RAPTORS MOU

Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia

Distribution: General

UNEP/CMS/Raptors/TAG3/Doc.4.1a

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AMENDMENTS TO THE LIST OF SPECIES ON ANNEX 1 TO THE RAPTORS MOU

Prepared by Coordinating Unit of the Raptors MOU

Introduction

1. As part of Activity 1, Task 1.1a, of the TAG WorkPlan, TAG was asked to consider whether there are further possible candidate species that should be proposed to be listed on Annex 1 to the Raptors MOU. As highlighted in the relevant document to MOS2 (UNEP/CMS/Raptors/MOS2/13/ Rev.1)[1], species can be proposed on the basis of: (1) updates to taxonomy and nomenclature to keep pace with current understanding; and, (2) enhanced understanding of their movements, which suggests they can be considered to be a 'migratory species' according to the CMS definition used by the Raptors MOU.

2. Since MOS2, there have been no taxonomic / nomenclature changes that result in the need for any proposed additions to, or removals from, Annex 1.

3. Since MOS2, working via the online WorkSpace, TAG members have already assessed a number of species, which were considered potential candidates for Annex 1 on the basis of their movements. It was concluded that only Northern Boobook *(Ninox japonica)* meets the CMS definition of a 'migratory species' on the basis of current knowledge. Annex 1 to this document repeats the information posted on the online Workspace regarding Northern Boobook.

4. Since then, Israel has proposed that Bonelli's Eagle (*Aquila fasciata*) be considered as a candidate for Annex 1 listing on the basis of its movements and have presented some tracking evidence from individuals fitted with satellite tags in Israel. Further information has been compiled from the available literature and is presented at Annex 2 to this document. TAG is asked to consider the available evidence and to provide an opinion on whether the evidence supports listing Bonelli's Eagle on Annex 1 to the Raptors MOU.

Background to TAG interpretation of 'migratory' as it applies to raptors

5. The Raptors MOU adopts the CMS definition of a 'migratory species'. According to the CMS definition in the original CMS Convention text (23 June 1979), a species can be considered a 'migratory species' where "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".

6. In October 1988, at the 2nd Conference of Parties to CMS, Resolution 2.2 was adopted and provides further clarification, as follows:

> *1. Adopts the following guidelines for the application of certain terms of the Convention interpreted in Article 1, paragraph 1:*

[1] https://www.cms.int/raptors/en/document/proposals-amendments-raptors-mou-andor-its-annexes-african-eurasian-migratory-birds-of-prey

CMS UN environment United Nations Environment Programme

(a) In the interpretation of the term "migratory species" in Article 1, paragraph 1(a):

(i) The word "cyclically" in the phrase "cyclically and predictably" relates to a cycle of any nature, such as astronomical (circadian, annual etc.), life or climatic, and of any frequency;

(ii) The word "predictably" in the phrase "cyclically and predictably" implies that a phenomenon can be anticipated to recur.

7. Recalling the way in which the CMS definition of a 'migratory species' has previously been interpreted by TAG, it is relevant to re-visit the TAG proposals for Annex 1 listing which were shared with MOS2 in document UNEP/CMS/Raptors/MOS2/13/Rev.1[2]. In that document evidence in relation to the movements of the species in Table 1 (below) were considered and all but two were recommended by TAG to be added to Annex 1; this was subsequently endorsed by MOS2 and as a result 18 species are now included on Annex 1.

Table 1. List of species considered by TAG in advance of MOS2 as candidates for listing in Annex 1 of the Raptors MOU on the basis of evidence of their migratory behaviour.

