savannah and forest edge (Ferguson-Lees and Christie, 2001; Ogada and Buij, 2011; Kemp *et al.*, 2020c; R. Buij *pers. comm.* 2021). *N. monachus* is considered to be a versatile scavenger that often makes use of disturbed habitats such as secondary forests, settlements and urban areas, in West Africa mostly so (Ogada and Buij, 2011). Like other vultures it principally feeds on carrion, but has also been reported to feed on small insects, oil palm fruits, food scraps and excreta around human settlements (Ferguson-Lees and Christie, 2001; Barlow, 2004; Kemp *et al.*, 2020c). The species has therefore developed an association with rubbish dumps and slaughterhouses in urban areas, where it has been reported to gather in large numbers (Ogada and Buij, 2011). In particular, it has been reported to be "quite common" in coastal areas with large numbers of people, especially in West Africa (Ferguson-Lees and Christie, 2001; Nosazeogie *et al.*, 2018; Kemp *et al.*, 2020c).

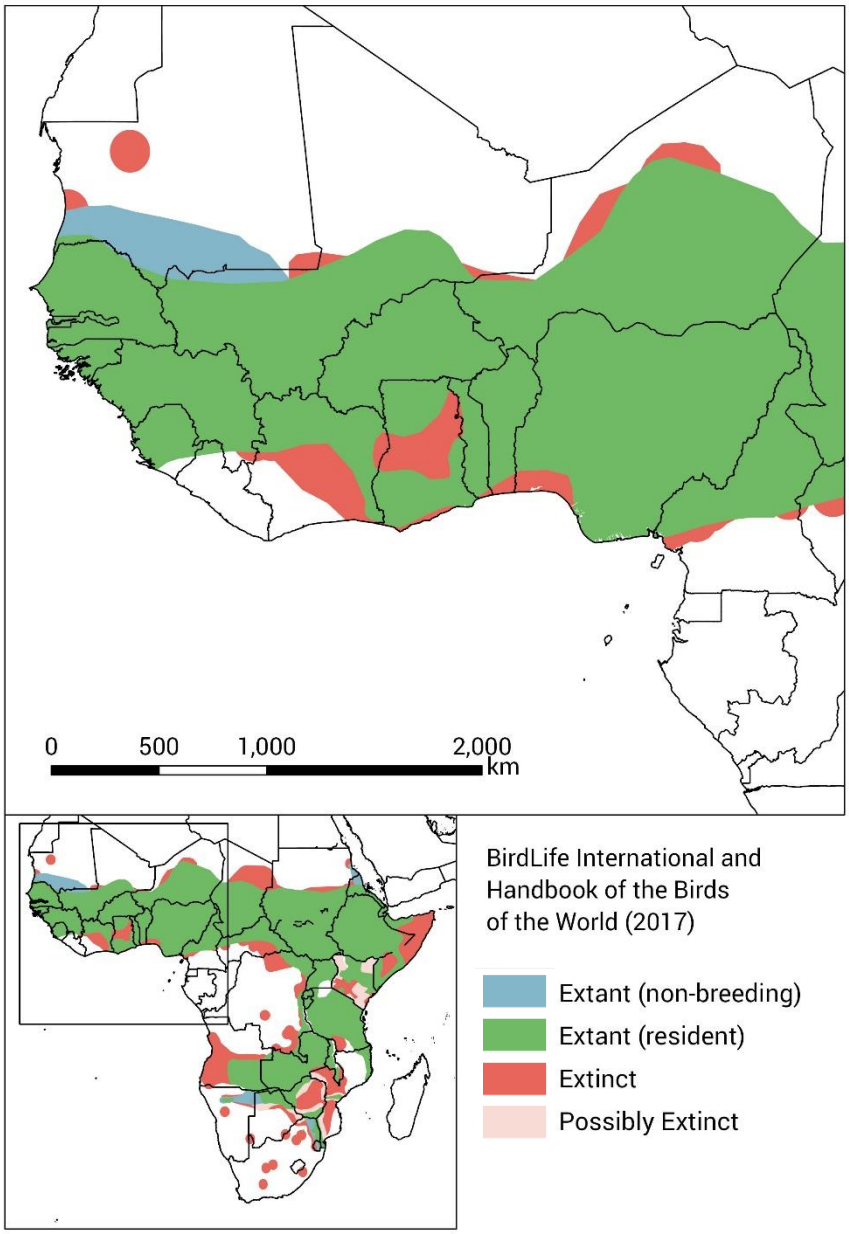
Breeding takes place at different times of the year across the species' range (Ferguson-Lees and Christie, 2001), but laying usually occurs after the rainy season (Kemp *et al.*, 2020c). In West Africa and Kenya, *N. monachus* was reported to breed throughout the year, with a peak in November to July (Ferguson-Lees and Christie, 2001). Clutch size is one egg, which hatches after an incubation period of 46-54 days (Ferguson-Lees and Christie, 2001). Chicks fledge after 80-130 days, but are dependent on their parents for a further 3-4 months (Ferguson-Lees and Christie, 2001). Annual breeding success was estimated to be 0.68-0.71 chicks fledged per breeding pair per year based on monitoring of 76 nesting attempts in the Garango area of Burkina Faso; average productivity for the species was estimated to be 0.57 chicks fledged per breeding pair per year (Daboné *et al.*, 2019).

Distribution: *N. monachus* has an Afrotropical distribution ranging from Senegal and south Mauritania through to southern Niger and Chad to southern Sudan, Ethiopia and west Somalia, and southwards through Zimbabwe to south Mozambique and northeastern South Africa (Ferguson-Lees and Christie, 2001) (Fig. 4.3.1). The extent of occurrence for the species has been estimated to be 23.5 million km^2 for all birds, and 22.5 million km^2 and for breeding/resident birds only (BirdLife International, 2020b). HBW Alive recognises two subspecies (Kemp *et al.*, 2020c):

- *N. m. monachus*, found in sub-Saharan Africa from southern Mauritania and Senegal east through Niger and Chad to west Sudan, South Sudan and northern Uganda;
- *N. m. pileatus*– found in east Sudan, Eritrea, Ethiopia and western Somalia, south to northern Namibia and Botswana, Zimbabwe, Mozambique and north-east South Africa.

According to the Botha *et al.* (2017), in West Africa *N. monachus* is resident in Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. Its distribution today has been noted to be smaller than that described in the 1970s, notably in Burkina Faso and Mali (Rondeau and Thiollay, 2004); however the range map produced by BirdLife International for the 2017 IUCN Red List assessment of the species

highlights large regions in Côte d'Ivoire and Ghana where the species is also considered to be extinct (Fig. 4.3.1). Based on this map, Mateo-Tomás and López-Bao (2020) calculated that the species had been extirpated or possibly extirpated from 19.9% of its range over last three decades.



Country	(A)	(B)
Benin		
Burkina Faso		
Cabo Verde		
Cote d'Ivoire		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		
Senegal		
Sierra Leone		
Togo		

Figure 4.3.1: Distribution of *N. monachus*[15], and occurrence of *N. monachus* in West Africa according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2017b) (green = resident, white = does not occur).

Population status and trends: *N. monachus* has been described as "common or locally abundant" north of the equator, but is considered to be "generally scarce or even rare" south of it (Ferguson-Lees and Christie, 2001), except for concentrations in the Okavango Delta, Hwange and regions along the Zambezi River in Zimbabwe, and Kruger National Park (Mundy, 1997). Its ability to

[15] The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

make use of urban areas was considered to have increased numbers of *N. monachus* due to a lack of competition with other vulture species in these areas (Anderson, 1999 in Ogada and Buij 2011). The species was considered to be very common in the early 1970s, particularly in West Africa (Rondeau and Thiollay, 2004; Brown, 1971 in Ogada and Buij 2011). In 1992, Mundy *et al.* estimated a total population size of between 200 000 and 330 000 individuals, but the methodology used to generate this estimate is unclear (Mundy *et al.*, 1992 in Ferguson-Lees and Christie 2001). Populations in the early 2000s were considered to be mostly stable (Ferguson-Lees and Christie, 2001), however research published shortly after this date began to show that the species had undergone a rapid and dramatic decline (Thiollay, 2001; Rondeau and Thiollay, 2004).

In 2016, Ogada *et al.* (2016) used data from seven studies spanning an average of 33 years (Table 4.3.1) to calculate a projected median population decline for the species of 83% over three generations (53.4 years). Three of the studies used to calculate this figure took place in West Africa: an unpublished road survey by Buij in Cameroon, roadside surveys carried out by Thiollay (2001) in Cameroon in 1973 and 2000, and roadside counts carried out by Rondeau and Thiollay (2004) in the Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger in 1969-1973 and 2003-2004. Thiollay (2001) calculated a decline in the abundance index of *N. monachus* of 67% between the two survey periods, noting additionally that numbers of hooded vultures that had been recorded during stops in villages and towns were often an order of magnitude lower than previous measurements. Rondeau and Thiollay (2004) found that the abundance index of *N. monachus* had decreased from 84.4 (± 12.1) birds/100 km and 23.6 (±5.7) birds/100 km in rural and protected areas respectively in 1970, to 46.4 (±11.2) birds/100 km and 16.2 (±6.0) birds/100 km in the same areas in 2004. This indicated a decline of 45% in rural areas and of 31% in protected areas, although the latter decline was not found to be statistically significant (Rondeau and Thiollay, 2004). More marked decreases were observed in transects taking place in the Sahelian biogeographic zone than the Sudanian biogeographic zone (Rondeau and Thiollay, 2004).

The assessment by Ogada *et al.* (2016) led to *N. monachus* being categorised as Critically Endangered in the IUCN Red List in 2015[16], on the basis that the population was experiencing an extremely rapid decline owing to indiscriminate poisoning, trade for belief-based use, hunting, persecution and electrocution, as well as habitat loss and degradation (BirdLife International, 2017b).

Information regarding the declines of *N. monachus* on a finer geographic scale is set out in Ogada and Buij (2011), who requested data on trends of the species across Africa through an online forum specific to African raptors, and conducted a literature search for published papers and reports. Table 4.3.2 summarises any empirical or anecdotal estimates of population declines in West African countries as set out in Ogada and Buij (2011), supplemented with more recent estimates. Although declines have been reported in all countries with long-term trend data (i.e. Burkina Faso, Mali and Niger (Rondeau and Thiollay, 2004; Thiollay, 2006c)), Ogada and Buij (2011) noted that data from Sahelian and savannah regions may not be reflective of more forested regions (e.g. Ghana) where populations "appear to be robust" (F Lemaire pers. comm. in Ogada and Buij 2011). It should be noted however that the map produced for the 2017 IUCN Red List assessment for the species appeared to indicate that *N. monachus* has been extirpated from a large area of Ghana (BirdLife International, 2017b).

Based on the data collected, Ogada and Buij (2011) estimated the total population of *N. monachus* to be 197 000 individuals; this was calculated by taking the midpoint of Mundy *et al.* (1992)'s estimate

[16] Full list of IUCN assessments: 2017 CR, 2016 CR, 2015 CR, 2012 EN, 2011 EN, 2009 LC, 2008 LC, 2004 LC, 2000 LR/LC, 1994 LR/LC, 1988 LR/LC.

of 200 000 to 330 000 birds (265 000) and estimated percentage declines for West, Central, East and Southern Africa as shown in Table 4.3.3.

Table 4.3.2: Summary of empirical or anecdotal estimates of *N. monachus* population status in West African countries. Unless otherwise noted the citation for the information contained is Ogada and Buij (2011); note, however, that this publication is nine years old and that the situation in each country may have changed. More recent studies have been included in the table where available.

Range State	Empirical trend data available?	Summary of available data
Benin	No	Reports from 2010 of the species still being widespread in small numbers in Pendjari National Park and Parc W (F Lemaire and B Dowsett pers. comm. in Ogada and Buij (2011); a dozen birds were recorded by F Lemaire and B Dowsett (pers. comm.) in the Bétérou area in 2009. There are additional reports of the species near Cobli (on the road to Tanguiéta from the Togo border), at Tanguiéta, and at Natitingou (F Lemaire, B Dowsett, and S and J Merz (pers. comm.).
Burkina Faso	Yes	Transects in Burkina Faso were included in Rondeau and Thiollay (2004)'s roadside count surveys (also published in Thiollay (2006), see above). Was reported to remain numerous in central Burkina Faso, but to have declined dramatically in the south west and to have almost disappeared in Bobodioulasso. There are anecdotal reports that the species has "greatly declined" in Ouagadougou, although local researchers in the south of the country reported the species to remain "fairly common".
Côte d'Ivoire	No	Reports of declines in the north of the country as a result of hunting pressure as early as 1992 (JM Thiollay per obs in. Mundy et al. 1992), with local extinctions reported to be a result of consumption as food (Thiollay, 2006a). A small population (30 individuals) was reported to be present in the south-east of the country on the border with Ghana; in the early 2000s, the species was noted to be a frequently seen resident breeder in Comoé National Park (Salewski, 2000 in Ogada and Buij, 2011), and to be frequently found around Aboisso (Rainey and Lachenaud, 2002 in Ogada and Buij, 2011).
The Gambia	No	Roadside counts of *N. monachus* conducted in 2005 in and around Banjul (far-west Gambia) found the species to be "comparatively abundant" with a relative abundance of 2.91 vultures/km (Barlow and Fulford, 2013). More recent surveys in the Western region of Gambia in 2013 and 2015 recorded higher relative abundances still; 12 individuals/km in 2013 (3416 individuals) and 17.5 individuals/km in 2015. Alongside counts from Guinea Bissau, this is one of the highest relative abundance estimates in West Africa. The authors note that their counts suggested population densities of 7000-15 000 *N. monachus* individuals across 600km2; this equates to 3.5% to 7.6% of the global population of 197 000 as estimated by Ogada and Buij (2011).
Ghana	No	Reported to occur in 59 out of 93 atlas squares, i.e. 63% of the country, with "no reason to suppose that it has decreased anywhere" (F Lemaire and B Dowsett unpub. data in Ogada and Buij (2011) (but see map above produced for the IUCN assessment of the species). There are two populations: one in the south-centre forest/ forest-transition zone where it was reported to be "very common", and a smaller population in the far north. Reported to be "an abundant commensal species" as well as a "common raptor in game reserves".

Range State	Empirical trend data available?	Summary of available data
Guinea	No	No baseline surveys from which to draw comparisons, but results are available from a 2006 road transect survey covering 3635 km across a representative range of habitats including rural, urban and protected areas (Rondeau *et al.*, 2008). *N. monachus* was the most common raptor observed; it was reported to be abundant in rural areas and towns, but none were observed in protected areas (Rondeau *et al.*, 2008). Overall, an average of 33.9 *N. monachus* individuals were recorded per 100 km (AC31 Inf. 5). A map of the distribution of *N. monachus* within the country is available in the response submitted to Notif. 2020/034 (AC31 Inf. 5) by the United Kingdom of Great Britain and Northern Ireland (AC31 Inf. 5); it shows that, in 2006, the highest abundance of the species was found in the west-central Guinea.
Guinea-Bissau	No	Previous surveys conducted in 1986 described the species as 'common' at Bisseau, Ilha de Bolhama, Ilha de Bubaque, Ilha de Rubane and north-east of Safin (Hazevoet, 1996). Roadside transects covering "most of Guinea Bissau" in 2016 found the species to be the most common raptor observed, being found at a frequency of 252 birds per 100 km (Henriques *et al.*, 2017). *N. monachus* was noted to be two times as abundant in less vegetated areas than in closed environments (Henriques *et al.*, 2017). The country's total population was estimated to be c. 76 000 birds (CI 68 000 – 88 000) (Henriques Baldé, 2016).
Liberia	No	Ogada and Buij (2011) considered there to be insufficient data to establish a population trend.
Mali	Yes	Transects in Mali were included in Rondeau and Thiollay (2004)'s roadside count surveys (also published in Thiollay (2006), see above). Thiollay (2006) noted that the species had almost disappeared from the towns of Segou and Mopti, where hundreds of individuals were observed 30 years ago. Ogada and Buij (2011) additionally noted there had been no sightings of *N. monachus* in either Bamako or Sokolo since 2003 and 1988 respectively. Over a total period of 11weeks spent in the country in 2002 and 2004, F Lemaire and B Dowsett (pers. comm. in Ogada and Buij (2011)) did not see any *N. monahcus* individuals in the south or the country, nor during a few days spent in the Sahel, near Mopti, and in the Gourma (north of Douentza) and as far east as Gao.
Mauritania	No	No recent surveys from which to establish population trends
Niger	Yes	Transects in Niger were included in Rondeau and Thiollay (2004)'s roadside count surveys (also published in Thiollay (2006), see above). Thiollay (2006) reported that the species had disappeared from towns such as Niamey where hundreds were observed 30 years ago. Data from the Niger Bird DataBase was also reported to suggest a decline in numbers, although Ogada and Buij (2011) noted that there was significant variation in observer effort across time and space. During 1990–1998, 10% of observations of *N. monachus* were of 10 or more individuals, compared to only 5% of observations during 2002–2008. In addition, the average number of *N. monachus* individuals per observation was 4.9 during 1990–1998, compared to 3.5 vultures per observation during 2002–2008 (Ogada and Buij, 2011)
Nigeria	No	There have been anectodal reports that the species has declined in Nigeria; Rondeau and Thiollay (2004) noted that the species had "practically disappeared from many towns and villages where they were formerly abundant", with their use as food ascribed as a potential cause. Surveys

Range State	Empirical trend data available?	Summary of available data
		conducted in Edo State by Nosazeogie *et al.* (2018)recorded very few individuals and found the species to be completely absent from a number of towns surveyed, leading the authors to suggest that it the species had undergone a strong population decline. The authors do however note that there are no previous published counts in the region prior to their study. Low abundance was suggested to potentially be a result of human exploitation, particularly for belief-based use.
Senegal	Yes	In 2017, Mullié (2017) noted the species was "still common in the Lower Casamance…without recent signs of decrease"; however, in Dakar, the species was estimated to have decreased by >85% from 3000 individuals in 1969 to 400 in 2016. Transects conducted in 2016 in western Senegal (covering 2700 km) calculated a relative abundance of 21.5 individuals/km (Mullié *et al.*, 2017).
Sierra Leone	No	Anecdotal reports describe N. monachus to be common as a commensal species in the Gola Forest and the towns of Kenema and Bo (F Lemaire and B Dowsett (pers. comm.). Populations were reported to be present in Freetown and in some regional capitals (T Ewert pers. comm.)
Togo	No	Described as a "commoner" species in 1980 (Cheke and Walsh, 1980 in Ogada and Buij 2011). Experts have indicated that species could be common along the country's border with Ghana (F Lemaire and B Dowsett pers. comm.).

Table 4.3.3: Summary of the inputs and methodology used to calculate Ogada and Buij (2011)'s estimate of *N. monachus* population size. Estimates of the percentage of the total population present in each region were based on actual numbers reported for southern Africa and 'guesstimates' based on numbers per kilometre from road surveys and the number of countries in each region.

