

Short communication**NEW RANGE OF THE AFRICAN BUFFALO (*SYNCERUS CAFFER* SPARRMAN, 1772) IN THE UPPER BLUE NILE VALLEY, WESTERN ETHIOPIA—A PRELIMINARY STUDY****Habte Jebessa Debella**

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ABSTRACT: A preliminary study on the distribution of the African buffalo (*Syncerus caffer*) was conducted in 2014 in the Didessa River Valley of the upper Blue Nile in western Ethiopia, to confirm the presence of buffaloes and other co-existing wildlives in the area, which the government considers for settlement and investment because of unconfirmed wildlife distribution. Buffaloes were located by tracking their expected ranges in the upper Blue Nile Valley and each location was marked using GPS, and superimposed on the known range of buffaloes. The result showed that the present distribution of buffaloes is further extended from their known ranges. Moreover, the presence of several other wildlife species in the study area was also been confirmed, and the new distribution range map for buffaloes was generated. The current range of African buffaloes is the last green space left in the upper Blue Nile Valley for wildlife conservation, for which urgent conservation actions are necessary.

Key words/phrases: African buffaloes, Blue Nile, conservation actions, Didessa Valley, western Ethiopia

INTRODUCTION

Due to the recent trends in land-use changes for large-scale agriculture by governments and investors in Ethiopia, lowland riverine ungulates and their corresponding predators are becoming threatened. African buffalo is one of the most threatened ungulates in the upper Blue Nile Valley of Ethiopia due to trophy hunting and bush meat trade in addition to habitat destruction and fragmentation. Conservation activities and research in this area are limited, mainly due to the inaccessibility of the area. The upper Blue Nile Valley is one of the least studied areas in the world (Conway, 2000).

In the Atlas of the Potential Flora of Ethiopia, this area falls under *Cumbretum-Terminalia* woodland and wooded grassland (CTW) along the lowlands and dry evergreen Afromontane forest, and grassland complex (DAF) on the higher altitudes (Friis *et al.*, 2011). Drought-driven re-settlements from eastern part of the country on the banks of the Didessa River drove buffaloes and co-existing wildlife further east to the only surviving CTW.

The Didessa River catchment constitutes the upper Blue Nile catchment. It originates from the mountains of Gumma in Illubabor Zone of the Oromia National Regional State of Ethiopia. This river drains the highlands of Oromia through its major tributaries such as Dabena, Dabus, Anger and Wama, traversing the lowland gorges of CTW. The Didessa River crosses Benishangul Gumuz National Regional State of Ethiopia before it confluences with the famous Abay (Blue Nile) River. The Didessa river basin covers a vast area of about 25,800 km² (Shahin, 1985). The lowland plains on the north of the river were deforested in the 1980s by large-scale agricultural activities, which were later abandoned. In comparison to other parts of Ethiopia, the Didessa River basin remained relatively afforested holding about 25% of its forest cover. However, recent human population pressure has changed the scenario and the annual rate of deforestation has increased to 2.6% (Bizuneh Admassu Sima, 2011). The intact part of the Didessa riverine habitat with rich biodiversity exists on both sides of the Dabena River. One of the biggest tributaries of Didessa River is the Dabena River.

Recent observations have revealed that this area is rich in ungulates, carnivores, primates, birds, and reptiles among others. The Dabena and Didessa rivers are also rich in their fish diversity (Mina *et al.*, 1998).

Despite extreme pressures from habitat degradation, poaching and encroachment, several wildlife species including buffaloes are present in large numbers in the Dabena and Didessa river catchments and valleys. The IUCN red list map shows that buffaloes are extinct from the current study area (IUCN, 2012). The present study, however, uncovers abundant buffaloes of morphologically distinct unidentified subspecies, which is worth consideration and protection. In Ethiopia, all unsettled or permanently uncultivated lands are considered as no man's land (state property), which is prone to settlement and investment, as if it is devoid of wildlife (Berihun Adugna Gebeye, 2016).

