Biogeographia – The Journal of Integrative Biogeography 35 (2020): 27–42
https://doi.org/10.21426/B635045738

Records of Ethiopian and Eritrean mammals in Italian literature and museums, with some taxonomic notes

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Keywords: *Canis anthus*, Conservation, *Equus africanus*, *Nanger lacuum, Nanger soemmerringi*, *Vulpes vulpes aegyptiaca*.

SUMMARY

Published and unpublished data on Ethiopian and Eritrean mammals, mainly deriving from Italian sources, including some natural history museums, in the present contribution are intended as an amendment to the landmark Catalogue of Ethiopian and Eritrean mammals produced by Derek Yalden and collaborators between 1974 and 1996. Additionally, a few taxonomic notes including the proposal of two new subspecific names are included. The paper highlights the importance of historical data for a number of scientific applications, such as taxonomy, conservation biology, and restoration ecology. Two 'cryptozoological' records are also included.

LSID for new names:

http://zoobank.org/NomenclaturalActs/1C90A558-271B-4623-8F0C-2AF1EB24EAD6

http://zoobank.org/NomenclaturalActs/fe73c8d4-ae7d-48ce-8ca7-5875935ad594

INTRODUCTION AND HISTORICAL BACKGROUND

Derek Yalden (1940-2013) and co-workers remarkably summarised all literature known to them on the mammals of Ethiopia and Eritrea (Yalden et al. 1996; see also Yalden and Largen 1992 and the last update in Afework Bekele and Yalden 2013). Their 'Catalogue' represents a long-standing reference for all those working on the mammals of the region, even if new records and discoveries inevitably make their taxonomy and nomenclature obsolete and refine geographic ranges of taxa (Gippoliti 2010a, Lavrenchenko et al. 2016, Lavrenchenko and Afework Bekele 2017, Bryja et al. 2019).

In recent decades, a number of poorly known records or publications in Italian on the fauna of the region attracted my attention. This is not surprising considering the long presence of Italy in the region. But because these publications are not widely known or circulated, they often were not included among the Catalogue's references. The Eritrean colony was established in 1890 but Italian presence in Asab goes back to 1869. In that year a first scientific mission was carried out by Orazio Antinori, Carlo Piaggia, Odoardo Beccari, and Arturo Issel in the area then known as Bogos country (Issel 1882).

North-East Africa (including eastern Sudan) became of strategic importance for Italy, several scientific missions were performed, and a permanent scientific station was established at Let Merafià (Shewa, Ethiopia) in 1876, under the auspices of the Società Geografica Italiana (SGI). The Genoa Natural History Museum received most of the zoological material collected by the SGI expeditions, but often important collections, such as that of Antinori and Traversi, were shared among several Italian museums. For instance, Shewa mammals collected by Antinori are at present in the museums of Genoa, Turin, Milan, Rome, Naples, Pavia, and Florence. The collections of Vincenzo Ragazzi, who succeeded Antinori as director at Let Marefià from 1884 to 1889, are conserved in Genoa and Modena. The collections of Leopoldo Traversi, who directed Let Marefià from 1889 to 1894, are found in Florence and Rome. The fragmentation of mammal collections prevented the publication of a comprehensive paper on the mammals of the Shewa region, as has been done on the birds (Salvadori 1884). Also several military and civil teams carried out geographic, zoological and hunting expeditions in the Region, and often donated materials to local museums that lacked scientific personnel to study and publish it. This first phase of scientific research abruptly came at end with the Abyssinian-Italian war and the defeat of the Italian Army at Adwa in 1896.

Despite the high number of natural history museums found in Italy, only a few regularly contributed faunistic data to the literature more than a century ago (Giglioli 1888, Picaglia 1895, Senna 1905, Sordelli 1902), while materials from the region flowed to Italian museums at least until 1940. The beginning of the XX Century saw increasing interest in the Somalia colony while little research was done in Eritrea, although an updated checklist of Eritrean mammals, based on the Milan collection, was published (Parisi 1917; see also Tedesco Zammarano 1930). A few important contributions to the Ethiopian mammal fauna originated from collections in Genoa and Milan (de Beaux 1922, 1925), but probably smaller collections reached Italian museums without even being recorded. The period 1920-1943 is characterised by the mammalogical work of Oscar de Beaux, director of the Genoa Museum, who studied the mammal collections in Genoa, Milan, Turin and Trento (Gippoliti 2006). During the same period, Edoardo Zavattari was the main supporter of tropical zoological researches in Italian colonies (Zavattari 1959). In 1936 Italy began a short period of domination of Ethiopia that ended in 1941 with the Second World War. During this period, the Tigray Region was included in the Eritrean Territory. Saverio Patrizi (1902-1957) was appointed Superintendent of hunting and fishing for all the then Italian Eastern Africa and began a census of Ethiopian wildlife. He also established a first nucleus for a future "Addis Ababa Natural History Museum" (Patrizi 1940), prepared a list of protected species, and gazetted a number of partial or total reserves to protect some large mammal species, including Job, Nacfa and Gash-Setit in Eritrea and Semien, Miesso (Harar), Mt. Chillalo and Didessa in Ethiopia (Anonymous 1940). The Reale Accademia d'Italia developed an intensive program of scientific studies including two biological missions in southern Ethiopia (Borana and Sagan-Omo regions), headed by Zavattari, and one in the Lake Tana, but also anthropological, geographical and geological researches were realised in little-known regions of the country. In the same years Augusto Toschi (1906-1973) and the taxidermist Giulio Calastri, of Bologna University, travelled extensively in Ethiopia but regrettably all their collections were lost following the war (Spagnesi 2000).