Region	Estimated proportion of total population (%)	Estimate of decline (%)	Population size based on mid-point of Mundy *et al.* 1992	Estimate of current population size
West	70	22.5	185 000	143 762
Central	18	31.5	47 700	32 674
East	10	38.5	26 500	16 297
South	2	25	5300	3975
TOTAL			**265 000**	**196 708**

CITES Trade Database records: There are no published CITES export quotas currently in place for the species; the only Party which has previously published quotas for *N. monachus* is Tanzania, which published annual quotas for 100 live, wild-taken individuals between 2008 and 2012.

According to the CITES Trade Database, direct trade in *N. monachus* 2009-2018 principally comprised low numbers of trophies, live specimens and bodies; trade reported from West African range states comprised relatively low numbers of wild-sourced trophies (exported from Ghana) and live individuals (exported from Guinea; Table 4.3.4). The only exporter-reported trade for commercial purposes was 14 wild-sourced trophies exported from Ghana to the United States in 2018; importers reported two live wild-sourced individuals exported from Guinea to Thailand and three live captive-

bred individuals exported from the Netherlands to Switzerland in 2013. Indirect trade comprised low numbers of bodies, scientific specimens and live individuals; one wild-sourced individual traded for zoological purposes originated in Guinea, but the country of origin for the remainder of indirect trade was unknown.

Table 4.3.4: Direct exports of *Necrosyrtes monachus* from West African Parties (highlighted blue) and others (white), 2009-2018.

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2016	2017	2018	Total
Ghana	United States of America	trophies	-	P	W	Exporter									
						Importer								7	7
				T	W	Exporter								14	14
						Importer									
Guinea	France	live	-	Z	W	Exporter									
						Importer			3						3
	Thailand	live	-	T	W	Exporter									
						Importer				2					2
Mozambique	United States of America	bodies	-	E	W	Exporter							7		7
						Importer									
		trophies	-	H	W	Exporter									
						Importer								7	7
Netherlands	Switzerland	live	-	T	C	Exporter									
						Importer					3				3
South Africa	China	bodies	-	E	W	Exporter									
						Importer								1	1
		trophies	-	E	W	Exporter							1	1	2
						Importer									
	Malaysia	specimens	I	S	C	Exporter								0.001	0.001
						Importer									
	United Kingdom of Great Britain and Northern Ireland	eggshell	-	P	W	Exporter						12			12
						Importer									
United Republic of Tanzania	United Arab Emirates	live	-	B	W	Exporter									
						Importer	4								4

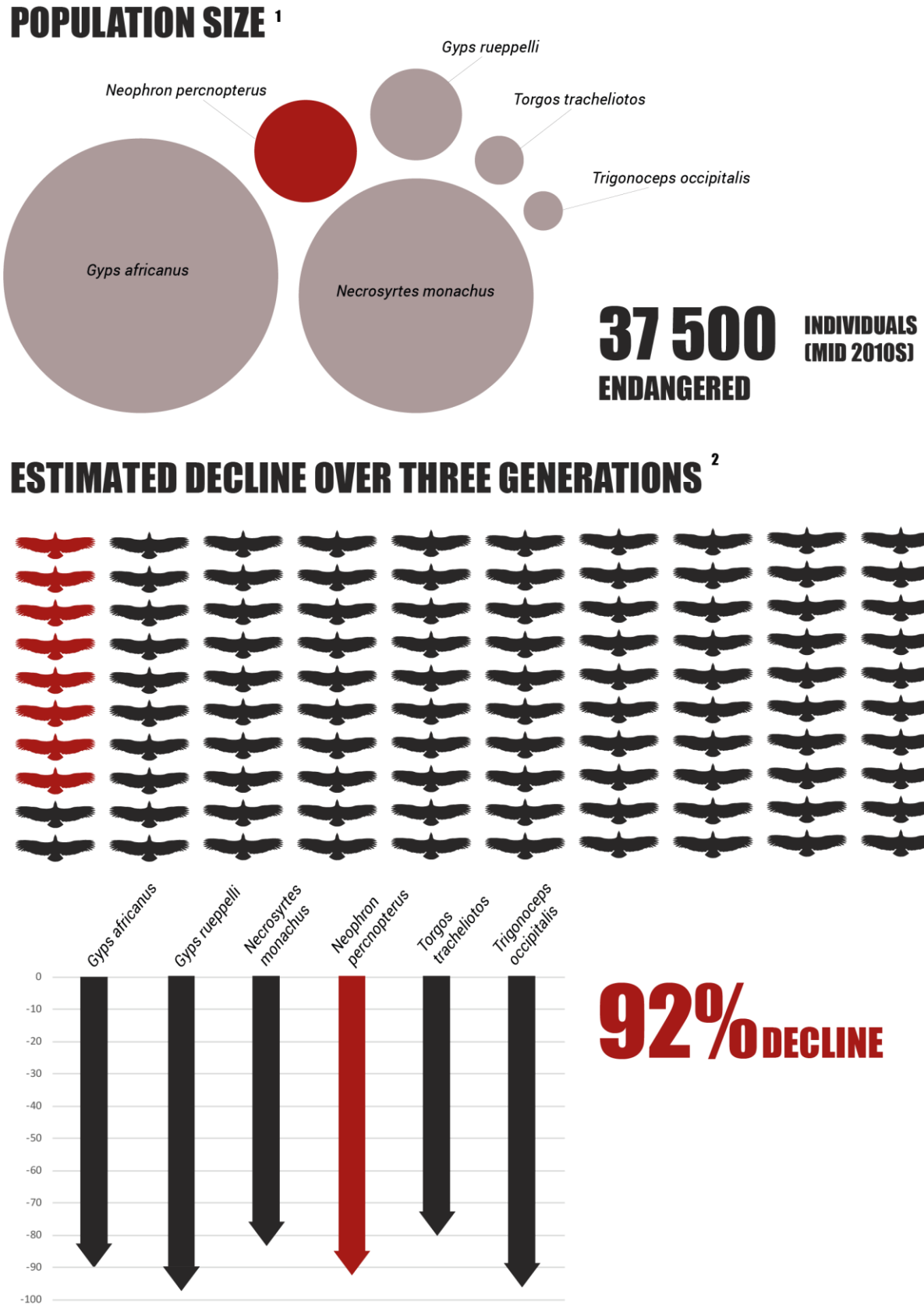
Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

Table 4.3.5: Indirect exports of *Necrosyrtes monachus*, 2009-2018; trade where the origin was a West African Party is highlighted in blue. All trade was reported as number of items.

Exporter	Importer	Origin	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Belgium	China	Unknown	bodies	T	O	Exporter						1					1
						Importer											
			specimens	E	U	Exporter											
						Importer						1					1
Canada	United States of America	Guinea	live	Z	W	Exporter					1						1
						Importer					1						1

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

4.4 Neophron percnopterus (Egyptian vulture)



[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Neophron percnopterus* (Egyptian vulture) is a small to medium sized vulture species with a wingspan of 155-170 cm (Ferguson-Lees and Christie, 2001; BirdLife International, 2019a). The species weighs between 1.6 and 2.4 kg; females are slightly larger and can weigh up to 15% more than males (Ferguson-Lees and Christie, 2001). *N. percnopterus* has white plumage and black flight feathers as well as a yellow, bare face with a dark bill (Orta *et al.*, 2020). It is a migratory species, with some sedentary populations in the Canary Islands, Balearic Islands, Cabo Verde, the island of Socotra (Yemen), the Masirah islands (Oman), the Arabian Peninsula, the Indian subcontinent, and parts of sub-Saharan Africa (Botha *et al.*, 2017; Orta *et al.*, 2020). It predominantly inhabits sub desert and arid savannah (Borrow and Demey, 2001) and desert habitats (Borrow and Demey, 2014), and is known to make daily foraging trips up to 80 km (Orta *et al.*, 2020).

N. percnopterus is principally an opportunistic scavenger, feeding on carrion and organic waste, and to a lesser extent on small vertebrates and swarming insects as well as the eggs of large birds (Ferguson-Lees and Christie, 2001). In some parts of its range it is heavily reliant on landfill sites and dumps (Orta *et al.*, 2020); the species has been recorded in high numbers at landfills in Oman (Al Fazari and McGrady, 2016; Al Farsi *et al.*, 2019; Meyburg *et al.*, 2019) and Europe (Tauler-Ametller *et al.*, 2017), as well as near human settlements in the Indian part of its range (Ferguson-Lees and Christie, 2001).

The species' breeding season varies across its range, but in West Africa it takes place between November to April (Ferguson-Lees and Christie, 2001). Migratory populations in South Europe and the Mediterranean breed from the end of March to early September after migrating from southern range States (Ferguson-Lees and Christie, 2001). Juvenile *N. percnopterus* born in the European range migrate to the African range in their first year of life (Yosef and Alon, 1997), with a proportion of birds returning north for the European summer after one to three years of remaining in Africa (Yosef and Alon, 1997; Meyburg *et al.*, 2004). Migrating *N. percnopterus* fly in pairs or as solitary individuals, and rarely in groups of three (Abuladze and Shergalin, 1998). Wintering *N. percnopterus* can congregate to roost at suitable habitats where food is plentiful (Arkumarev *et al.*, 2014).

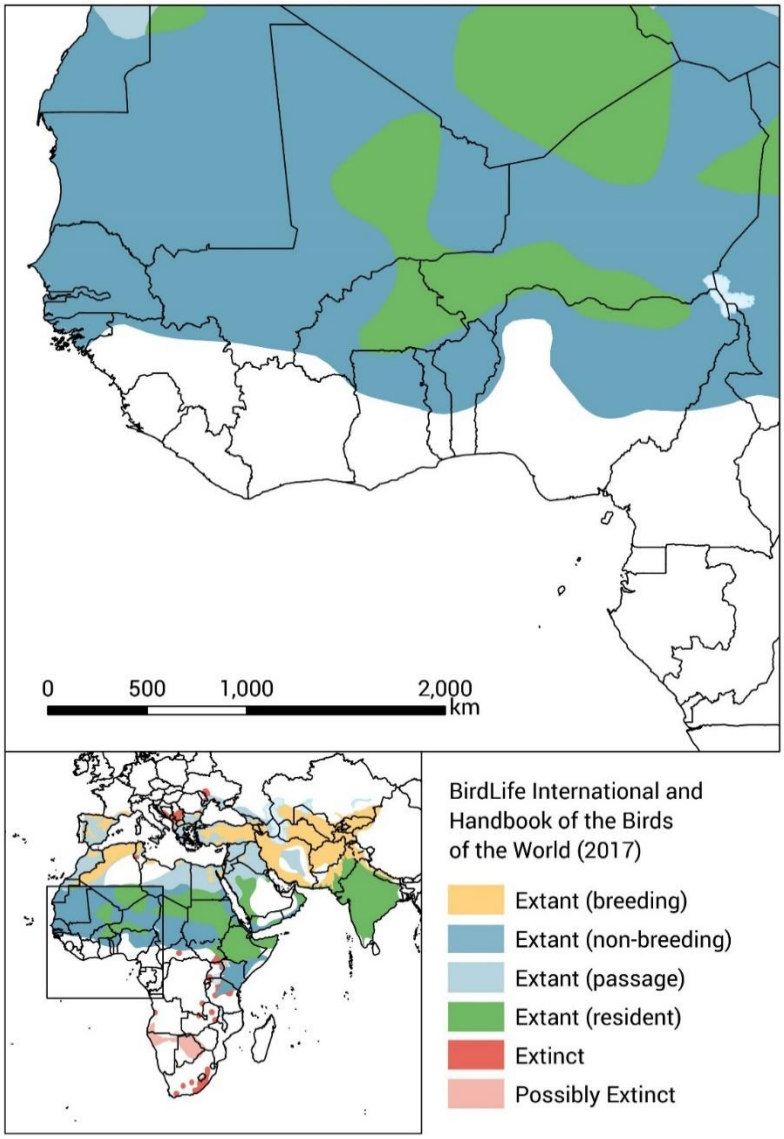
The species nests on rocky outcrops and cliffs (Borrow and Demey, 2001; Ferguson-Lees and Christie, 2001), as well as caves (Abuladze and Shergalin, 1998). Clutch size is usually two (Abuladze and Shergalin, 1998) but may be between one and three eggs, with an incubation time of approximately 42 days (Ferguson-Lees and Christie, 2001). The chicks fledge after 70 to 90 days and are dependent for at least one month after fledging (Donazar and Ceballos, 1989; Ferguson-Lees and Christie, 2001; Arkumarev *et al.*, 2018). A study conducted in Transcaucasia from 1978 to 1991 reported a nesting success rate of 74% (Abuladze and Shergalin, 1998), and a study in Bulgaria from 2005-2016 reported an 85.6% success rate (Arkumarev *et al.*, 2018). Productivity estimates of northern breeders range from 0.49 to 1.04 (Arkumarev *et al.*, 2018). In nests with two chicks, the second hatchling has been found to have a higher mortality rate and develop slower, unless weather conditions were favourable toward the end of the nesting period (Donazar and Ceballos, 1989).

Distribution: *N. percnopterus* has a wide distribution ranging from southern Europe to central Africa and East to the Indian subcontinent (Fig. 4.4.1). There are three recognised subspecies, the latter two of which are largely sedentary (Donázar *et al.*, 2002; Dickinson, 2003; Orta *et al.*, 2020):

- *N. percnopterus percnopterus*, found from Southern Europe through to Southern Africa
- *N. percnopterus majorensis*: found in the Canary Islands
- *N. percnopterus ginginianus*: found on the Indian subcontinent (excluding northwest India) and Nepal

The majority of resident *N. percnopterus* reside in Ethiopia, East Africa, the Arabian Peninsula, and the Indian subcontinent (I. Angelov *in litt.* 2012 in BirdLife International, 2019). Migrating birds mainly breed in northern Africa and southern Europe, central Asia, the Middle East, and in the northern range of the Indian subcontinent, with all except the Indian subcontinent population wintering in the Sahel region in Africa (BirdLife International, 2019a). The main flyways between the palearctic range and the African wintering range are the Strait of Gibraltar, Sicily, Suez (Mundy *et al.*, 1992 in Arkumarev *et al.*, 2014; Bougain and Oppel, 2016), Gulf of Iskenderun (Oppel *et al.*, 2014), and Bab al Mandeb (Mundy *et al.*, 1992 in Arkumarev *et al.*, 2014; Rayaleh *et al.*, 2013), and Sinai peninsula and Dead Sea (Yosef and Alon, 1997).

Although West Africa principally comprises the wintering range of the species, according to the distribution map in the IUCN assessment of *N. percnopterus* (Fig. 4.4.1) there are resident populations in Mauritania, Mali, Burkina Faso, Niger, and Nigeria (BirdLife International, 2019a). Arkumarev *et al.* (2019) however notes that no breeding could be confirmed in Burkina Faso. The species has been extirpated from its southernmost range in South Africa, Lesotho, and Eswatini (Taylor *et al.*, 2015 in BirdLife International, 2019), and no longer occurs as a breeding population in Namibia (Simmons, 2015 in BirdLife International, 2019). Overall, Mateo-Tomás and López-Bao (2020) estimated a decrease in the African range of the species of over five percent over the last three decades, mainly concentrated in southern Africa.



Country	(A)	(B)
Benin		
Burkina Faso		
Cabo Verde		
Cote d'Ivoire		?
Gambia		
Ghana		
Guinea		
Guinea Bissau		?
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		
Senegal		
Sierra Leone		
Togo		

Figure 4.4.1: Distribution of *N. percnopterus*[17] and occurrence of *N. percnopterus* in West Africa according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2019a) (Green = resident, Blue = non- breeding, grey = vagrant, ? = present but origin uncertain, white = does not occur).

Population status and trends: The most recent global population estimate for *N. percnopterus* that could be located was outlined in the 2019 IUCN assessment for the species; this was 18 000 - 57 000 birds, equivalent to 12 000 - 38 000 mature individuals (BirdLife International, 2019). These figures are based on an extrapolation of the European breeding population, which was estimated to number 3000 to 4700 pairs (6000 to 9400 individuals) in a 2015 European Red List of Birds Assessment (BirdLife International, 2015a).

On the African continent, Mundy *et al.* (1992 in Arkumarev *et al.,* 2019) estimated there to be approximately 7500 breeding pairs of *N. percnopterus* in the early 1990s (excluding Socotra and the Canary Islands), out of a total population numbering 20 000 individuals. The original paper could not

[17] The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

be accessed, so the methodology underpinning this estimate is unclear. The most recent population estimate for this region that could be identified was approximately 1000 to 2000 breeding pairs (I. Angelov *in litt.* to BirdLife International, 2019); although the methodology underpinning this most recent estimate is again unclear, this would correspond to a decline in breeding pairs of between 73% and 86% over a c. 20 year period (early 1990s to early 2010s) (BirdLife International, 2019). The species population in north Africa (Morocco and Algeria) was considered to be "severely depleted" in particular (Arkumarev *et al.*, 2019). Arkumarev *et al.* (2014) considered Ethiopia to be a remaining African stronghold, harbouring roosting sites with large populations in the Afar region in the north-east. Ogada *et al.* (2016) calculated a median population decline for the species of 92% over three generations (45 years), based on annualised change rate data from three studies (Table 4.4.3) in West and East Africa.

A summary of data available from West African range States is provided in Table 4.3.2. It should be noted that where empirical population trends were available, these all indicated declines. Arkumarev *et al*. (2019) noted that this was particularly the case in Cabo Verde, Mali, and Niger, which were previously considered to be strongholds for the species. One study included in Ogada *et al.*'s population trend calculation for Africa was conducted in West Africa: roadside counts carried out by Rondeau and Thiollay (2004) in the Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger in 1969-1973 and 2003-2004. The authors found that the abundance index of *N. percnopterus* in rural areas had declined from 9.4 ±3.3 birds/km in 1970 to 1.3 ± 0.5 birds/km in 2004; an 86% decrease. The species was noted to have been completely absent from a number of rural areas where it had been recorded 1970, and was now only recorded in central Mali near the inland delta of the river Riger and the Gourma cliffs. No individuals were recorded in protected areas either in 1970 or 2004 (Rondeau and Thiollay, 2004).

Table 4.3.2: Summary of empirical and/or anecdotal estimates of *N. percnopterus* population status in West African countries. All information contained was as cited in Arkumarev *et al.* (2019), but where possible is supplemented by more recent studies.