Scientific name	Common name	Reason for consideration	TAG recommendation to Signatories
Gypaetus barbatus	Bearded Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Necrosyrtes monachus	Hooded Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Gyps africanus	White-backed Vulture	Listed in Inf. 13.3 Annex 8b	Consider adding to Annex 1
Gyps bengalensis	White-rumped Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Gyps indicus	Indian Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Gyps tenuirostris	Slender-billed Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Gyps rueppelli	Rüppell's Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Gyps himalayensis	Himalayan Griffon	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Gyps coprotheres	Cape Vulture	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Sarcogyps calvus	Red-headed Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Trigonoceps occipitalis	White-headed Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Torgos tracheliotos	Lappet-faced Vulture	Additional African-Eurasian Vulture species	Consider adding to Annex 1
Circaetus pectoralis	Black-chested Snake-eagle	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Circaetus beaudouini	Beaudouin's Snake-eagle	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Circaetus cinereus	Brown Snake-eagle	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1

[2] https://www.cms.int/raptors/en/document/proposals-amendments-raptors-mou-andor-its-annexes-african-eurasian-migratory-birds-of-prey

Scientific name	Common name	Reason for consideration	TAG recommendation to Signatories
Polyboroides typus	African Harrier-hawk	Listed in Inf. Doc 13.3 Annex 8b	Not recommended for addition on basis of current evidence
Hieraaetus ayresii	Ayres's Hawk-eagle	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Falco cuvierii	African Hobby	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1
Falco jugger	Laggar Falcon	Suggested for consideration during TAG2	Not recommended for addition on basis of current evidence
Asio capensis	Marsh Owl	Listed in Inf. Doc 13.3 Annex 8b	Consider adding to Annex 1

8. In the relevant MOS2 document, justifications were provided separately for each species but, in general terms, aside from the conservation imperative of the poor and worsening IUCN Red List status of the African-Eurasian vulture species as a group, the rationale for proposing the vulture species for Annex 1 included that:

a. Vultures fit under the Raptors MoU taxonomically and with three species already listed on Annex 1 (Cinereous Vulture, Egyptian Vulture and Griffon Vulture), adding the other African-Eurasian vultures would improve the consistency of Annex 1.
b. They can undertake vast spatial movements (sometimes over hundreds of thousands of km^2) which were poorly understood.
c. They are known to have very large foraging ranges and to complete cyclical seasonal movements in response to migratory ungulate populations.
d. There are differences in the pattern of movements of adults during, compared to outside, the breeding season and of immature birds versus adults with individuals crossing international borders on a regular basis and some tracked birds passing through several countries in a year.

9. For the other species added to Annex 1 (Black-chested Snake-eagle, Beaudouin's Snake-eagle, Brown Snake-eagle, Ayre's Hawk-eagle, African Hobby and Marsh Owl) while there were significant gaps in knowledge of their movements, TAG felt there was sufficient evidence of movements consistent with the definition of 'migratory' to support their listing on Annex 1.

10. The current document invites TAG3 to review the proposals of adding the Northern Boobook *(Ninox japonica)* – see Annex 1 to this document – *and the* Bonelli's Eagle *(Aquila fasciata)* – see Annex 2 to this document – to the list of species on Annex 1 of the Raptors MOU. Should TAG conclude that either or both of these species be proposed for listing on the Raptors MOU, the Category within which they are listed in Table 1 of Annex 3 to the MOU, will automatically flow from their respective threat status as assessed by IUCN.

Action requested

TAG is requested to consider and agree proposals to amend the List of African-Eurasian migratory birds of prey in the Raptors MOU (Annex 1) and the corresponding amendments to the Categorisation of African-Eurasian migratory birds of prey (Table 1 of Annex 3) covered by the Action Plan.

Annex 1: Information compiled on the Northern Boobook *(Ninox japonica)* movements

HBW (Movements): Migratory except on Okinawa Is, Miyako Is, Yaeyama Is, Taiwan (including Lanyu)(1,2), and probably also on Calayan I, N Philippines(3). Migrants arrive on nesting grounds from early Apr–mid May and remain until late Sept in N to Oct or early Nov farther S (1). Many migrants winter on the Greater and Lesser Sundas, where they overlap with resident tropical Ninox populations; some also in E China. Record of beach-washed specimen on Ashmore Reef, NW Australia, in 1973, probably japonica(4); other vagrants include live bird photographed on St Paul I, Alaska, in Aug 2005 (5) and carcass recovered on Kiska I, Alaska, in Aug 2008 **.**

Notes on taxonomy

BirdLife datazone (18 June 2018) Ninox scutulata (not a migrant), N. japonica (full migrant), N. randi (not a migrant) and N. obscura (not a migrant) (del Hoyo and Collar 2014) were previously lumped as N. scutulata following Sibley and Monroe (1990, 1993).

