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

Summary:

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

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

*The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CMS Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.

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

A. PROPOSAL

Inclusion of all subspecies of African Wild Ass *Equus africanus* to **Appendix I** of the Convention on the Conservation of Migratory Species of Wild Animals.

B. PROPONENT: Government of Ethiopia

C. SUPPORTING STATEMENT

1. Taxonomy

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/Baro Denen (Afar)/Gumburi (Issa)
Eritrea: Dibokoli (Afar)
Somali: Gumburi (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. Migrations

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

The estimate of population differentiation (F_{ST}) among the Eritrean and Ethiopian populations was low, i.e. 0.10 ($P<0.05$), confirming a scenario of low genetic differentiation and no clear geographic population structure. Bidirectional historical migration and recent migration were detected between the Ethiopian and Eritrean populations (Rosembom *et al.* 2017).

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

Genetic analyses of faecal 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} (estimate of population genetic differentiation) among these populations was estimated at 0.10 ($P<0.05$), confirming a scenario of low population structure.

Bidirectional historical migration and 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 (Rosembom *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 ass 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 ass, 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 Ethiopia and Eritrea is approximately 23,000km².

Levels of genetic diversity, population structure and demographic parameters were assessed using genotype data from ten 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; Na=4.7). Effective population sizes for both Ethiopian (*Ne* = 26.2) and Eritrean (*Ne* = 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).

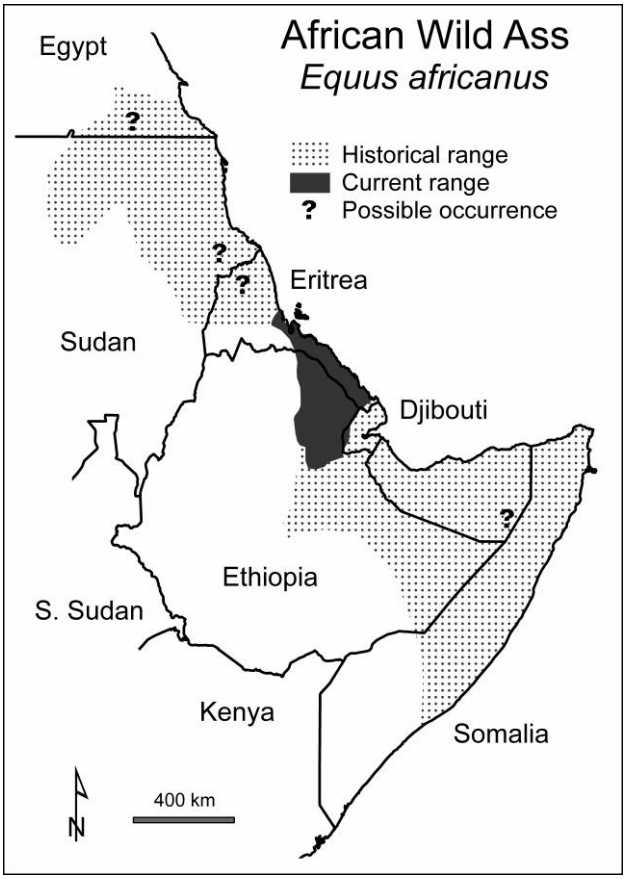

Figure 1. Historic and current distribution of African Wild Ass (Moehlman *et al.* 2016)

4.2 Population (estimates and trends)

Ethiopia

In 1970-1971, Klingel and Watson did an aerial survey of the Teo area (5,280 km²), the Tendaho-Serdo area (4,270 km²), and the Lake Abbe area (6650 km²). Klingel (1980) estimated a total of 3,000 African Wild Asses, or 18.6 per 100 km² (Klingel 1972). The Teo area, which is now part of the Yangudi-Rassa National Park, had the highest density, 30 African Wild Asses per 100 km². However, Watson (1982) thought that this was an undercount and that the population was 6,000 to 12,000.

In 1976, Stephenson (1976) did aerial total counts in some of the same areas and reported estimates of 675 in Yangudi-Rassa National Park, i.e. approximately 21 African Wild Asses per 100 km². He recorded 725 in the southern Danakil and 75 in the Danakil depression. These population figures are not comparable because they were based on different survey methods, but they suggest that the population was declining sharply.

