MODULE 6: MIGRATORY SPECIES AND TRANSBOUNDARY POPULATIONS

Contents

1. What is in this module?

This module provides additional guidance to Parties on some of the key considerations for undertaking NDFs for migratory species and transboundary populations. It is complementary to the generic guidance contained in **modules 1** and **2**. It is recognized in this module that there are specific considerations that apply to migratory species and transboundary populations, and which must be addressed in the preparation of an NDF. This module refers to both terrestrial (including birds) and aquatic species; however, aquatic species which occur in areas beyond national jurisdictions (ABNJ), straddling and transboundary stocks are included in **module 5**. To assist Scientific Authorities this module provides examples that may be used to clarify considerations for migratory species and transboundary populations. Some of the examples provided may not refer to species currently in trade but may, nevertheless, serve as comparators.

The present guidance concerns the preparation of NDFs specifically for migratory species and transboundary populations.

1. **Migratory species** means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries (as defined in the Text of the Convention on the Conservation of Migratory Species of Wild Animals, CMS)

2. **Transboundary populations** refers to groups or individuals of a population of a species that cross one or more national jurisdictional boundaries, but where any movement may not be clearly predictable or cyclical.

The preparation of an NDF and principles guiding such preparation are provided in **module 1** and **2** and are not discussed here. There are specific considerations relating to the preparation of an NDF for migratory species and transboundary population and these are considered below.

2. Multinational considerations

Migratory species and transboundary populations may occur in two or more national jurisdictions. This makes the process of developing an NDF particularly complex, as Scientific Authorities should consider the potential impact of national take / use on the whole population of the species. They may also wish to consider the impacts that may have on the ecosystem services that species provides across its distribution range. In addition, considerations should be given to different types of use (e.g., food, medicine, curios, trophies, aphrodisiacs, spiritual artifacts, traditional use etc.) of the species across different national jurisdictions.

As indicated in Res. Conf. 16.7 (Rev. CoP17) on NDFs, and in **module 1** and **2**, the Scientific Authority should take into account information on the species' biology and life-history characteristics; distribution range (historical and current); population structure, status and trends; conservation status; threats; historical and current levels of legal and illegal trade; historical and current levels of mortality from combined causes; current and proposed management measures and consideration of levels of compliance; and population monitoring capacity. To the extent possible, Scientific Authorities should consider these aspects not only at their national level, but also in relation to the other countries with whom they share a species. It is therefore recommended that prior to permitting the taking of a migratory species and a species with a transboundary population, Scientific Authorities of range states of such species liaise and collaborate with one another to be able to obtain the best available information on the aspects enumerated above. It should be noted that CITES recommends that collaboration between Scientific Authorities of different Parties and, specifically, neighbouring Parties (Res Conf. 10.3 paragraph 2 d) and e). Scientific authorities are also encouraged to share written NDF reports, including the science-based rationale justifying the positive or negative finding, whenever possible with the CITES Secretariat to be shared publicly on the CITES website, which aligns with Res Conf. 16.7 (Rev. CoP17) paragraphs 2 d) and e).

In the case of migratory species and transboundary populations, each range State would be required to develop their own NDF. It is recommended that Scientific Authorities, of the states within the range of the species or population of the species under consideration liaise and, collaborate and, ideally, share in the preparation of NDFs or create consultative bodies for this purpose with other Scientific Authorities as far as possible. In the case of migratory species, consideration must be given to these concerns within countries where the species:

(a) Breeds

(b) Traverses in migration (migratory corridors).

(c) "Winters" (referring to non-breeding areas).

(d) Feeds (feeding grounds).

CMS brings together the range States through which migratory species and species with transboundary population pass. Not all Parties to CITES are Parties to CMS (including those that have reservations); nevertheless CITES Scientific Authorities, even in countries that are not Parties to CMS, may reach out directly to CMS National Focal Points, including those of the CMS species-specific instruments, the contacts of whom are provided on the CMS webpage. Alternatively, Scientific Authorities may wish to request the support of the CITES and CMS Secretariats in facilitating collaboration with CMS National Focal Points, where they believe that such engagement could result in obtaining useful information for NDF making. Scientific Authorities may also consult the documentation on the CMS website, including that on CMS species-specific instruments.

In situations where there is significant trade, or where trade may be considered of potential risk to the species, the formation of formal or informal structures to address NDF findings for migratory species and transboundary populations involving range States or regional groupings of nations is strongly recommended. It is appreciated that the establishment

Box A: Example of a multinational collaboration in conservation management, including trade, in the case of a migratory species:

The Saker Falcon, *Falco cherrug*, is a large falcon species that has been favoured for use in falconry for thousands of years. Notwithstanding its cultural and economic importance in many countries, population monitoring data has suggested that failure to control and reduce the cumulative effect of threats may cause most of the species' subpopulations to significantly decrease or become extinct.

Urgent coordinated action to maintain and restore the conservation status of the species has, therefore, been deemed necessary to avoid losing the species, including for future generations.

Recognising the risk of extinction of the species throughout all or a significant parts of its range, a Saker Falcon Task Force (STF) was established under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals' (CMS) Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MOU).

The STF aimed to bring together range States, partners and other interested parties to develop a coordinated Global Action Plan, including a management and monitoring system, to conserve the Saker Falcon throughout its range. This goal included the ambition to develop and apply an Adaptive Management Framework to ensure that any taking of the species from the wild would be legal, controlled and sustainable (See **Box D**).

of such structures involves significant effort and the development of protocols which may require engagement at governmental and regional level. Less formal collaboration could be established between national management authorities and allow information sharing for scientific authorities. This is further considered in this document with respect to transboundary populations. This form of collaboration should be encouraged within the "spirit" of CITES as a Multinational Environmental Agreement. The establishment of more formal structures with respect to the saker falcon is reflected on in **Box A** and the vicuna in **Box B**. The Scientific Authority may have to take into consideration the scientific requirements of other agreements applicable to a species included in the CITES Appendices (**Box C**).

Box B: Example of a multinational collaboration in conservation management, including trade, in the case of a species with transboundary populations:

The Vicuna, *Vicugna vicugna*, is a is a wild high-altitude camelid distributed throughout the Andean Mountains from 3,000 to 5,000m asl, in the Puna and High Andean ecoregions. Populations of this species are found in Peru, Bolivia, Argentina, and Chile, with a small, introduced population in Ecuador. The species is valued for its fibre (hair) which is used in expensive high-end fashion products. The species was listed as Vulnerable in 1996, on the IUCN Red List but was reclassified as Least Concern in 2008. This change in threat status was the result of improved conservation measures which shifted unsustainable use of the species, to managed sustainable use based on non-lethal harvesting of the fibre supported by national legislation and multinational agreements. The development of non-lethal harvesting is based in ancient traditional Inca practice herding and corralling of wild vicunas for shearing of the fibre by local communities, which is done in the spring. The meat of the vicuna is considered valueless, so sheared vicunas are of no interest to poachers. This conservation success is the result of facilitation by various levels of legislation. Estimated population numbers for the species have improved from 10,000 In 1965 to recent estimates of a total in excess of 500,000 individuals.