Family	Scientific name	Common name	2017 IUCN Red List Category	Migratory status in BirdLife dabase
STRIGIDAE	Ninox japonica	Northern Boobook	LC	Full Migrant

References

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2) Lin Wen-Loung, Severinghaus, L.L., Tseng Hui-Yun & Lin Si-Min (2013). Genetic differentiation between migratory and sedentary populations of the Northern Boobook (Ninox japonica), with the discovery of a novel cryptic sedentary lineage. Journal of Ornithology 154(4): 987–994.

3) King, B. & Icarangal, N. (2008) Territorial behaviour of the Northern BoobookNinox japonica, on Calayan Island, northern Philippines. Forktail 24: 124-125.

4) Schodde, R. & van Tets, G.F. (1981). First record of the Brown Hawk-Owl Ninox scutulata from Australasia. Emu 81(3): 171.

5) Yerger, J.C. & Mohlmann, J.D. (2008). First North American record of Brown Hawk Owl (Ninox scutulata) on Saint Paul Island, Alaska. North Amer. Birds 62(1): 4-8.

Annex 2: Information compiled on Bonelli's Eagle (*Aquila fasciata*) movements

Bildstein (2006) lists Bonelli's Eagle as a Partial Migrant. De Juana and Garcia (2015) consider adults as largely resident, though some adults may wander some distance outside the breeding season. Mebs and Schmidt (2006) note adults are sedentary, however their range in winter can be significantly larger than during the breeding season. They noted that juveniles disperse more widely, probably to avoid competition for food with territorial adults. Ferguson-Lees and Christie (2001) note that juveniles disperse various distances and are sometimes recorded on migration routes e.g.in Middle East, wintering in areas where adults are absent.

Bonelli's Eagle has been listed as a partial migrant and demonstrates predictable natal dispersal with fledglings leaving their nesting site in order to avoid competition for food with territorial adults (Cheylan *et al*., 1996; Bildstein, 2006). Both juvenile and immature birds disperse more widely than territorial adults (Real & Mañosa 2001; Cadahia *et al.,* 2005; Balbontin & Ferrer 2009), but breeding individuals do extend their territories outside of the breeding season as demonstrated by 18 birds radio tracked in Catalonia between 2002-2006 (Bosch *et al.,* 2010). Seven adult breeding birds in Spain have also been shown to wander on long trips (more than 15 km) beyond their territorial boundaries (Perez-Garcia *et al.,* 2013). Bosch *et al,* (2010) present evidence to suggest that adult eagles should not be assumed to be purely territorial. They note that the large areas of the home-range of breeding eagles outside the breeding season, which included locations far from the nests, indicates that outside the breeding season, breeding eagles exploit similar areas to non-breeding eagles. This change in the use of space with respect to the season coincides with the specific foraging patterns and different prey consumed outside the breeding season (Real 1991, Moleón *et al.* 2007). Seasonal change in range use seems to be common in other raptors (Marzluff *et al.* 1997, Haworth *et al.* 2006).

Hernández-Matías *et al*. (2013) used monitoring, ringing, and bibliographic data from the period 1990–2009 from 12 populations to identify that all local populations of Bonelli's Eagle in western Europe are thought to belong to a single, spatially-structured population operating as a source-sink system, whereby dispersal sustains all other local populations.