The bombing of the Milan Natural History Museum in 1943 led to the destruction of the rich Ethiopian and Eritrean collections there (Oriani and Castiglioni 2003). After the Second World War, Ethiopia and Eritrea were visited by several Italian zoologists but contributions to mammalogy have been limited in number (cf. Azzaroli-Puccetti 1987, Corti et al. 1999, Chiozzi et al. 2014).

MATERIALS AND METHODS

Zoological and geographical literature not cited in the Catalogue of the Mammals of Ethiopia and Eritrea (see above) were analysed for new records pertinent to the two countries. Museum specimens are generally the most reliable data, but occasional reliable direct observations or photographic data are also discussed (Table 1). The relevance of some records is appropriately highlighted through the text. When appropriate, specific accounts deal with the taxonomic status of some taxa in the region, and some taxonomic changes are proposed. The list follows the order of Yalden et al. (1996). Two 'cryptozoological' records are also included.

DISCUSSION

The following records have been selected in view of their faunistic or conservation importance. Their reliability is variable, yet all them are worth publishing (or re-publishing) to stimulate further research and to make them available to a wider audience.

It seems that pre-war collections and researches have long been ignored by Italian zoologists as a way to overlook a negative historic period. This attitude was also shown by the Accademia dei Lincei, which, after the Second World War, blocked the publication of the scientific results of the Sagan-Omo Mission (Zavattari 1959; Capanna 2012). However, taxonomic and faunistic knowledge in the region is still far from satisfactory, even among mammals (see for example Koch et al. 2000, Lavrenchenko et al. 2016, Gippoliti 2017). It is now a moral obligation for Italian institutions to disseminate all those data that may contribute to increase knowledge about the importance of the conservation of biodiversity in the Horn of Africa. Several taxonomic questions seem still open and museum collections may be particularly valuable to solve some issues that have important conservation implications (Gippoliti et al. 2014, Gippoliti 2018), such as those surrounding the correct names and number of species actually existing under the name of 'golden jackal' or 'golden African wolf'. Furthermore, historical data may be essential to better understand the reasons associated with the decline or extirpation of species and thus for the correct development of conservation and restoration projects (Largen and Yalden 1987, Battisti et al. 2015, Fris 2019). The present compilation does not pretend to be exhaustive. Some particularly important specimens are currently under study and will be reported elsewhere, while a copious literature still awaits competent zoological readers. Hopefully, this paper will generate interest on frequently neglected museum collections, archives and historical reports that are highly valuable to the conservationist of the XXI Century (cf. Fris 2019).

SYSTEMATIC LIST

Primates Linnaeus, 1758

Cercopithecidae Gray, 1821

Papio Erxleben, 1777

Papio hamadryas (Linnaeus, 1758). This species was reported and pictured by Robecchi-Stagnoli (1939) in his account of the game species of the Western Highlands, where it was reported to be much less common than *Papio anubis*. This seems to represent a westerly extension of known hamadryas baboon range in Ethiopia (see also discussion in Yalden at al. 1996). There are Antinori's specimens from Fekerie-Ghemb and Sciotalit in the Museo di Storia Naturale of Genoa (Doria pers. com). The first of these records confirm the presence of the species at considerable altitude on the Shewa plateau, see also discussion by Yalden et al. (1996: 95).

Papio anubis J.B. Fisher, 1829. Tedesco Zammarano (1922: 235) showed a photo of a male baboon shot at Ghindi-Meteà, near the Amba Cion, north-west of Gonder. This animal differs substantially from typical *Papio anubis doguera* (Pucheran, 1829) by the absence of a conspicuous mane and may be ascribed to *Papio anubis heuglini*

Matschie, 1898. There are baboon specimens from "Abyssinia" in Italian museums (i.e. Pavia, Florence) that may belong to this taxon. The range of the subspecies of *Papio anubis* in Ethiopia has been discussed by Stark and Frisch (1958), Hill (1970) and Yalden et al. (1977).

Table 1. A summary of additional geographic record subdivided by taxa and kind of record.