Range State	Empirical trend data available?	Summary of available data
Benin	No	Considered vagrant by (Claffey, 1999 in Orta *et al.* 2020).
Burkina Faso	No	Although the IUCN red list assessment for *N. percnopterus* (Fig. 3.4.1) identifies areas of Burkina Faso as within the breeding range of the species, Arkumarev *et al.* (2019) stated the species has not been confirmed as a breeder in this country.
Cabo Verde	Yes	In 1951, the species was reported to be "abundant" except for two islands, with flocks recorded of 14 to 50 individuals (Bourne, 1955). It was still being referred to as "abundant" throughout the archipelago up to the 1980s (Bannerman and Bannerman, 1968; Naurois, 1985), however declines were perceived to have started from the 1970s onward (Hille and Thiollay, 2000; Freitas *et al.*, 2020). "Alarming" declines were reported between 1986 and 1993, when flocks of five or more individuals were only recorded on Santo Antão island (Hazevoet *et al.*, 1996). Hille and Collar (2011) reported that the species had declined by 50% on Santo Antão island and extirpated from at least 10 other islands. Freitas *et al.*, (2020) estimated a total of 7 to 11 breeding pairs remained in Cabo Verde, on Boa Vista, Maio, and Santo Antão islands, and that it had been extirpated from all other islands.
Côte d'Ivoire	No	The IUCN assessment for the species notes that it is present in Côte d'Ivoire, but that its origin is uncertain (BirdLife International, 2019a).
The Gambia	No	Since 1997 there have been no confirmed observations of the species (Caucanas *et al.*, 2018).

Range State	Empirical trend data available?	Summary of available data
Ghana	No	No recent records. Although both Botha et al. (2017) as well as the IUCN assessment of the species (BirdLife International, 2019) indicate that northern Ghana is within the species wintering range, Claffey (1999 in Orta *et al.* 2020) considers the species to be vagrant only.
Guinea	No	*N. percnopterus* was observed on cliffs at Koundara and near the Guinean border in 1972 (Morel, 1985). The species was not recorded in a 27-day country-wide survey in 2006 (Rondeau *et al.*, 2008).
Guinea-Bissau	No	The IUCN assessment for the species notes that it is present in Guinea-Bissau, but that its origin is uncertain (BirdLife International, 2019a).
Liberia	No	No records, although Botha *et al*. (2017) indicate that Liberia is within the species' wintering range.
Mali	Yes	Prior to 1980, *N. percnopterus* was reportedly common in the Sahel up to 21 degrees N, breeding on cliffs at Hombori (central Mali) and Baoulé (south-west Mali) (Lamarche, 1980). West and central Mali were reported to be the main breeding areas within West African range States, with numbers reported as a few hundred pairs (Thiollay, 1989). In 1973, a road count survey recorded 16 individuals in Tilemsy Valley in central Mali and 11 at Adrar des Iforhas, northeast Mali, some of which were breeding (Thiollay, 2006b). More recent studies reported either no sightings of the species at Adrar des Iforhas (Moulin *et al.*, 2001), or only occasional single individuals (Clouet and Goar, 2003). Rondeau and Thiollay (2004) reported a decrease of 86% in abundance of *N. percnopterus* in central Mali from 1970 to 2004 based on roadside bird counts totalling 2112 km through central and north-east Mali. The species was found to be absent from sites where it had been observed in 1970 (Rondeau and Thiollay, 2004), and was recorded only in Central Mali, at Gourma and by the river Niger (Rondeau and Thiollay, 2004). In 2006, two breeding pairs were recorded at Mount Hombori (Clouet *et al.*, 2009).
Mauritania	No	The species was reported to breed in the Zemmour region, north Mauritania (Thiollay, 1977), however no recent reports could confirm that breeding still takes place in the country. Numbers of migratory *N. percnopterus* from Spain, Portugal, and France wintering in southern and eastern Mauritania were estimated at over 1000 (García-Ripollés *et al.*, 2010; Kobierzycki, 2017). A small number of individuals from Morocco and Algeria, populations which are "severely depleted", likely winter in the same area (Arkumarev *et al.*, 2019).
Niger	Yes	*South Niger* A long-term survey conducted in southwest Niger from 1995 to 1999 did not record the species (Ambagis *et al.*, 2003). A more recent survey in south Niger, conducted in 2003-2004, similarly recorded none (Rondeau and Thiollay, 2004). Pairs were recorded at rocky outcrops in southeast Niger between 2010 and 2013 (Wacher *et al.*, 2013). *Central Niger* In 1977, Thiollay (1977) reported 100 to 200 breeding pairs present at Aïr Massif (central Niger) and across Senegal, Mali, and Niger, not specifying the numbers of pairs per country; Aïr Massif was identified as providing

Range State	Empirical trend data available?	Summary of available data
		"ideal breeding sites" based on a seven-year avifaunal survey (Newby *et al.*, 1987). Subsequent surveys of Aïr Massif within 20 years of the first did not yield any observations of breeding pairs (Rondeau and Thiollay, 2004; Thiollay, 2006b). *North Niger* Surveys in the north of Niger (Adrar to Tenere) in the 1970s yielded observations of 75 vultures, and a road count in the same region in 2004 resulted in an observation of one individual (Thiollay, 2006b).
Nigeria	No	The species was described as an "uncommon resident" in the Benue valley (east Nigeria), with the population described as mainly composed of migrating birds from northeast Africa or the Palearctic (Elgood *et al.*, 1994). Buij and Croes (2014) suggested that a resident population may exist on the northern section of Nigeria's border with Cameroon, and observed some breeding pairs in the Mandara mountains (R. Buij *pers. comm.* 2021). There was no solid evidence to confirm that a breeding population was present in Nigeria (Arkumarev *et al.*, 2019). Sharland and Wilkinson (1981) speculated that there may be a breeding population in Kano state (north Nigeria) based on observations of the species at rocky hills in 1972 (Sharland and Wilkinson, 1981).
Senegal	No	Morel and Morel (1990) regarded *N. percnopterus* as a Palearctic migrant in the country, with resident populations of the species considered scarce. Breeding has not been confirmed in Senegal; juveniles observed in the country by (Thiollay and Dupuy, 1970) were thought likely to have come from neighbouring resident populations in Mali. Caucanas *et al.* (2018) described studies reporting sporadic sightings of individual birds from the 1960s to the 90s. In 2017, the species was recorded in the Boundou Community Nature Reserve in east Senegal in a congregation of 30 individuals, of which the majority (20) were juveniles (Caucanas *et al.*, 2018). The authors reported 31 other unpublished records between 2016 and 2018, eight in northern Senegal, two that were tracked from the Iberian Peninsula and briefly entered Senegal, and 21 in eastern Senegal.
Togo	No	Although both Botha *et al.* (2017) as well as the IUCN assessment of the species (BirdLife International, 2019) indicate that northern Togo is within the species wintering range, no recent records could be located. The only observation that found was of a vagrant *N. percnopterus* in Fazao-Malfakassa National Park (central Togo) in 1984 (Cheke and Walsh, 1994).

Table 4.4.3: Summary of population trend estimates for *N. percnopterus* in West Africa used by Ogada *et al.* (2016).

Region	Country	Method	Measure	Scale	Time span (years)	% Change	Annualized % change	Source
East	Kenya	Road survey	Birds/100 km	3400 km	29	-99.9%	-21.2%	Virani *et al.*, 2011
West	Cameroon	Road survey	Birds/ 100 km	1222 km	36	-6%	-0.2%	Buij. unpub.
West	Burkina Faso, Mali, Niger	Road survey	Birds/ 100 km	8000 km	32.5	-86%	-5.9%	Rondeau and Thiollay, 2004

Declines have also been recorded in outside of the species' African range, including in Europe (BirdLife International, 2015a; Arkumarev *et al.*, 2018), West Asia (Abuladze and Shergalin, 1998), and the Middle East (Shirihai, 1996 in Angelov *et al.*, 2013; O. Hatzofe *in litt.* in Angelov *et al.* 2013). The population of *N. percnopterus* that has undergone the most severe declines is considered to be the resident population in India (BirdLife International, 2019a), where in the early 2000s the population was estimated to be declining at over >35% per year (Cuthbert *et al.*, 2006).

The species was first categorised as Endangered in the IUCN Red List in 2007, a threat category that has been maintained up to the most recent assessment in 2019[18], on the basis of extreme declines of over 90% in India due to poisoning by the veterinary drug diclofenac, severe long term declines across Europe and West Africa, and continuing declines thorough other parts of its African range (BirdLife International, 2019a).

CITES Trade Database records: There are no published CITES export quotas currently in place for the species; the only Party which has previously published quotas is Uzbekistan, which previously published quotas for four live individuals between 2009 and 2010, and two live individuals in 2008. Trade does not appear to have exceeded annual quotas in any year 2008-2010.

According to the CITES Trade Database, direct trade in *N. percnopterus* between 2009 and 2018 mainly comprised live individuals (22 reported by exporters, of which 81% were wild-sourced, and 16 reported by importers of which 10 were wild-sourced). Direct trade also included low levels of feathers and specimens. Exports from West African Parties comprised very low levels of feathers and specimens exported by Cabo Verde from unspecified sources for scientific purposes (reported by Cabo Verde only), and four live wild-sourced birds exported by Guinea to Thailand for commercial purposes (reported by Thailand only).

Indirect trade mainly comprised 104 live *N. percnopterus* individuals (Table 4.4.5). Oman reported exporting 100 captive-bred birds originating from South Africa to Kuwait for commercial purposes in 2013, and a total of four wild-sourced live birds were reported by exporters over the period 2009-2018 (three originating from Tanzania, and one from unknown origin). In addition, specimens originating from a various range States for scientific purposes were exported by the United States to Portugal (reported by the United States only), including pre-Convention specimens sourced from Cabo Verde.

[18] Full list of IUCN assessments: 2019 EN, 2017 EN, 2016 EN, 2014 EN, 2012 EN, 2008 EN, 2007 EN, 2004 LC, 2000 LR/LC, 1994 LR/LC, 1988 LR/LC.

Table *4.4.4:* Direct exports of *Neophron percnopterus* from West African Parties (highlighted blue) and others (white), 2009-2018.

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Azerbaijan	Bulgaria	live	-	Z	W	Exporter		4									4
						Importer											
	Czech Republic	live	-	Z	W	Exporter		4									4
						Importer											
Bahrain	Oman	live	-	N	I	Exporter								2			2
						Importer											
				P	I	Exporter								1			1
						Importer											
Cabo Verde	Portugal	feathers	kg	S	-	Exporter						0.1					0.1
						Importer											
	Spain	specimens	kg	S	U	Exporter								0.05			0.05
						Importer											
Czech Republic	Switzerland	live	-	Z	C	Exporter									1		1
						Importer									1		1
Germany	Switzerland	live	-	T	C	Exporter								1			1
						Importer								1			1
Guinea	Thailand	live	-	T	W	Exporter											
						Importer				4							4
Jordan	Israel	live	-	-	-	Exporter					1						1
						Importer											
Kazakhstan	United Kingdom of Great Britain and Northern Ireland	specimens	-	M	C	Exporter							2				2
						Importer											
Oman	Spain	feathers	-	S	W	Exporter											
						Importer						12	15				27
	United Arab Emirates	live	-	B	I	Exporter											
						Importer					6						6
Spain	Switzerland	live	-	Z	F	Exporter									1		1
						Importer									1		1
Sudan	Guinea	live	-	T	W	Exporter			3								3
						Importer											
Switzerland	Germany	live	-	T	C	Exporter	1										1
						Importer											
Tajikistan	Kazakhstan	live	-	Z	C	Exporter											
						Importer									2		2

Neophron percnopterus

Exporter	Importer	Term	Unit	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
United Republic of Tanzania	Japan	live	-	Z	W	Exporter	1										1
						Importer	1										1
	South Africa	live	-	T	W	Exporter	1										1
						Importer	1										1
Uzbekistan	Czech Republic	live	-	T	C	Exporter		1									1
						Importer											
				Z	C	Exporter											
						Importer		1									1

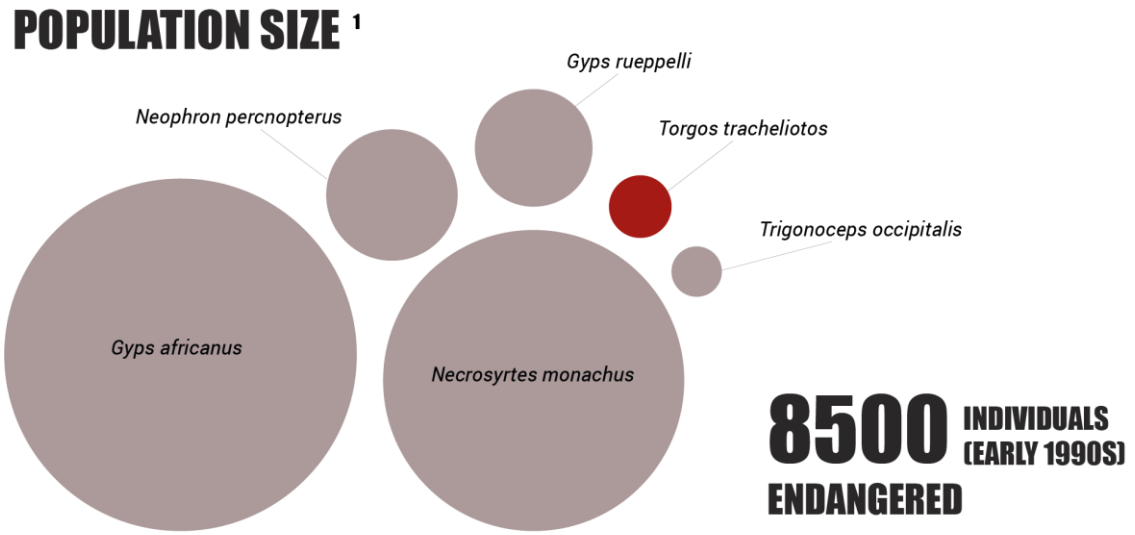
Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

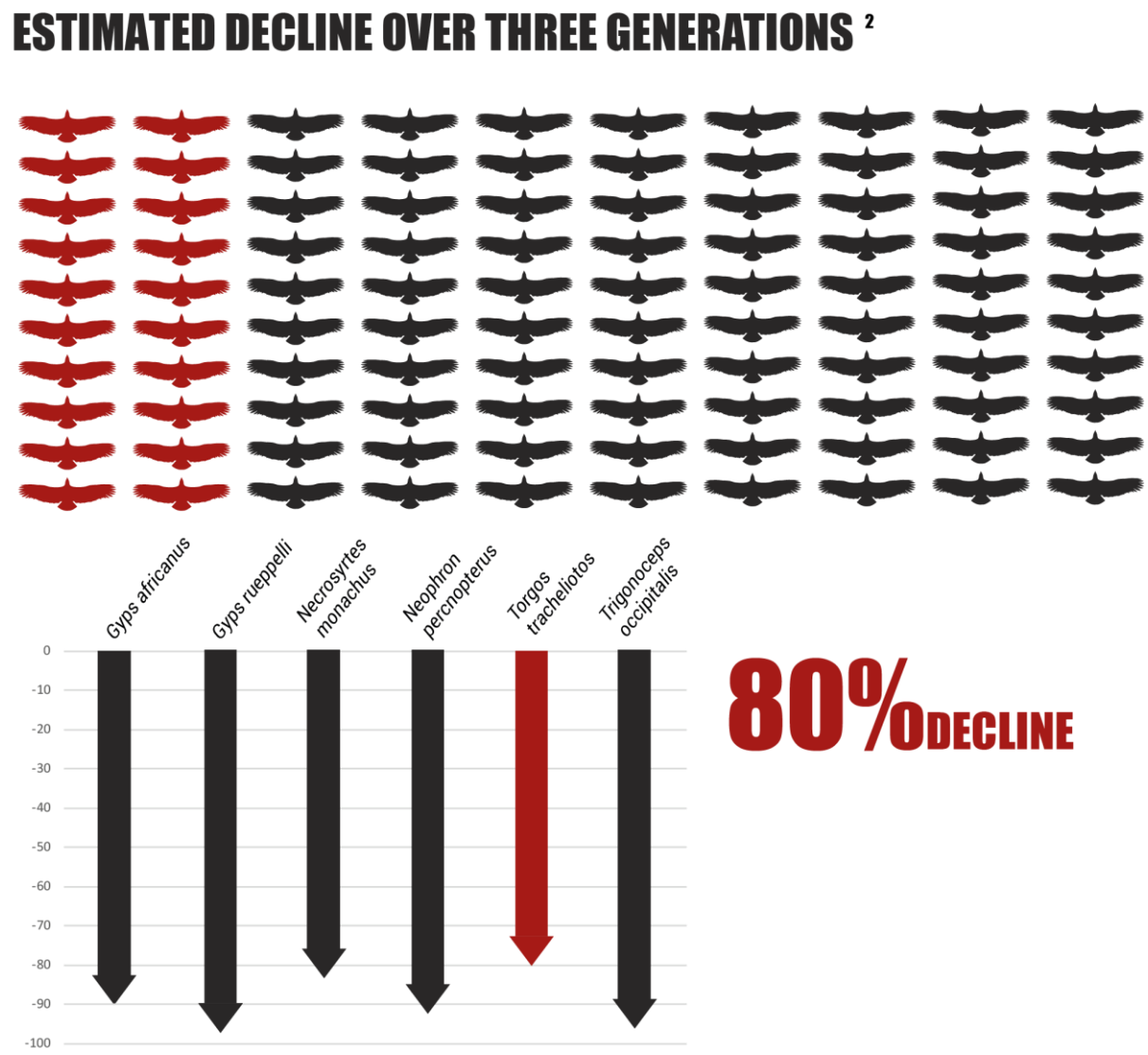
Table 4.4.5: Indirect exports of *Neophron percnopterus* from 2009-2018. Trade where the origin was a West African Party is highlighted in blue. All trade was reported as number of items.

Exporter	Importer	Origin	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Azerbaijan	Bulgaria	Unknown	live	Z	W	Exporter											
						Importer		4									4
Bahrain	Oman	Unknown	live	N	I	Exporter											
						Importer									3		3
				T	I	Exporter											
						Importer									3		3
Oman	Kuwait	South Africa	live	T	C	Exporter					100						100
						Importer											
	Spain	Spain	feathers	S	W	Exporter						15					15
						Importer											
Serbia	Various	Serbia	bodies	Q	O	Exporter								2			2
						Importer											
Switzerland	Austria	United Republic of Tanzania	live	T	W	Exporter				1							1
						Importer											
	France	United Republic of Tanzania	live	Z	W	Exporter	1								1		2
						Importer									1		1
United Republic of Tanzania	Bulgaria	Unknown	live	Z	W	Exporter											
						Importer		1									1
United States of America	Czech Republic	Unknown	live	Z	W	Exporter								1			1
						Importer								1			1
	Portugal	Cabo Verde	specimens	S	O	Exporter							5				5
						Importer											
		Non-West African origin	specimens	S	O	Exporter							50				50
						Importer											
			specimens	S	W	Exporter							29				29
						Exporter											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

4.5 Torgos tracheliotos (Lappet-faced vulture)





[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Torgos tracheliotos* (lappet-faced vulture) is a large vulture species, with a wingspan of 280cm and an average weight of 5.4 to 9.4kg (Kemp *et al.*, 2020d). While mainly considered to be sedentary (Ferguson-Lees and Christie, 2001), in West Africa the species was reported to move north during the rainy season and south during the dry season; elsewhere, no regular migrations have been described (Kemp *et al.*, 2020d). Like other vultures *T. tracheliotos* principally feeds on carrion, skin and bone fragments from carcasses. It is additionally known to hunt, taking small reptiles, fish, birds and mammals (Mundy *et al.*, 1992 in BirdLife International, 2019; McCulloch, 2006; Kemp *et al.*, 2020d). The species is principally found in steppe and desert habitats but its range also extends into open savannah and arid plains (Kemp *et al.*, 2020d). It has been noted to prefer undisturbed open country with some trees where there is little or no grass (Ferguson-Lees and Christie, 2001), but has occasionally been recorded in forest edges and disturbed (e.g. roadside) habitats (Ferguson-Lees and Christie, 2001; BirdLife International, 2019c).