The objective of this study was to bring the new territory of buffaloes and co-existing wildlife ranges into the attention of scientific and conservation agencies, and policy makers for consideration of this last green space for conservation. This report is expected to discourage settlement and large scale agricultural investments in this hitherto neglected wildlife habitat.

MATERIALS AND METHODS

The study was conducted in Meko Woreda, Buno Bedelle Zone, in the catchment of the Dabena River, one of the tributaries of the Didessa River on the eastern side. The altitude ranges from 1400 to 2505 masl. It rises from the Didessa River to the top of Mount Jorgo, which is located at the centre of the Jorgo-Wato Participatory Forest Management area. The altitude of the Jorgo Wato Participatory Forest Management area is about 2505 m.a.sl on the top of Mount Jorgo.

A reconnaissance study was conducted in March 2013 in the Didessa Valley and on the eastern escarpment of the Didessa River catchment, the Jorgo-Wato Participatory Forest Management area. Thereafter, every dry season observations were carried out for at least a week from 2013 to 2016. The study site covers about 1000 km² in the Dabena River Valley and 60 km² in Jorgo-Wato Participatory Forest Management area. Jorgo and Didessa River forests used to

connect before they disconnected by settlements in the last three decades. Each year from 2013 to 2016 overnight sleeping in the buffaloes' territory was made in March or April when the forests were burnt down (in the case of Didessa Valley) and any gunshot was recorded. This was also done for Jorgo-Wato Participatory Forest Management area. The Jorgo-Wato Participatory Forest Management area is covered with high rising trees of the characteristic tropical rainforest of south-western Ethiopia (Friis *et al.*, 2011). Most of the Jorgo-Wato forests are impenetrable while the Didessa River valley is impenetrable during the wet season. The study used reconnaissance walking in the forests during the dry season to see animals from far distance using binoculars. In both cases, different detection methods such as visual observation of buffalo herds, carcasses, dungs, hoofmarks on salt licking sites and looking for freshly poached buffaloes from gun shots were used (Hoffman *et al.*, 2010). A map of known range of African buffaloes obtained from the IUCN was used to locate the known ranges (IUCN, 2012). The current range of the buffaloes was recorded using GPS during the ground survey. Co-existing species of mammals recorded during the surveys were also listed.

RESULTS AND DISCUSSION

Since 2013, repeated study visits confirmed with certainty that viable buffalo populations inhabit both the Jorgo-Wato Participatory Forest Management area and the new territory indicated in Figure 1. The reconnaissance studies showed the same buffaloes' herds in small patches (3-7 individuals) in Jorgo-Wato Participatory Forest Management area. In the Dabena River Valley, the reconnaissance walk overran many buffaloes while they rest under the unburnt elephant grasses during the dry season (February to end of March). No buffalo was seen grazing or standing during the day in both areas. On April 18, 2014, carcasses of two freshly poached bull buffaloes (Figs 2 A and B) were seen outside their IUCN specified known range (IUCN, 2012). In 2016, similar observations confirmed the abundance of the African buffalo herds in the same area. Co-existing species of wildlife encountered in the area are listed in Table1.

