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**PROPOSAL FOR THE INCLUSION OF
THE AFRICAN WILD ASS (*Equus africanus*)
ON APPENDIX I AND II OF THE CONVENTION**

Summary:

The Government of Eritrea has submitted the attached proposal* for the inclusion of the African Wild Ass (*Equus africanus*) on Appendix I and II of CMS.

A proposal for the inclusion of the same taxon on Appendix I of CMS has been submitted independently by the Government of Ethiopia. The proposal is reproduced in document UNEP/CMS/COP12/Doc.25.1.7(b).

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PROPOSAL FOR THE INCLUSION OF THE AFRICAN WILD ASS (*Equus africanus*) ON APPENDIX I AND II OF THE CONVENTION

A. PROPOSAL

Inclusion of all subspecies of African wild ass *Equus africanus* to Appendix I and Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals:

B. PROPONENT: ERITREA

C. SUPPORTING STATEMENT

1. Taxonomy

This proposal does not follow the current nomenclatural reference for terrestrial mammals adopted by CMS, i.e. Wilson, D. E. & Reeder, D. M. (ed.) (2005): Mammal Species of the World. A Taxonomic and Geographic Reference. Third edition, John Hopkins University Press. The proposal follows instead the nomenclature for the taxon adhered to by CITES, which lists the African Wild Ass as *Equus africanus* to emphasize the wild form of the species in preference to synonymous name for the domestic form, *Equus asinus*.

- 1.1 Class Mammalia
- 1.2 Order Perrisodactyla
- 1.3 Family Equidae
- 1.4 Genus, species or subspecies, including author and year
 - Equus africanus* Heuglin & Fitzinger, 1866
 - E. a. africanus* Heuglin & Fitzinger, 1866
 - E. a. somaliensis* Noack, 1884

1.5 Scientific synonyms: *Equus asinus*

1.6 Common name(s), in all applicable languages used by the Convention

English: African Wild Ass, Somali wild ass, Nubian wild ass

French: Ane sauvage d'Afrique,

Spanish: Asno Salvaje de Africa

German: Africanischer Wildesel

Ethiopia : Dibakoli (Afar)

Eritrea: Dibokoli (Afar)

Somali: Gumbure (Issa)

2. Overview

The African wild ass is the most endangered wild equid in the world. It is a large sized, non-ruminant herbivore that lives in a very hot dry climate and harsh terrain. This species could serve as a 'flagship' species for the conservation of desert ecosystems and their biodiversity. These arid habitats are also home to human populations that are at risk from climatic extremes. Conservation of wildlife will be closely linked to local nomadic pastoralists being able to participate in and benefit from conservation management in their areas.

3. Migration

3.1 Kinds of movement, distance, the cyclical and predicable nature of the migration

F_{ST} among the Eritrean and Ethiopian populations was estimated at 0.10 ($P < 0.05$), confirming a scenario of low population structure. Bidirectional historical migration as well as recent migration were detected between the Ethiopian and Eritrean populations (Rosebom *et al.* 2017).

3.2 Proportion of the population migrating, and why that is a significant proportion

Genetic analyses of fecal samples from Ethiopia and Eritrea indicate both historic and bilateral movement between the two populations. Polymorphic microsatellite analyses were done to assess levels of genetic diversity, population structure and demographic parameters. The results revealed the absence of geographic structuring among extant African Wild Ass in Ethiopia and Eritrea. F_{ST} among these populations was estimated at 0.10 ($P < 0.05$), confirming a scenario of low population structure. Bidirectional historical migration as well as recent migration were detected between the Ethiopian and Eritrean populations. Recent migration was detected, with two individuals belonging to the Ethiopian population being identified as first generation migrants from Eritrea and one individual belonging to the Eritrean population identified as a first generation Ethiopian migrant. Genetic analyses indicate that there has been long term connectivity between the Ethiopian and Eritrean populations (Rosebom *et al.* 2017).

4. Biological Data (Other than Migration)

4.1 Distribution (current and historical)

a) *Historic Distribution*

The African Wild Ass was originally widespread from the Moroccan Atlas Mountains across Northern Africa to the Sudanese and Somali Arid zones (Sidney 1965, Ansell 1974, Kimura 2010). Because African Wild Asses and feral donkeys can be difficult to distinguish in the field, the historical record needs to be treated with caution.