Taxon	Literature record	Museum record	Visual/photo record	Other
Papio hamadryas	1	1 (GENOA)		
Papio anubis	1			
Chlorocebus pygerythrus zavattarii			1	
Colobus guereza	2	1 (GENOA)	1	
Lycaon pictus	2			
Canis cf. *anthus*		4 (GENOA)		
Canis mesomelas		4 (GENOA)		
Vulpes vulpes aegyptiaca	1			1
Otocyon megalotis		1 (GENOA)		1
Ictonyx striatus		5 (GENOA)		
Mellivora capensis	3	2 (GENOA)		
Aonyx capensis meneliki	3	1 (GENOA)		
Genetta abyssinica	1	1 (GENOA)		
Genetta maculata		7 (GENOA)		
Genetta genetta		3 (GENOA)		
Ichneumia albicauda	1	4 (GENOA)		
Herpestes sanguineous		3 (GENOA), 1 (NAPLES)		
Atilax paludinosus		1 (GENOA)		
Proteles cristatus	1	1 (GENOA)	1	
Hyaena hyena	1			
Felis lybica		1 (GENOA)		
Leptailurus serval		2 (GENOA)		
Caracal caracal		4 (GENOA)		
Loxodonta africana	3			
Equus africanus	3			
Equus grevyi	1			
Diceros bicornis	2			
Orycteropus afer	2			
Potamochoerus porcus	4			
Phacochoerus africanus	1			
Hippopotamus amphibius	2			
Giraffa reticulata	1			
Alcelaphus neumanni	1			
Alcelaphus swaynei	2			
Cephalophus sp.	1			
Ourebia sp.	1	1 (GENOA), 1 (MILAN)		
Madoqua saltiana	2			
Nanger soemmerringi	1			
Nanger notata	1			
Eudorcas rufifrons	1			
Gazella dorcas pelzeni		1 (GENOA)		
Tragelaphus buxtoni	1			
Taurotragus oryx	1			
Syncerus cf. *caffer*	2			
Graphiurus sp.	1			
Lophiomys imhausi	1			
Thryonomys sp.	1			

Theropithecus I. Geoffroy, 1843

Theropithecus gelada (Rüppell, 1835). Known historical records were reviewed by Gippoliti (2010b).

Chlorocebus Gray, 1870

Chlorocebus pygerythrus zavattarii (de Beaux, 1944). Three individuals of this distinctive and little-known form of grivet (characterised by a very marked white ventral area) were observed and photographed by the author (unpublished data) in 1990 along the Neri River, Mago National Park. Examination of the type series in Genoa Museum confirmed this taxon belong to the *C. pygerythrus* species-complex.

Chlorocebus djamdjamensis (Neumann, 1902). Carpaneto and Gippoliti (1994) discussed the external differences between *C. djamdjamensis* from the Harenna Forest and a group of *C. djamdjamensis* then found in the Jilhava Zoo. The wealth of research produced after that re-evaluation of the species has documented the presence of two well-defined groups from morphological, ecological, and genetic points of view (Mekonnen et al. 2018). One of the groups, found in forest fragments of Sidamo, shows signs of – a presumably ancient - admixture with *Chlorocebus aethiops* and includes the holotype of *C. djamdjamensis* (Haus et al. 2013, Mekonnen et al. 2018). The other group is restricted to continuous primary montane and bamboo forest of the Bale Mountains and is clearly distinguished morphologically by the absence of a clearly demarcated white frontal band. I here propose to name this latter form *Chlorocebus djamdjamensis harennaensis* **ssp. nov.** (http://zoobank.org/NomenclaturalActs/1C90A558-271B-4623-8F0C-2AF1EB24EAD6) the holotype being the adult female captured at Katcha, (Katcha Camp, Harenna Forest, Bale: 06'42'N, 39"44'E, 2400 m a.s.l., Bale Mountains N.P.), on August 1986 (field number: 83; Yalden et al. 1996: 96) and now in the Natural History Museum of Addis Ababa.

Colobus Illiger, 1811

Colobus guereza (Rüppell, 1835). The presence of the species is reported in Western Tigre by Cianni (1942) at Ende Guresà (near Scimbillina and Ciamaeschebet, Ab Darò Commisariat). Two skins in the Natural History Museum of Genoa are labelled Macallé, E. Tissi legit, 1930 (Doria, pers. com.). Guerezas were encountered and photographed by Augusto Vigna Taglianti at Sombo (between Jimma and Bonga, Kaffa Region) during the 1973 Accademia Nazionale dei Lincei Expedition to Ethiopia (Brignoli et al. 1978). These animals possess a completely whitish tail and a well developed terminal tuft approaching those typical of the subspecies *C. guereza caudatus* of Mt Kenya. Interestingly, *Colobus guereza* was not observed and sampled at Sombo (Dandelot and Prevost 1972). Grottanelli reported the species for the Anfillo Forest (north of Gambela) (Grottanelli 1940).