Convention on the Trade in Endangered Species of Wild Fauna and Flora (CITES) came into force in 1975. All populations of the Vicuna were initially listed in Appendix I. CITES allowed for successful implementation of the regional **Vicuña Convention** (1979), an agreement whereby Argentina, Chile, Peru, Bolivia, and Ecuador have reversed the unsustainable use trend that was leading vicuñas to extinction, through enforcing decisions made in the framework of the Vicuña Convention upon all CITES Parties. Subsequently, all populations in Peru, Bolivia and Ecuador as well as some populations in Argentina and Chile are moved to Appendix II, specifically for trade in fibre obtained through live-shearing.

The Convention for the Conservation and Management of the Vicuna (1979) provides a good example of multilateral cooperation for the sustainable management of a species. Within this framework, Argentina, Chile, Peru, Bolivia and Ecuador set an important precedent in achieving sustainable management through the adoption of national action plans for vicuña management. The Vicuña Convention establishes an obligation for parties to prohibit all hunting and trade in vicuña products, except in cases closely monitored by the state and approved as sustainable practices within the Vicuña Convention. Manufacturers of cloth or garments using Vicuna fibre must, under licence from the country of origin, identify the cloth with a specific mark or logo stating "Vicuna (country of origin)".

National Legislation applies to the harvesting of vicuna fibre within the range countries, and specified populations, permitted in terms of CITES. This legislation, which determines specific areas for harvesting and the obligations and remuneration to communities involved, varies from county to country.

Sustainable use, whilst controversial, has provided a valuable tool for conservation of the species, maintaining wild populations, and restoring a valuable resource to local communities. In the case of the vicuna, this is preferable to maintaining captive populations and is possible because of international and regional agreements.

3. Harmonization of assessments

Ideally, there should be harmonization of NDFs developed across range States for transboundary populations and migratory species. Such harmonization will assist in establishing confidence that trade in the species will be non-detrimental throughout its range. While it is appreciated that this may not always be possible, it may be achieved through formal and informal communication between the CITES Management and Scientific Authorities in these range States. Ideally, collaboration between Scientific Authorities may result in the development of Joint NDFs through harmonization of this process. The agreement and support from the Management Authorities will be a necessary component of this process. It is important that individual states prepare their own NDFs and, also where possible, take cognisance of those prepared in other range States. Scientific authorities are also encouraged to share written NDF reports, including the science-based rationale justifying the positive or negative finding, whenever possible with the

CITES Secretariat to be shared publicly on the CITES website, which aligns with Res. Conf. 16.7 (Rev. CoP 17) paragraphs 2 d) and e).

Box C: International Obligations (See also Annex I)

a) **CITES** is a Multilateral Environmental Agreement (MEA) designed to regulate the international trade in endangered species included in its Appendices and ensure that this trade is sustainable, legal, and traceable. CITES does not regulate the local or national trade in wild species.

b) **CMS** regulates the taking[1] of migratory species listed in Appendix I, directly affecting national and international use and trade. It is important that the CITES Scientific Authority is aware of the listing of migratory species with respect to CMS, as well as other MEAs which may limit use and may apply different obligations on exporting states that are Party to both Conventions. Similarly, should be noted that there may be additional instruments under CMS that may affect trade in these species and may provide important scientific information.

c) **Regional structures or agreements** exist which govern the use of shared populations of species (**Annex 1**), for example the Migratory Bird Treaty Act of 1918. At sea, the 1982 United Nations Convention on the Law of the Seas (UNCLOS) establishes a legal framework regulating activities in all marine areas. In particular, UNCLOS established Exclusive Economic Zones (EEZs) as the area of the sea in which a sovereign state has exclusive rights regarding the exploration and use of marine resources. In order to manage stocks effectively and equitably, it is necessary to enable consultations between national Management Authorities of adjacent EEZs at the bilateral or regional level. In practice, this is done through Regional Fishery Bodies which include Regional Fishery Advisory Bodies, providing non-binding scientific advice to assist management, and Regional Fisheries Management organizations.

d) **Agreements between neighbouring countries** relating to conservation management may exist. Some 227 Transfrontier Conservation Areas across the globe covering over 4.6 million km² (UNEP-WCMC 22007). In the Southern African Development Community region, there are eighteen (18) existing or potential TFCAs in both terrestrial and marine environments covering over 700,000 km2 which have been grouped into three categories based on the level of development: Category A (TFCAs with a Treaty or other form of legally binding and mutually recognised agreement), Category B (TFCA with an MoU), and Category C (TFCAs at a conceptual stage)

Regional trade and cooperation agreements may also be relevant and provide a forum for discussion of trade in shared species or populations of species.

[1] "Taking" is defined by CMS as "taking, hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct" (CMS Convention Text, Art.1, I, i).

In considering illegal trade or take in the assessment, guidance in **module 2** should be considered. There are considerations, however, relating to both trade and illegal trade which are important when addressing migratory species and transboundary populations.

Trade and take data may be under-reported or absent and the lack of data should not be taken to mean that legal and illegal trade or take is absent.

If illegal take or trade occurs in some jurisdictions, consideration should be given as to whether trade allowed through the NDF may have a negative or positive impact on such illegal trade or on other populations. Consideration should also be given to the possibility that illegal trade and or laundering could more easily occur for transboundary populations and migratory species.

4. Adaptive management and precautionary approach

Adaptive management is discussed in detail in **module 1 section 9**. There are areas that may need specific consideration in addressing the impacts of trade on migratory species and transboundary populations. These would include:

(a) Res. Conf. 16.7 (Rev. CoP17) Paragraph 1. a) v) Recommends that *the making of an effective non-detriment finding relies upon a correct identification of the species concerned and verification that it is specimens of this species that are to be exported*. The Convention refers to the difficulty in correctly visually identifying the specimen, which may be a part of, or a product made from, the species. This is more difficult with transboundary populations and migratory species where the source of the specimen/animal or the population of the species may be difficult to determine.

(b) For transboundary populations and migratory species, gauging how population dynamics will be affected by any levels of take is more complex than gauging these effects for non-migratory species, particularly for poorly researched species. Before an NDF is developed for such species, Scientific Authorities should make every possible effort to obtain as much information as possible regarding the aspects outlined in the **section 2** above on "Multinational Considerations in NDF preparation" (also see section 5. below on *Guidance on evaluating scientific approaches to studying migratory species).*

(c) The conservation status of a species may vary across national jurisdictions, in the case of transboundary populations and migratory species (National "Red Lists" or other national conservation-level assessments). The status of a species in national-level legislations does not necessarily equate to actual level of protection, but formal listings of species may vary substantially across country boundaries and, particularly, at the latitudinal range extremes. Asymmetries in listing could indicate that species are under less threat in one country compared to another or could reflect different levels of concern in the two countries although population status is similar. Regardless of this, asymmetries in listing could challenge cross-border connectivity and climate change resilience in the face of possible species range shifts. This is an indication of the need for greater transboundary coordination in species management.

