

Research and Community-Based Conservation of the African Wild Ass in the Danakil Desert of Ethiopia



Research Report

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Table of contents	Pages
1. Background	3
2. Objectives of the field work	5
2.1. General objectives.....	5
2.2. Specific objectives	5
3.Methods and Materials.....	6
4. Results and discussion.....	10
5. Conclusions and recommendations.....	21

1. Background

The African Wild Ass (*Equus africanus*) is the world's most endangered wild equid, assessed as Critically Endangered (Moehlman et al 2015). In Ethiopia there may remain fewer than 200 individuals localized to small areas that are within an approximately 20-30km radius of permanent water. This species persists in one of the harshest climates and terrains in the world where they share and may compete for resources with local people and livestock. These days, competition for forage and water resources is being exacerbated by emerging agriculture and infrastructure investments along with settlements. In these arid habitats, it is not only the wildlife but also the local human populations that are at risk mainly due to scarce resources. The goal of this project is to successfully involve the local Afar pastoral communities in the conservation of this critically endangered equid species. The project directly links the research experts and the regional government with locals to work in close collaboration to safeguard the species' survival and establish a strong relationship to mediate scarce resource competition and improve co-existence with the African wild ass.

Long term research indicated that the substantial population and distribution decline of the Ethiopian African wild ass population was caused mainly by illegal hunting for meat and cultural medicine. Therefore, the project further calls for the collaboration of the regional government mainly focused on law enforcement against the killing of wildlife. However, competition with domestic livestock for scarce water and forage were also major contributing factors.

The conservation efforts put towards saving the species from extinction have been focused on securing the conservation support of the local inhabitants. However, this time the support of the regional government is imperative as there is little or no

official presence in the Danakil Desert for enforcing the wildlife laws that would help ensure the survival of the species. Therefore, the best option is to enhance local people's engagement in conservation activities alongside with the support of the regional government. This includes training, equipping and employing local Afar pastoralists as community wildlife scouts and recognizing the contribution of community elders to protect the species through regular monitoring and promoting species conservation of this remnant population.

It is well recognized that the involvement of the local people in the conservation of this species is paramount. Local knowledge concerning resource requirements in this arid habitat is fundamental for understanding and managing the area for the benefit of both wildlife and local communities.

This field work reports on the three quarterly monitoring surveys and data collection of the project period. Previous research and surveys identified locations where the African wild asses were regularly observed. After a two year gap in work due to the COVID19 pandemic and civil insecurity, these field trips were needed to survey known locations. The ultimate goal of this program is to come up with pertinent information that supplements the long-term data which will support proposing appropriate protected area establishment for the conservation of African wild ass and other wildlife species. In consultation with local communities, experts and government authorities, appropriate areas will be designated, mapped and demarcated for the conservation of the species.

This field work is part of a long term program for prioritizing suitable habitat, mapping, demarcating and gazettement these areas for the conservation of African wild ass.

2. Objectives

2.1. General objective

The overall objective of the fieldwork was to update the long-term data on African wild ass distribution, identify the most suitable habitat for establishment of protected areas, continue the training, employment and involvement of local communities and establish the foundation for consolidated and community based conservation of the critically endangered African wild ass for the future in Ethiopia.

2.2. Specific objectives

- Updating the scientific information available on age, sex, feeding, reproduction, movement and time budget of the African wild ass
- Gathering data on the species and its habitat for the demarcation of the protected area.
- Strengthen Scouts' capacity through training in the field
- Enhance communications with locals, raise their awareness and involve them in prioritizing protected area designation and management.

3. Methods and Materials

Primary data on African wild ass sightings, numbers, age, sex and seasonal movement were collected from the scouts and local community members through informal discussions. Additional information was obtained from surveying known areas of African wild ass habitat (Serdo, Hillu, Hundurur and Afdera/Bidu) (Figure 1)). Informal awareness education for scouts on African wild ass was also carried out while doing the survey. Information on the daily time budget was collected to supplement previous data.