Groves (2001) considered the Rift Valley as the border between the two recognised subspecies in Ethiopia; *C. guereza guereza* on the west and *C. guereza gallarum* on the east. It should be noted however that guerezas of the Harenna Forest in the Bale Mt. N.P. do not share the tail characters of *C. guereza gallarum* (Carpaneto & Gippoliti 1994), so distribution of *C. guereza gallarum* appears limited to the Eastern Arusi and Chercher region (Groves 2007). A genetic study (Zinner et al. 2019) has recently confirmed the validity of *C. guereza gallarum* and its restricted geographic range. This case offers another example of the practical importance of taxonomic knowledge for both basic research and conservation (Gippoliti 2019). Actually, some research done on *C. guereza* '*gallarum'* (e.g., Petros et al. 2018) in fact documented another *C. guereza* population, judging from the external characters of the studied population.

Carnivora Bodwich, 1821

Canidae Fischer, 1817

Lycaon Brookes, 1827

Lycaon pictus (Temminck, 1820). Reported as abundant at Addi Hagherà and along the Tacazzè River (Western Tigre – Ad Darò Commisariat) (Cianni 1942). Tedesco Zammarano (1922) observed two individuals along the Scinfé River and a large pack along the Sorocà River, demonstrating the (former) relative abundance of the species in an area where no records apparently existed (Malcom & Sillero-Zubiri 2001).

Canis Linnaeus, 1758

Canis simensis Rüppell, 1838. The Museo Civico di Storia Naturale Giacomo Doria holds a pair labelled as from Dabarif, Danakil, donated by Capt. Alfonso Maria Tancredi in 1908 (de Beaux 1922; Arzelà Grassi 1973). This may be corrected as Debarek (cfr. Largen and Spawls 2006), near the Simien.

Canis anthus F. Cuvier, 1820. Massawa, Eritrea, legit O. Beccari 1870; Assab, Eritrea legit V. Ragazzi 1888 (ssp. *riparius*). Mt. Onà, Eritrea legit O. Antinori 1879; Keren, Eritrea legit O. Beccari & O. Antinori, 1870; Gabba Laitù, Shewa, legit V. Ragazzi 1884 (ssp. *soudanicus*) (Arzelà Grassi 1973).

While several genetic studies have clearly demonstrated that the African golden (or grey) jackals are closely related to *Canis lupus* rather than *Canis aureus* (Gaubert et al. 2012, Rueness et al. 2015), much confusion surround the nomenclature and taxonomic rank and validity of the several taxa of 'golden jackals' described from Africa. Although it is likely that more than one species of golden jackals exist in Africa, the older available name is clearly *Canis anthus* F. Cuvier, 1820 (contra Viranta et al. 2017). To exemplify the current confusion it is enough to look at Bekele and Yalden's (2013) accounts of *Canis aureus* and *Canis lupus*, the latter a species that has been never reported from Ethiopia (and Africa)! Regrettably, most authors now follow Viranta et al (2017) and refer all 'golden jackals' in Ethiopia to *Canis lupaster* Hemprich and Ehrenberg, 1832. All this nomenclatorial chaos will not help to reach a good knowledge of the diversity of this taxon.

Lupulella Hilzheimer, 1906

Lupulella mesomelas (Schreber, 1775). Keren; Eritrea, legit O. Beccari and O. Antinori, 1870; Damma; Danakil, legit V. Ragazzi 1884; Asab; Eritrea legit V. Ragazzi 1888; Setit; Eritrea, Legit R. Scotti (Arzelà Grassi 1973).

Vulpes Oken, 1816

Vulpes vulpes aegyptiaca (Sonnini, 1818). This species is not discussed by Yalden et al. (1984) nor by Setzer (1956) for Sudan. The Guide to Africa orientale italiana (Consociazione Turistica italiana 1938: 53) cited the species without further comments. Presence of the red fox in Eritrea is supported by the importation of several live red foxes from Eritrea in the 1950's for the Giardino Zoologico in Rome (Gippoliti 2013). Specifically four foxes entered the zoo on 15 November 1951 together with other Eritrean small mammals. This seems another – overlooked – occurrence of a terrestrial Palaearctic species extending at least to Eritrea.

Otocyon Müller, 1836

Otocyon megalotis (Desmarest, 1822). Rugdeja-Sogheira, legit O. Antinori (Antinori 1878, Arzelà Grassi 1973), apparently a northern extension of historic range. Note that Butynski (1995) reported the observation of this species in the Gash-Setit region of Eritrea by Johannes (1993) well outside the known range of the species.

Mustelidae Fischer, 1817

Ictonyx Kaup, 1835

Ictonyx striatus (Perry, 1810). Asab; Eritrea legit V. Ragazzi 1888; Keren; Eritrea legit Zavattari 1930 (ssp. *erythreae*); Dens; Shewa legit O. Antinori 1881; Falle and Let Merefià;

Shewa legit V. Ragazzi 1886-1888 (Arzelà Grassi 1973).