(d) The scale of the proposed trade will affect the complexity of the scientific data required and the need for collaboration between national jurisdictions. Where a relatively large number of specimens are to be harvested, if the status of the species is uncertain or where the harvest is likely to be repeated, more in-depth NDFs are required, and in the case of transboundary populations and migratory species, consultation with other affected national jurisdictions becomes even more important.

(e) The transboundary or migratory nature of the population or species needs to be taken into account when applying the requirement in Article IV paragraph 3 to monitor the exports from the population in order to maintain that species throughout its range at a level consistent with its role in the ecosystems in which it occurs. This is in line with an ecosystem approach that is appropriate for the integrated management of transboundary populations and migratory species (**module 1** and **module 2**).

Box D contains an example of a complex multinational initiative to design an adaptive management approach to establish sustainable legal trade in an endangered species that is represented by several transboundary populations which follow a diversity of migratory routes, and which are subject to different survival threats. An example of a less complex approach to adaptive management can be found in **Box M**.

Box D: Adaptive Management Framework for the sustainable use of the Saker Falcon (*Falco cherrug*) (See Box A for context)

One key aim of the Saker Task Force is to develop an Adaptive Management Framework (AMF) that moves the current illegal, and presumably unsustainable trapping activity, into a system that is legal, controlled, and sustainable and conforms CMS and CITES requirements. To develop such a framework the STF established an Adaptive Management Framework Discussion Group to use an AMF to assist the decision-making of stakeholders, especially international partners, and national authorities, on the sustainable use of the Saker Falcon.

The objective is to design an international AMF which integrates nine modules:

a. global governance and data management, including effective sustainable use models and a sustainable, international quota scheme,
b. internationally harmonized policy and law-making that ensures sustainability,
c. reinforced law enforcement,
d. effective awareness raising,
e. effective monitoring and research schemes,
f. complementary *ex situ* conservation measures,
g. compensatory *in situ* conservation measures,
h. effective stakeholder engagement, cooperation, and networking to respond to the socio-economic and cultural drivers of Saker Falcon use, and
i. the involvement of rural communities in the conservation management of the Saker Falcon.

Currently, a significant degree of uncertainty and speculation accompanies the population estimates. For certain key range States, especially in Asia. Therefore, the STF is seeking to find a careful balance between the benefits of an internationally coordinated sustainable use framework and the inherent risks of taking Saker Falcons from the wild in large numbers. Safeguards can help ensure that management decisions are based on the best available science, in the context of the precautionary approach and, ultimately, that any legal use is sustainable and exerts minimal adverse impact on decreasing non-target populations.

The draft AMF suggests that legal harvest may conditionally be allowed in larger, stable or increasing Saker Falcon populations in parts of its global range, only if safeguards for sustainability are met and the origin of falcons is identifiable. Depleted or decreasing breeding populations should not currently be considered suitable for any harvest. However, the illegal taking of wild falcons along the flyways and in wintering areas must be mitigated.

This would require an international harmonization of alternative policies, legal and wildlife management tools. As well as a concerted international data sharing to ensure that harvest that is assessed as non-detrimental at the Range State level does not affect negatively the Saker Falcon populations of other Range States.

This case study demonstrates how adaptive management can be used as a tool to achieve shared objectives for a species across multiple range States with a range of measures being proposed to achieve sustainable use and boost populations.

5. Guidance on scientific approaches to studying migratory species and transboundary populations for making NDFs and informing adaptive management.

NDFs and adaptive management processes seek to use the best scientific information available on a species. Scientific Authorities should review available literature and information relevant to inform the NDF and determine the need for further studies. When assessing studies examining the sustainability of harvesting migratory species and transboundary populations, or when designing such studies directly, key considerations should include:

5.1. Understanding the conservation status and trends of the populations of the species that will be impacted by take/use

To develop a suitable NDF for a migratory species and transboundary populations the Scientific Authority must have an understanding of the conservation status and trends of the populations of the species that are likely to be impacted by any levels of take. Understanding this is a key step to understanding the potential impacts of any such take. It also provides a baseline for monitoring efforts. For this, cross-border information sharing, and collaborative research may be needed. A review of the literature relating to the species must be performed and this may provide at least some of the required data and allow gaps in the knowledge to be determined. It is important to ensure that the NDF produced is based on science.

5.2. Identifying appropriate sampling methods

Sample sizes must be adequate to ensure statistical validity. With many migratory species, populations do not migrate all at once, while some individuals or populations may overwinter or breed at different locations. It is important, therefore, to ensure that the number of populations (and individuals within populations) sampled is sufficient to draw accurate inferences about the impact of harvesting on the species.

Larger sample sizes will make it easier to detect small changes in the harvested population, while smaller sample sizes will only allow detection of relatively larger changes. Larger sample sizes thus confer greater precaution into the examination of harvesting effects. In the same way, samples should be gathered from more than one population of the migratory species, at different locations within the country, to ensure that any detected changes in the population size or structure are not artifacts of natural population- or geographic-level variation among populations. The basis for these studies may be determined through review of literature relating to studies on other populations of the species or comparable species.

5.3. Sampling points along a migration path

Migratory species often undertake long journeys over long distances. Thus, the sites at which the population of migratory animals is censused plays an important role in influencing the results forthcoming from any study (see **Box E**). Ideally, sampling should be conducted at as many points as possible along a migration route to detect changes. If sampling at multiple points along the migration route is not possible, then at a minimum it is important to ensure consistency in sampling (see **section 6** below).

Box E: Considerations of population demographics in migratory birds:

The population size and demographic attributes of a species of migratory bird will differ depending on whether the birds are sampled at their breeding ground (where the population may be higher due to the presence of immature individuals), along the flyway/migration route (noting that not all individuals may migrate or may not migrate at the same time), or at their final destination (at which point a significant proportion of the population may have died during the migration).

5.4. Monitoring the conservation status of the species

Monitoring can be achieved through regular surveying of population status and trends. Accurate and consistent surveying will make it possible to apply adaptive management to the harvesting of species.

Surveying must be performed at predetermined times, intervals, and locations over time to ensure that any relevant trends are captured. The best timing for performing these surveys depends on the species in question. Information on such timing may be available in the literature, and when not, attempts should be made to take informed decisions based on scientific information available for comparable species.

Standardisation in surveying will help to ensure consistency in approach, which improves the confidence of wildlife managers that any observed changes are due to harvesting rather than other effects. For example, assessing populations

of migratory species during their breeding period must be done at the same times each year. If assessments of the population are early in one year, then some species may not have arrived at the breeding ground. If the assessment is undertaken late in another year, then large numbers of breeding animals may have succumbed to predation, and some individuals may have begun their migration. The results of the two assessments would be widely different and may be erroneously attributed to the impacts of harvesting.