The fieldwork was conducted on foot as most of the areas are not accessible by cars. The principal investigator and lead researcher (Dr Fanuel Kebede), researcher (Mr. Fedlu Abdella), drivers from EWCA (Alemayehu W/Aregay and Agazhie Sefiw) and a researcher from Semera University (Dr. Redwan Mohammed) worked with local game scouts (Ali Hamed, Ali Wagaris, Deto Nuru, Ahmed Mohammed Halo Be'eda) to carry out the field surveys.

The field work was restricted to Serdo and Hillu area during the first survey (June 6-16, 2023) due to security concerns. During the second survey (Nov 25- Dec 9, 2023) it was possible to survey the Afdera area in addition to Serdo/Hillu whereas the third quarter survey (Nov-Dec, 2024) was carried out in Serdo, Hundurur and Afdera.

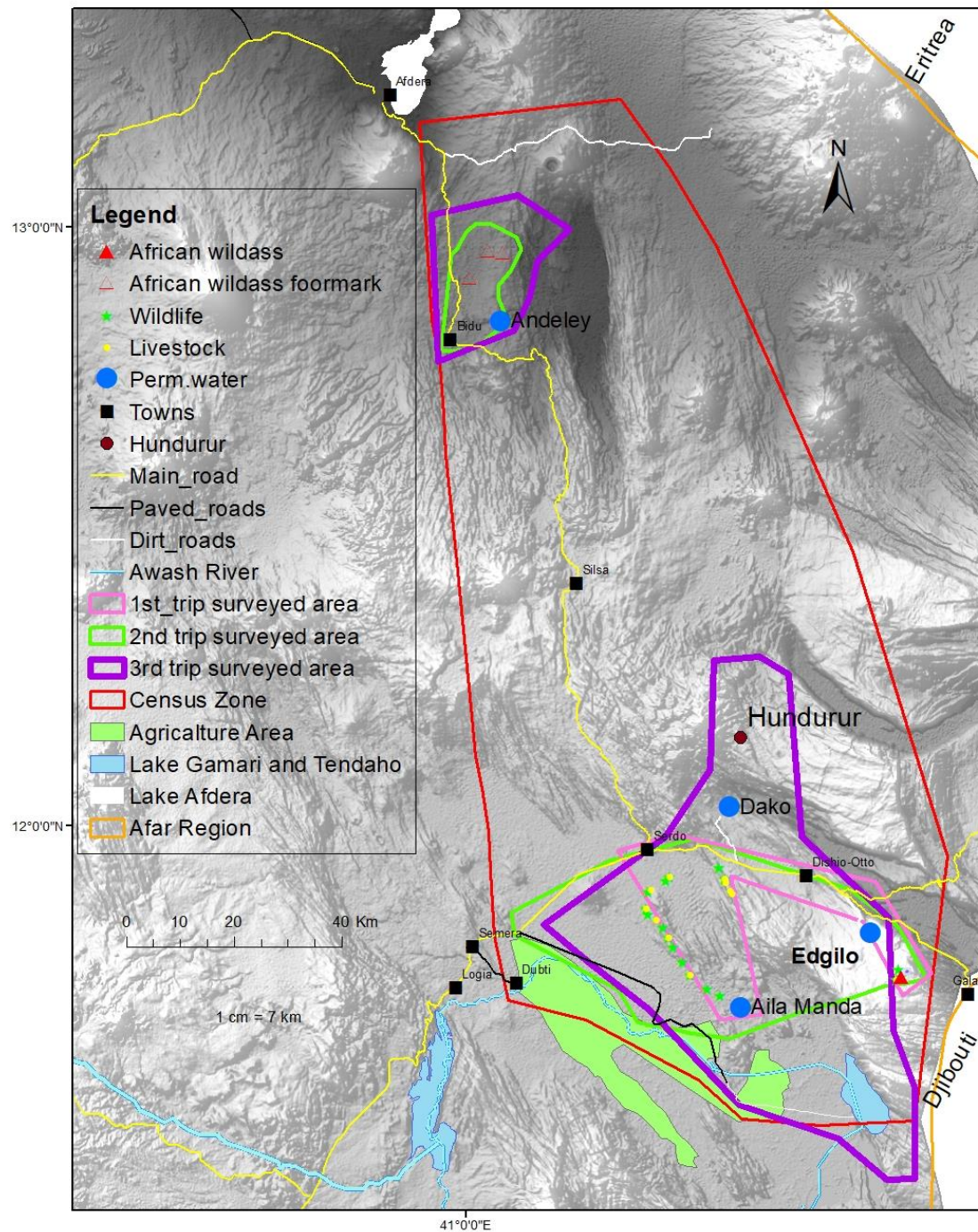


Figure1. Topographical map of survey areas. The representations of international boundaries on this map are not authoritative.