Mellivora Storr, 1780

Mellivora capensis (Schreber, 1776). Widely distributed in Eritrea; cited along the Ambessà River (Tucul), Barasiò and Segeneyti (Fossati 1938). Ailei; Eritrea legit C. Piaggia 1872; Barentù; Eritrea legit Zavattari 1930 (Arzelà Grassi 1973).

Aonyx Lesson, 1827

Aonyx capensis meneliki (Thomas, 1903). There is a skin from 'Scioa Galla', Awash River in the Museo Civico di Storia Naturale G. Doria collected in 1883 by Giulio Pestalozza (Arzelà Grassi 1973). Antinori (1878) cites 'otters' from the Awash. A specimen was also shot and figured by Tedesco Zammarano (1922, 1930) somewhere along the route Gondar - Tacazzé River. 'Otters' were reported as common and hunted in the Tana Lake by Piaggia in 1874 (Pellegrinetti 1941).

Viverridae Gray, 1821

Genetta Oken, 1816

Genetta abyssinica (Rüppell, 1836). Robecchi-Stagnoli (1939) published what is probably the first ever photo of the species, apparently a living tame individual and reported as its pelage was said to be as velvet. In the short account, the author says that the species is very rare compared to *Genetta maculata* (Gray 1830). The Museo Civico di Storia Naturale Giacomo Doria in Genoa had a specimen from Kassala donated by Orazio Antinori in 1871 (Arzelà Grassi 1973), apparently the first record of this rare species from Sudan.

Genetta maculata (Gray, 1830). In the Museo Civico di Storia Naturale G. Doria in Genoa there are seven specimens from Shewa collected between 1881-1889 by Antinori and Ragazzi (Arzelà Grassi 1973).

Genetta genetta Linnaeus, 1758. Specimens from Massawa, Asab and Keren (Eritrea) in Genoa (Arzelà Grassi 1973).

Herpestidae Bonaparte, 1845

Ichnemia I. Geoffroy, 1837

Ichnemia albicauda (G. Cuvier, 1829). Robecchi-Stagnoli (1939) found very common a black-tailed form of the species in the Northern Highlands, while the white-tailed form was much rarer. This dichromatism of the species has been reported elsewhere in Africa (Taylor, 1972, Kingdon, 1997) but with the exception of Demeter and Topal (1982) not from Ethiopia; it probably deserves to be investigated more carefully. Additional specimens in Genoa originated from Sciotel and Ghinda (Eritrea); Fallé and Let Marefià (Shewa) (Arzelà Grassi 1973).

Herpestes Illiger, 1811

Herpestes sanguineous (Rüppell, 1835). Specimens from the following localities are stored in Genoa; Let Marefià (Shewa), V. Ragazzi legit 1885-86; Bogos (Eritrea), O. Antinori legit; Kassala, (Sudan), E. Korn legit 1885 (Arzelà Grassi 1973). One further specimen from Denz Shewa, V. Ragazzi legit is at the Zoological Museum of the Naples University (Maio pers. comm.).

Atilax F. Cuvier, 1826

Atilax paludinosus mitis (Thomas, 1903). There are two specimens from the Shewa in the Natural History Museum "G. Doria" of Genoa.

Hyenidae Gray, 1869

Proteles I. Geoffroy, 1824

Proteles cristatus (Sparman, 1783). Few records reported for Eritrea by Yalden et al., (1980). Cited by Fossati (1930: 77) who, in a popular book, described a fight between a Hamadryas baboon and an aardwolf in the

Aidwasso Valley Region. Gippoliti (2013) included a photo of an aardwolf shot by Luigi Fossati at Segeneyti. There is a specimen from Massawa in the Museo Civico di Storia Naturale Giacomo Doria collected by Vincenzo Ragazzi, 1894 (Arzelà Grassi 1973).

Hyaena Brisson, 1762

Hyaena hyaena (Linnaeus, 1758). Reported as present, but never seen, in the highlands north of Gondar (Robecchi Stagnoli 1938).

Felidae Gray, 1821

Felis Linnaeus, 1758

Felis lybica (Forster, 1780). Fin-Finni (Shewa), legit O. Antinori, 1878 (Arzelà Grassi 1973).

Leptailurus Severtzov, 1858.

Leptailurus serval (Schreber, 1776). Beni-Amer (Eritrea), legit O. Antinori; Mahal Uonz (Shewa) legit V. Ragazzi 1885 (Arzelà Grassi 1973).

Caracal Gray, 1843

Caracal caracal (Schreber, 1776). In Genoa there are specimens from Ghinda, Massawa and Keren (Eritrea) and Ulà (Shewa), V. Ragazzi 1885 legit (Arzelà Grassi 1973).