The northern part of the range was occupied by the extinct Atlas Wild Ass (Groves 1986). Though asses have been reported in northern Chad, southern Algeria and the Hoggar Massif of the Central Sahara, these are probably feral donkeys.

The Nubian Wild Ass (*E. a. africanus*) lived in the Nubian Desert of north-eastern Sudan, from east of the Nile River to the shores of the Red Sea, and south to the Atbara River and into northern Eritrea (Watson 1982). During aerial flights in the 1970s, Wild Asses were seen in the Barka Valley of Eritrea and in the border area between Eritrea and the Sudan (Klingel 1980, Watson 1982). There is no recent documentation of Nubian Wild Asses, but they may persist in Northern Eritrea.

The Somali Wild Ass (*E. a. somaliensis*) was found in the Danakil Desert of Eritrea, Djibouti, and the Danakil Desert and the Awash River Valley of north-eastern Ethiopia. In Somalia, they ranged from Berbera, Meit and Erigavo in the north to the Nugaal Valley (Yalden *et al.* 1986, Moehlman 2002, Moehlman *et al.* 2013, Groves 2002).

The most comprehensive review of the historical literature concerning African Wild Ass distribution is in Yalden *et al.*'s catalogue of the mammals of Ethiopia (1986). There is disagreement in the scientific literature as to whether the African Wild Ass is one continuously distributed species or if there are valid subspecies (Ansell 1971, Groves and Willoughby 1981, Yalden *et al.*, 1986, 1996 Gentry *et al.* 1996, Grubb 2005). According to Watson (1982), there was a semi-continuous population going from northern Somalia into Ethiopia and possibly through Eritrea and into the Sudan. But research on ancient DNA indicates that the Nubian Wild Ass is the ancestor of the domestic donkey (Kimura *et al.* 2010) and this research also concluded that based on MtDNA the Nubian Wild Ass were distinct from the Somali Wild Ass.

The African Wild Ass occurs in Eritrea and Ethiopia, and some animals may persist in Djibouti, Somaliland, Sool, Sanag, Puntland, Somalia, Sudan and Egypt. But there is no recent information available (Moehlman *et al.* 2016, Figure 1). Yalden *et al.* (1996) recorded them to 1,500 m in Ethiopia.

b) Current Population Distribution

The current range of the African Wild Ass in the Danakil Desert of Eritrea is approximately 11,000km² (Hagos 2015). DNA extracted from fecal samples collected from animals in Eritrea resulted in the identification of five mitochondrial DNA haplotypes: one haplotype (group of polymorphisms) specific to the Eritrean population (haplotype D), likewise one haplotype specific to the Ethiopian population (E), and three shared haplotypes (A, B, and C). These results suggest that there is and/or has been gene flow between the subpopulations (Afrera, Serdo) in Ethiopia and the population in Eritrea (Oakenfull *et al.* 2002).

Levels of genetic diversity, population structure and demographic parameters were assessed using genotype data from 10 polymorphic microsatellite markers. The results revealed the absence of geographic structuring among extant African wild ass in Ethiopia and Eritrea. The Eritrean population had the highest values of genetic diversity ($H_E=0.63$; $N_a=4.7$). Effective population sizes for both Ethiopian ($N_e = 26.2$) and Eritrean ($N_e = 25.6$) populations were low, confirming that these populations are extremely vulnerable. There was no evidence of hybridization in the wild population. However, one domestic donkey in Eritrea was identified as a first generation hybrid (Rosenbom *et al.* 2017).

