Bonn zoological Bulletin 69 (1): 111–115
2020 · Gippoliti S. & Lupi L.
https://doi.org/10.20363/BZB-2020.69.1.111

ISSN 2190–7307
http://www.zoologicalbulletin.de

Scientific note

urn:lsid:zoobank.org:pub:925DF201-A926-4633-B830-14B111BDEF4C

A note on the wild canids (Carnivora: Canidae) of the Horn of Africa, with the first evidence of a new – forgotten – species for Ethiopia *Canis mengesi* Noack, 1897

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Abstract. The first ever reported observation of a member of the genus *Canis* well in the interior of the Danakil area (Ethiopia) offers the opportunity to revise available evidence about the existence of a neglected species of small-sized 'jackal' in the Horn of Africa. A review of historical zoological literature led to assign this small-sized, reddish jackal to *Canis mengesi* Noack, 1897, originally described from inner Somaliland. Geological and geomorphological considerations support the distinctiveness of the Red Sea coastal jackal *Canis anthus riparius* Hemprich & Ehrenberg, 1832, typical of the narrow alluvial, sandy coast, while *Canis mengesi* is found in the volcanic rocky habitat prevailing over most northern Afar (Danakil, Ethiopia).

Key words. *Canis mengesi*, *Canis riparius*, Danakil, geomorphology, taxonomy.

Knowledge of mammals in some parts of the Horn of Africa is still very sparse, and gaps exist even with respect to species diversity among the most visible mammals. Regarding canids, one of the best studied mammal group worldwide, a short note on an unusual wolf-like individual observed in coastal Danakil Eritrea (Tiwari & Sillero Zubiri 2004) should have promoted more interest regarding the issue of alpha diversity among canids in the Horn of Africa, but nothing apparently was done and this observation remained unidentified. Currently, much scientific interest concerning the intriguing African 'golden jackal' group, has been attracted by new phylogenetic data that allied this canid closer to the Eurasian wolf *Canis lupus* rather than the Eurasian golden jackal *Canis aureus* (Viranta et al. 2017).

The object of this note is another observation of a single individual of an unusual small-sized canid in the interior of northern Afar (Danakil) region of Ethiopia, done by one of us (L.L.) on January 1st 2018, along the road between the Massif of Dadar and the Massif of Masca (about 12°43' N, 41°08' E). A few photos allow us to discuss some details concerning this individual while attempting a taxonomic identification. This small canid was observed along a recently asphalted road about 150 km south of Lake Afrera, an area lacking data concerning the presence of any member of the genus *Canis* (cfr. Yalden et al. 1980). The small size of this individual canid is evident from comparison with the horizontal traffic signals (Fig. 1).

The general reddish coloration may suggest a red fox *Vulpes vulpes* – a species that is probably part of the Eritrean fauna (Gippoliti 2020a) yet unlikely to inhabit the Danakil Region – but the blackish end of the tail, the lack of black behind the ear, the body building and body proportion (Fig. 2) led to reject this hypothesis.

As evidenced by photos, the canid was observed in rocky habitat typical of the central and northern rocky plateau of Afar. The Danakil depression is floored principally by Pliocene volcanic rocks of the *Afar Stratoid series* (Barberi & Santacroce 1980). The Afar Depression, between the Red Sea and the Ethiopian plateau, is covered by Tertiary and Quaternary volcanic rocks. The Danakil Alps run parallel to the coast, forming a strong barrier between the interior area and the sandy and alluvial coastal region (Fig. 3) (Lupi 2009, 2012).