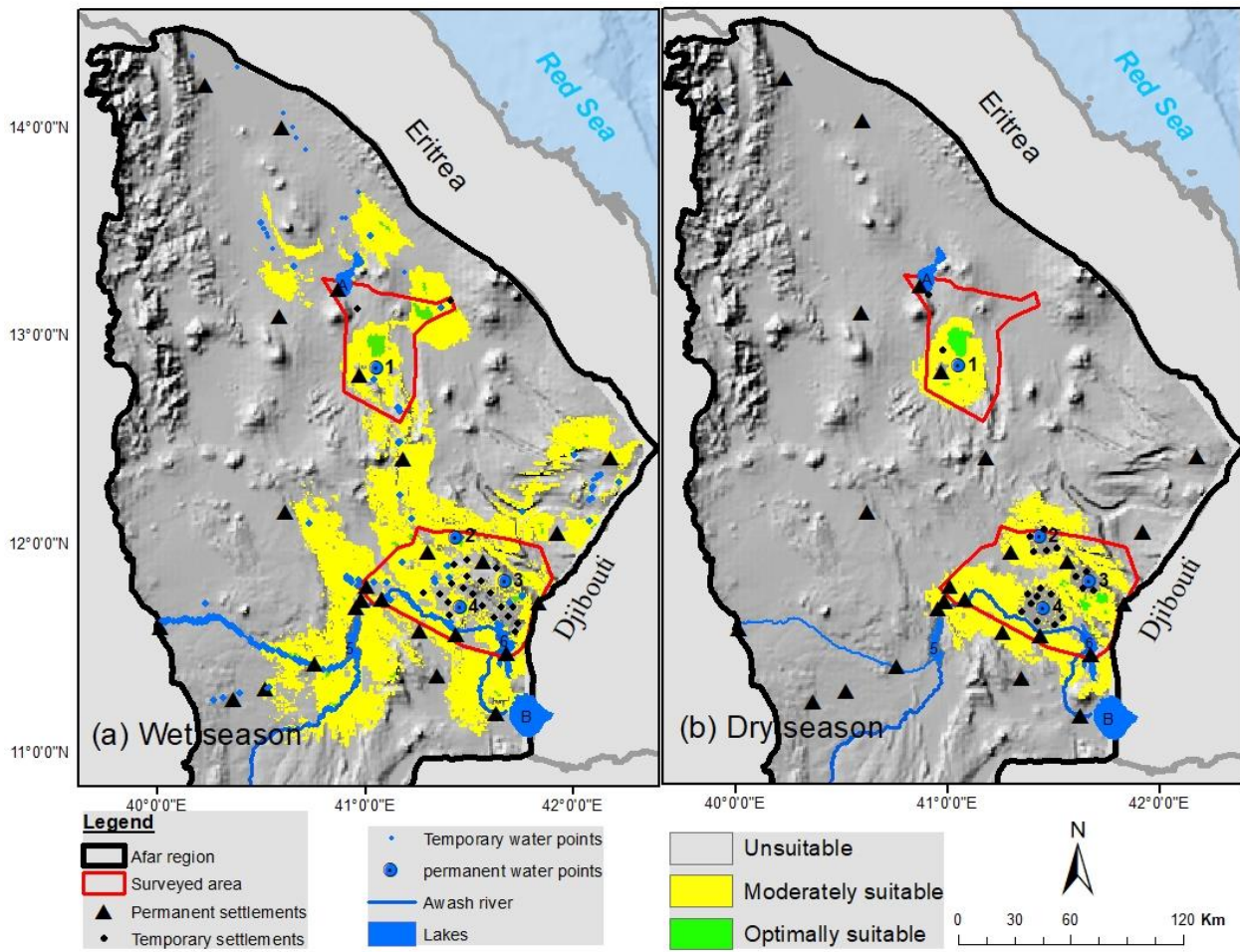


Figure 2. African wild ass habitat suitability during the (a) wet season and (b) dry season indicating Maxent model output extent of habitat suitability (moderately suitable, and optimally suitable) areas derived from 2017 through 2024 wildlife field survey data.