Breeding provides the opportunity to place markers or tags on young animals as a means of monitoring populations or tracking movements. A range of devices are used on migratory species with different applications (see **Box F** for an example).

Box F: Example of use of a marking system:

A "Mark and Bank" scheme has been proposed for management of Saker falcon, *Falco cherrug,* harvests. This scheme proposes widespread marking of Saker chicks in Central Asia with specialised numbered tamper-proof rings which incorporate a microchip. A feather is taken from the chick, linked to the ring, and banked for future DNA comparison if necessary. The recording of such rings by trappers (encouraged to engage through on-line recording system offering entry to a lottery) as well as though participation by falconers and falcon hospitals in Gulf States, would enable measurement of the saker population size, scale of trade and ultimately adaptive management of trade.

Satellite trackers can be used on a wide range of species to determine distribution, migration routes and assessing mortality. The cost of the technology limits the numbers of individuals tagged but invaluable data can be collected on relatively small numbers of individuals. Variations in technology include tags which use cellular phone networks rather than satellites and acoustic tags are used on turtles. Tags or trackers may increase the mortality risk for certain species so must be used judiciously.

Larger numbers of individual animals can be marked in a variety of ways which are less expensive and pose less risk for the marked animal. These include bird-rings (or bands), microchips and physical marking such as clipping notches in specific patterns on turtle shells. It should be recognised that microchips have significant limitations as they are not immediately visible, and insertion involves an invasive procedure which entails some risk to the individual. Tracking of fish, such as sharks, by means of plastic dart tagging by recreational fishers as well as use of satellite tags can help in establishing the size and distribution of populations and is a means to involve the public in the process. Such inexpensive marking does enable adaptive management of species harvests if recapture recording can be managed.

Regular planned monitoring can be used to establish the initial harvest size and will allow application of adaptive management, which can modify off-take in response to population changes that may result from the harvest or from weather or other variable influences (see **module 2 section 9** for further information on adaptive management).

Box G includes an example of how a variety of monitoring methods can be used to determine harvest levels and apply adaptive management measures.

Box G: Example of monitoring to allow harvest determination and adaptive management practiced in Namibian Community Conservancies:

Wildlife populations in communal conservancies are monitored through annual game counts, waterhole counts and the Event Book monitoring system. Periodically aerial surveys are also conducted in some areas. These multiple methods are used to ensure that a variety of species can be monitored, and the results compared. Wildlife populations vary from year to year in response to changes in the environment such as drought, rainfall, diseases, predation, utilisation, and poaching. Annual road-based game counts and line transect counts are undertaken in conservancies, along with regular fixed foot patrols, which are collected in the Event Book by the community game guards. In preparation for annual game counts, the NRWG and the MEFT train community game guards and staff on game count methodology. Game count training is used as an opportunity to review broader wildlife monitoring techniques such as fixed patrols and the Event Book monitoring system. The predator sightings index is produced by dividing the number of physical sightings recorded during the year by the number of event books (one book per game guard) (MEFT/NACSO 2023. The state of community conservation in Namibia (Annual Report 2022). MEFT/NACSO, Windhoek.)

5.5. Frequency of assessment

The frequency with which harvested populations of migratory species should be assessed for the preparation of an NDF will depend on a number of factors, as well as the objectives of management. As a rule, however, the greater the potential risk to the species and its populations, the more frequently assessments should be made (see **Box H**). For example, if the

conservation status of the species is poor, if the level of harvest is high, if the life-history or recruitment rate of animals is slow, or if many range states are harvesting from the migratory population, then assessments should be performed more frequently (annually or biennially). However, if the conservation status of the harvested species is secure, levels of harvest are low, the species has a fast rate of recruitment, or only one range state is utilising the migratory species, then assessment can be undertaken less frequently.

Box H: Risk Assessment based on Life History Gradients and Geographic/Exploitation Gradients – See module 1.

Understanding life history traits, in concert with geographic distribution of populations and anthropogenic pressures, including wildlife trade, allow conservation scientists and managers to make robust predictions about the likelihood a population or species can withstand harvest for the international trade in wildlife. This framework of placing species along life history, geographic, and exploitation gradients is useful for both simplified and complex NDFs.

Species 1: Saltwater Crocodile *Crocodylus porosus.*

- IUCN Red List: Least Concern (2019). CITES Appendix II in Australia, Indonesia, Papua New Guinea, and parts of Malaysia (other populations in Appendix I)
- Life History trait Gradients: Delayed maturity (K) Large brood size with low investment (r) and moderately frequent reproduction (intermediate)
- Geographic and exploitation Gradients: Large contiguous range and occupancy in harvest areas. Harvest is large (71,000 skins in 2017) but managed through ranching and other means so overexploitation unlikely. Thus, gradient will tend towards "Easier to Sustain".

Species 2: Cape Mountain Zebra *Equus zebra zebra*.

- IUCN Red List – moved from Vulnerable (2008) to Least Concern (2015) and downlisted from CITES Appendix I to II at CITES CoP17.
- The Cape Mountain Zebra is a sub-species of Mountain Zebra found in South Africa with a separate sub-species *(E z hartmannae)* found in neighbouring Namibia.
- Life History Gradients: Slow maturing with small (single) brood sizes so K selected.
- Geographic and exploitation gradients: The population has increased from 100 to 5000 (approx.) individuals found in 75 sub-populations but these are subjected to active population management with low and managed harvest pressure. This would tend to move the gradient towards "easier to sustain".

6. Consideration of different harvesting areas with respect to migratory species and transboundary populations

Both migratory species and transboundary populations will, by virtue of their movement, occupy different areas at different times. These movements may be seasonal and predictable, in the case of migratory species or more random in the case of transboundary species. Different considerations may apply depending on the specifics of the area where the intended harvest is to occur. These areas could include:

1. Breeding or nesting areas

2. Non-breeding (e.g. wintering areas, feeding areas, stop-over areas)

3. Migratory Corridors / routes / flyways

4. Core-areas which are occupied by the bulk of the species population and peripheral areas where the species may be found intermittently, as a vagrant, or only when the numbers of the core-population are high (See **section 6.4** with **Box L**).

5. Areas outside of any national jurisdiction (e.g., international waters).

Further to this it is important to recognise that the *demographics of a population* may change during or after the migration and may influence both the selection of the time or site of harvesting (offtake) or the age, sex or size of individuals removed from the wild. This possible change in population demographics should also be considered in assessing the effects of harvesting.

6.1. Breeding or nesting areas

The Breeding Area can be considered as the geographic region where a migratory species, or population of the species, breeds and this may extend across multiple countries. Similarly, "nursing areas", such as estuaries and mangroves may be important for aquatic and marine species.