Proboscidea Illiger, 1811

Elephantidae Gray, 1821

Loxodonta F. Cuvier, 1827

Loxodonta africana (Blumenbach, 1797). Hawash near Entotto, legit P. Antonelli (Carruccio 1894). Tedesco Zammarano (1922, 1930) included photos of Eritrean elephants of the Gash-Setit area and gave details on their population status at that time that were not included in a recent review of the now most notherly elephant population in Africa (Hagos et al. 2003, see also Gippoliti 2013). In the early colonial period one small herd was reported from the Aighét Mountains (17°N), while a greater population, estimated at 200 head, was found between the Setit, Sittona and Mai Sciglà Rivers. During the rainy season, the latter elephant population moved in the hilly region toward the Gasc River (Tedesco Zammarano 1922). An older record of elephants in Eritrea is reported by Piaggia that cited a group in migration passing at Ailet (near Massawa) on February 1872 (Pellegrinetti 1941). The elephant he shot was later found dead near Segeneyti.

Perissodactyla Owen, 1848

Equidae Gray, 1821

Equus Linnaeus, 1758

Equus africanus (Heuglin et Fitzinger, 1857). Oscar de Beaux (1928) discussed the taxonomy and nomenclature of *Equus africanus* in a paper not cited by Yalden et al. (1986). His study material includes 3 skins from Asab (Turin and Genoa museums), 2 from Pian del Sale (Milan and Genoa), one from Ragalì and one from souther Danakil (Milan). Mahalagù (Bottego 1892). The same author reported the species from Ogaden and what seemed a herd of wild asses was observed drinking at night on 4 December 1892 at Arghébla, between the Ueb Gestro and the Welmel rivers (Bottego 1895). This latter record is well outside the accepted historical range of the species (see Yalden et al. 1986: 37). Gippoliti (2014a) reviewed the history and taxonomy of African wild asses at the Rome Zoological Garden.

Equus grevyi Oustalet, 1882. While reporting on his travel in coastal Danakil, Bottego (1892) reported that locals assured the presence of several large mammals in the interior, including zebras that were named 'Dama'. This seems supported by the several skins studied by Camerano (1902), all imported by Asab and probably originating from the Danakil-Awash region.

Rhinocerotidae Gray, 1821

Diceros Gray, 1821

Diceros bicornis (Linnaeus, 1758). Bottego and Grixoni (Bottego 1895) reported several records of this species south of the Genale River and along the Dawa River, a region apparently lacking historical data. The presence of black rhinoceros in the same region was confirmed by Maud (1904).

Tubulidentata Huxley, 1872

Orycteropodidae Bonaparte, 1850

Orycteropus G. Cuvier, 1798

Orycteropus afer (Pallas, 1766). Northern limit in Eritrea at 16° 15' N along the Ain Saba (Anseba) Valley (Fossati 1937). Antinori (1878) inferred the presence of the species at the Forest of Adagala from several holes found under termitaria.

Artiodactyla Owen, 1848

Suidae Gray, 1821

Phacochoerus F. Cuvier, 1817

Phacochoerus africanus (Gmelin, 1788). Occuring and hunted by the Mao people in the Mt. Gezar/Mt. Gara Arba area and the Anfillo Forest (Grottanelli 1940). Interestingly, in the latter area that author reported the presence and traditional Mao and Oromo names (boyé, karkarrò, šaggé) of three suid species, perhaps implying also the presence of *Hylochoerus meinertzhageni*.

Potamochoerus Gray, 1852

Potamochoerus porcus (Linnaeus, 1758). Common in the highlands north of Gonder (Robecchi-Stagnoli 1939), where the warthog is apparently absent. Also reported by Fossati (1930) for the Aidwasso River, Eritrea. Reported from the Mt. Gezar/ Mt. Gara Arba area and the Anfillo Forest, north of Gambela (Grottanelli 1940).

Hippopotamidae Gray, 1821

Hippopotamus Linnaeus, 1758

Hippopotamus amphibius Linnaeus, 1758. Several records from the Ganale (Juba) (Bottego 1895). He reported 158 hippopotamus in a few hundred meters along the Ganale Guddà. In the same book Grixoni reported the species from the higher Dawa. The Ganale records were confirmed by Maud (1904).

Giraffidae Gray, 1821

Giraffa Brisson 1762

Giraffa reticulata De Winton, 1899. Antinori (1878), while reporting his adventurous crossing of the Awash River in 1876, cites the giraffe as present together with elephants, lions, zebras and 'antelopes'. While he explained he could not specifically distinguish the antelopes owing to the great distance, this clearly does not apply to giraffes. This record is of exceptional importance, as it provides support to Kingdon's (1979: 317) belief that giraffes once extended throughout the Ogaden region and Danakil Desert (see Yalden et al. 1984: 81). However, while Antinori repeatedly remarked the richness of antelopes found between the Lake Ota and the Awash River, giraffes are only cited once.