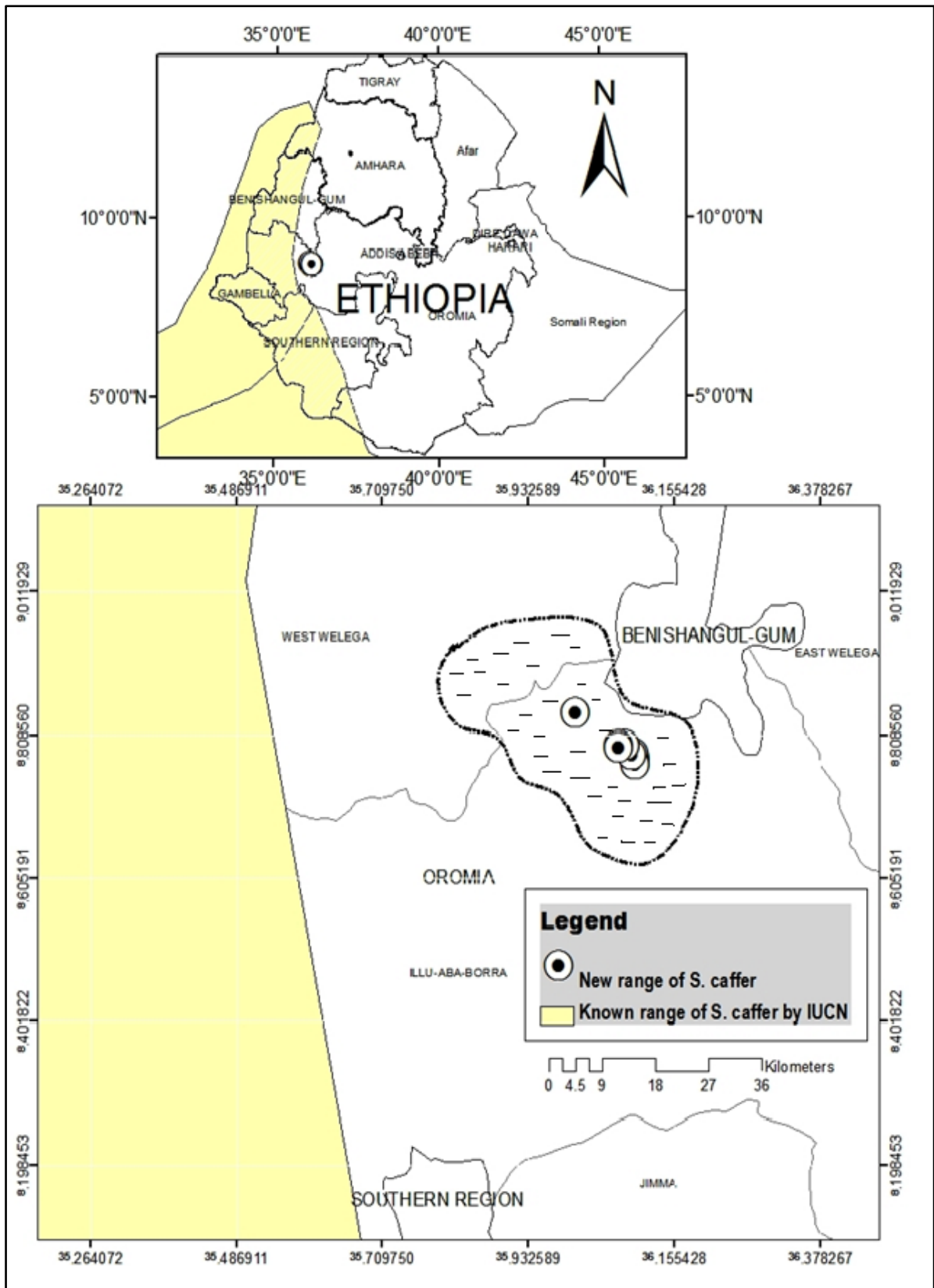


Figure 1. Map of the study area showing new range of *S. caffer* (Bullets show exact GPS location of herds and the (–) show observations of ranging buffalo herds between Oromia and Benishangul Gumuz National Regional States.



Figure 2. Poached and butchered unidentified subspecies of buffalo (*S. caffer*) on the bank of the Dabena River (tributary of the Didessa River), upper catchment of the Blue Nile (April 18, 2014). A= younger buffalo; B= older buffalo; C=butchered and carefully arranged for transport (Photo: Habte J. Debella). Poached and butchered unidentified subspecies of buffalo (*S. caffer*) on the bank of the Dabena River (tributary of the Didessa River), upper catchment of the Blue Nile (April 18, 2014). A= younger buffalo; B= older buffalo; C=butchered and carefully arranged for transport (Photo: Habte J. Debella).

Table 1. Co-existing species of wildlife with buffaloes in the study area.