Some species may breed at both ends of the migration route whilst other species breed only at one destination. Breeding or nesting areas represent areas of special concern with respect to migratory species. Although not necessarily the case, the population abundance may be more easily monitored and managed within these areas, but care must also be taken to ensure that harvesting does not interfere with breeding processes such that population recruitment is jeopardized. **Box I** provides examples of harvesting that specifically relate to breeding and nesting areas and behaviour. There are also opportunities to enhance breeding success such as through nest site provision or enhancing food sources, as well as through protection of breeding and nursing grounds. There may be specific reasons to harvest in breeding areas, for example where young animals or eggs are the targets of harvest, or where the harvested product is the result of breeding activity.

Box I: Examples of harvest that specifically relates to breeding and nesting:

1) The harvesting of eiderdown. Although eiderdown pillows or quilts are now a rarity, eiderdown harvesting continues and is sustainable, as it can be done after the ducklings leave the nest with no harm to the birds.
2) Harvesting of nests for "Birds Nest Soup" is an historical tradition. Edible bird's nests are bird nests of swiftlets, mainly belonging to the genus *Collocalia*, created from solidified saliva, which are harvested for human consumption. Typically, the swiftlets nest in caves but recently houses, with no windows, have been built to facilitate nesting and harvest thus increasing sustainability. See CoP10 Doc 10.50
3) Olive ridley turtles (*Lepidochelys olivacea*) are listed as Vulnerable on the IUCN Red List and are in CITES Appendix I. The adults are noted for their synchronised mass-nesting behaviour, known as arribadas. In these events, the eggs of earlier-nesting females are often inadvertently dug up and destroyed by later females. Taking advantage of this, laws permit the local community to harvest and sell for human consumption, eggs from nests laid in the first few days of an arribada (but not subsequently). The local community in return contributes to the policing of nesting beaches to prevent illegal take of eggs later in the arribada (see **module 1**).

Box J provides an example of the impact of over harvesting in the breeding area of a species.

Box J: Example of unsustainable off-take in the Breeding Area of a species.

The Brazilian Guitarfish, *Rhinobatos horkelii,* is listed in CITES Appendix II and is considered Critically Endangered on the IUCN Red List. The species has undergone a population collapse because of overfishing, particularly yearlong fishing in shallow coastal waters which are important for breeding and pupping. This fishing has disproportionately affected larger pregnant females. The females live 14 to 28 years and undergo a 11 to 12 months pregnancy, producing 4 to 12 pups, so tending to "K" selection.

Consideration must also be given to the recruitment of the species. Some species have small numbers of young, such as eagles, bustards, sharks, rays, and leopard, and recruitment, following harvesting, may be slow. Other species may have relatively large numbers of young and this may moderate the effect of harvesting. Medium sized raptors, such as falcons and goshawks, breed annually producing two to five young. It is well established that there is a high mortality (approximately 70%) with death through starvation, predation, or accident, and this can be considered when modelling the effects of harvesting first-year birds of these species (See case study: Peregrine falcon).

Harvesting of eggs of various species of crocodilians and associated ranching programmes has generally benefited the conservation of these species. Hatchling crocodilians are known to have a high mortality rate. Harvesting of eggs, followed by rearing of hatchlings in a secure environment will significantly reduce mortality, whilst a proportion of hatchlings can later be released at an age and size where survival is much more likely. Similar considerations may also apply to the taking of young raptors for falconry and subsequent release after use.

6.2. Non-breeding (e.g., wintering areas, feeding areas, stop-over areas)

Wintering areas may be considered as the migration destination at which breeding does not occur.

These areas may provide a suitable location to allow harvesting as no disruption of breeding activity will occur. In the case of birds that breed in the northern hemisphere, the populations may be condensed within the wintering area. For example, Amur falcons, *Falco amurensis,* congregate in Southern Africa while the Sooty falcon, *Falco concolor,* migrates mainly to northern Madagascar. Surveying these species at those times and locations may facilitate population estimation.

Other species, such as salmon, may disperse widely during the non-breeding season. Harvesting of such species may be difficult to monitor and control. Overharvesting during non-breeding seasons may have devastating effects on the role of the species within the ecosystems where breeding occurs (see *Role in Ecosystems)*. By contrast, the European eel (*Anguilla anguilla*) breeds in the Sargasso Sea and larval forms migrate into coastal waters, off Europe, where they are harvested as "glass eels". The eels, in adult form move to brackish and then fresh water and migrate up rivers where further harvesting occurs. The mature form then returns to spawn in the Sargasso Sea. Over-harvesting, habitat change, and parasitic infections have resulted in collapse of populations of this species, which is now is listed in Appendix II of CITES and is assessed as Critically Endangered on the IUCN Red List.

Similar concerns may exist for species, such as the European populations of the saker falcon, *Falco cherrug,* which are generally subjected to good conservation measures in their breeding range, but which disperse to North Africa in winter where effective controls on harvesting are lacking.

6.3. Migratory Corridors

The migratory route or "corridor" followed by a migratory species is an important consideration when undertaking an NDF:

a) A flyway is a flight path used by large numbers of birds while migrating between their breeding grounds and their non-breeding (overwintering) quarters. There are well recognised flyways that connect between North and South America as well as between Eurasia and Africa and Asia and Australasia.

b) "Swimways" refer to the routes followed by marine or freshwater species and the significance of these is being increasingly appreciated. Over 1000 marine species depend, for survival, on free access across their whole migratory route which frequently involves both marine areas and rivers (as already discussed in 7.2 with respect to salmon and eels). Freshwater connectivity corridors are important in environmental planning for these species, particularly with respect to obstructions such as dams and weirs.

c) Migratory Corridors for terrestrial animals including transboundary populations, can be similarly complex and important for survival.

The migration routes are subject to their own special considerations that should be taken into account during the preparation of an NDF. The species may condense at certain points on the migration route and this may provide important opportunities to monitor populations. The bi-annual passage of migratory animals may be seen as an important opportunity for harvesting and this may be ingrained within the cultures of the communities through which they pass. Migration routes may cross multiple countries with varying ability to control and manage harvesting. **Box K** describes an example of harvest along a migration route.

a) Electrical infrastructure, including dangerous transmission and distribution lines as well as wind-turbines, create risks of electrocution and collision. Appreciation for these hazards is a necessary consideration during planning and development of such Infrastructure, while mitigation measures may be required to existing infrastructure and may be expensive, both in terms of unnecessary damage and outages, as well as implementation of mitigation technology.

b) Human made linear structures cause disruption of migratory routes of various species. These may include disease-control fences, dams, linear electrical infrastructure, roads and railways, Examples:

- **i.** The erection of disease-control fences may cause disruption of migratory routes for species, such as elephants, wildebeest, and zebra, cutting them off from important grazing and water resources.
- **ii.** Linear infrastructure such as road and rail are known to be barriers to migration of Saiga antelope and other Central Asian migratory mammals.
- **iii.** Dams, weirs, and other barriers create obstructions to the swimways of migratory fish.