Bovidae Gray, 1821

Alcelaphus de Blainville, 1816

Alcelaphus neumanni Rothschild, 1897. Patrizi (1940) reports the presence of specimens that seem intermediate between *Alcelaphus lelwel* and *Alcelaphus tora* (*neumanni*) occurring in the Didessa Valley. This taxon is usually considered invalid but Groves and Grubb (2011: 211) stated that "One of us (PG) has been inclined to think that the name *Bubalis neumanni* may actually designate a valid taxon, rather than a hybrid population. This question needs further investigation". The question of *Alcelaphus* alpha taxonomy is paradigmatic of how an overlumped taxonomy may hamper conservation of biological diversity (Gippoliti

et al. 2018). It is therefore recommended further taxonomic research on hartebeests and the compilation of a particular Action Plan for this highly threatened genus in North-East Africa.

Alcelaphus swaynei Sclater, 1892. South of Lake Sciala (Shala) between 'Shasamane and Soddu'; old male in the Addis Ababa collection (Patrizi, 1943). Maud (1904:562) recorded huge numbers of 'hartebeests' in the Didan Liban, a vast waterless plain between the Ganale and Dawa rivers.

Cephalophus Hamilton Smith, 1827

Cephalophus sp. Cited as present in southern Ethiopia, precisely into the southern 'Galla Sidamo' forests by Patrizi (1943). This appears to be the first ever reference to the genus in Ethiopia and still the only one not associated with the Bale region (during the Italian occupation the Bale region was included in the Harar Government). However, the presence of *Cephalopus* in Ethiopia was not confirmed by Toschi (1947).

Ourebia Laurillard, 1842

Ourebia ourebia (Zimmermann, 1783). Aimelia, Eritrea, 1906 (Oriani and Castiglioni 2003). Hadda Galla (Adagala), O. Antinori legit (Menchinelli 1973); this appears to be a considerable extension of the known range of the genus in Ethiopia. Patrizi (1943) confirmed its presence on the Arusi. It seems there is only one museum specimen of *Ourebia* from the region (in Genoa) and the species is not generally reported from this region (Hillman 1988).

Madoqua Ogilby, 1837

Madoqua saltiana (Desmarest, 1816). Tedesco Zammarano (1922) reported the species widespread, but without details, in the lowlands south of the Setit River and west of Tana Lake. Piaggia in 1874 too reported the species ("Dig-dig") from around Lake Tana (Lupi, 2017 vol I: 953).

Nanger Lataste, 1885

Nanger soemmerringi (Cretzschmar 1828). Tedesco Zammarano (1922) collected the subspecies *N. soemmerringi sybillae* Matschie, 1912 where the Scinfà meets the Arcà (about 12°65'N 36° 05' E).

Yalden et al., (1996) and Masseti et al. (2015) discussed the species identification of gazelles on the Dahlak Kebir Island. Much attention has been attracted by the identification of Baschieri Salvadori, the zoologist of the 1953 *Spedizione Subacquea Italiana nel Mar Rosso* (Baschieri Salvadori 1954), who considered them to be *Gazella isabella* Gray, 1846, currently considered a synonym of *G. dorcas*. It is quite possible that Baschieri simply followed the opinion of his friend Saverio Patrizi, who in 1943 had written "La gazzella delle Dahlac sarà probabilmente una specie importata da Massaua, e quindi una *G. dorcas isabella*" (Patrizi 1943). Both were unaware that in 1938 the Giardino Zoologico in Rome had received a pair of dwarf ariel gazelles *Gazella soemmerringi* ssp. from the Dahlak Islands (Gippoliti 2013).

Chiozzi and colleagues (2015) demonstrated in a remarkable way that the Dalhak's Soemmerring gazelle is clearly distinguished by its smaller size from the mainland populations. I therefore propose to name the island population *Nanger soemmerringi debeauxi* **ssp. nov.** (http://zoobank.org/NomenclaturalActs/fe73c8d4-ae7d-48ce-8ca7-5875935ad594) as a tribute to the zoologist Oscar de Beaux (1879-1956) who described, so far, the only other Eritrean endemic mammal, the Beccari dorcas gazelle *Gazella dorcas beccarii* de Beaux, 1931. As evidenced by the raw data collected by Andrea Cardini (see Cardini 2019), Dalhak's gazelle had a skull basal length never exceeding 193 mm [172.68 – 192.18 (n 14)]. Mainland specimens always exceed 200 mm in basal length (Matschie, 1912) with a unique exception of a small and little-known subspecies found in South-East Ethiopia, *N.*

soemmerringi butteri Thomas, 1904, whose holotype – and sole known specimen - has a basal length of 198 mm (Thomas 1904). The typical series of the new subspecies is represented by the subset of 14 skulls collected by G. De Marchi on Dahlak Kebir Island, stored in the Natural History Museum in Milan and studied by Cardini (2019). The selected holotype is MA7640, a male. It is emphasized that this taxonomic proposal does not replace the need for a proper taxonomic revision of the whole *N. soemmerringi* complex, even considering the precarious or unknown status of many populations, but serves to highlight the unique evolutionary and ecological significance of the Dahalak Kebir population.