No.	Common name	Species	IUCN Red list status online	Current population trend from the IUCN Red list website.	Means of detection
1	Lion	<i>Panthera leo</i> (Linnaeus, 1758)	VU	Decreasing	Visual
2	Aardvark	<i>Orycteropus afer</i> (Pallas, 1766)	LC	Unknown	Fresh burrows
3	Greater kudu	<i>Tragelaphus strepsiceros</i> (Pallas, 1766)	LC	Stable	Visual
4	Ethiopian Hare	<i>Lepus fagani</i> (Thomas, 1903)	DD	Unknown	Visual
5	Bush back	<i>Tragelaphus scriptus</i> (Pallas, 1766)	LC	Stable	Visual
6	Honey badger	<i>Mellivora capensis</i> (Schreber, 1776)	LC	Decreasing	Visual
7	Leopard	<i>Panthera pardus</i> (Linnaeus, 1758)	NT	Decreasing	Visual
8	Genet	<i>Genetta genetta</i> (Linnaeus, 1758)	LC	Stable	Visual
9	Giant Forest Hog	<i>Hylochoerus meinertzhageni</i> (Thomas, 1904)	LC	Decreasing	Visual
10	Bush pig	<i>Potamochoerus larvatus</i> (F. Cuvier, 1822)	LC	Stable	Visual
11	Warthog	<i>Phacochoerus africanus</i> (Gmelin, 1788)	LC	Stable	Visual
12	De Brazza's Monkey	<i>Cercopithecus neglectus</i> (Schlegel, 1876)	LC	Unknown	Visual
13	Blue Monkey	<i>Cercopithecus mitis</i> (Wolf, 1822)	LC	Decreasing	Visual
14	Olive Baboon	<i>Papio anubis</i> (Lesson, 1827)	LC	Increasing	Visual
15	Grivet Monkey	<i>Chlorocebus aethiops</i> (Linnaeus, 1758)	LC	Stable	Visual
16	Spotted Hyena	<i>Crocuta crocuta</i> (Erxleben, 1777)	LC	Decreasing	Voice
17	Golden Jackal	<i>Canis aureus</i> (Linnaeus, 1758)	LC	Increasing	Visual
18	Mongoose	<i>Mungos mungo</i> (Gmelin, 1788)	LC	Stable	Visual
19	Civet	<i>Civettictis civetta</i> (Schreber, 1776)	LC	Unknown	Civetry, Scent markings
20	Colobus monkey	<i>Colobus guereza</i> (Rüppell, 1835)	LC	Unknown	Visual
21	Porcupine	<i>Hystrix cristata</i> (Linnaeus, 1758)	LC	Unknown	Spines

DISCUSSION

The population of African buffaloes is declining and becoming locally extinct from some of the East African countries (IUCN SSC Antelope Specialist Group, 2008). Being a large herbivore, habitats of buffaloes allow several species of ungulates and predators to co-exist. Since time immemorial, buffaloes are the most persecuted wildlife in Ethiopia. This is because of the cultural myth that a man who failed to kill a buffalo is not fit to get married. Until recently, trophies of buffaloes were available on Ethiopian rural roadsides, hanged on trees (Mosissa Geleta, 2015). The current killings are not only for trophies, but also for bush meat trade. Extra kill (Fig. 2A); body parts of butchered buffaloes (Fig. 2B), parts carefully separated and prepared for transportation (Fig. 2C) indicate the demand of bush meat outside the buffalo habitat.

African buffaloes are not well documented and studied in Ethiopia. The status of a red forest buffalo, which was hunted by PH Nassos Roussos in 1974 and was again encountered by the same hunter in the 1980s in Southwestern Ethiopia, is still unknown to science (Roussos, 2010). This finding was far outside of the IUCN red list extant species range (IUCN SSC Antelope Specialist Group, 2008).