A geographic positioning system (GPS) was used to record the coordinates of the species presence points, water points, other major mammal species occurrence and livestock encountered during the survey time. Binoculars and a spotting scope were used to obtain demographic information such as population size, sex, age and movement patterns of the African wild ass. A digital Camera was used to capture photos of wild animals, livestock, landscape and vegetation cover of the survey area.

4. Results and discussion

The team observed five African wild ass (*Equus africanus*) during the first survey (Figure 3a) and four during the second one (Figure 3b). Figure 3c shows two out of the four African wild ass in the at Hillu. All the individuals were adult females and one female had an injured hind leg.



(a)



(b)



(c)

Figure3. (a) Five female African wild asses observed at Hillu, June 2023, (b) four female African wild asses grazing at Hillu, November 2023 and (c) two out of four African wild asses grazing at Hilu November 2023.

During the second field trip there were no direct observations of African wild ass in the Afdera area, but tracks of seven individuals, one foal and six adults,(Figure 4a)were documented going towards the Andeley water source and droppings of African wild ass (Figure 4b) were also observed.



(a)



(b)

Figure 4. Indirect confirmation of African Wild Ass occurrence: tracks (a) and droppings (b) at Afdera.

During the third survey four African wild ass (two adult males, one adult female and a foal) were directly observed in Afdera area (figure 5). In addition foot prints of three other adults were observed North of Afdera.

In the Hundurur area, footprints of two adult and one foal were observed.



Figure 5. African Wild Ass observed in the Afdera area (Third trip, December 2024, ©Fanuel Kebede)

The team visited the main African wild ass habitats in Serdo and Hillu areas during the first field work and Serdo, Hillu, and Afdera in the second. Serdo, Hundurur and Afdera were surveyed during the third field work. During the first survey, the Hillu and Serdo areas were found to be covered with green herbs and grass (Figure 6) with many temporary water spots compared to previous years. This is due to the unusual long rainy months in the area from April through June 2023. This attracted a lot of pastoralists and their livestock to the area, thus potentially increasing the competition with wildlife for forage and water. In summary, the team traveled

through possible African wild ass habitats at Serdo, Hillu, Afdera and Hundurur and recorded wild animals and livestock encountered.

The team also collected information through informal communication (discussions) from locals about recent sightings of African wild ass and illegal hunting in the area.

The Hillu/Serdo area had the most diverse wildlife. The most frequently observed ungulate was Soemmerring's gazelle followed by Dorcas gazelle during the three surveys. Besia oryx (*Oryx beisa*), Dikdik (*Madoqua sp*) Abyssinian hare (*Lepus habessinicus*) and Hamadryas baboon (*Papio hamadryas*) were only observed in the Hillu area., Afdera/Bidu has less diverse wildlife and Hundurur needs further investigation.



Figure 7. Ostriches and Soemmerring's gazelle at Hillu, June 2023 (first trip)

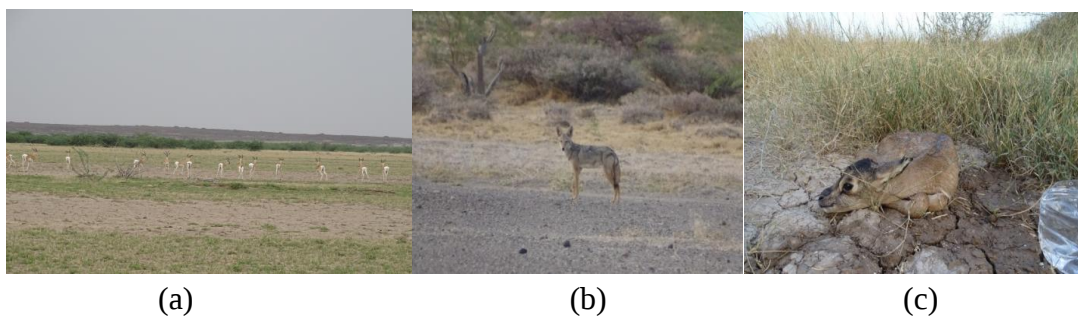


Figure 8. (a) Soemmerring's gazelle at Serdo, June 2023 (first trip) (b) Golden jackal (*Canis aureus*) and (c) young Soemmerring's gazelle at Serdo Alayla, November 2023 (second trip).