Nanger notata (Thomas, 1897). Maud (1904: 562) cites 'Grant's gazelle' as plentiful at Didan Liban, a vast waterless plain found between the Ganale and Dawa rivers. Apparently Yalden et al. (1984) had no records of 'Grant's gazelle' north of the Dawa River. It should be noted that de Beaux (1943), on the basis of several specimens from Yavelo, Gondaraba, Murlé and Elolo (North-East of Turkana Lake), maintained that the subspecies *N. notata lacuum* Neumann, 1906 was clearly distinct from the subspecies *N. notata notata* Thomas, 1897 found on the plains south of Turkana Lake and from the subspecies *N. notata brighti* Thomas, 1900 that is found between the Turkana Lake and the Nile. This seems to support the need of a detailed study of the different forms presently subsumed under *Nanger notata* by Groves and Grubb (2011).

Eudorcas Fitzinger, 1869

Eudorcas rufifrons Gray, 1846. Tedesco Zammarano (1922) collected the species at Alcadras.

Gazella de Blainville, 1816

Gazella dorcas pelzeni Kokl, 1886. Asab (Eritrea), G. Pestalozza 1902 (Genoa Museum).

Tragelaphus de Blainville, 1816

Tragelaphus buxtoni Lyddeker, 1910. Gippoliti (2014b) reviewed some Italian records of the species. In an otherwise competent/authoritative faunal discussion of the Eritrean game species, Ciani (1942) reported the species as abundant in the Dessà and Subahà area in the Eastern Tigray, well outside the known range of the species, and therefore a record to be rejected.

Taurotragus Wagner, 1855

Taurotragus oryx (Pallas, 1766). Plaines of German Safar, Magi (Maji) (Patrizi 1943).

Syncerus Hodgson 1847

Syncerus cf. *caffer* (Sparrman, 1779). Bottego (1895) reported the abundance of skulls of this species along the Ganale River, where the species had apparently disappeared due to rinderpest. Carlo Piaggia reported in 1874 the presence of small buffalos in the Tana Lake region (Pellegrinetti 1941). Taxonomy of the genus in the Horn of Africa needs a revision.

Rodentia Bowdich, 1821

Gliridae Thomas, 1897

Graphiurus Smuts, 1832

Graphiurus sp. Reported from Sole (Galla and Sidamo region) (Toschi 1947).

Cricetidae Rochebrune, 1883

Lophiomys Milne-Edwards, 1867.

Lophiomys imhausi Milne-Edwards, 1867. Bottego captured – but did not preserve - one individual during his trip between Auàta and Kormoso, (Bale Region) on 9 may 1893 (Bottego 1895).

Thrynomyidae Pocock, 1922

Thryonomys Fitzinger, 1867

Thryonomys sp. Toschi (1947) reported having seen a skin belonging to this genus in the Bale region.

MYSTERIOUS MAMMALS

In the book *Il Giuba esplorato* (Bottego 1895) it is included the relation of Capt. Matteo Grixoni of a travel from the Ganàle Guddà to Brava following most of the Dawa River. On 26-27 February 1893, while walking in a subdesertic area (Deserto di Bànas) he observed among a rich wildlife, a strange creature "the shape, size and skin of the black bear and walking upright on the posterior legs". It is of some interest that Heuvelmans (1959), in his account of the so-called Nandi bear, cites that the tribes bordering the Tana River used the name duba – presumably derived from the Arabic dubb (bear) – to describe a fearful beast found there.

Antinori (1878) reported that Sebastiano Martini (an experienced hunter) had met at Mataclà, near Farrè (Shewa), some deer-like ungulates with branched horns. No further details are added. This appears as the only possible historical record of a deer in Ethiopia so far available (see Yalden et al., 1984: 178).

ACKNOWLEDGEMENTS

Andrea Cardini is thanked for sharing some morphometric data on the dwarf gazelles of the Dahlak Kebir Island. Several curators and directors of natural history museums are thanked for continued support: Paolo Agnelli and Pierluigi Finotello (Florence); Nicola Maio (Napoli); Stefano Bulla (Parma); Giuliano Doria and Roberto Poggi (Genoa); Giorgio Bardelli and Giorgio Chiozzi (Milan); Leonardo Latella and Roberta Salmaso (Verona); Simone Farina (Pisa); Franco Andreone and Elena Gavetti (Turin). I wish to warmly thank Luca Lupi for his valuable and huge work in recovering the old Italian exploration literature. Bruce Patterson (Chicago) and two anonymous reviewers provided valuable insight to the last version of the paper.

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Submitted: 30 October 2019

First decision: 4 December 2019

Accepted: 11 December 2019

Edited by Manuel Steinbauer