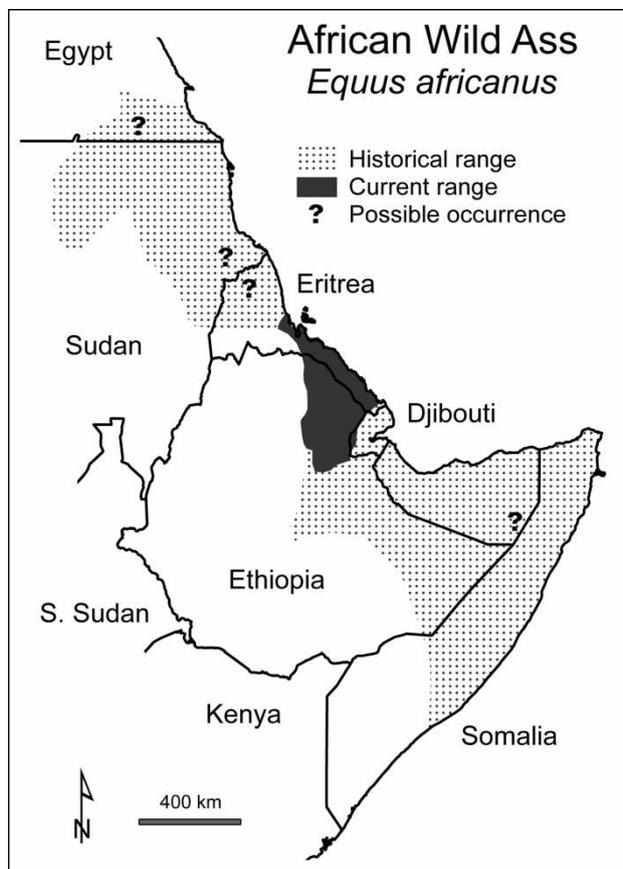


Figure 1: Historic and Current Distribution of African Wild Ass (Moehlman *et al.* 2016)

4.2 Population (Estimates and Trends)

In Eritrea, there exists limited long-term data. The first successful documentation of African wild ass was in 1995 (Moehlman *et al.* 1998) and since that time the IUCN/SSC Equid Specialist Group has had a cooperative research, training and conservation program with the Ministry of Agriculture, Hamelmalo Agricultural College, and the Forestry and Wildlife Authority. Due to individual identification, it has been possible to estimate that 47 African Wild Asses are found in the 100 km² main study site in the Northern Red Sea Zone (Moehlman *et al.* 1998, Moehlman 2002). This is the highest population density found anywhere in the present range of the species and is similar to population densities recorded in Ethiopia in the early 1970s (Klingel 1977). This is a limited study area, but recent research indicates that African Wild Ass currently inhabit approximately 11,000 km² in the Danakil Desert (Teclai 2006, Hagos 2015). Surveys and MaxEnt analyses of suitable habitat are needed to determine the distribution and density of African Wild Ass in this larger area. A rough estimate of African Wild Ass in Eritrea would yield a total of possibly 400 individuals (Moehlman 2002).

Equally the current population in estimate in Ethiopia indicated that this species occurs in low density, approximately one African wild ass per 100 km². Current population estimates indicate that the population size has declined significantly (~95 per cent) since the 1970s and 112 +/- 4 individuals of African Wild Asses are estimated to survive in the Danakil Desert of the north-eastern Afar region (Kebede 2013).

Regarding Somalia, the only recent information available was in 1997. Moehlman returned to the Nugaal Valley but was not able to survey the entire area. Local pastoralists said that there were less than ten African wild asses left in the Nugaal Valley (Moehlman *et al.* 2013). Some animals may remain near Meit and Erigavo, but this area has not been surveyed since the 1970s (Moehlman *et al.* 2013). It is not known if the African Wild Ass currently persists in Somalia.

In summary, the total number of observed African wild ass in Eritrea and Ethiopia is roughly 70 individuals; there may be as many as 600 individuals in these two countries, but this figure is a very rough extrapolation from more intensely studied areas. The number of mature individuals is approximately 30-50 per cent of the population (Feh *et al.* 2001, Moehlman *et al.* 2015, Hagos 2015), hence the minimum number of mature individuals is 23 and the maximum might be 300. In Ethiopia, in the last 35 years there has been a greater than 95 per cent population decline and in the last 12 years the African Wild Ass has been extirpated from roughly 50 per cent of its range (Kebede *et al.* 2007). In Eritrea, the population is stable and slowly increasing. However, it is difficult to predict population trends into the future. The desert habitat of the African Wild Ass in both Eritrea and Ethiopia suffers from recurrent and extreme droughts (Kebede 1999).