In January 1994, Moehlman and Kebede did a ground survey of the Yangudi-Rassa NP, but no Wild Asses were seen, although local Issa pastoralists reported that they were present but rare and occurred at an approximate density well below one animal per 100 km^2 (Moehlman 1994, Kebede 1995). Issa pastoralists were utilizing the Yangudi-Rassa National Park and in some areas their herds of sheep and goat were in excess of 50 per km² (Thouless 1995). Surveys conducted from 1994-1998 in an area of 2,000 km² indicated that there were approximately 0.5 wild ass per 100 km² (Moehlman 2002). In 2007, Kebede surveyed the historic range of the African Wild Ass in Ethiopia (Kebede *et al.* 2007) and determined that they have been extirpated from the Yangudi-Rassa NP and the Somali Region and that the only

remaining population was in the North-Eastern Afar Region. The total number of wild ass observed during this survey was 25 in an area of 4,000 km² yielding a density of 0.625 animals per 100 km². In 2009 and 2010, Kebede (2013) did quarterly ground surveys in the African Wild Ass range and sampled 17 per cent of the total African Wild Ass range in Ethiopia (12,300 km^2). The density estimate was computed applying D=N/A where D=density, N= total number of individuals recorded, A= sample area (km²). Then the result obtained was extrapolated to the suitable habitat determined using the Maxent model to estimate the population (Kebede *et al*. 2014). The 2009-2010 survey results indicated that the species' distribution is restricted to few localities in the Danakil. The current population estimate 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 Ass are estimated to survive in the Danakil Desert of the North-Eastern Afar region (Kebede 2013).

Eritrea

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 programme 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 Asses 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.

Somalia

In 1978-1980, Watson (1982) did aerial surveys in Northern Somalia and estimated that there was a population of 4,000-6,000 African Wild Ass in the area from the Nugaal Valley to the Djibouti border. Given the area covered by the survey, this would indicate approximately six African Wild Ass per 100 km^2. In 1979/82 Simonetta and Simonetta (1983) estimated that there were about 250 African Wild Asses in the north-western Nugaal Valley and that there were about 50 African Wild Asses near Meit, with scattered groups along the coast in the Erigavo region. In 1989 (Moehlman *et al*. 1998) a ground survey with limited aerial reconnaissance in the Nugaal Valley yielded population estimates of roughly 135 to 205 Wild Asses or approximately 2.7 to 4.1 African Wild Asses per 100 km². This indicated that there had been a significant reduction in the African Wild Ass population during the decade between those surveys. 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 Asses 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 that 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 and Ethiopia, the African Wild Ass lives in volcanic landscape of the Great Rift Valley where it ranges from below sea level in the Dalool Depression to 1,500 m (Yalden *et al.* 1996, Moehlman *et al.* 2013). In Eritrea and Ethiopia, 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 the Mille-Serdo Wild Ass Reserve the preferred forage is *Aristida* sp., *Chrysopogon plumulosus*, *Dactyloctenium schindicum*, *Digitaria* sp., *Lasiurus scindicus*, and *Sporobolus iocladus* (Kebede 1999, Moehlman 2002, Moehlman *et al*. 2013). In Eritrea, *Pannicum turgidium* 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 and typically are composed of 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 oestrous 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 habitats. 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 ass 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 percent 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 ass 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 (if available)

Red List Assessment:	Critically Endangered (CR) version 3.1
Red List Criteria:	C2a(i)

5.2 Equivalent information relevant to conservation status assessment

Rationale for the Red List Assessment
Listed as Critically Endangered as 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 in excess of 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).

5.3 Threats to the population (factors, intensity)

In Ethiopia and 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 (Kebede 1999, 2007; Moehlman 2002; Teclai 2006; Moehlman *et al.* 2013, Hagos 2015).

In Ethiopia and Somalia, an additional threat is hunting for food and medicinal purposes; for example, body parts and soup made from bones are used for treating tuberculosis, constipation, rheumatism, backache, and bone ache (Moehlman *et al.* 1998, Kebede 1999, Moehlman 2002, Moehlman *et al.* 2013). Research by Kebede (1999) revealed that 72 per cent of 65 adult male Afar pastoralists had killed African Wild Asses for food and/or medicine. Their explanation was that they could not afford to buy medicine or that they were too far from medical facilities.

In 2002, detailed discussions were made with the respected religious leader of the Afar region (Sultan Ali Mirah) and he played a key role to influence his followers to support the conservation effort in the region (Kebede *et al.* 2007). Using his power and position the Sultan informed the local Afar elders to actively engage themselves and participate vigorously in the conservation of the natural habitat including wildlife. Particularly he mentioned from the holy Quran that Muslim religion does not allow eating the flesh of equids and therefore killing wild equids for food and medicinal purpose was not only against conservation but also against their religion. He emphasized his message by saying that eating equid flesh was *Haram,* forbidden*.*

The third possible threat to the survival of the African wild ass is potential interbreeding with the domestic donkey (Moehlman 2002, Moehlman *et al.* 2013). However, there is no scientific evidence that indicates introgression of domestic donkey genes into African wild ass populations (Kebede 2013, Hagos 2015, Rosenbaum 2017).