Unlike Tiwari & Sillero-Zubiri (2004), we examined the classical zoological and taxonomic literature, a valuable source of data concerning morphological diversity

Received: 28.02.2020
Accepted: 02.04.2020

Corresponding editor: R. Hutterer
Published: 19.04.2020

Figs 1 (left) and 2 (right). Two photos of the same individual canid. Note the small size and habitat characteristics where this canid individual was observed. Photos: Luca Lupi.

that is often overlooked by recent research (Gippoliti 2020b). We found that a canid taxon with the characters shown in the photo was described from the Horn of Africa at the end of the 19th century. In 1897, the German zoologist Theodor Noack described two new canid species from several living specimens captured in Somaliland by Joseph Menges, a collaborator of the famous Carl Hagenbeck (Noack 1897). The larger species was named *Canis hagenbecki* while the smaller one became *Canis mengesi*. These descriptions were based on numerous living specimens and several skulls in the possession of Noack. According to Noack (1897), *Canis mengesi* is smaller and shorter-legged than *C. hagenbecki*. His diagnostic characters, especially compared with *C. hagenbecki*, include the following: snout is shorter and the longer ear has a slenderer tip. The hind quarters are kept low, so that the gait of the animal resembles a hyena. Hair on the back is short, with a dark spot on the middle tail, but without or at least with only a minor black tip of the tail. Body colour is reddish yellow or reddish grey, including the nasal area and the rear of the ears. Forehead red grey, hair on the back paler with more yellow hair tips, the brown of the hair tips hardly visible if present at all. Lower lip is brown, upper lip white, iris of the eye yellowish red with a grey hue. Legs are yellowish red, not darker on the forelegs, hardly paler on the inner sides. A dark collar on the neck is absent. Breast and belly are paler than the flanks. The species digs cavities in the soil. The vocalization is similar to *C. hagenbecki*, but more whining, rather like a young dog. Skull is slender, with an only weakly curved profile, nasal bones somewhat longer than maxillae, and broader in front than in the middle. Occiput as in *C. hagenbecki* and *C. anthus*. Pterygoid process more widely spaced from each other than in *C. hagenbecki*. Upper premolars 2 and 3 with additional cusp, as lower premolar 4 that has 2 additional cusps. Noack failed to provide details on types, and the exact provenance of *Canis mengesi* – as those of *C. hagenbecki* - remained vague - Somaliland, Küstengegenden, Inneres? (Noack, 1897: 518). Heck (1899) under the name of *Canis hadramaticus* Noack published a photo – perhaps the only one so far published – of one of the captive *Canis mengesi* studied by Noack, showing a relatively massive head compared to body and legs, and the white area over the lips (Fig. 3).

Some years later Hilzheimer (1906) not only accepted *C. mengesi*, but on the basis of the study of two more skulls (ex-captive animals captured in Somaliland) in the museum of Stuttgart, he described a new subspecies, *Canis mengesi lamperti*. With 125 and 121 mm their basilar lengths are even smaller than the type of *Canis mengesi*, which they resemble except that their nasalia do not extend as far back as the maxillary (Hilzheimer 1906). According to Hilzheimer (1906), *Canis mengesi* is the smallest true jackal, which forms a group of its own within the golden jackal group due to its color and skull shape. Its native range is unknown but could be the interior of northern Somalia. Maximum basilar length of its skull is 132 mm. He described *C. mengesi lamperti* as very small, as red as a fox, black in midline of back, very long ears, no black markings and tail with dark brown tip (Hilzheimer 1908).

The mounted skin of the holotype of *Canis mengesi lamperti* (SMNS 2394) is shown here for the first time as far as we know (Fig. 5), while its skull was shown by Hilzheimer (1908: table II). It is a male from Joseph Menges' expedition to Somaliland that lived in a zoo in Stuttgart and was donated by Nill to the museum in 1897 (Dieterlen et al. 2013). The meagre evidence so far available does not allow a clear assessment of the minor morphological differences between the two described taxa of *mengesi* and our own observation, yet we can conserva-