4.3 Habitat (Short Description and Trends)

The primary habitat is arid and semi-arid bushland and grassland. In Eritrea, the African wild ass lives in volcanic landscape of the Great Rift Valley where they range from below sea level to 1,500 m (Yalden *et al.* 1996, Moehlman *et al.* 2013, Hagos 2015). Limited observations indicate that African wild asses are primarily grazers, but that they will also utilize browse. Typical of arid habitat equids, the only stable groups are composed of a female and her offspring. Females do associate with other females or with males, but even temporary groups are small. Low density and low sociability may be due to low forage quality and availability. In Eritrea, *Panicum turgidum* is an important forage species (Teclai 2006).

4.4 Biological Characteristics

The African Wild Ass in the deserts of Eritrea and Ethiopia live in temporary groups that are small (typically fewer than five individuals). The only stable groups are composed of a female and her offspring. In temporary groups, the sex and age-group structure varies from single-sex adult groups to mixed groups of males and females of all ages. Adult males were frequently solitary but also associated with other males. Adult females were usually associated with their foal and/or yearling. Some adult males were territorial, dominant to conspecifics, and the only males that were observed copulating with estrous females. Thus, the African wild ass exhibits the social organization that is typical of equids that live in arid habitats (Klingel, 1977; Moehlman et al 1998).

Research on feral asses has documented that they are physiologically well adapted to life in arid habitat. They can sustain a water loss of up to 30 per cent of body weight and can drink enough water in two to five minutes to restore fluid loss (Maloiy 1970, Maloiy and Boarer 1971). Tomkiewicz (1979), using temperature sensitive implants, determined that feral asses varied their body temperature from 35.0 to 41.5°C, dependent on air temperature. In hot summer months, males had lower mean body temperature (36.5°C) than females (38.2°C). Females were maintaining a higher body temperature and presumably losing less water due to sweating. A 2°C increase in body temperature could provide a two per cent water savings daily in a hydrated 150 kg feral ass. Tomkiewicz also found that the biological half-life of water for females was one day longer than for males, indicating that their water use was more efficient. Such information indicates that the ancestral species, the African Wild Ass, is physiologically very well adapted to life in the deserts of Eritrea, Ethiopia, and Somalia. However, the African Wild Ass still needs access to surface water and the movements of lactating females are constrained by water and forage availability. During aerial surveys in the Danakil desert of Ethiopia (1976) most African wild asses were observed within 30 km of known water sources).

4.5 Role of the Taxon in its Ecosystem

The African Wild Ass can serve as a flagship species for the conservation of biodiversity in the Danakil ecosystem.

Compared to ruminants, African Wild Asses are generalist and bulk feeders that can have a diet of higher fiber and lower quality than sympatric ruminants of a similar size. Thus, they can facilitate the growth of lower fiber/higher quality grasses for sympatric antelopes.

5. Conservation Status and Threats

5.1 IUCN Red List Assessment

Red List Assessment: Critically Endangered (CR) version 3.1

Red List Criteria: C2a(i)

Rationale for the Red List Assessment

The African Wild Ass is listed as Critically Endangered because the species numbers (at best approximately 200 mature individuals) may be undergoing a continuing decline due to climate and human/livestock impact, and no subpopulation numbers more than 50 mature individuals. The species may also meet the threshold for Critically Endangered under D, as there may be less than 50 mature individuals in the wild. (Moehlman *et al.* 2015)

5.2 Equivalent Information relevant to Conservation Status Assessment

The Government of Eritrea is paying great attention and commitment in conservation of wildlife in general and the Wild Ass in particular. Consequently, the home range of African Wild Ass in Eritrea is set aside as a protected area. Hence promising achievements has been attained in securing the existence of the Wild Ass. Not only that the local Afar people have also a strong tradition on the ethics of conservation. Besides they have unique knowledge and skill for the management of wildlife and sustainable co-existence. All these together will have positive impact in the conservation of African wild ass.

5.3 Threats to the Population (Factors, Intensity)

In Eritrea, the major threat to the African Wild Ass is limited access to drinking water and good forage (largely due to competition with livestock). Reproductive females and foals less than three-months old are most at risk. It is important to determine critical water supplies and basic forage requirements, allowing management authorities to determine (in consultation with local pastoralists) how to conserve the African Wild Ass (Moehlman 2002; Teclai 2006; Moehlman *et al.* 2013, Hagos 2015).