5.4 Threats connected especially with migrations

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

5.5 National and international utilization

In Ethiopia and Somalia, African Wild Ass are hunted for meat and medicine. Internationally, no trade is allowed since the species is listed as CITES Appendix I.

6. Protection status and species management

6.1 National protection status

In Ethiopia, Wildlife laws (Federal Negarit Gazeta, Regulation No. 163/2009) categorizes the African wild ass under Schedule 10, Prohibited Animals for hunting. This legal status means that the African Wild Ass cannot be hunted and/or killed, unless with exceptions and/or special permits for scientific purpose.

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).

Sudan: The African Wild Ass was legally protected in 1963 (Schomber 1963), but its present status is unknown.

6.2 International protection status

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

6.3 Management measures

In Ethiopia, the Yangudi-Rassa National Park (4,731 km²) and the Mille-Serdo Wild Ass Reserve (8,766 km²) were established in 1969. However, the former has never been formally gazetted, and both areas are utilized by large numbers of pastoralists and their livestock. These areas are remote and extremely arid, and the Ethiopian Wildlife Conservation Authority (EWCA) has not had sufficient funds or personnel for appropriate management (Kebede 1999). The IUCN/SSC Equid Specialist Group has worked with EWCA since 1994 to provide support for research, training and conservation. This has included support for scouts, workshops and educational materials. In 2016, EWCA hosted a workshop on strategic conservation planning for its three threatened wild equids, which includes the African Wild Ass.

In both Eritrea and Ethiopia, research and conservation programmes (Ministry of Agriculture, Hamelmalo 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 wild ass.

In Somalia, the African Wild Ass may occur in Somaliland, Sool, Sanag and Puntland. These areas are individually administrated and the African wild ass has no legal protected status.

6.4 Habitat conservation

In areas near permanent water there is the potential of degradation of forage due to high livestock numbers. In Eritrea, the new Colluli potash 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.

6.5 Population monitoring

In Ethiopia, the African wild ass population is monitored by the Ethiopian Wildlife Conservation Authority in cooperation with the IUCN/SSC Equid Specialist Group. Dr. Fanuel Kebede of EWCA is the focal point for all Ethiopian wild equids.

In Eritrea, the African Wild Ass population has been monitored by the Ministry of Agriculture and the Forestry and Wildlife Authority in cooperation with the IUCN/SSC Equid Specialist Group. Mr. Futsum Hagos of the Forestry and Wildlife Authority 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. 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 Ethiopia and Eritrea.

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

The Federal Democratic Republic Government of Ethiopia is a signatory to CMS and ratified the Convention in 2009. The Ethiopian Wildlife Conservation Authority (EWCA) is empowered to undertake all acts necessary for the implementation of the agreement. After ratification, a focal point was appointed in order to closely follow up the implementation of the Convention. As a result the Ethiopian Wildlife Conservation Authority is the government institution mandated to deal with wildlife conservation and management activities in the country. EWCA believes that concerted efforts are needed to save this critically endangered species in its natural range. EWCA is working towards the achievement of CMS conservation goals.

8. Range States

Ethiopia

The State of Eritrea

African Wild Ass populations may persist in Djibouti, Somaliland, Puntland, Sool, Sanag, Somalia, Sudan and Egypt. There is no recent information available (Moehlman *et al*. 2013).

9. Consultations

10. Additional remarks

The following actions are needed:

• Ecosystems based population dynamics research on the African Wild Ass in Eritrea and Ethiopia
• Ecosystems research on interactions among pastoralists, livestock, wildlife and the environment
• Educational awareness campaigns with local communities in Ethiopia on the 'haram' status of the African Wild Ass
• Development of medicine/veterinary care for local pastoralists
• Continued employment and training of local pastoralists as scouts
• Continued education and awareness campaigns on the ecological and cultural roles of wildlife
• Continued workshops and active involvement of local pastoralists in the preparation of management plans
• Post-graduate training of personnel in Eritrea and Ethiopia
• Surveys in northern Eritrea, Djibouti, Somaliland, Somalia, Sudan and Egypt to determine current distribution of African wild ass
• Genetic research on the two subspecies of African Wild Ass and also local domestic donkeys to determine the potential for hybridization.

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