The Scientific Authority should, also, consider any measures to mitigate these impacts, which may include under or over-passes for roads, adequate insulation applied to electrical infrastructure or building of fish ladders.

Box K: Example of harvesting on migration routes (flyway):

The common quail, *Coturnix coturnix,* undergoes an annual migration from western Asia, across the Black Sea, through Türkiye, across the Mediterranean Sea to North Africa. The flocks of quail are followed by migratory Sparrowhawks, *Accipiter nisus,* and this is seen as a significant cultural opportunity to local communities in both Türkiye and North Africa who traditionally trap sparrowhawks, train them rapidly, hunt the quail for food and then release the sparrowhawks when the quail flocks move on. By contrast to this sustainable harvesting, the quail are captured in huge numbers in large nets set up over hundred kilometres along the southern and southeastern Mediterranean coast and the species is now in decline.

6.4. Core and Peripheral areas

The "core" area for a species may be considered as the central region with greatest abundance for that species or population. "Peripheral" areas refer to areas outside of the core where the species is present during times of greater abundance or where the species occurs only as a vagrant (see **Box L**).

The term "core area" may have different implications for different types of species. In the case of large species such as elephant, large carnivores and large ungulates, core areas refer to conserved areas within which strong stable populations of the species are present.

In the case of other species, particularly those not confined by conservation area boundaries, the core area may be understood as the area where the species or population of the species is known to predominate. The boundaries of this may be fluid depending on population pressures, prevailing weather conditions, or food availability. If the population within the core area is abundant, the NDF must consider whether the scale of harvest within this area is sustainable. The species may be rare at the periphery of the core area, but individuals in such areas may be vagrants or pushed there through population pressures within the core area, so small harvests in such areas may be of negligible concern. Peripheral areas may include transboundary populations of species that are at the edge of their natural distribution range. Peripheral areas may become more important as distribution range change due to the impact of climate change.

On the other hand, it is important to establish whether small numbers of a species in a given area represent vagrants on the periphery of a strong population or a separate population which is doing poorly due to ineffective management or the presence of threats.

Box L: Species populations in "core" versus "peripheral" areas

Red-necked Falcon (*Falco chicquera*) in South Africa: This species is Near Threatened on the IUCN Red List, which occurs in Southern Africa including Namibia, Botswana, North-West Zimbabwe, and Mozambique (as well as further north). Within South Africa, it has a stronghold within the Kgalagadi National Park, and occurs sporadically in the north and west of the country where there are historic reports of breeding. Thus, it may be considered rare within South Africa but a harvest of individuals within South Africa, excluding the Kgalagadi Transfrontier Park, would hold no conservation significance for the species.

Saker falcon (*Falco cherrug*), in Central Asia: Populations within Mongolia and China are strong with a non-breeding surplus, limited by nest site availability. The strength of these populations results from provision of artificial nest-sites, management of illegal trade and mitigation of electrocutions on dangerous electrical transmission lines. In contrast to this, populations within areas of Central Asia to the west of China and Mongolia, are doing poorly as these conservation constraints have not been managed. It is necessary to recognize these as separate populations which require different management strategies and harvest restrictions.

The Atlantic Sturgeon (*Acipenser oxyrinchus)* is a species found in coastal waters and rivers in North America and the Baltic region. It has been assessed as Vulnerable on the IUCN Red List and is on Appendix II of CITES. Specimens of this fish are encountered, very rarely, in rivers in Ireland where these individuals can be considered as vagrants.

6.5. Areas outside of any national jurisdictions – international waters

Guidance relating to the preparation of NDFs for straddling stocks or specimens harvested in areas beyond national jurisdiction is provided in **module 5 section 3.9.2** on aquatic species and other additional guidance.

6.6. Changing demographics of migrating populations

It must also be recognised that the demographics of populations of migrating species vary during migration. Whilst moving from breeding to other areas, the overall number of individuals in a population and their age distribution will vary in response to mortality due to natural and anthropogenic (including harvest) causes (**Box M**).

Box M: **Example of varying demographics in response to mortality and harvesting**

In the specific case of raptor species, natural mortality may be as high as 70% for first year raptors. First year birds, and, in some species such as the Saker falcon, particularly larger female birds, may be in higher demand for use in falconry, leading to preferential harvesting. Simultaneously, larger female raptors may also be more vulnerable to electrocution than males when perching on dangerously constructed electrical transmission infrastructure.

7. Application of the precautionary principle for migratory species and transboundary populations

Consideration should be given to the fact that migratory species and transboundary populations may occur in two or more national jurisdictions that may increase the risk to the species. See **Box N** for an example of the application of the Precautionary Principle in practice through an adaptive management approach involving a species that includes transboundary populations.

Box N: Example of implementation of the Precautionary principle through an adaptive management approach to making NDFs:

The 2015 South African NDF assessment for the Leopard, *Panthera pardus,* would exemplify the application of the precautionary principle through an adaptive management approach. This species occurs in approximately 20% of the country and 68% of this is outside of protected areas. The protected areas provide secure core areas for the species and recreational hunting occurs outside of these areas, on private land. Transboundary populations are shared with Mozambique, Zimbabwe, Botswana, and Namibia. The NDF found that there was uncertainty relating to the abundance and population trends of the species in South Africa, uncertainty relating to the illegal killing of leopards in South Africa as well as in adjacent States and poor management of existing harvests. Based on these uncertainties, steps were recommended to develop better monitoring and management of any permitted harvest, and these included:

a) The development of guidelines for the allocation of leopard trophy quotas.
b) A conditional leopard trophy quota allocation in compliance with the new guidelines.
c) The development of national norms and standards for the management and monitoring of leopard trophy hunting and putative damage causing animals.
d) Full implementation of the norms and standards by the end of 2019.

Thus, the NDF recognised and addressed the knowledge deficits and proposed the means to address these, while imposing better controls on the harvest. Subsequent NDFs will take into account the significant improvements in the regulatory and management regime pertaining to leopards in South Africa.

8. The role of migratory species and transboundary populations within the ecosystem

Many migratory species play a significant role in their ecosystems and, in fact, may play disproportionate roles within their ecosystems compared to other species. For this reason, special consideration must be given to CITES Paragraph 3 of Article IV on the role of the species in the ecosystem.

Migratory species cyclically leave and re-enter ecosystems. This movement is usually associated with weather change and is seasonal. These cyclical movements may, thus, coincide with abundance of food or the migratory species, itself, may represent an essential source of food that enables predator species to breed and thrive. Similarly, the inflow of returning individuals may represent an influx of nutrients which are then redistributed and so contribute to the health of the ecosystem. In this consideration, the Scientific Authority may need to consult more broadly to determine the effects of reduction in the size of a population of a migratory species within an ecosystem. As already stated, it is also important to appreciate that a sustainable level of offtake (implying no risk of extinction) could still impact the role within the ecosystem (ecological extinction).