Local residents in the Serdo area revealed that the African wild ass had not been observed since 2022. The locals reported that there is poaching of gazelles. There is no law enforcement and protection in this area. Such illegal activities have become common in the Serdo Area. The locals are very much concerned about such activities and suggested that the regional and federal governments need to communicate and design a strategy to stop the illegal killing of wildlife in the area. The research team also observed during the second and third survey an expansion of agricultural land near Aila Manda water source (Figure 9) and a mining activity inside the wildlife area at Serdo. This has an adverse effect on African wild ass and other wildlife due to habitat transformation to other land use types. i.e. irrigated agriculture.



Figure 9. New agriculture development irrigation plans at Serdo encroaching the Aila Manda water source,

During the first survey, the team has observed a group of 15 Beisa oryxes (Figure10) at Hillu grazing together. This is the first time in the past 15 years that Oryx have been observed in this locale. This may indicate improvement of forage in the area owing to better rainfall than normal in early 2023.



Figure 10. Beisa Oryx at Hillu, June 2023 (first trip)

In the Hillu/Serdo area there were a substantial number of camels, cattle and shoats (sheep and goats) encountered during all three surveys. By comparison the Afdera/Bidu area had very few livestock,

The potential African Wild Ass Reserve/protected area

A reserve can be a wildlife protected areas designated for conservation of designated species. In this case, the Mille-Serdo Wild Ass Reserve (MSWAR) 8,700km² (Figure 13, a polygon in red line) was established primarily for the protection and conservation of the critically endangered African wild ass. However, the status of this Reserve has remained on paper since its establishment and has been continuously encroached by humans to the extent that some of its natural habitat is no longer suitable for the survival of the species. Particularly, the current development activities including settlement and agriculture practices have completely transformed the natural habitat into other land use forms.

This clearly indicates that the remaining suitable habitat needs to be redesigned and the boundaries need to be demarcated. Based on the scientific information documented since 1994 on the distribution of African wild ass and its habitat suitability the following boundary re-demarcation is recommended (Figure13, polygon in green line). The new proposed area will be 35,000 km². This proposal is open for discussion in order to get the consent of the regional Authorities, experts in the field and EWCA management body.