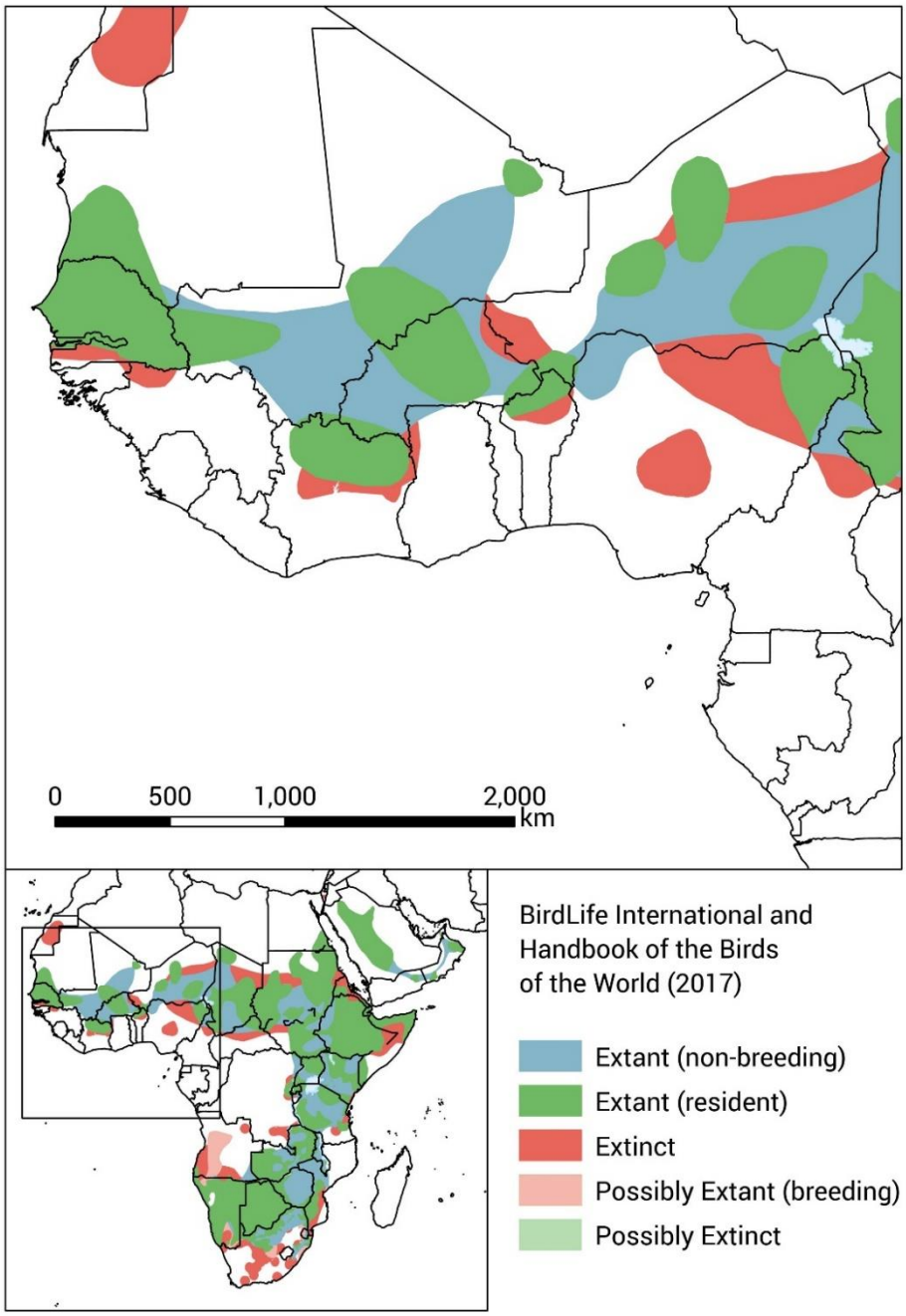
Although Kemp *et al.* (2020d) reported that adults forage over 200km from the nest, Shivalis *et al.* 2005 reported that the species "probably confines its foraging activities within the limits of its home range", the size of which varies between habitats but which has been recorded as 8-43 km^2. As with other species of vulture, juvenile *T. tracheliotos* travel large distances, with colour-ringed individuals recorded to have travelled as far as 800 km in Southern Africa (Ferguson-Lees and Christie, 2001).

Breeding takes place at different times of the year across the species' range (Ferguson-Lees and Christie, 2001), but usually occurs in the dry season (October to January in West Africa (Kemp *et al.*, 2020d)). The species builds solitary nests that are usually dispersed in individual territories, although in places where the species is abundant nests may be built much closer to each other (Brown *et al.*, 1982 in Shimelis *et al.*, 2005). Nests are re-used year-on-year and are usually built on top of *Acacia*, *Balanites* and *Terminalia* trees (Shimelis *et al.*, 2005). Clutch size is one egg (rarely two), which hatches after an incubation period of 54-56 days (Kemp *et al.*, 2020d). Chicks fledge after 125-135 days, but may be regularly fed by their parents a year after fledging (Kemp *et al.*, 2020d). Average productivity has been estimated to be around 0.4 young per pair per year (Mundy *et al.*, 1992 in Shimelis *et al.* 2005). The age of first reproduction was reported to be six years old (Kemp *et al.*, 2020d). Authorities have been noted to disagree as to whether *T. tracheliotos* is able to breed every year; some have argued that the species' longer breeding cycle would not permit it to breed annually, whereas others argued that the species would be able to do so if factors such as food and climate remained at their optimum (Shimelis *et al.*, 2005).

Distribution: *T. tracheliotos* has a wide distribution ranging from West Africa east to Yemen and south to South Africa (BirdLife International, 2019c, 2020d), excluding the forest areas of West and Central Africa (Fig. 4.5.1). Its extent of occurrence has been estimated to be 34.2 million km^2 and for breeding/resident birds only (BirdLife International, 2020c). Three subspecies are recognised (del Hoyo *et al.*, 2014):

- *T. t. nubicus*, found in South Eastern Egypt and Northern Sudan.
- *T. t. negevensis*, found in the Arabian peninsula (extinct in Southern Israel)
- *T. t. tracheliotos*, found from Southern Mauritania east through to Somalia, Ethiopia and Kenya, south to Namibia, Northern South Africa and Eswatini (extinct in South West Morocco and Western Sahara.

According to the Botha *et al.* (2017), in West Africa *T. tracheliotos* is resident in Burkina Faso, Côte d'Ivoire[19], Mali, Niger, Nigeria[20], Senegal and Togo, and is a non-breeding species in Benin and Gambia.



Country	(A)	(B)
Benin		
Burkina Faso		
Cabo Verde		
Cote d'Ivoire		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		
Senegal		
Sierra Leone		
Togo		

Figure 4.5.1: Distribution of *T. tracheliotos*[18] and occurrence of *T. tracheliotos* in West Africa according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2017a). Green = resident, blue = non-breeding, white = does not occur, grey = vagrant)

[19] Although it should be noted 2007 communication from G. Rondeau in the 2019 IUCN assessment for the species noted that it was no longer thought to breed here.
[20] Although Shimelis *et al.* (2005) suspected that the whole population may have been extirpated.
[18] The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The range of *T. tracheliotos* has historically been larger, and the species is considered to have been extirpated from a number of countries and regions including Algeria, Tunisia, Israel, Morocco, Western Sahara, Nigeria, areas of South Africa (Mundy *et al.*, 1992 in BirdLife International, 2019; Shimelis *et al.*, 2005)) and the Syrian Arab Republic (BirdLife International, 2019c). Mateo-Tomás and López-Bao (2020) used the IUCN red list map for the species to calculate that it has been extirpated or possibly extirpated from 17% of its range.

Population status and trends: The most recent population estimate for *T. tracheliotos* that could be located is derived from data from Mundy *et al.*, 1992 (in BirdLife International, 2019) which suggested an African population of 8000 individuals and 500 individuals in the Middle East. This total population of 8500 was estimated to be roughly equivalent to 5700 mature individuals (BirdLife International, 2020d). In Africa, the figure was reported to be a projection of estimates of regional totals, which suggested a population of 1000 pairs (~3000 individuals) in southern Africa, (south of Okavango-Zambezi), 1000 pairs and 1000 immature birds in eastern Africa, and circa 3000 birds in west Africa and the Sahara (Shimelis *et al.*, 2005). In light of the age of these estimates and recorded population declines, however, it is considered highly likely that this figure is an overestimate of the current population size.

Ogada *et al.* (2016) used data from seven studies spanning an average of 33 years (Table 3.5.1) to calculate a projected median population decline for the species of 80% over three generations (45 years). Two of the studies used took place in West Africa, where populations were noted to be declining at a more rapid rate than those in Eastern and Southern Africa (Ogada *et al.*, 2016): Buij. unpublished and Rondeau and Thiollay (2004). Buij. unpublished's study of *T. tracheliotos* abundance in Cameroon calculated that the species had declined by 83% over a 36-year period. Rondeau and Thiollay (2004) compared species abundance in Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger between 1969-1973 and 2003-2004 using roadside counts. Although the authors note that the species had 'always been uncommon' in the study area, they found that the abundance index of *T. tracheliotos* had decreased from 2.7 birds/100 km and 1.8 birds/100 km in rural and protected areas respectively in 1970, to 0.1 birds/100 km and 1.1 birds/100 km in 2004 (Rondeau and Thiollay, 2004). This indicated a decline of 97% in rural areas, and of 35% in protected areas, although the latter decline was not found to be statistically significant (Rondeau and Thiollay, 2004). The authors describe the species as having "to all intents and purposes, practically disappeared from West Africa"…"except in the vast protected areas where the Lappet-faced Vulture is still present in very low numbers" (Rondeau and Thiollay, 2004).

T. tracheliotos was listed as Endangered in a 2016 IUCN assessment, on the basis that only a small, very rapidly declining population remains (BirdLife International, 2019c). The assessment noted that recent published data suggested that the population in Africa was declining extremely rapidly and that future population assessments may lead to further uplisting (BirdLife International, 2019c).

Table 3.5.1: Summary of population trend estimates for *T. tracheliotos* used by Ogada et al. (2016).

Region	Country	Method	Measure	Scale	Time span (years)	% Change	Annualized % change	Source
East	Kenya	Road survey	Birds/100 km	3400km	29	-50%	-2.40%	Virani et al. 2011
East	Kenya	Road survey	Birds/100 km	9000 km	29.5	-65%	-3.50%	Ogada, Thiollay and Virani unpub.
East	Uganda	Road survey	Birds/100 km	12900 km	35.5	-78%	-4.20%	Pomeroy, Thiollay, Opige and Kaphu unpub.
Southern	South Africa	Aerial survey	Nest counts	3500km2	27	0%	0	Murn et al. 2013
Southern	South Africa	Aerial survey	Nest counts	~900km2	29	-48%	-2.20%	Hitchins 1980, Bamford et al. 2009
West	Cameroon	Road survey	Birds/100 km	1222 km	36	-83%	-4.80%	Buij unpub.
West	Burkina Faso, Mali, Niger	Road survey	Birds/100 km	8000 km	32.5	-97%	-10.20%	Rondeau and Thiollay, 2004

CITES Trade Database records: No Parties have published either current or historical CITES export quotas for *T. tracheliotos*.

According to the CITES Trade Database, direct trade in *T. tracheliotos* 2009-2018 principally comprised low numbers of live individuals exported for commercial, captive breeding or zoo purposes (Table 4.5.2). Only one direct export was recorded from West African Parties, which comprised four wild-sourced live individuals exported from Guinea to Thailand for zoological purposes in 2012, as reported by Thailand only. Indirect trade comprised low numbers of live wild-sourced individuals exported for personal and zoological purposes (Table 4.5.3). Five live wild-sourced birds, originating in Sudan (four) and Tanzania (one) were imported by the United Arab Emirates (as reported by exporters only). Additionally, six individuals originating from the United Arab Emirates (source 'I': confiscated or seized specimens) were exported by Oman for captive breeding purposes in 2013. No indirect trade was reported where a West African range state was the origin.

Table 4.5.2: Direct exports of *Torgos tracheliotos* from West African Parties (highlighted blue) and others (white), 2009-2018. All trade was reported as number of items.

Exporter	Importer	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Guinea	Thailand	live	Z	W	Exporter											
					Importer				4							4
Namibia	South Africa	specimens	S	W	Exporter	4										4
					Importer											
	United States of America	specimens	S	C	Exporter			15								15
					Importer											
				W	Exporter											
					Importer		15									15
Oman	United Arab Emirates	live	B	I	Exporter											
					Importer					6						6
South Africa	China	trophies	E	W	Exporter						1					1
					Importer						1					1
	United Arab Emirates	live	Z	W	Exporter											
					Importer	1										1
	United Kingdom of Great Britain and Northern Ireland	eggshell	P	W	Exporter								12			12
					Importer											
Sudan	Guinea	live	-	W	Exporter				4							4
					Importer											
	Qatar	live	T	W	Exporter											
					Importer				6							6
			-	W	Exporter				6							6
					Importer											
United Republic of Tanzania	Bulgaria	live	Z	W	Exporter											
					Importer		2									2
	South Africa	live	T	W	Exporter											
					Importer							1				1
	United States of America	trophies	H	W	Exporter							1				1
					Importer							1				1

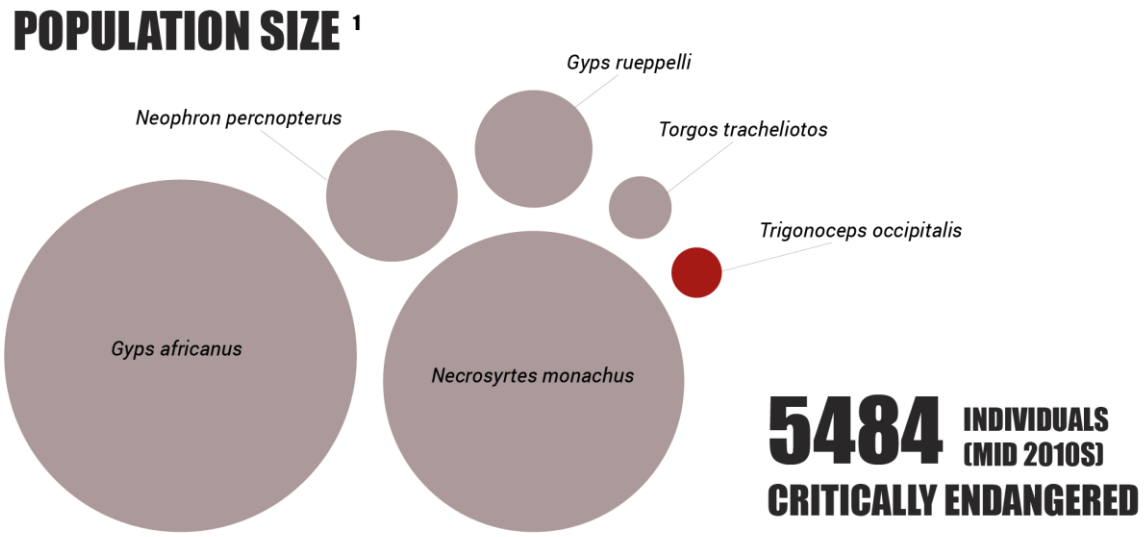
Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

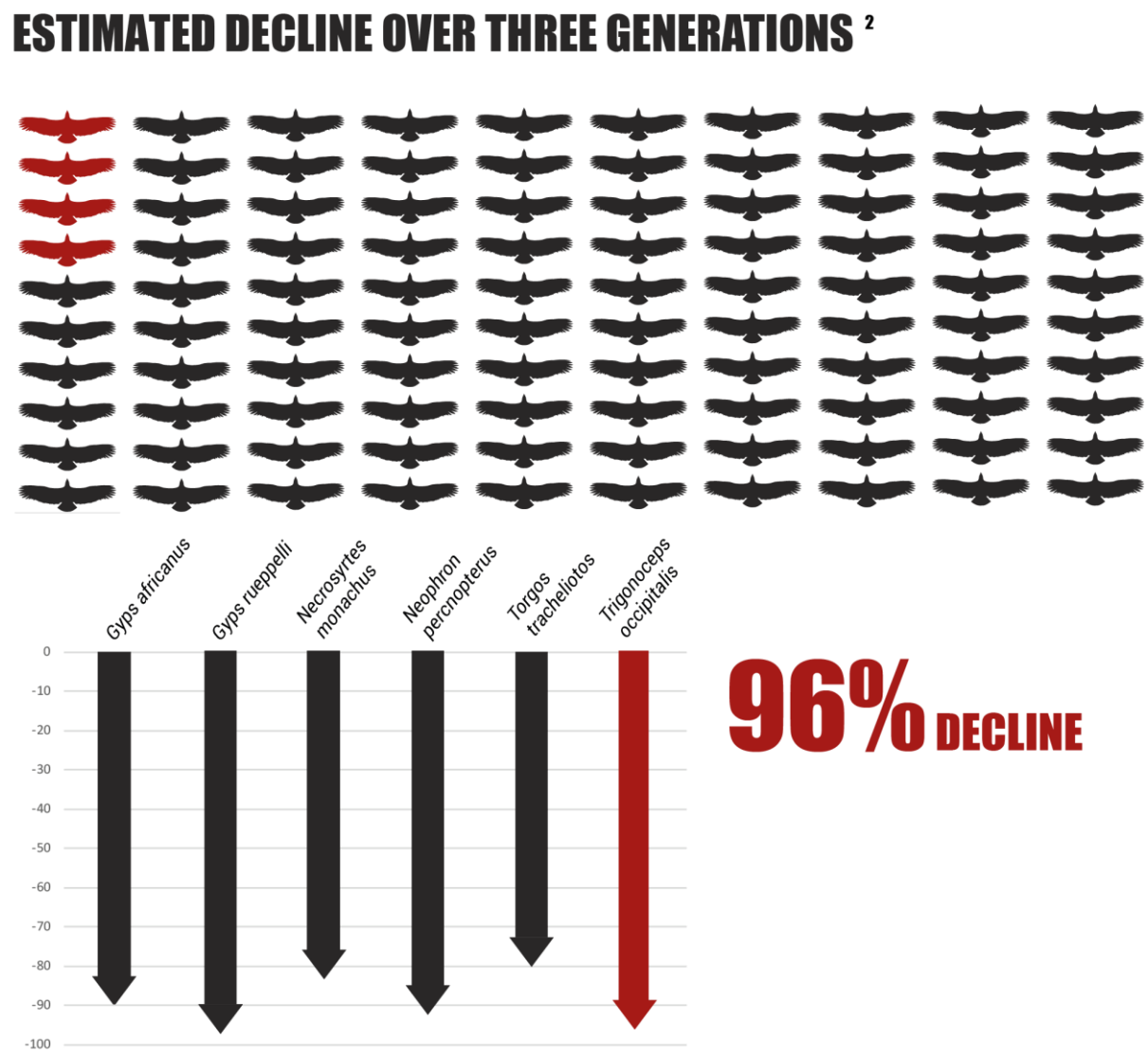
Table 4.5.3: Indirect exports of *Torgos tracheliotos*, 2009-2018. All trade was reported as number of items.