Scientific Authorities making NDFs for migratory species should carefully consider the role the species plays throughout its migratory route, its impacts on other species, and link this to ecosystem function.

Consideration of the role/function of migratory species and transboundary populations within ecosystems can be categorised as follows:

8.1. Direct Interaction (including trophic functions and cascades)

These functions would include pollination, seed dispersal, herbivory and predation. Examples of species providing such ecosystem functions would include:

(i) Migratory hummingbirds as pollinators,

(ii) Seed dispersal by a wide range of species such as flying foxes, hornbills and herbivores such as elephant.

(iii) Control of marine algae by herbivorous fish which prevent coral-to-microalgal phase shift in reefs.

(iv) Predation by sea otters on urchins so maintaining kelp forests and wolf predation on elk so maintaining willow ecosystems.

(v) Seasonal influx of migratory species is necessary for the survival of predators. Many species benefit from the cyclical influx of migratory species and depend on these as a resource when breeding, preparing for hibernation or migration. Eleonora's and Sooty Falcons are rare island dwelling species that rely on an influx of migratory passerines to feed their chicks. As a result of this, both species delay breeding to late northern summer to coordinate with the southerly autumn migration. Reductions in passerines could adversely affect both these species. Island dwelling pit vipers also rely on migratory passerines and have evolved a specialised metabolism which allows for long periods of fasting between migration influxes.

(vi) Seasonal influx of predatory migratory species may also be important in maintaining ecological balance. Migratory species often rely on the seasonal abundance of food in wintering or breeding areas and so provide a balance within ecosystems through control of species which may otherwise be detrimental to the ecosystem or are pests to crops. This may be seen though the influx of insectivores including migratory raptors to Southern Africa during the northern winter and which predate on the winged termites and quelea species (*Quelea* spp.). The Saker falcon feeds on rodents within its steppe-land breeding range and can control these in agricultural areas. The provision of artificial nest -sites has been used to increase Saker numbers, benefiting conservation efforts, and to support biological control of pest species.

8.2. Indirect interactions (structural functions)

These functions would include habitat creation, ecosystem engineering, nest-site provision.

(i) Habitat creation and effect on habitat heterogeneity through behaviour reliant on population density such as wallowing by American Bison and tree-destruction as well as water-hole creation by African Elephant. Overabundant populations, of such species, on the contrary could have negative effects on habitats, ecosystems, and on the breeding of other species such as tree-nesting raptors.

(ii) Ecosystem engineering such as conversion of woodland to mixed savannah-woodland by African elephant or by bottom dwelling rays that create micro-habitats for various tiny invertebrates while excavating for their food.

(iii) Nest-site and habitat creation such as creation of cavities within baobab trees by elephant providing nesting and roosting sites for species such as Mottled Swift and Bohm's Spinetail.

(iv) Competition between species may have indirect effects if this balance is altered. The presence of lions within an ecosystem influences the numbers of smaller predators such as cheetah and wild dog. When lions are reduced or removed, the numbers of these species may increase with resultant

impacts on the prey base of these species. Another example is the presence of tiger sharks in seagrass meadows that reduces or discourages grazing by dugongs, sea turtles, and other species. This in turn impacts seagrass ecosystem structure and function.

8.3. Diffuse interactions (ecosystem level functions)

This would include nutrient cycling or redistribution.

(i) Communally nesting or roosting birds, if in large numbers, can, through fertilization at roosting or nesting sites, create biodiversity "hotspots" or change local ecosystems. This can be seen through communal roosts of migratory species such as metallic starlings (*Aplonis metallica*) or Amur falcons (*Falco amurensis*).

(ii) Large collections of nesting seabirds introduce quantities of sea-derived nutrients to the ecosystem in the form of guano. Declining numbers of nesting birds, resulting from depleted fish stocks or introduced predators, can change the local ecosystem.

(iii) The carcasses of Pacific salmon when spawning contribute considerable sea-derived nutrients to forest ecosystems with effects measurable some distance from the rivers and seen to vary with large annual fluctuations in the numbers of spawning fish.

(iv) Cetaceans are important in carrying nutrients, such as nitrogen, from the depths where they feed back to the surface via their faeces, where these are important for primary producers in oligotrophic ecosystems near the surface.

8.4. Intra-specific interactions (within-species processes)

This would include population movement (including migration) and reproductive aggregations.

(a) "Green-wave surfing" and other seasonal migration by ungulates. This behaviour can be affected by population continuity, age-structure facilitating transmission of knowledge and landscape connectivity.

(b) Reproductive aggregations. Sufficient population density may be necessary to overcome sperm limitations in spawning. Similarly, population size may be critical for lek-formation. Raptors may disperse when numbers are critically depleted resulting in breeding failure (Allee effect).

The Scientific Authority should, where uncertainty exists, take a precautionary approach through harvest / offtake limitation and establishment of measurement protocols which allow an adaptive management system. *The CITES NDF Checklist can be adapted to accommodate these considerations for migratory species.* **Box O** provides a case study of NDF-related considerations for Peregrine Falcons (*Falco peregrinus minor*) in the Western Cape, South Africa.

Box O: Example of Assessment for a Harvest Request - Wild Peregrine Falcons, *Falco peregrinus minor,* in the Western Cape, South Africa.

The following example is a hypothetical case study that is provided to illustrate the use of scientific data and accepted international norms. It also illustrates the application of a precautionary approach and is included to assist Scientific Authorities in incorporating and evaluating scientific evidence. The example is that of a population of *Falco peregrinus minor* which is neither migratory nor transboundary, however some subspecies of the peregrine falcon are migratory, and this subspecies can be considered to include populations which are transboundary. In this case, there is no implication requiring development of an NDF, but is simply provided to illustrate aspects that may be considered in that process.

The hypothetical case considers a request for the harvesting of 10 immature (nestlings or first-year birds) for the purpose of use as falconry birds in the western Cape Province of South Africa. Following use, the intention will be to release the birds back to the wild within the Western Cape. There has been previous permission to harvest a smaller number of these birds in the Western Cape. There is no trade in wild-taken specimens of this species within South Africa nor evidence of illegal trade.

The Peregrine falcon is listed as Least Concern on the IUCN Red List with most populations stable or increasing. Under South African National Legislation the peregrine falcon is considered "of least concern" and is protected. There is evidence of a strong population of this species in The Western Cape[1] and evidence of increasing populations in urban settings[2]. The species remain in CITES Appendix I but, in this case, the intention to harvest the specimens in not for purposes of trade.

There are an estimated 200 to 400 breeding pairs of peregrines in the South Western Cape[1] and the breeding success for this species has been estimated to vary from 1.1 to 1.37 chicks per year [3]. Based on this, a very cautious calculation using the lowest of these estimates for peregrine chicks bred in the South Western Cape per annum would give a number of at least 220 young birds. This number must be significantly higher if extended to the whole of the Western Cape.