Liuery *et al,* (2016) use data from a 24-year study to confirm the importance of emigration from Spain as an intrinsic factor in the survival of range-margin sites in France. The Spanish population has been shown to exchange individuals with this remnant population in south-eastern France, which numbered 30 pairs in 2010. However, there are also seven ring recoveries in Spain from birds ringed in southern France, which indicates a cyclical nature to this transboundary flux. The juveniles that have been recorded returning to their natal area as non-breeding components of the population reflect a cyclical nature to the movement of pre-adult life stages (Ferrer, 1993). Hernández-Matías *et al.* (2010) also show natal dispersal and territorial recruitment between French and Catalan populations (Fig 1). In this study, natal dispersal distance appeared to be highly related to sex, in that female Bonelli's eagles recruited at larger distances than males. These cross-boundary studies reveal that pre-adult dispersal connects several local Bonelli's eagle populations, including the isolated French nuclei, and that conservation actions must thus be undertaken at an international level.

Cadahía *et al's* (2010) tracking of 14 juvenile Bonelli's eagles during dispersal in Spain led them to suggest that since dispersal areas are located over territories managed by different autonomous communities with particular jurisdictions, there is a need for organization among regional governments to undertake inter-regional conservation measures targeting the non-breeding fraction of Bonelli's eagle population. An adequate Action Plan for the species will need a combination of international and inter-regional coordinated actions aimed at improving juvenile survival.

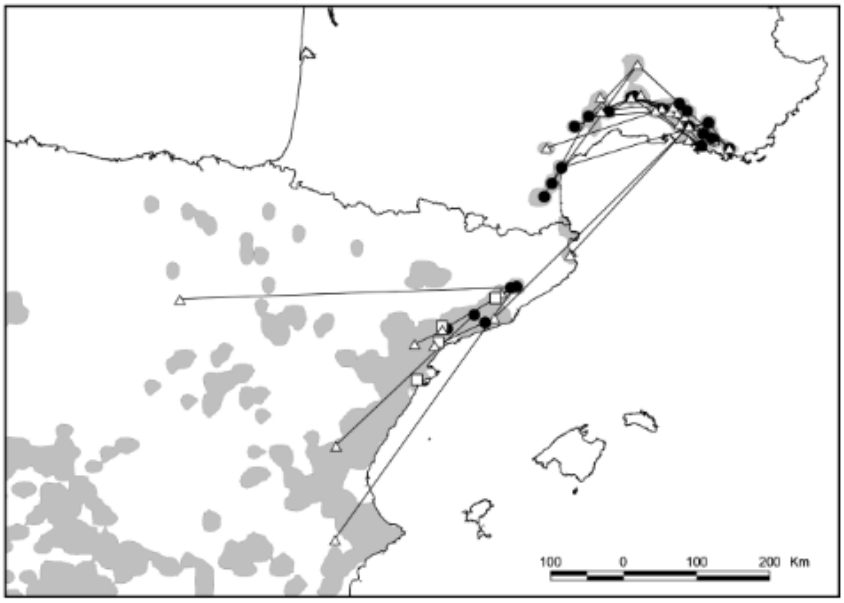


FIG. 1. Recruitment of Bonelli's Eagles in southeastern France and Catalonia (northeastern Spain). Lines join natal sites (solid circles) and recruitment sites (empty triangles). Recruitment of marked birds of unknown origin is also shown (empty squares). The current distribution range of Bonelli's Eagle around the studied populations is represented by the shaded area.

Hernández-Matías *et al.,* (2015) support the concept of nomadism as they posit that Bonelli's eagle populations are comprised of two fractions – non-territorial and territorial birds that have markedly different movements. After post-fledging dependence but before recruitment, non-territorial Bonelli's eagles (under three-years old) pass through a transient nomadic phase, in which they perform long-distance movements to dispersal areas. This leads to individuals being recorded on migration routes, such as the Straights of Gibraltar (Ferguson-Lees & Christie 2001). Even adults that maintain breeding territories can have a significantly larger range in winter (Mebs and Schmidt, 2006).