Exporter	Importer	Origin	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Oman	United Arab Emirates	United Arab Emirates	live	B	I	Exporter					6						6
						Importer											
Qatar	United Arab Emirates	Sudan	live	P	W	Exporter				4							4
						Importer											
South Africa	United Arab Emirates	United Republic of Tanzania	live	Z	W	Exporter	1										1
						Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

4.6 Trigonoceps occipitalis (White-headed vulture)





[1] Based on most recent population estimates according to BirdLife International's Data Zone.
[2] Declines as calculated in Ogada *et al.* (2016) c. 50 years. Silouettes are representative of the number of vultures that would remain after this period (in red) if the population was 100 individuals.

Biology: *Trigonoceps occipitalis* (white-headed vulture) is a medium-sized vulture, with an average wingspan of 150-180 cm and an average weight of 3.3 to 5.3 kg (Ferguson-Lees and Christie, 2001; Kemp *et al.* 2020e). The species is principally found dry woodland, thornbush, and tree savannah, and has occasionally been recorded in dense woodland and subdesert areas (Ferguson-Lees and Christie, 2001 in Kemp *et al.*, 2020e). Mundy *et al.* (1992 in Botha et al. 2017) noted that the species generally avoids human habitations.

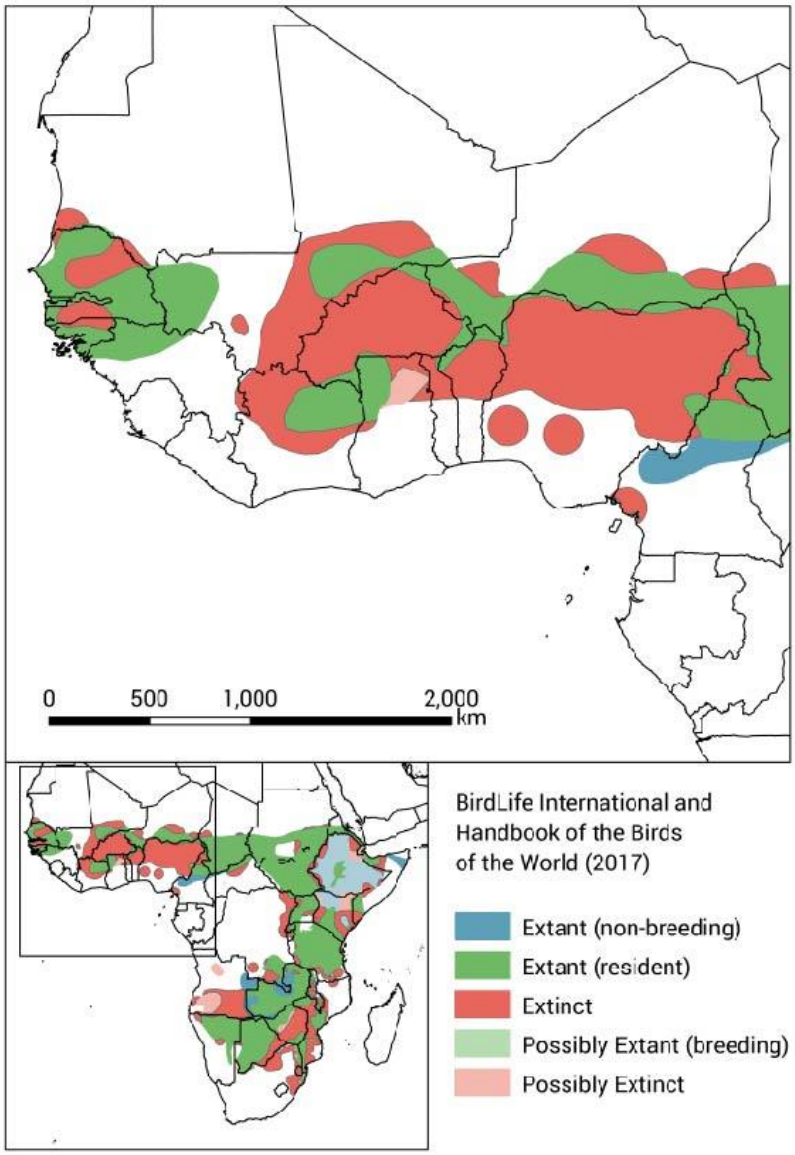
There is limited data on the movement ecology of *T. occipitalis* (Murn *et al.*, 2016), but it is considered to be sedentary and to have a limited home range (Ferguson-Lees and Christie, 2001); Murn (2016) used an estimate of 100 km^2 per territory. Juveniles have been reported to disperse reasonably longer distances (c. 60-120 km based on limited ringed recoveries of Zimbabwean birds (Oatley *et al.*, 1998), and there is some indication that they may move with the rains in West Africa and Chad (Ferguson-Lees and Christie, 2001).

Like other vultures, *T. occipitalis'* diet principally consists of carrion and bone fragments from carcasses; usually in the form of small mammals and reptiles, roadkills, pieces of skin and other animal scraps (Ferguson-Lees and Christie, 2001). The species is considered to have an unusual feeding ecology in that it has additionally been observed to hunt birds, small mammals, insects, lizards, and venomous snakes, and to rob or scavenge from other raptors as well as Marabou storks (*Leptoptilos crumenifer)* (Ferguson-Lees and Christie, 2001; Murn, 2014; Kemp *et al.*, 2020e).

T. occipitalis is considered to be solitary, usually breeding as single pairs (Ferguson-Lees and Christie, 2001). Breeding takes place at different times of the year across the species' range, but laying usually takes place in the dry season (roughly corresponding to October/November to May in West Africa); in East Africa, *T. occipitalis* was reported to breed year-round (Ferguson-Lees and Christie, 2001). Nests are usually built on *Acacia* or baobab (*Adansonia*) trees. Clutch size is one egg, which hatches after an incubation period of 51-56 days; chicks fledge after 110-120 days (Ferguson-Lees and Christie, 2001). Ferguson-Lees and Christie (2001) reported that up to 61% of pairs do not attempt to breed each year, especially in years of below-average rainfall. A study of 55 breeding attempts across 73 pairs/year in Kruger National Park estimated a mean productivity for the species of 0.69 chicks per pair (Murn and Holloway, 2014). Murn *et al.* (2016) reported that there are no published records of the species breeding outside of protected areas.

Distribution: The species has patchy distribution ranging from Senegal, Gambia and Guinea-Bissau east to Eritrea, Ethiopia and Somalia, and south to easternmost South Africa and Eswatini (Mundy *et al.*, 1992b in Murn *et al.*, 2016; BirdLife International, 2020d; Fig. 3.6.1). According to Botha *et al.* (2017), in West Africa the species is resident in Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Mail, Mauritania, Niger[21], Senegal, Sierra Leone and Togo, and is additionally a non-breeding species in Guinea and Guinea-Bissau. In total, extent of occurrence of *T. occipitalis* has been estimated to be 21.1 million km^2; however, while widespread, the species is considered to be sensitive to human disturbance and the breeding population is considered to be highly fragmented and largely restricted to protected areas (Murn *et al.*, 2016). The range map produced by BirdLife International for the 2017 IUCN Red List assessment of the species (Fig. 3.6.1) shows that the species is considered to be extinct from large areas of its West African range, particularly in Nigeria, Burkina Faso, Togo and Benin. Based on this map, Mateo-Tomás and López-Bao (2020) calculated that the species had been extirpated or possibly extirpated from 35% of its range over last three decades.

[21] The species IUCN assessment notes however that there have only been four records of the species since 1995, all in the Gadabeji area (J. Brouwer in litt. 2012) in BirdLife International (2017). It is unclear whether this refers to records of nests or of individual sightings.



Country	(A)	(B)
Benin		
Burkina Faso		
Cape Verde		
Cote d'Ivoire		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Liberia		
Mali		
Mauritania		
Niger		
Nigeria		?
Senegal		
Sierra Leone		
Togo		

Figure 4.6.1: Distribution of *T. occipitalis*[22] and occurrence of *T. occipitalis* according to (A) Botha *et al.* (2017) and (B) the IUCN Red List assessment of the species (BirdLife International, 2017c). Green = resident, blue = non-breeding, ? = presence uncertain, white = does not occur.

Population status and trends: *T. occipitalis* is generally considered to have always been rare in the West African subregion, particularly in rural savannahs (Rondeau and Thiollay, 2004). Despite this, there is evidence that the species has declined rapidly across many parts of its range (Ogada *et al.*, 2016), with some experts estimating that rapid declines in parts of West Africa began to occur as early as the 1940s (P. Hall in litt. 1999, J. M. Thiollay *in litt.* 2006, 2012 in BirdLife International, 2020b). Two estimates of the extent of decline across the whole of the species' range were located- the first (27-60% over a period of 25 years) is based on a comparison of two population estimates in 1992 and 2006 (Mundy *et al.* 1992 and Murn *et al.* 2016), and the second (96% over three generations (45 years)) is based on annualised change rate data from six aerial and road surveys carried across

[22] The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

seven African range countries (Ogada *et al.* 2016). More detail on each of these estimates is given below.

Estimate 1: 27-60% over a period of 25 years

Estimate 1 is based on a comparison of total population estimates for *T. occipitalis* made by Mundy *et al.* (1992b in Murn *et al.*, 2016; BirdLife International 2020)) and Murn *et al.* (2016). Mundy's *et al.*'s estimate of 7000 – 12 000 mature individuals (equivalent to 10 500 – 18 750 individuals in total) in 1992 was reported to be based on averaged data from road transects and proportionally extrapolated data from southern African populations to sub-Saharan African populations; however, the authors noted that making a population estimate for *T. occipitalis* was difficult as data on the occurrence and status of the species was "limited, published infrequently and usually take[s] the form of counts of birds made during road transects" (Murn *et al.*, 2016). Of the total population, c. 130 pairs were estimated to occur in South Africa and 500 pairs were estimated to occur in southern Africa north to Okavango and Zambezi (Mundy et al. 1992 in Ferguson-Lees and Christie, 2001).

Murn *et al.* (2016) estimated a total global population size of between 5475 and 5493 birds (including immature and non-breeding individuals), equating to 3685 mature individuals (BirdLife International, 2017c); this is the most current population size estimate that could be located. The study took the species' association with protected areas (PAs) as the basis of its methodology, firstly converting road transect data to an estimate of nests per km^2 then multiplying average nest density by the area covered by protected areas which were considered likely to contain *T. occipitalis*. The species was considered likely to occur in 400 protected areas across its total range- this was calculated to equate to 721 nests in Eastern Africa, 548 nests in Central Africa, 468 nests in Southern Africa, and 156 nests in West Africa (Murn *et al.*, 2016). Table 4.6.1 gives a breakdown of the number of white-headed vulture pairs estimated to be present in each of the West African countries under review. Assuming that Mundy *et al.* (1992)'s estimate is valid, Murn *et al.* (2016) used these estimates to calculate that the global population of *T. occipitalis* had decreased by 27-60% over a period of 25 years.

Table 4.6.1: Estimated number of *T. occipitalis* pairs based on density in select protected areas

Country	Estimated number of *T.occipitalis* pairs
Benin	17
Burkina Faso	20
Côte d'Ivoire	27
Gambia	1
Ghana	15
Guinea	4
Guinea-Bissau	4
Mali	15
Niger	2
Nigeria	14
Senegal	24
Togo	7
Total	150

Estimate 2: 96% over three generations (45 years)

Estimate 2, published in Ogada *et al.* (2016), is based on annualised change rate data from six studies (Table 4.6.2), which were used to calculate a projected median population decline for the species of 96% over three generations (45 years). Two of the studies used to calculate this figure took place in West Africa: an unpublished road survey by Buij in Cameroon, and roadside counts carried out by Rondeau and Thiollay (2004) in the Sudano-Sahelian savannahs of Burkina Faso, Mali and Niger in 1969-1973 and 2003-2004. Rondeau and Thiollay (2004) found that the abundance index of *T. occipitalis* had decreased from 1.2 (± 0.2) birds/100 km and 4.4 (±1.0) birds/100 km in rural and protected areas respectively over the first survey period, to 0 birds/100 km and 1.3 (±0.6) birds/100 km over the second survey period ending in 2004. This indicated declines of 100% in rural areas, and of 75% in protected areas, both of which were statistically significant (Rondeau and Thiollay, 2004).

Table 4.6.2: Summary of population trend estimates for *T. occipitalis* used by Ogada *et al.* (2016).

Region	Country	Method	Measure	Scale	Time span (years)	% Change	Annualized % change	Source
East	Kenya	Road survey	Birds/ 100 km	3400 km	29	-44%	-2%	Virani et al. 2011
East	Kenya	Road survey	Birds/ 100 km	9000 km	29.4	-94%	-9.1%	Ogada, Thiollay & Virani unpub.
East	Uganda	Road survey	Birds/ 100 km	12 900 km	35.5	-86%	-5.4%	Pomeroy, Thiollay, Opige & Kaphu unpub.
Southern	South Africa	Aerial survey	Nest counts	3500 km	27	0%	0%	Murn et al. 2013
West	Cameroon	Road survey	Birds/ 100 km	1222 km	36	-95%	-8%	Buij. unpub.
West	Burkina Faso, Mali, Niger	Road survey	Birds/ 100 km	8000 km	32.5	-99.9%	-19.1%	Rondeau & Thiollay, 2004

Ogada *et al.*'s (2016) study led to the classification of *T. occipitalis* as Critically Endangered in a 2016 IUCN assessment[23], on the basis that the already small population is declining at an extremely rapid rate owing to a variety of threats including poisoning, persecution and ecosystem alterations (BirdLife International, 2017c). Murn *et al.* (2016) additionally note that the small, fragmented nature of the population left the species vulnerable to stochastic events as well as mass mortality events such as poisoning. Extinction risk for the species was considered to be very high for the 75% protected areas that contained five or fewer nests; in addition, the PAs large enough to hold over 20 nests were noted to be isolated by more than 100km from other PAs, a large distance given what is currently known about the movement ecology of the species (Murn *et al.*, 2016). None of the 1% of protected areas containing more than 40 nests were located in West Africa (Murn *et al.*, 2016).

CITES Trade Database records: No Parties have published either current or historical CITES export quotas for the species. According to the CITES Trade Database, direct trade in *T. occipitalis* 2009-2018 principally comprised relatively low numbers of live individuals, bodies, and trophies (amounting to eight wild-sourced birds and two captive-born birds) as well as 12 wild-sourced eggshells (Table 4.6.3). No direct exports were reported from West African Parties over this period. Indirect trade mainly comprised low numbers of wild-sourced live individuals exported for commercial and zoo purposes (four wild-sourced birds as reported by exporters, eight as reported by importers; Table 4.6.4). The majority of these live birds originated in Guinea.

[23] Previous IUCN assessments: 2016 CR, 2015 CR, 2012 VU, 2008 VU, 2007 VU, 2004 LC, 2000 LR/lc, 1994 LR/lc, 1988 LR/lc.

Table 4.6.3: Direct exports of *Trigonoceps occipitalis*, 2009-2018. All trade was reported as number of items.

Exporter	Importer	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mozambique	United States of America	bodies	E	W	Exporter									4		4
					Importer											
		trophies	H	W	Exporter											
					Importer										4	4
South Africa	China	trophies	E	W	Exporter						1					1
					Importer						1					1
	Germany	live	T	F	Exporter				2							2
					Importer				2							2
	United Kingdom of Great Britain and Northern Ireland	eggshell	P	W	Exporter								12			12
					Importer											
United Republic of Tanzania	Japan	live	B	W	Exporter		1									1
					Importer		1									1
	South Africa	live	T	W	Exporter	2										2
					Importer											
			Z	W	Exporter											
					Importer	2										2

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

Table 4.6.4: Indirect exports of *Trigonoceps occipitalis*, 2009-2018. Trade where the origin was a West African Party is highlighted in blue. All trade was reported as number of items.

Exporter	Importer	Origin	Term	Purpose	Source	Reported by	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Belgium	Canada	United Kingdom of Great Britain and Northern Ireland	live	Z	C	Exporter	2										2
						Importer											
	China	United Kingdom of Great Britain and Northern Ireland	bodies	T	C	Exporter						1					1
						Importer											
			specimens	E	C	Exporter											
						Importer						1					1
	Switzerland	Côte d'Ivoire	live	T	W	Exporter				2							2
						Importer				2							2
		Guinea	live	T	W	Exporter		1									1
						Importer		1									1
France	Thailand	Guinea	live	Z	W	Exporter											
						Importer			4								4
Germany	Switzerland	Guinea	live	T	W	Exporter			1								1
						Importer			1								1

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 10/11/2020.

5. Threats

Vultures in West Africa face a numerous and diverse range of threats, including habitat loss, degradation, and fragmentation; declines in food availability; disturbance as a result of human activities; disease; climate change; electrocution and collisions with energy infrastructure; intentional and unintentional poisoning; and trade in their parts and meat (Rondeau and Thiollay, 2004; Botha *et al.*, 2017). The relative importance of each of these threats is difficult to disentangle, as many are nuanced and interdependent. The use of poisoned baits, for example, is considered to be the most widespread method of killing vultures for belief-based use and consumption as meat in areas where they are heavily traded (Saidu and Buij, 2013), so these three threats can be closely connected and one can be the driver of the other. Sentinel poisoning, however – the practice of lacing carcasses with poison to avoid vultures drawing attention to sites where animals have been poached – is linked to illegal killing and trade in elephants, and may not be related to any inherent value in the vultures themselves. Assessments of the number of recorded deaths of vultures in Africa can nevertheless provide some indication of the scale of threat posed by different issues, or at least those that can be measured in terms of the number of carcasses detected. A study collating all vulture deaths recorded in peer-reviewed articles, unpublished and newspaper reports across 26 African countries between 1961 and 2014, for example, found that of out of 7819 deaths recorded, 61% were attributed to poisoning, 29% to "trade in traditional medicine", 1% to killing for food, and 9% to electrocution or collision with electrical infrastructure (Ogada *et al.*, 2016).

While acknowledging that all of the threats outlined above need to be tackled in order to ensure the survival of vultures in the region, this review will focus on threats resulting (1) from local and international trade in vultures and their body parts and (2) from the practice of sentinel poisoning. It does so as the most relevant threats in the context of CITES and the key focal areas of CITES Decision 18.190.