The other threat to the survival of the African Wild Ass is hyena predation particularly the Spotted Hyena. The interbreeding with the domestic donkey is also identified as a potential threat (Moehlman 2002, Moehlman *et al.* 2013). However, there is no scientific evidence that indicates introgression of domestic donkey genes into African Wild Ass populations (Hagos 2015). Potash mining in the Danakil depression by South Boulder (Colluli) Potash Mining Company is also another potential threat to the existence of the African Wild Ass, and in general to the ecology of the region.

5.4 Threats connected especially with migrations

There is the possibility of anti-personnel and anti-vehicle mines on the border between Ethiopia and Eritrea.

5.5 National and International Utilization

In Eritrea hunting and killing of these animals is totally forbidden and is widely respected. Internationally, no trade has been allowed since the species was listed as CITES Appendix I.

6. Protection Status and Species Management

6.1 National Protection Status

In Eritrea, the government designated the African Wild Ass area between the Buri Peninsula and the Dalool Depression as a high-priority area for conservation protection as a nature reserve (Government of Eritrea 1995).

The African Wild Ass does have protected status through the Forestry and Wildlife Conservation and Development Proclamation No 155/2006 and the cultural ethics of the Afar pastoralists and can't be hunted and/or killed.

6.2 International Protection Status

The African Wild Ass is listed as CITES Appendix I in both Ethiopia and Eritrea. Populations of Somali Wild Ass are maintained in captivity (Steck 2016).

6.3 Management Measures

In both Eritrea and Ethiopia, research and conservation programmes (Hamelmallo Agricultural College, Forestry and Wildlife Authority and the Ethiopian Wildlife Conservation Authority) have been critical for sustaining African Wild Ass populations by supporting research and conservation and involving local communities.

In Eritrea, research has documented that the Messir Plateau is a critical area for reproduction and work has begun on demarcating a sanctuary for the African Wild Ass and other wildlife. In 2013 a workshop was held for strategic conservation planning for the African w Wild Ass.

6.4 Habitat Conservation

To ensure the continuous existence of the Wild Ass in Eritrea habitat conservation is of paramount importance. In view of this idea the establishment of a Wild Ass sanctuary in the core habitat has been identified thus endeavor are under way with full partition of the local community who inhabit in the adjacent of the wild ass habitat. So far preparatory process has been accomplished, in near future the remaining boundary demarcation of the sanctuary would be in place.

It is true that in areas near permanent water there is the potential of degradation of forage due to high livestock numbers. Besides, the new Colluli potash mining project is also another growing threat in terms of impact on the water table and primary productivity and the development of roads for heavy truck traffic. Nevertheless, the project is developing mitigation measures to alleviate such threat.

6.5 Population Monitoring

The African Wild Ass population has been monitored by Ministry of Agriculture/Forestry and Wildlife Authority in cooperation with the IUCN/SSC Equid Specialist Group. Mr. Futsum Hagos, Head of Wildlife Conservation of the state of Eritrea, has major responsibility for the African Wild Ass. Mr. Redae Teclai Tesfai is doing PhD research on the population dynamics and distribution of the African wild ass.

7. Effects of the Proposed Amendment

7.1 Anticipated Benefits of the Amendment

The amendment has the potential to facilitate cross boundary cooperation wild ass conservation. It could also encourage potential range states to support surveys to document whether the African Wild Ass still persists in their countries. It may also encourage more funding for needed infrastructure and training in range states.

7.2 Potential Risks of the Amendment

Conservation of wildlife will be closely linked to local nomadic pastoralists being able to participate in and benefit from conservation management in their areas.

7.3 Intention of the proponent concerning development of an Agreement or Concerted Action

8. Range States

Currently the existence of wild ass is confined in Eritrea and Ethiopia. African wild ass populations may persist in Djibouti, Somaliland, Puntland, Sool, Sanag, Somalia, Sudan and Egypt. However, there is no recent information available (Moehlman *et al.* 2013).

9. Consultations

In the case of taxa that are also managed through other international agreements or intergovernmental bodies, consultations should be undertaken to obtain the comments of those organizations or bodies.

10. Additional Remarks

11.References

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