Dispersing birds perform long-distance movements to dispersal areas (Cheylan *et al.* 1996, Real and Mañosa 2001, Cadahía *et al.* 2007b). During the dispersal period, Real and Mañosa found that birds perform medium- to long-distance movements and often settle for extended periods in dispersal areas (geometric mean is 101km, range 1 – 1020km). The dependence on immigrating eagles appears particularly strong in the most isolated populations in north, northwest and eastern Spain, and in France. Importantly, these dispersal areas may be shared by individuals from different populations and, therefore, conservation actions can positively affect both nearby and distant sub-populations (Rollan, Hernández-Matías & Real, 2016). Cadahia *et al*. (2010) identify individuality in the relative use of dispersal areas by juvenile Bonelli's eagles. There are important management implications for this individuality and the authors suggest that conservation efforts should focus on the whole landscape matrix of man-managed ecosystems rather than in a few clearly delimited geographic areas. Because heterogeneous spatiotemporal use of home-ranges by eagles is evident, in which some patches are used much more than others, this should stimulate further investigation into the ecological, physical and biological patterns of these selected areas.

Tracking of Bonelli's eagles has proven informative. Satellite tracking of two juvenile birds from the Community of Madrid LIFE Bonelli's programme has shown individuals travelling several hundreds of kilometres from the capture site and crossing the Strait of Gibraltar to explore sites Morocco and Senegal (LIFE Bonelli, Quercus 2016). Additionally, satellite tracking of another two juvenile birds over four-years showed natal dispersal of 441 km; the birds demonstrated a lack of philopatry through their long travelling episodes and exploration of different regions (Cadahia *et al*., 2009). Commentary from 'Birding The Strait ' blog 02 February 2017 (http://birdingthestrait.com/blog/photographing-large-eagles-in-andalusia/): "A significant number of juvenile and immature eagles from all over the Iberian

Peninsula disperse South and reach Andalusia. Here, they concentrate in regions where food sources are abundant. This is the case of the Bonellí´s Eagle. Indeed, up to 15 (!) different individuals have been recorded simultaneously in La Janda, the Strait of Gibraltar, in previous weeks."

Many more satellite and radio-tracking studies have commenced in 2018 with more than 100 birds being tracked across Spain, Portugal, France and Italy. Studies initiated in recent years include 26 birds in Navarra (since May 2012), 85 birds in Spain (since Jan 2014) and 37 birds in southern France (since Nov 2009). Whilst these studies will gather a large quantity of valuable data they will take some years to complete and analyse. The Life Bonelli project confirmed the dispersal of two juvenile birds across Spain and into Africa (Figs 2 and 3). Furthermore, satellite tracking of ten 1st and 2nd year birds originating from Israel (kindly provided by O. Hatzofe) demonstrates extensive transboundary movements (Fig 4). Some further clarification is needed on the origin of these individuals as some individuals tracked may have been released from captivity. O. Hatzofe comments 'According to our data from the breeding territories and from a single adult bird track – adult are resident. Yet, all the young perform a migration regarding the direction and the season. They only vary from each other in the distance of their movement.'