5.1 Domestic and international trade

Trade in vulture parts for belief-based use and for wild meat has a well-established history in West Africa (Rondeau and Thiollay, 2004; Thiollay, 2006c; Botha *et al.*, 2017; Deikumah, 2020), although Botha *et al.* (2017) highlighted that recent practices have also emerged linking vulture part use to increasing the user's chances of winning national lotteries and sports bets. Use of vultures for these purposes is not universal across the region. Countries where vultures have been reported to be actively traded for meat and belief-based use include Burkina Faso (Nikolaus, 2011), Benin (Buij *et al.*, 2016; Nikolaus, 2011), Mali (Barlow and Fulford, 2013; Buij *et al.*, 2016), Nigeria (Buij *et al.*, 2016), Senegal (M. Dia & W. Mullie *in litt. in* Barlow and Fulford, 2013) and Togo (Nikolaus, 2011). In Guinea and The Gambia, however, vulture parts for belief-based use were not noted to be openly on sale (Nikolaus, 2011; Barlow and Fulford, 2013). Interviews conducted in Niger additionally noted that vultures generally did not appear to be used domestically, although there is a 2017 report of an *N. percnopterus* individual being killed and eaten by local traditional hunters (Kret *et al.*, 2018).

Nigeria and Benin in particular have been identified as important centres of regional trade in raptors, with a synthesis of vulture surveys carried out at fetish and wild meat markets between 2008 and 2013 finding the former to have accounted for an estimated 73% of trade, and the latter for 21% of trade recorded over the six year period (Buij *et al.*, 2016). Within Nigeria, the southwest in general as well as the states of Ondo, Osun, Ogun and Kwara in particular have been identified as important trade hubs (Saidu and Buij, 2013; BirdLife International, 2019b; S. Awoyemi *pers. comm.* 2021). Feathers, legs vulture heads and whole vultures have been identified as the principal commodities sold (Saidu and Buij, 2013; S. Awoyemi *pers. comm.*, 2021), with heads and eggs in particular noted to be highly valued (Ogada and Buij, 2011; Saidu and Buij, 2013; VOA, 2019).

It is important to note that just because an item is traded in a certain country does not necessarily mean that this is where it was harvested, and that there is evidence that vultures sold in markets within hotspots are being sourced internationally. Much of this trade is thought to be illegal (VOA, 2019), but potential trade routes are poorly characterised and data on the number of birds estimated to be traded across borders are scarce.

Saidu and Buij (2013) provided estimates of the origin of vultures or their parts (n=565) offered for sale in Nigerian markets from fieldwork carried out in 2011, although it is unclear if the figures provided in their study relate to the proportion of parts reported to be sourced in particular countries or the percentage of traders (n =113) indicating the principal source locality for the vulture parts they sold. Assuming that the latter is correct, 43% of respondents indicated Nigeria as the principal source locality for their vulture parts, 17% reported that the principle source was Niger, 12% Benin, 8% Sudan, 7% Cameroon, and 4% Chad (the origin of the remaining 9% was unknown). In 2018, interviews with market sellers conducted in Nigeria and Niger found that "only a fraction" of vultures sold in Nigeria were reported to have originated there; instead, the increasing scarcity of vultures in Nigeria was noted to have led Nigerian markets to be supplied with vultures hunted in Niger, Chad, Cameroon, Burkina Faso, Mali, Senegal and the Central African Republic (Ogada and Buij, 2011; Fondation 30 million d'amis, 2012; Nikolov, 2014; Kret *et al.*, 2018; Oppel *et al.*, 2019).

Figure 4.1 shows a map of the threat posed to vultures by belief-based use based on the location of 125 traditional medicine markets created by Buij *et al.* (2012). Levels of demand were estimated based on the density of markets within a 500 km radius, weighted by the amount of vulture trade recorded in an area. An area of high market demand was identified covering Nigeria, Benin, Togo, most of Burkina Faso and large areas of Cameroon and Nigeria, with a smaller area of high demand in southern Africa covering west South Africa and much of Lesotho and Eswatini (Buij *et al.*, 2012). Trade routes and source countries may have changed since this map was produced, however, with Guinea-Bissau in particular emerging as a potentially important source country over the last year. Recent mass vulture poisonings in the country (estimated at over 2000 individuals between September 2019 and March 2020, almost all of them *N. monachus*) are thought to have been deliberate to collect heads for belief-based use (Henriques *et al.*, 2020); a representative from BirdLife noted that "information coming from field teams in Guinea-Bissau suggests the vultures being killed…may be illegally traded widely throughout the region" (BirdLife International, 2020a), with some reports of demand for vulture heads "from neighbouring countries like Senegal" (Vulture Conservation Foundation, 2020; CITES MA of Senegal response to Notif. 2020/034).

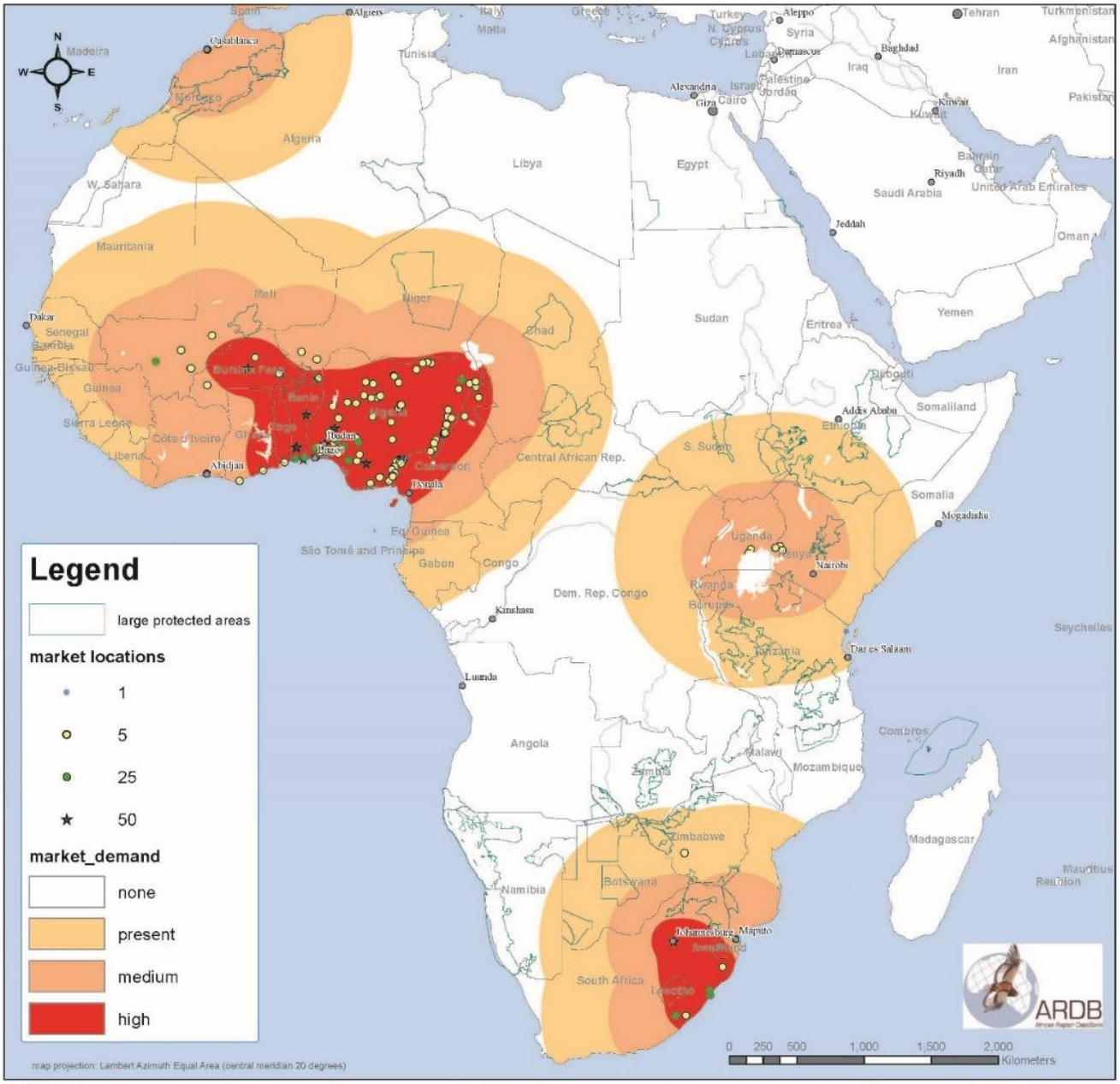
Figure 4.1 (overleaf): Analysis of the level of threat posed to vultures by traditional medicine markets in Africa; methods used to generate the map are outlined below the figure. Reproduced with permission from Buij *et al.*, (2012).

map T6

African vulture hotspot mapping

threat map: traditional medicine market

24 May 2017



METHODS:
We digitized and georeferenced the locations of 125 traditional medicine markets. Lou Luddington assisted with this work. These were mainly in West & Central Africa provided by Buij et al. (2016) but we supplemented these with several known locations for Southern and Eastern Africa from Williams et al. (2014), McKean et al. (2013) and other sources (Ogada, Thomsett, Monadjem, Pomeroy, Baker & Baker in litt.). We also tabulated information on the size of these markets. We do not yet have a systematic way of measuring this but we looked at the number of stalls with vulture products and the number of vultures traded over time periods (McKean et al. 2013). We classed markets as non-trading in vulture parts (weighted 1), small (weighted 5), medium (weighted 25) or large (weighted 50) – these weights were roughly based on the frequency histogram of number of stalls with vulture products. We conducted a kernel density analysis across Africa measuring the density of markets within a 500km radius and using the weights as a population field. The resultant dataset was then reclassified into four threat levels: 0 = no threat, 1 = threat present, 2 = medium threat / demand, 3 = high threat / demand.

CREDITS: Coordination: Ralph Buij (Wageningen University & Research), Corinne Kendall (North Carolina Zoo), Ara Monadjem (University of Swaziland). Data collation: Lutfor Rahman & Lou Luddington (Habitat Info). Analysis & map production: Rob Davies (Habitat Info). Finance: The vulture surveys, data gathering and habitat and threat modeling were funded by the following organisations through Wageningen University & Research (which also contributed resources): Dutch Ministry of Economic Affairs, WWF-Netherlands, UNEP-CMS Raptors MoU, North Carolina Zoo, Fondation LePal Nature, Quagga Foundation, Stichting Vogelpark Avifauna, Stichting Koninklijke Rotterdamse Diergaarde, Detroit Zoological Society, and Stichting Wildlife. Through The Peregrine Fund this project benefited greatly from access to the ESRI Grant Scheme. Data on vultures were contributed or facilitated by the following individuals: Yilma D Abebe, Hichem Azafzaf, Laila Bahaa El Din, Neil & Liz Baker, Clive R Barlow, Keith Bildstein, Claire Bracebridge, Andy Bramfield, Erik & Asaph Brohaugh, Joost Brouwer, Chris Brown, Evan Buechley, Ralph Buij & Barbara Croes, Andre Botha, Mike Cadman, Alazar Deka Rufo, Rob Davies, Maria Diekmann, Nina Farwig, Oliver Fox, Toby Galligan, Beckie Garbett, Ashwell Glasson, Roi Harel, Stratton Hatfield, Chad Hatzofe, Joseph Heymans, Constant Hoogsted, Mawdo J Jallow, Walter Jubber, Gregory Kaltenecker, Adam Kane, Chris Kelly, Alan & Meg Kemp, Corinne Kendall, Holger & Claire Kolberg, Bernard & Antje Madden, Glyn Maude, John Mendelsohn, Mike McGrady, Ara Monadjem, Campbell Murn, Ran Nathan, Karin Nelson, Stoyan Nikolov, Darcy Ogada, Steffen Oppel, Louis Phipps, Bram Piot, Thomas Rabeil, Sascha Rösner, Lizanne Roxburgh, Volker Salewski, Andrea Santangeli, Dana Schabo, Orr Spiegel, Lindy Thompson, Simon Thomsett, Dirk van Stuyvenberg, Rien van Wijk, Munir Virani, Tim Wacher, Kerri Wolter (VULPRO) and numerous other African Raptor Databank observers; and by the following organisations: AFRICAN RAPTOR DATABANK, AFRICAN IMPACT, BIRDLIFE INTERNATIONAL & NATURESERVE, BIRDLIFE BULGARIA (BSPB), BIRDLIFE TUNISIA (AAO), BOISE STATE UNIVERSITY, CITES (MIKE DATABASE), ENDANGERED WILDLIFE TRUST, HAWK CONSERVANCY TRUST, HAWK MOUNTAIN SANCTUARY, INTERNATIONAL UNION FOR CONSERVATION OF NATURE (AFRICAN ELEPHANT DATABASE & REDLIST MAPS), ISRAEL NATURE & PARKS AUTHORITY, NATURAL HISTORY MUSEUM (TRING), MOVEBANK, NKOKOLO-KOBA CITIZEN SCIENCE PROJECT, NORTH CAROLINA ZOO, RAPTORS BOTSWANA, RARE AND ENDANGERED SPECIES TRUST, ROYAL SOCIETY FOR THE PROTECTION OF BIRDS, TANZANIAN BIRD ATLAS, THE PEREGRINE FUND, UNIVERSITY OF UTAH, VULPRO, WEST AFRICAN BIRD DATABASE, WILDLIFE ACT and WILDLIFE CONSERVATION SOCIETY.

Species and number of individuals traded

Of the six focal species of this report, the hooded vulture (*N. monachus*) is the species that is most highly traded, both in terms of the number of countries and markets at which the species has been encountered across Africa (Williams *et al.*, 2014), as well as in absolute numbers of specimens traded in West Africa in particular (Sodeinde and Soewu, 1999; Nikolaus, 2006; Saidu and Buij, 2013; Buij *et al.*, 2016). In part this is thought to be because of their association with urban areas and because they are considered to be relatively easy to capture, readily accepting meat scraps provided to them (Ogada and Buij, 2011; Saidu and Buij, 2013).

Data from market surveys undertaken between 1990 and 2013 across West and Central Africa found that palm-nut vultures (*Gypohierax angolensis*, not reviewed in detail in this report) and Rüppell's vultures *(G. rueppellii)* were the most commonly traded vulture species after *N. monachus*, with the greatest diversity of large Afrotropical vultures (*G. rueppelli*, *G. africanus*, *T. occipitalis* and *T. tracheliotos*) available at markets recorded in Nigeria (Buij *et al.*, 2016). Across all traded raptors (not just vultures), Buij *et al.* (2016) found that the major predictors of carcass counts at markets were, in decreasing order of importance: species abundance (common species were more represented than uncommon species); habitat (species associated with savannah habitats are more likely to be traded); whether the species was a scavenger or non-scavenger (frequent and obligate scavengers were more likely to be traded); and whether the species was migratory or non-migratory (species with an Afrotropical breeding range were more likely to be traded compared to those with a Palearctic breeding range).

Table 5.1.1 shows the estimated offtake per annum in West Africa for the six focal vulture species according to Buij *et al.* (2016); these volumes were calculated based on market data collected between 2008 and 2013, and are considered to be based on conservative estimates of turnover (Buij *et al.*, 2016). The figures for *G. rueppellii, G. africanus* and *T. tracheliotos* were considered to represent a substantial proportion of their regional populations. For example, the 143-214 *T. tracheliotos* individuals estimated to be traded annually would represent an offtake of 4.8-7.1% of the c. 3000 individuals estimated to have occurred in West Africa and the Sahara during the late 1990s (Shimelis *et al.*, 2005), assuming all vultures harvested came from this region (Buij *et al.*, 2016). For *T. occipitalis*, an annual offtake of 24-36 individuals would account for 5.3% to 8% of the 456 individuals estimated to have remained in 2014 (Buij *et al.*, 2016). Taking Murn *et al.* (2016)'s more recent estimate of 312 individuals of *T. occipitalis* in West Africa, this accounts for a higher percentage still (7.7-11.5% of the West African population). More recent surveys of Nigerian markets focusing on *N. percnopterus* estimated that if all 397 stalls/sellers stating that they would be willing to sell *N. percnopterus* products sold one individual per year, the entire eastern European population of the species (c. 60 pairs) would rapidly go extinct (Oppel *et al.*, 2019). In Guinea-Bissau, the number of individuals killed in poisoning incidents linked to direct trade in vulture parts since September 2019 was reported to represent a loss of around 5% of the estimated national population of the species, which represents 22% of the global population (Henriques *et al.*, 2020).

Table 5.1.1: Annual estimated number of individuals traded per year in West Africa, based on extrapolation of mean carcass counts at market stands between 2008 and 2013. Source: Buij *et al.* (2016)

Species	Offtake per annum estimate
Necrosyrtes monachus	975-1462
Gyps rueppellii	188-282
Gyps africanus	154-231
Torgos tracheliotos	143-214
Trigonocepts occipitalis	24-36
Neophron percnopterus	2-3

There are multiple cases where trade for belief-based use and consumption is thought to have been the primary contributor of local extirpations of the six focal species. The extirpation of *Gyps africanus* in Nigeria, for example, was attributed to "trade in vulture parts for traditional juju practices" in the species' IUCN assessment (BirdLife International, 2018). In fact, Nikolaus (2001) reported that all large afrotropical vultures had been largely extirpated from Nigeria, one of the major regional centres of trade in vultures, in the late 1990s. *G. rueppellii*, *G. africanus*, *T. tracheliotos* and *T. occipitalis* were now reported to be only rarely recorded

and mostly found within protected areas (Saidu and Buij, 2013), although the 2017 proposal to list a number of vulture species in Appendix I of CMS notes that *G. rueppellii* and *G. africanus* had disappeared even from their last strongholds in Nigeria's Yankari Game Reserve (UNEP/CMS, 2017).

Smaller vultures like *N. monachus* are also thought to have experienced declines as a result of hunting for consumption and belief-based use (Rondeau and Thiollay, 2004; Gbogbo *et al.*, 2016; Nosazeogie *et al.*, 2018), although a lack of baseline data in many areas has hindered efforts to support this hypothesis with empirical data, and in some cases the various potential causes of declines could not be disentangled. Local extinctions of *N. monachus* in Côte d'Ivoire were believed by Thiollay (2006) to have been caused as a result of hunting them for meat, and populations have been noted to appear healthier in regions where the species is not widely used for food and belief-based use (see Barlow and Fulford, 2013).

Prices and shifts towards other raptors

Market sellers in Nigeria interviewed by Saidu and Buij (2013) noted that the price of vultures had increased between 2001 and 2011, with traders estimating the cost of a vulture in 2001 at NGN 150-250 (USD 0.95-1.60) and in 2011at NGN 2000-3000 (USD 13-19). This was considered to indicate similar or increasing demand combined with a lower availability of vultures, and to potentially be encouraging traders to source vultures from neighbouring countries (Saidu and Buij, 2013). In 2011, Nikolaus (2011 in Saidu and Buij, 2013)) reported that large vulture species appeared to have largely vanished from western African markets outside Nigeria, which "apparently is the only country where people can still afford to buy such highly-valued species for traditional medicine purposes". Prices have since increased even higher; prior to the Covid-19 pandemic, a vulture head and whole carcass were reported to sell for NGN 9500 (USD ~25) and NGN 16 000 (USD ~42) respectively; as of November 2020, they sold for NGN 15 000 (USD ~ 39) and NGN 35 000 (USD ~92) respectively (S. Awoyemi *pers. comm.* 2021). A live vulture was reported to be NGN 80 000 (USD ~210).