Population modelling studies have been performed elsewhere to establish the basis for calculating falconry harvests:

1. A very limited harvest of peregrine falcons is permitted, under EU "Birds Directive" derogation, in the Republic of Ireland. Scientific modelling to show the effects of this harvest has been undertaken[4]. This demonstrates that a harvest of 5% of chicks would have no effect on the population and 10% would be sustainable.
2. A study was undertaken by the United States Fish and Wildlife Service to estimate the effect of allowing a harvest of peregrines for the purposes of falconry. The conclusion of this study was that a 5% harvest of young (first year) birds would be undetectable in any population study[5].
3. The CMS/UNEP Saker Task Force determined that a 5% harvest of young saker falcons, in Central Asia and the near east, for falconry would be acceptable[6].

Indeed, a 5% harvest of young falcons appears to be internationally acceptable as a level at which such a harvest would have no impact on population levels.

Considering the request for a permit for the harvest of 10 peregrines: This number is below 5% of the production of wild peregrines within the province and will have no measurable effect on the population of peregrines. We must also note that most of these birds will, ultimately, be released back to the wild. Similarly, a harvest of this size will have no effect on the role of the species within the ecosystem.

This example can be applied to the Simplified Assessment in **module 2** (See **Box P** below). In a more formal Simplified Assessment, further information or justifications should be provided for each score given. The example in **Box P** has been abbreviated for illustrative purposes.

[1] Pepler D, Lombard A, Oettle E, Populations of Peregrine Falcon in the South Western Cape. South Africa. (2008)
[2] Altwegg R, Jenkins A, Abadi F, Nest boxes and immigration drive the growth of an urban Peregrine Falcon Falco peregrinus population. Ibis (2013)
[3] Jenkins A, Ostrich - Journal of African Ornithology 71(3-4):385-392 (2000)
[4] Sielicki J, Population modelling of Peregrines in Ireland – Conference Proceedings International Conference on the Stewardship of Biodiversity and Sustainable Use. (2016)
[5] Final Revised Assessment, Management Plan and Implementation Guidance: Take of Nestling Peregrine Falcons in the Contiguous United States and Alaska for Use in Falconry – US Fish and Wildlife Service, Division on Bird Management (2006)
[6] Kovács, A., Williams, N.P. and C.A. Galbraith (2014) Saker Falcon Falco cherrug Global Action Plan (SakerGAP), including a management and monitoring system, to conserve the species. CMS Raptors MoU Coordinating Unit, Abu Dhabi. CMS Technical Series No. XX.

Box P: Simplified Assessment of the Peregrine Falcon (*Falco peregrinus*) Case Study (Box O)

Table 2C. Scoring criteria for the five variables of interest in the **Simplified Assessment** *framework*.					
	Number of points			**Score**	
Criteria	**1**	**2**	**3**		
Annual Harvest level	Low	Medium	High/Unknown	1	
Area of distribution	Large	Medium	Small/Unknown	1	
Life-history	Fast	Medium	Slow/Unknown	2	
Illegal trade	**If the status of the species is** threatened or Unknown give a **max score of 1 point.**			0	
Conservation or threat status	If levels of illegal trade are inferred by reference to seizure data, they should be included under "Annual harvest level". If illegal trade is known to be occurring, but *levels* are unknown give a **max score of 1 point.**			0	
Final Score	(If score lower than five (5) = **trade is non-detrimental** (record the score and justification in the worksheet provided). If the Simplified NDF score is equal to or greater than five (5) then a **Comprehensive Assessment should be undertaken**.			4	

Annex 1 – Online resources for migratory species

This Annex is designed to list and provide links to reputable online resources which are available to the Scientific Authority, and which can provide background information. In the development of an NDF, Multinational Agreements may determine whether trade in, or use of, a species is permissible. Other sources can be used to establish the conservation status of the species. There are a range of resources which can provide this baseline information.

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is an MEA that regulates the taking of migratory species listed in Appendix I, directly affecting national and international use and trade. It is important that the CITES Scientific Authority is aware of the listing of migratory species with respect to CMS, as well as other MEAs which may limit use and may apply different obligations on exporting states that are Party to both Conventions. Similarly, should be noted that there may be additional instruments under CMS that may affect trade in these species and may provide importand information when developing an NDF:

Description and hyperlink	Comments
CMS Website	
CMS Convention Text	
CMS-listed Species	Database of all species listed on CMS Appendix I or II
CMS Agreements	Links to the 7 species-based legally binding Agreements under CMS
CMS MOUs	Links to the 19 species-based Memoranda of Understanding under CMS
CMS Special Species Initiatives	Links to 4 initiatives on CMS species: ACI, CAF, CAMI, and SSM.
CMS Action Plans	Links to single and multi-species Action Plans for CMS listed species
Concerted Actions	Past and present Concerted Action projects on CMS species
List of species included in CMS Appendix I, indicating their status in the CITES Appendices | CMS	List of species included in CMS Appendix I, indicating their status in the CITES Appendices | CMS

The Agreement on the Conservation of African-Eurasian Migratory Waterbirds, or African- Eurasian Waterbird Agreement (AEWA) is an independent international treaty developed under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and currently includes in excess of 250 species. The Agreement provides conservation related data Including single species action plans which may be relevant to specific NDFs.

The China–Australia Migratory Bird Agreement (CAMBA) is a bilateral treaty between Australia and China that aims to protect migratory birds and their environment between the two countries. Article II prohibits both China and Australia from taking either migratory birds or their eggs unless otherwise permitted in the domestic laws of the respective country given certain circumstances. Some of these circumstances include if such actions are for: "scientific, educational, propagative" or other purposes that align with the motives of the Agreement, the reason is to protect people or property, or it is during hunting season as established in Article II. For instance, the Department of Primary Industries, Parks, Water and Environment has permitted Tasmanian Aboriginal individuals to harvest shearwaters, which is a historic part of their muttonbirding tradition. This Article further states that both parties shall not sell, purchase, or exchange migratory birds or eggs, but may determine a criterion for hunting these birds given reproduction rates needed for survival. During the 2010 to 2011 and 2013 to 2014 breeding seasons, cultural harvesting for Tasmanian Aboriginals was terminated to ensure bird populations returned to their original levels. Further Information can be found here.

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) implements four international conservation treaties that the United States entered into with Canada in 1916, Mexico in 1936, Japan in 1972, and Russia in 1976. It is intended to ensure the sustainability of populations of all protected migratory bird species. The law has been amended with the signing of each treaty, as well as when any of the treaties were amended, such as with Mexico

in 1976 and Canada in 1995.The Migratory Bird Treaty Act (MBTA) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior United States Fish and Wildlife Service. Birds protected under the Act are listed on this site as are other related Acts and conservation programs.