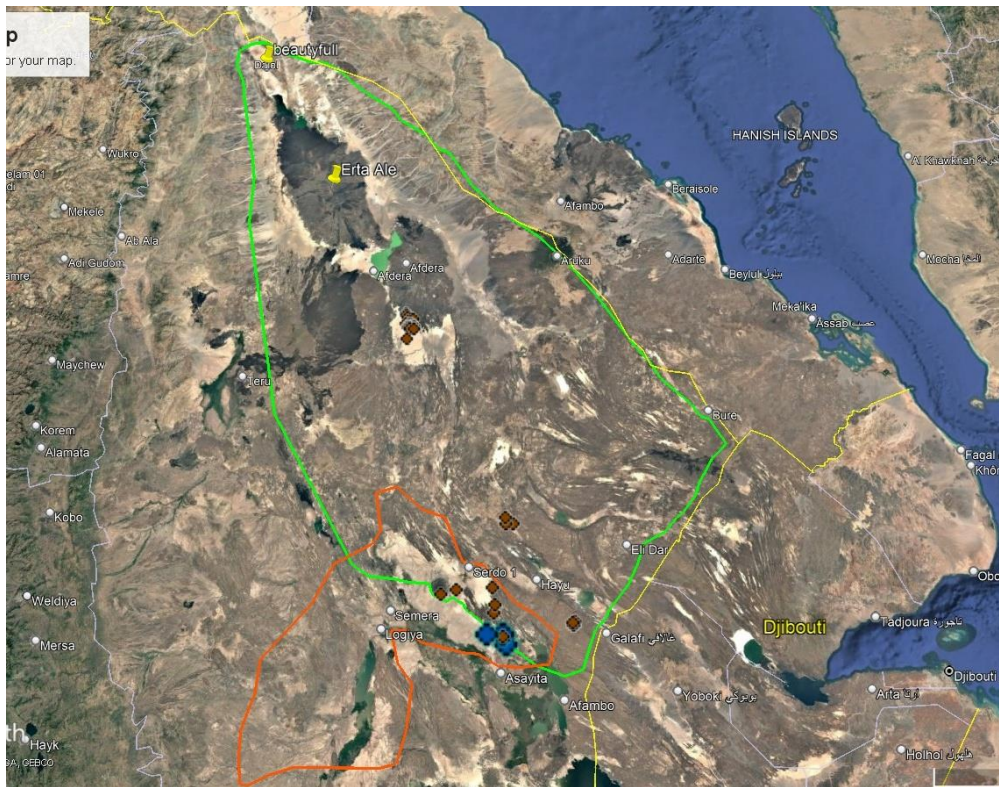


Figure 13 proposed African Wild Ass Community Based Conservation Area (AWACBCA) (35,000 km²) Green line and the former Mille-Serdo Wild Ass Reserve (MSWAR) (8,700km²) red line

5. Conclusions and recommendation.

Since 1994, there has been evidence of reproduction in Hillu area. However, since 2009 there have been no observations of foals in the Serdo and Hillu area. The female individuals that have been regularly observed during each survey have decreased in number from five in June 2023 to four in November 2023. Although the Hillu population has remained relatively stable since 2009, three female adult African wild asses were reported dead of natural causes between 2023 and 2025. The death of one adult female African wild ass occurred between June 2023 and November 2023 and may have been due to an injury that was infected. The death of two adult female African wild asses from the Hillu group was reported and confirmed recently and occurred in July of 2025.

There was a severe drought and many livestock perished. The available water sources dried up and forage was depleted. The two female African wild ass presumably died from lack of water and forage. Their deaths were not due to poaching. The Hillu population is small and since there appears to be no reproduction the situation is critical. It also illustrates that during periods of severe drought the lack of a protected areas puts this critically endangered species at severe risk.

The Afdera population is more promising as there are both adult males and females and they are producing foals. The following recommendations help to improve the long term survival of the species;

- Continue the community based conservation practice to engage more locals and improve the conservation effort through minimizing illegal activities and enhancing co-existence.

- Conservation management measures like rangeland management need to be developed in order to improve pasture condition and availability for locals and improve the local people and wildlife co-existence.
- Continued monitoring of the species and the habitat would provide additional information for better conservation and management of this critically endangered species.
- A new demarcation of the reserve boundary of the species range should be based on the existing realities on the ground and the current information on both the species distribution and habitat suitability. The recent long-term research has determined the suitable and optimum habitat. The species has a restricted distribution and there is promising suitable habitat but most of it is shared with local communities. Therefore, it is essential to enhance the integration of the local people in this conservation program in order to ensure conservation benefits to both the community and the wildlife. For, this reason the proposed African Wild Ass Community Based Conservation Area (AWACBCA) is larger in size compared to the previous African wild ass reserve. This proposed WACBCA also incorporates two of the outstanding features unique to Ethiopia and Africa; the Erta Ale and Dalol. These localities have unique geographical features and attractions. Erta Ale is an active basaltic shield volcano with a persistent lava lake, while Dalol is a hydrothermal system characterized by colorful, acidic hot springs and salt formations. These localities are among the outstanding geological sites in Ethiopia and have significant tourism potential. Therefore it is imperative for the Regional Government to legalize the newly defined and proposed AWACBCA

- The regional government should work with the community and also hire permanent scouts to safeguard the wildlife species in general, and to closely monitor and safeguard the known African wild ass populations in Hillu, Afdera, and Hundurur and other localities.
- Conduct workshops to reach consensus on the redefinition and demarcation of the new AWACBCA
- EWCA should continue its research to further identify potential habitats and populations within the newly redefined conservation area to strengthen the effort towards the conservation of the species.
- Despite glimpses of promising situations in Afdera, the conservation of remnants of the African wild ass requires special attention from regional government in collaboration with the community and other stakeholders.