Buffaloes have also migrated to the high-altitude forests of Jorgo-Wato Participatory Forest Management area, Oromia Regional State, where the number of individuals in each herd dramatically decreased. Several encounters confirmed that the number of individuals in the herd in Jorgo-Wato Participatory Forest Management area were at most 7 while in the Dabena River they can reach as much as 60. During the reconnaissance survey of this study, at least 12 gunshots were heard in the early morning and late afternoon hours. Local farmers living in the proximity of the forests confirmed that those gunshots were signs of poaching in the study area. On March 18, 2014, mass shooting occurred on the eastern bank of the Dabena River at about 1:00 p.m. local time, following disturbance by forest fire. Even though the IUCN Red list status of most mammals in Table 1 are marked as "Least Concern", population trends indicate as "decreasing" or "unknown" (IUCN SSC Antelope Specialist Group, 2008). Unknown wildlife distribution in the study site allowed settlement and investment in wildlife habitats. Hence, it is

recommended that responsible authorities launch a full-fledged biodiversity inventory and take appropriate conservation actions on these hitherto unknown ranges of African buffaloes in the Dabena and Didessa River Valleys and nearby areas in the upper Blue Nile Valley of Ethiopia. Since no buffalo was observed during the day grazing or resting on the open field, it seems that buffaloes have changed their grazing behaviour to night and the resting to the day, mainly due to disturbance and persecution by poachers.

ACKNOWLEDGMENTS

Extant range shape file of *S. caffer* was kindly provided by the International Union for Conservation of Nature and Natural Resources (IUCN). The Rufford Small Grants Foundation, Grant Id. 15203-1, supported this study.

REFERENCES

- Berihun Adugna Gebeye (2016). Unsustainable: An Evaluation of the Legal and Policy Interventions for Pastoral Development in Ethiopia. *Pastoralism: Research, Policy, and Practice* 6:2, doi: 10.1186/s13570-016-0049-x.
- Bizuneh Admassu Sima (2011). Flow Regime and Land Cover Changes in the Didessa Sub-Basin of the Blue Nile River, Southwestern Ethiopia: Combining Empirical Analysis and Community Perception. MSc thesis. Swedish University of Agricultural Sciences, Uppsala.
- Conway, D. (2000). The climate and hydrology of the upper Blue Nile River. *Geogr. J.* 166:49-62.
- Friis, I., Sebsebe Demissew and Van Breugel, P. (2011). *Atlas of the Potential Vegetation of Ethiopia*. Addis Ababa University Press and Shama Books.
- Hoffmann, A., Decher, J., Rovero, F., Schaer, J., Voigt, C. and Wibbelt, G. (2010). Field methods and techniques for monitoring mammals. In: *Manual on Field Recording Techniques and Protocols for All Taxa Biodiversity Inventories and Monitoring*. Vol. 8, pp. 482-529, (Eymann, J., Degreef, J., Häuser, C., Monje, J.C., Samyn, Y and Vandenspiegel, D., eds). Abc, Taxa.
- IUCN (2012). International Union for Conservation of Nature (IUCN) Red List of Threatened Species. Version 2012. 1. Available on

- <http://www.iucnredlist.org>. Accessed on November 3, 2015.
7. IUCN SSC Antelope Specialist Group (2008). *Syncerus caffer*. The IUCN Red List of Threatened Species 2008: e. T21251A9260904. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLT.S.T21251A9260904.en>.
 8. Mina, M.V., Mironovsky, A.N., Golubtsov, A.S. and Dgebuadze, Y.Yu. (1998). II - Morphological diversity of "large barbs"; from Lake Tana and neighbouring areas: Homoplasies or synapomorphies? *Ital. J. Zool.* **65**:S1,9-14, doi: 10.1080/11250009809386789.
 9. Mosissa Geleta (2015). The indirect socioeconomic impact of illegal hunting of African buffalo (*Syncerus caffer*) for trophy in East Wollega, Ethiopia. *Am. Sci. Res. J. Eng. Technol. Sci.* (ASRJETS) **9**:64-75.
 10. Rousso, N.N. (2010). A Red Forest Buffalo in Kaffa Province of Ethiopia? *African Hunting Gazette*, March 14, 2010. <http://www.africa-hunting.com/threads/a-red-forest-buffalo-in-kaffa-province-of-ethiopia.14895>.
 11. Shahin, M. (1985). *Hydrology of the Blue Nile*. Elsevier Science Publishers, Amsterdam.