Another indicator of the decreased availability of vultures is the increasing numbers of black kites (*Milvus migrans*) being sold in West African markets; *M. migrans* is regularly used as a substitute for vultures by traders, who pluck feathers from the kites' heads to make them resemble *N. monachus* (Buij *et al.*, 2016; Nikolaus, 2011). Buij *et al.* (2016) found that the proportion of black kites being sold in markets in West and Central Africa appeared to have increased over time, supporting the idea that increasing prices and the increasing rarity of vultures may be resulting in shifts to other species.

Discrepancies in trade data and market reports

Relatively little commercial trade in the six focal species of this report has been recorded from West Africa in CITES data spanning 2009 – 2018. According to exporter-reported data, the only direct commercial trade in these species that occurred over this ten-year period from West Africa was 14 wild-sourced trophies of *N. monachus* exported from Ghana to the United States. According to importer-reported data, direct trade in these species for commercial purposes consisted solely of two live wild-sourced *N. monachus* individuals and four live wild-sourced *N. percnopterus* individuals, exported from Guinea to Thailand. No imports for any purpose were reported to have taken place into either Nigeria or Benin, which are considered to be two of the regional hot spots of trade in these species; similarly, no exports were reported to have taken place from countries such as Niger, Chad, Burkina Faso, Mali, Senegal and the Central African Republic, even though interviews with market traders have implied that international trade from these countries is taking place (Ogada and Buij, 2011; Saidu and Buij, 2013; Kret *et al.*, 2018; Oppel *et al.*, 2019; Vulture Conservation Foundation, 2020). Trade is therefore likely to be occurring in non-compliance with CITES and CMS[24], as well as in breach of many of these countries' national laws – in Niger, for example, all vultures are listed as "completely protected" species in the country's Hunting and Wildlife Protection Law (Law 98-07 of 29 April 1998) (see Management section for information on other West African range States). The scale of this potentially illegal trade is challenging to quantify, however, due to a lack of robust estimates of the number of vultures being sold in markets that have been internationally sourced.

[24]As per Article III (5) of the CMS Convention text.

5.2 Sentinel poisoning

Sentinel poisoning is the name given to the deliberate poisoning of vultures in order to prevent detection of illegal killing of other species; it is so called because the circling behaviour of vultures over carcasses can be seen from long distances, thus making them inadvertent 'sentinels' by which local wildlife authorities can identify the location of poaching events (Ogada *et al.*, 2015; Botha *et al.*, 2017). It is considered to be a relatively new practice, closely linked to increases in elephant and rhinoceros poaching that have been recorded since 2012 (Ogada *et al.*, 2015). It often occurs as a side-effect of the method that was used to kill the poached animals themselves (rather than via the poisoning of carcasses after the poached animal has been killed in a different way); the number of mortality events has therefore been linked to the increased use of poison as a poaching method (Ogada *et al.*, 2015).

Ogada *et al.* (2015) noted that vulture mortality recorded between 2012-2014 associated with elephant poisoning accounted for over a third of all vulture mortality recorded since 1970, although it is important to note that due to its illicit nature the activity is generally to be underreported. The authors found that a median of 191 individuals were killed at each ivory poaching event for which data were available (n=11, range = 1-500 individuals); this was over 30 times higher than those that have been recorded at other poisoning incidents (a median of 191 individuals based on data from 33 poisoning events). Mateo-Tomás and López-Bao (2020) extrapolated this data to calculate that if circa half of poached elephant carcasses annually recorded by the Monitoring the Illegal Killling of Elephants Programme (MIKE) across Africa (a mean of 791 carcasses/year between 2010 and 2018) were laced with poison, >75 000 vultures could be killed annually.

While all vulture species are susceptible to poisoning, sentinel poisoning in particular is thought to most commonly affect *G. africanus* and *T. tracheliotos* (Ogada *et al.*, 2015; Botha *et al.*, 2017). For the former species, this is thought to be because of the large number of birds that congregate at carcasses (Botha *et al.*, 2017; Murn and Botha, 2018), however no information could be found explaining why *T. tracheliotos* was thought to be affected more severely. Species specific data is only available in a relatively low of cases, however, either as a result of the advanced state of decay in which carcasses are discovered, or due to a lack of bird identification experience held by field-based personnel (Ogada *et al.*, 2015).

The African wildlife poisoning database indicates that sentinel poisoning is far more common in southern and eastern Africa than it is in West Africa (Fig. 5.2.1), although it is important to note that this database is considered to be neither complete nor unbiased towards areas where poisoning incidents are more likely to be recorded (Santangeli *et al.*, 2019). Botha *et al.* (2017) argue that the potential for this practice to occur in parts of West Africa where elephant poaching is prevalent should not be underestimated; nevertheless, West Africa is not considered to be a priority for any of the 11 actions associated with Objective 5 of the vulture MsAP ("To reduce and eventually to halt the practice of sentinel poisoning by poachers") (see Annex III). There is overlap between the killing of vultures in order to conceal poaching events and the killing of vultures for belief-based use. For example, Groom *et al.* (2013) reported that the many of the upper beaks of 57 white-backed and eight lappet faced vultures, thought to have been deliberately poisoned in Gonarezhou National Park (Zimbabwe) by opening up a poisoned elephant carcass that had had its tusks removed, had been removed. Trade in vultures for belief-based use occurs outside of West Africa, but no information could be found regarding whether parts taken for these purposes are traded locally or are traded more widely.

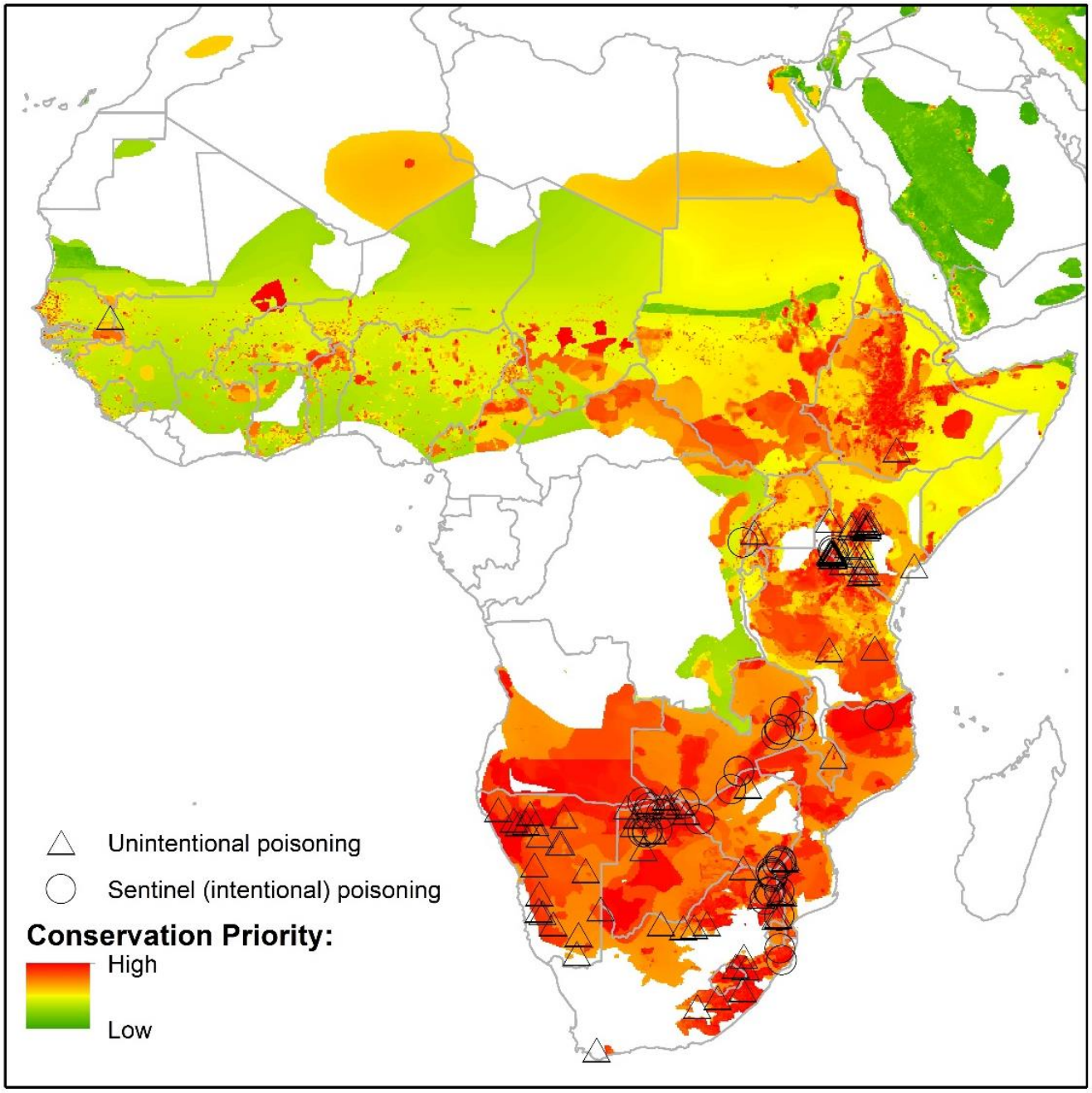


Figure 5.2.1: Distribution of sentinel (circles) and unintentional (triangles) poisoning incidents recorded in the African wildlife poisoning database. Conservation priority shading was created by combining priority areas for the conservation of all vulture species of Africa and Eurasia (except for the palm nut vulture *Gypohierax angolensis*) with poisoning records (for full details see Santangeli *et al.* (2019)). Figure reproduced with permission from A. Santangeli.

6. Management

The following section provides an overview of national legislation in place to protect vultures in West African countries and gives a brief overview of relevant protections and initiatives for vultures afforded to them by CMS. It additionally sets out relevant information received in the replies of range States to UNEP-WCMC's consultation and to CITES Notif. No. 2020/034; at the time of writing, these had been received from Côte d'Ivoire, Mauritania, Mali and Senegal.

6.1 Convention on the Conservation of Migratory Species of Wild Animals (CMS)

All six vulture species featured in this review are listed in CMS Appendix I; this requires the Parties that are range States of these species to "endeavour to strictly protect them by: prohibiting the taking of such species, with very restricted scope for exceptions; conserving and where appropriate restoring their habitats; preventing, removing or mitigating obstacles to their migration; and controlling other factors that might endanger them". All West African countries are party to CMS except for Sierra Leone (Table 1.1).

Vultures have received particular attention through CMS via the adoption of the Multi-species Action Plan to Conserve African-Eurasian Vultures (Vulture MsAP) in 2017 (Botha *et al.*, 2017), and through the adoption of five decisions relating specifically to African-Eurasian Vultures (Annex II). The MsAP, which was produced after extensive consultation with range States, stakeholders, conservation specialists and species experts, proposes 12 objectives to be reached via 124 recommended actions. Objectives 4 and 5 focus on direct trade and sentinel poisoning and read as follows:

Objective 4. To reduce and eventually to halt the trade in vulture parts for belief-based use.

Objective 5. To reduce and eventually to halt the practice of sentinel poisoning by poachers.

These two objectives are linked to 20 actions, which have been assigned a priority rating and a target timescale. The twelve objectives, as well as the actions relating to objectives 4 and 5, are given in Annex III. The action plan also noted that an assessment was underway to inform a potential future proposal to transfer African vulture species from CITES Appendix II to CITES Appendix I, but the outcome of this assessment was not available at the time of writing.

Nine of the sixteen range States considered in this review are additionally signatories of the Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MOU) (Table 1.1), which has the chief aim of ensuring that all populations of African Eurasian migratory birds of prey (which includes all six of the focal species of this report) are maintained in or returned to favourable conservation status.

6.2 Country legislation and responses to the consultation

Benin

Benin's nature protection and hunting law (Loi No. 87-014 of 21 September 1987) lists all vultures as totally protected species (Article 2). As such, capture as well as egg collection of vultures is strictly prohibited unless carried out under a scientific permit (Article 2). Despite this, Buij *et al.* (2016) noted that the government of Benin supported the trade in raptors as part of the country's cultural heritage; the paper does not elaborate on how this is achieved.

Burkina Faso

Limited information about the legal protection status of vultures in Burkina Faso could be found. *N. monachus* and *T. occipitalis* are mentioned in a Ramsar report on Burkina Faso's Mare de Yomboli area as fully protected species (Ramsar, 2019); however, the piece of legislation listing them as a protected species could not be located, and as such, the full array of species protected as well as the activities that legal protection may regulate and restrict are unclear. An article detailing prosecutions of illegal traffickers in Burkina Faso describes vultures as "protected", although it only goes on to note that "vulture hunting is prohibited by international conventions" (Fondation 30 million d'amis, 2012).

Cabo Verde

No information could be found regarding the legal protection status of vultures in Cabo Verde.

Côte d'Ivoire

The CITES MA of Côte d'Ivoire (*in litt.* to UNEP-WCMC) confirmed that hunting is prohibited for all species of vulture. It was not possible to confirm the legislation denoting this, however Article 4 of the most recent version of Côte d'Ivoire's Wildlife Protection and Hunting Law that could be located (Law No. 94-442 of 16 August 1994, modifying Law No. 65-255 of 4 August 1965) notes that the protection of fauna is assured by, *inter alia*, the complete or partial protection of animals that are rare of threatened with extinction. Hunting by use of poison is prohibited (Article 6).

The CITES MA of Côte d'Ivoire additionally confirmed that there was no legal trade in vulture parts in the country; however it was noted that there may be low levels of illegal trade in vultures for belief-based use. No vultures have been recorded in bushmeat seizures (CITES MA Côte d'Ivoire *in litt.* to UNEP-WCMC, 2021).

The Gambia

It is unclear whether vultures are protected in The Gambia. Article 46 of The Gambia's Biodiversity and Wildlife Act 2003 states that "Except as otherwise provided under this Act, a scheduled biological resource found in The Gambia, whether or not originating in The Gambia, is hereby protected as a biological resource"; these biological resources may not be harvested or hunted except under licence (Article 48). Article 47 of the Act states that the Secretary of State may declare an open season during which it is lawful to hunt or harvest biological resources specified, but that the open season should not apply to protected areas. No lists of scheduled species could be located, so it remains unclear which, if any, vulture species these regulations may apply to.

Ghana

In combination with a 1983 amendment (L.I.1284), Ghana's Wildlife Conservation Regulations 1971 (L.I. 685) (which implement the Wild Animals Preservation Act, 1961) list "all birds of prey, including falcons, kites, hawks, eagles, buzzards, kestrels, etc" as fully protected species, meaning that their hunting or capture and possession are prohibited "at all times".

Guinea

Articles 47 and 56 of Guinea's 1997 wildlife protection and hunting law (Loi L/97/038/AN) state that the list of fully and partially protected species is set by Decree. Fully protected species cannot be captured, nor their eggs collected except for scientific purposes, whereas exploitation of partially protected species requires a permit (Article 56). Although no relevant Decree could be located to verify whether vultures were included in the list of protected species, Nikolaus (2011) noted that "the fetish tradition using wild birds or mammals is strictly forbidden by law".

Guinea-Bissau

Limited information about the protection status of vultures in Guinea-Bissau could be found. Article 5 of Decree No. 21/80 (Guinea-Bissau's Hunting Regulation) prohibited the hunting as well as the destruction of nests and eggs of all vultures; it also prohibited their sale. However, this hunting regulation has since been repealed and replaced by Decree-Law No. 2/2004; Article 16 of this law states that the hunting of protected species is prohibited and generally prohibits the destruction or capture of nests and young, but an accompanying list of protected species could not be located.

Liberia

All vultures are "fully protected" under Liberia's Wildlife and National Parks Act of 1988; this is further confirmed in the list of protected species in Liberia's 2000 regulation on revised administrative fees on wildlife conservation (Forestry Development Authority Regulation No. 25).

Mali

Article 70 of Mali's 2018 law setting the principles of management of fauna and its habitat (Law No. 2018-036 of 27 June 2018) states that species can be classified as totally or partially protected throughout the national territory; totally protected species cannot be hunted without a scientific capture permit with protection extending to nests, eggs and broods. Article 71 of this law states that the list of protected species is set by Decree; the CITES MA of Mali (*in litt.* to UNEP-WCMC, 2021) confirmed that a draft of this Decree includes *G. africanus, G. rueppelli, N. percnopterus* and *T. tracheliotos* as totally protected species. According to the CITES MA of Mali, these are the only four species thought to be present in the country; although both Botha *et al.* (2017) and the IUCN Red List (BirdLife International, 2017c) list Mali as a range state of *T. occipitalis* also. A previous law (Law No. 86-43/AN/RM of 30 January 1986) lists this species fully protected, but it does not appear to have been included in more recent legislation.

The CITES MA of Mali (*in litt.* to UNEP-WCMC, 2021) explained that there was a shortage of up-to-date data on the population status and trend of vultures in the country; anecdotally, however, it was noted that vultures were becoming increasingly rare. Bush fires and a decline in carcasses on which to feed were listed as important threats to vultures in Mali, however the effects of poaching, poisoning and collection of eggs and chicks were also considered to have been significant (CITES MA of Mali *in litt.* to UNEP-WCMC, 2021, based on NIagate and Clark, *Guide dur les mammifères, reptiles et oiseaux du Mali,* Edition 2004)). In order to ensure full implementation of Decisions 18.188 to 18.192, the MA noted an urgent need for a holistic project to be implemented including studies to update population data and trends, collect data on legal and illegal trade, and the training of water and forestry as well as law enforcement officers. It was noted that an illicit trade in vulture parts for medicinal use and consumption existed in neighbouring countries (CITES MA of Mali *in litt.* to UNEP-WCMC, 2021). Mali was noted to have porous borders and to have multiple routes through which illegal trade could potentially leave the country; however, as this illegal trade circumvents the CITES MA, no information was available regarding how prevalent this practice is (CITES MA of Mali *in litt.* to UNEP-WCMC, 2021).

Mauritania

Vultures are not included in the list of totally or partially protected species in Mauritania's Hunting and Nature Protection Law (Law 97-006).

The CITES MA of Mauritania (*in litt.* to UNEP-WCMC, 2021) noted that the population size, status and trends of its vulture species were unknown and that it did not have the resources for a systematic monitoring program. The principal threats to vultures in the country were considered to be a lack of food and threats posed by the ingestion of poisoned animal carcasses that are intended to target jackals (CITES MA of Mauritania *in litt.* to UNEP-WCMC, 2021). The MA noted that the information at

their disposal indicated that there was no legal or illegal taking or trading of vultures or their parts; enforcement was reported to consist mainly of monitoring and information gathering. No training of customs or law enforcement officials on the identification of vultures and their parts to facilitate the confiscation of illegal specimens at borders was reported to take place in the country (CITES MA of Mauritania *in litt.* to UNEP-WCMC, 2021). No vulture conservation projects were noted to be underway or being developed at the national level (CITES MA of Mauritania *in litt.* to UNEP-WCMC, 2021).