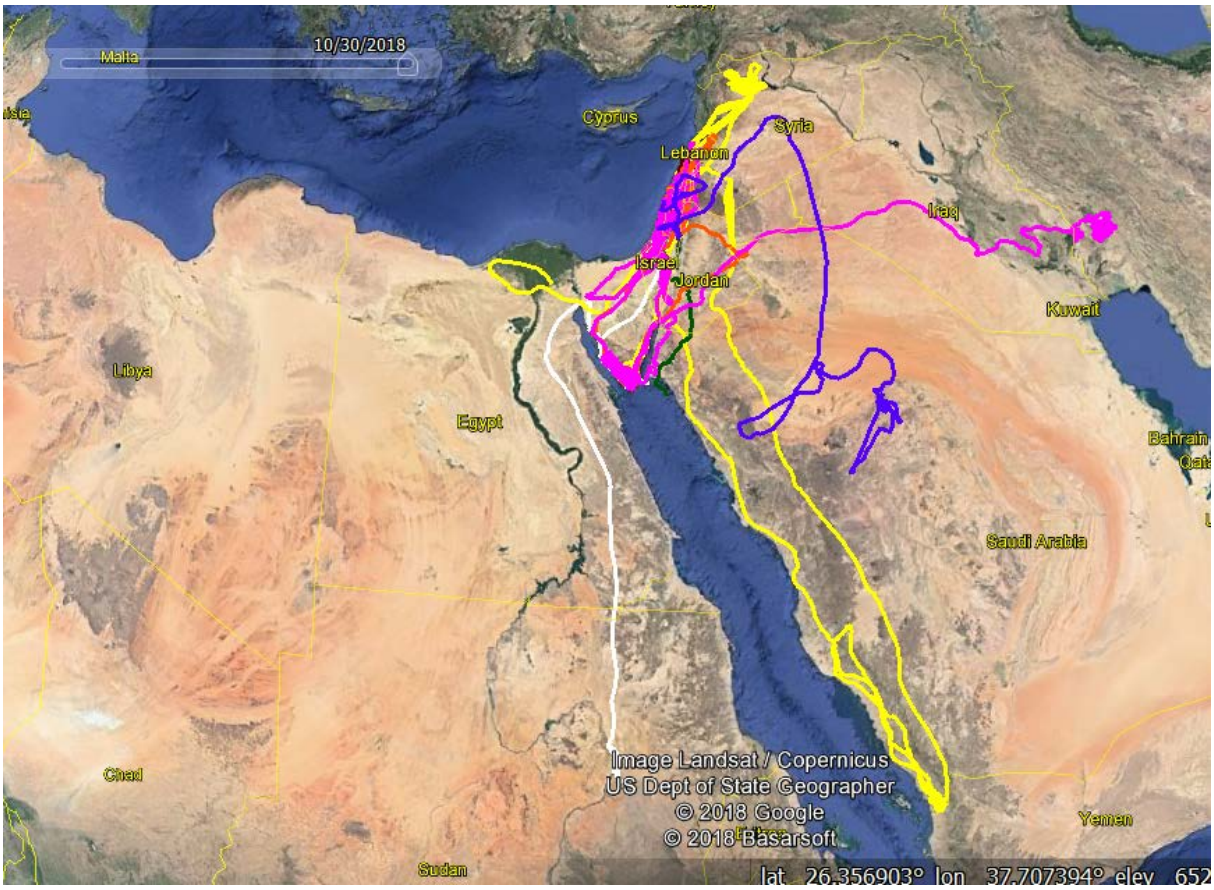
Arroyo, Ferreiro & Garza (1998) found the unacceptably high proportion of juvenile mortality in their study (63.6%) was due to human persecution and electrocution. These pervasive threats have been corroborated by Real & Mañosa (2001) and the highest levels of mortality were identified in juveniles dispersing furthest from the nest. Long-term monitoring has further contributed to this evidence with a total of 150 Bonelli's eagles found dead or injured in the period 1990–2014. Non-territorial (i.e. juvenile disperser) birds were more often electrocuted than territorial birds (69.4% v. 50%) (Hernández-Matías *et al.,* 2015). These findings support the need for protection of this species as it disperses away from its core home range, so that recruitment is maintained and the demographic dynamics of sub-populations can be sustained.

Bonelli's Eagle is Least Concern globally but with a decreasing population trend. The species is listed as Near Threatened on the European Red List of Birds (2015) and can be considered a Species of European Conservation Concern. TAG may wish to discuss how the precautionary principle should be applied with regard to different life stages which have different movement patterns and may be facing differing threats or differing threat intensities.

Figure 2. Movements of a wild-bred juvenile released from a different part of Spain; one of the two juveniles in the Life Bonelli project (Turón) tracked across the Strait of Gibraltar into Africa.

Figure 3. Second of the two Life Bonelli's eagles ('Zahara' that was captive-bred) and its movements across Spain and the Sahel.

Figure 4. Current tracking data of 10 1st and 2nd year Bonelli's eagles from the Israel Nature and Parks Authority (origin – wild or captive bred to be confirmed).



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