Niger

All vultures are listed as "completely protected" species in Niger's Hunting and Wildlife Protection Law (Law 98-07 of 29 April 1998) (Republic of Niger, 1998). Article 38 of the implementing decree of Law 98-07 (Decree No. 98-295/PRN/MH/E) additionally prohibits the taking of protected animals found dead, and Article 39 explicitly prohibits the collection of eggs and the destruction of nests of completely protected species except by special authorisation of the Director of Wildlife. Article 26 prohibits poisoning as a hunting technique. Kret *et al.* (2018) additionally reported that "doping…as well as the guns used to hunt vultures" are not permitted under this Decree, but did not specify in which Articles these provisions are set out.

Nigeria

The legal protection of vultures in Nigeria at the time of writing was unclear. The most recent copy of Nigeria's Endangered Species (Control of International Trade and Traffic) Act that could be accessed lists "Vultures (family Aegypiidae)" in Schedule II, which means that "no person shall hunt, capture, trade in or otherwise deal with" vultures except under licence (Article 1). Article 2 of the Act additionally says that the export and import of species specified in Schedule II is prohibited except in compliance with the following provisions:

> (1) An export permit has been granted by the Minister
>
> (2) The Minister is satisfied that such export will not be detrimental to the survival of that specimen;
>
> (3) The Minister is satisfied that the species is to be exported alive, will be so prepared and transported as to minimise the risk of injury, damage to health, cruel treatment or death of the animal; and
>
> (4) The Minister is satisfied that an import permit has been or will be granted for the specimen by the country of importation.

According to Oppel *et al.*, (2019), however, "this law [referring to Act above] is not enforced". Recent reports also indicate that vultures recently been placed on Schedule I of Nigeria's Endangered Species (Control of International Trade and Traffic) Act (Nikolov, 2014; S. Awoyemi *pers. comm.* 2021) – this would mean that "the hunting, capture of or trade in [the species specified] is absolutely prohibited" (Article 1). Nikolov (2014) also reported that the importation of vulture parts into Nigeria is totally prohibited.

Senegal

All vultures are listed as "fully protected" in the implementing Decree (Decret No. 86-844 of 14 July 1986) of Senegal's Wildlife and Protection and Hunting Law (Loi No. 86-04 of 24 January 1986). As such, their capture (including the capture of young and taking of eggs) is prohibited except with a scientific permit.

The CITES MA of Senegal responded to Notif. No. 2020/034, in which the MA raised concern was raised regarding a recent group of mass mortality events in Guinea-Bissau. Senegal presented a set of recommendations to the Animals Committee, which can be found in full in AC31 Inf. 5.

Sierra Leone

All vultures are listed as 'prohibited animals' in Sierra Leone's Wildlife Conservation Act (No. 27 of 1972). This bans their hunting and possession (Article 31), except under licence (Article 32). Articles 37-42 set out the purposes for which permits to capture protected animals may be granted. Notably Ministers may issue a permit authorising the holder to "kill animals, if the Minister is satisfied that the killing of such animals is in the interests of the conservation, management, control **or utilization** of wild life" (emphasis added by the author of this report), but that animals and their parts killed or captured under permit may only be sold "if the Minister is satisfied that the sale of the animals or such products is in the interest of wild life conservation and the proper regulation of commercial development connected with wild life". Sierra Leone was contacted to verify whether any hunting permits have been issued for vultures, but no reply had been received at the time of writing.

Togo

Vultures are listed as Annex I, Class B, Group I animals in Togo's Ordinance regulating wildlife protection and hunting (Ordinance No. 4 of 16 January 1968). This means that they are partially protected; hunting and capture, including of young or eggs, is only authorised with a permit. The Ordinance sets out the four types of hunting permit that can be obtained:

(1) Small hunting licences that can be obtained to hunt Annex II and Annex III species.

(2) Sports hunting licences – these can be obtained to hunt, amongst others, species that are categorised as partially protected. The number of licences that have been issued to hunt vultures, and for which (if any) species they have been issued for, is not known. Decree No. 90-178 states that the hunting of the genus *Neophron* is subject to a tax of 5000 F CFA; this was the only genus of vulture listed. This Decree was the latest that could be found, but it is unclear whether it has since been superseded.

(3) Special commercial capture permits, which can be issued for any species except those that are fully protected. The conditions for these permits are set out by Decrees.

(4) Scientific permits, which can be issued for the killing or capture of fully protected species for scientific purposes.

6.3 Conservation projects currently underway

Numerous small-scale projects focusing on research, advocacy for law enforcement, and community awareness-raising and mobilisation against vulture poisoning have taken place or are currently underway in West African countries (including Guinea-Bissau, Burkina Faso, and Ghana) through NGOs and universities (R. Safford *pers. comm.* 2021).

Large scale conservation projects currently underway include the following:

- A two-year project by the Nigerian Conservation Foundation aiming to combat illegal trade in threatened vultures and their parts for belief-based use, which was launched in May 2019 (BirdLife International, 2019b). Its aims include raising awareness among traditional healers of herbal alternatives to vulture parts, and seeking collaboration with security agencies on law enforcement (BirdLife International, 2019b). So far, more than 80 traditional healers have engaged with the project, and work is underway to develop a manual to guide

traditional medicine practices such as the use of plant-based alternatives which will be published in local languages (BirdLife International, 2019b).

- The Egyptian Vulture New LIFE project, launched in 2017. While the project principally aims to achieve an increase in the population of *N. percnopterus* in the Balkans and to minimise the loss of migrating birds (Egyptian Vulture New LIFE, 2021a), some activities to develop local capacity and reduce belief-based use in Nigeria and Niger are taking place under the project's framework (R. Safford *pers. comm.* 2021). In 2020, for example, the Sahara Conservation Fund developed a short conservation guide providing information on the main vulture species present in Niger, their role, the threats they face, and the tools available to protect them (Egyptian Vulture New LIFE, 2021b).

6.4 Non-detriment findings (NDFs)

Although details of non-detriment findings were requested via UNEP-WCMC's consultation with West African range States, no response had been received from the two top West African exporters of wild-sourced vultures for commercial and trophy purposes (Togo and Ghana, see section 3.1) at the time of writing. It should be noted that vultures have been highlighted as one of the key priority groups for developing NDF guidance (AC31 Doc. 14/PC25 Doc. 17), and that Decision 18.187 encourages the Secretariat to include vultures as case study for a possible non-detriment findings workshop.

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Annex I: Current CITES Decisions relating to West African Vultures (Accipitridae spp.)

Decisions 18.186 - 18.192 West African vultures (Accipitridae spp.)

18.186

Decision directed to the Secretariat

The Secretariat shall liaise with the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) to assist in the implementation of the trade- related aspects of the Vulture Multispecies Action Plan, subject to the availability of resources, including sharing information based on the work of the Animals Committee.

18.187

Decision directed to the Secretariat

The Secretariat is encouraged to include vultures as a case study for the possible Non- Detriment Findings workshop.

18.188

Decision directed to the Secretariat

The Secretariat shall issue a Notification to the Parties requesting the following information concerning trade in and conservation of Egyptian vulture (*Neophron percnopterus*), white- headed vulture (*Trigonoceps occipitalis*), hooded vulture (*Necrosyrtes monachus*), whitebacked vulture (*Gyps africanus*), Rüppell's vulture (*Gyps rueppelli*) and lappet-faced vulture (*Torgos tracheliotos*) in West Africa:

a) biological data on West African vultures, including population size, breeding productivity, distribution, and trends across the range of the species;

b) available information about harvest and levels of legal and illegal trade of vultures and their parts;

c) information on threats to these species, in particular belief-based use and sentinel poisoning, and other trade-related threats;

d) information on enforcement actions taken, including seizures, forensic analysis of seized specimens, arrests, prosecutions and judgments relating to illegal trade in vultures as well as disposal of seized specimens; and

e) new developments regarding management, education and awareness-raising measures concerning vultures.

18.189

Decision directed to the Secretariat

The Secretariat shall compile responses from the Parties and provide these responses to the Animals Committee's working group to inform its work.

18.190

Decision directed to the Animals Committee

The Animals Committee shall establish a working group to address key gaps in knowledge as it relates to the biological and trade issues highlighted in the Vulture Multispecies Action Plan (Vulture MsAP), with particular attention for the six species mentioned in Decision 18.188 and the West African region, and including but not limited to trade in vulture parts of belief-based use (Objective 4), sentinel poisoning by poachers (Objective 5), cross- cutting actions that contribute to addressing knowledge gaps (Objective 11), and contribute to effective implementation of the Vulture MsAP (Objective 12).

The working group shall:

a) review the information submitted under the Notification;

b) conduct a detailed assessment on the scale and impact of legal and illegal trade in live birds, eggs, and vulture body parts across the range of the Vulture MsAP; and

c) provide findings and recommendations to the Animals Committee.

18.191

Decision directed to the Animals Committee

The Animals Committee shall provide guidance to range States on how to factor in all known threats to the species when making non-detriment findings for these species, and make recommendations, as appropriate, for consideration by the Standing Committee.

18.192

Decision directed to the Standing Committee

The Standing Committee shall:

a) consider the recommendations from the Animals Committee, as appropriate, and information relating to illegal trade in vulture body parts for traditional/belief-based use, and adopt recommendations as appropriate for consideration by the Parties concerned; and

b) in consultation with the Secretariat, report on the implementation of Decisions 18.186 to 18.191 to the Conference of the Parties at its 19th meeting.

Annex II: CMS Decisions on the Conservation of African-Eurasian vultures

13.50

Decision directed to: *Parties, IGOs & NGOs*

Parties, non-Party Range States and stakeholders are encouraged to:

a) develop partnerships with anti-poaching initiatives and conservation groups concerned with poisoning of other taxonomic groups, including developing training courses, translating and disseminating examples of best practice, sharing protocols and regulations, transferring technology, and promoting the use of online tools to address specific issues that are relevant to the Vulture Multispecies Action Plan;

b) contribute, with the support of the Secretariat, to the proposed workshop hosted by CMS-United Nations Convention to Combat Desertification (UNCCD), referred to in UNEP/CMS/COP12/Doc.24.1.2 on the Conservation of Migratory Landbirds in the African-Eurasian Region (especially in relation to sustainable land use in Africa), to ensure the needs of vultures are provided for in the development of a plan (to be proposed for adoption at the 14th meeting of the Conference of the Parties) on the inte-gration of biodiversity requirements, as indicated by wild birds, into the land degradation neutrality delivery at national level with a focus on West Africa (countries of the Sahel and Guinea Savannah) and potentially also North-West Africa (countries of the Maghreb), subject to the availability of resources.

13.51

Decision directed to: Scientific Council

The Scientific Council is authorized to liaise with the Vulture Working Group and the IUCN Vulture Specialist Group, via the Coordinating Unit of the Raptors Memorandum of Understanding to address key gaps in knowledge as highlighted within the Vulture Multispecies Action Plan, subject to the availability of resources.

13.52

Decision directed to: Secretariat

The Secretariat shall convey this Decision to the secretariats of other multilateral environmental fora, in particular the United Nations Environment Programme, the Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), seeking their support, contributions, cooperation and collaboration in the implementation of the Vulture Multispecies Action Plan, subject to the availability of resources.

13.53

Decision directed to: Secretariat

The Secretariat, through the Coordinating Unit of the Raptors Memorandum of Understanding, shall report to the next Meeting of Signatories of the CMS Raptors Memorandum of Understanding and subsequent meetings of the Sessional Committee of the CMS Scientific Council.

Annex III: Objectives of the Multi-Species Action Plan to Conserve African-Eurasian Vultures (Vulture MSAP) and actions identified as necessary to meet Objectives 4 and 5

Objective 1. To achieve a significant reduction in mortality of vultures caused unintentionally by toxic substances used (often illegally) in the control and hunting of vertebrates.
Indicator: Use of toxic chemicals to poison animals is prevented through effective education and enforcement by 2029.

Objective 2. To recognise and minimise mortality of vultures by non-steroidal anti-inflammatory drugs (NSAIDs) and occurrence and threat of toxic NSAIDs throughout the range covered by the Vulture MsAP.
Indicator: By 2029, potentially harmful NSAIDs no longer available for veterinary use, safe alternatives introduced and widely used.

Objective 3. To ensure that CMS Resolution 11.15 on the phasing out the use of lead ammunition by hunters is fully implemented.
Indicator: Policies and legislation in place to ensure phasing out the use of lead ammunition by all CMS Parties and Range States covered by the Vulture MsAP by 2029.

Objective 4. To reduce and eventually to halt the trade in vulture parts for belief-based use.
Indicator: Significant reduction in vulture mortality due to belief-based use as a result of greater public awareness and the introduction of appropriate legislation, including effective implementation and enforcement by 2029.

Objective 5. To reduce and eventually to halt the practice of sentinel poisoning by poachers.
Indicator: Significant reduction in vulture mortality due to elephant and other poaching by 2029.

Objective 6. To substantially reduce vulture mortality caused by electrocutions linked to energy generation and transmission infrastructure.
Indicator: All new energy infrastructure after 2029 should be bird friendly.

Objective 7. To substantially reduce vulture mortality caused by collisions linked to energy transmission and generation infrastructure.
Indicator: Mortality through collisions on energy infrastructure

is reduced to sustainable levels by 2029.

Objective 8. To ensure availability of an appropriate level of safe food to sustain healthy vulture populations.
Indicator: By 2029, no measurable negative impact on productivity and vulture populations due to lack of food.

Objective 9. To ensure availability of suitable habitat for vultures to nest, roost and forage.
Indicator: All major breeding and roosting sites for vultures are known and appropriately protected by 2029.

Objective 10: To substantially reduce levels of direct persecution and disturbance of vultures caused by human activities.

Indicator: Effective measures in place and enforced in all Range States.

Objective 11. To support vulture conservation through cross-cutting actions that contribute to addressing knowledge gaps.
Indicator: Ten Endangered and Critically Endangered Old World Vultures listed on CMS Appendix I; all species
of vultures are fully protected within the national legislation of all respective Range States by 2029.

Objective 12. To advance vulture conservation by effective promotion and implementation of the Vulture MsAP.
Indicator: All critical actions of the Vulture MsAP and at least 50% of the high priority actions successfully implemented across the range by 2029.

Actions necessary to meet Objective 4 (relating to vulture parts for belief-based use)

Result	Action	Time frame (years)	Priority	West Africa considered to be a priority by the MsAP?
4.1 Improved understanding of the trade in vultures and their parts informs improved conservation approaches	4.1.1. Conduct overall situation analysis on belief-based use of vultures and their body parts, to include: current state of knowledge, best practices for tackling the trade, body parts used, market turnover rates, how vultures are acquired, key markets, socio-economic drivers of the trade and trade pathways.	1-6	High	Yes
	4.1.2. Assess population effects on vultures of trade from body parts for belief-based use.	1-6	High	Yes
	4.1.3. Assess policies, laws and regulations governing the use, sale, distribution and disposal of poisons and illegal use of agro-chemicals used to poison wildlife, especially vultures, for belief-based use.	1-3	High	Yes
	4.1.4. Investigate and test best practices to eliminate the trade in vulture parts for belief-based uses.	1-6	High	Yes
	4.1.5. Determine protocols for sampling and promote the establishment or use of suitable facilities to do advanced and accurate toxicological assessment of samples in range countries.	1-3	Medium	Yes
	4.1.6. Identify human health impacts of use and consumption of vulture body parts for belief-based use	1-6	High	Yes
4.2 Governments, local communities and other stakeholders understand scale and impact of trade in and belief -based use of vulture body part	4.2.1. Initiate engagement and dialogue with relevant stakeholders, publish and share research and monitoring results on belief-based use of vultures with relevant Government departments (e.g. environment, agriculture, health) and other stakeholders to agree appropriate national actions	1-6	Essential	Yes
	4.2.2. Implement multi-media awareness campaigns to highlight negative (human health and ecological) impacts of belief-	1-12	High	Yes

Result	Action	Time frame (years)	Priority	West Africa considered to be a priority by the MsAP?
	based use of vulture body parts; target public (especially suppliers, traditional healers, religious leaders, consumers and youth), using research results.			
4.3 All appropriate policy instruments and legal measures are established and/or aligned to reduce belief-based use of vulture body parts	4.3.1. Train customs and law enforcement officers to identify vultures and their body parts to enable effective confiscation and enforcement actions, particularly at borders.	1-3	High	Yes

Actions necessary to meet Objective 5 (relating sentinel poisoning)

Result	Action	Time frame (years)	Priority	West Africa considered to be a priority by the MsAP?
5.1 Barriers to prosecuting offenders of wildlife crime are understood	5.1.1. Review existing policy and legislation to identify barriers to successful prosecution of wildlife crime offenders.	1-3	High	No
5.2 Information on sentinel poisoning incidents is properly collected, managed and shared	5.2.1. Develop new, or support existing, poisoning and poaching related databases, and link them where possible.	1-12	High	No
	5.2.2. Confirm or identify poaching hotspots (especially of elephants) and determine sites to focus action to reduce risk or impact to vultures whose ranges overlap with hotspots.	1-12	High	No
5.3 Governments, local communities and other stakeholders understand scale and impact of sentinel poisoning	5.3.1. Raise awareness of law enforcement, judiciary and public through targeted campaigns on the link between elephant and bushmeat poaching and vulture declines.	1-3	High	No
5.4 Conservation authorities, communities and others take collaborative action to respond to or prevent poisoning incidents	5.4.1. Expand poisoning response training programmes to support conservation staff to rapidly respond to poisoning incidents.	1-12	Essential	No
	5.4.2. Identify and provide effective sustainable (alternative) livelihoods to encourage people to move away from poaching (e.g. recruit poachers into law enforcement).	1-6	Medium	No
	5.4.3. Enhance capacity to sample and analyse poisons used in elephant and bushmeat poaching among relevant national institutions.	1-6	Medium	No

Result	Action	Time frame (years)	Priority	West Africa considered to be a priority by the MsAP?
	5.4.4. Increase capacity and resources for effective law enforcement to tackle elephant and bushmeat poaching within Protected Areas.	1-12	High	No
	5.4.5. Enhance networking and coordination between initiatives on vulture conservation and preventing elephant poaching. Improve communication between conservation practitioners, researchers, Governments and elephant anti-poaching groups.	1012	High	No
5.5 Legal and policy measures respond to causes and impact of poaching on vultures and are enforced	5.5.1. Introduce and enforce severe penalties on those found guilty of carrying out illegal wildlife poisoning events, treating those that impact on vultures and on other fauna with equal seriousness.	1-6	High	No
	5.5.2. Develop and enforce legislation to control, ban or restrict the sale, storage, distribution, use and disposal of toxic chemicals used in elephant and bushmeat poaching.	1-6	Medium	No