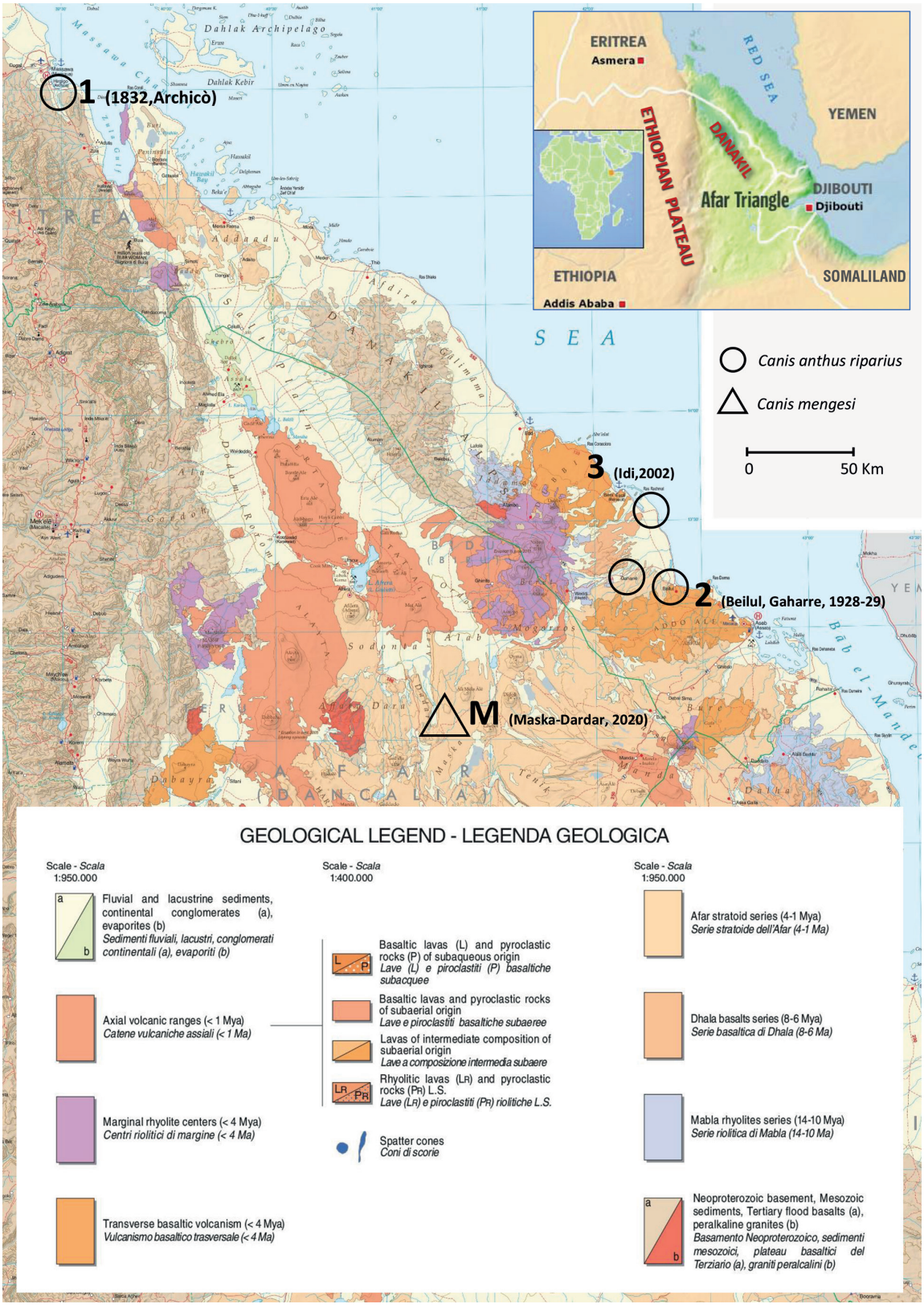

Fig. 3. Geomorphological map of Danakil (Lupi 2012), showing our visual record of *Canis mengesi* (triangle), and those assigned to *Canis anthus riparius* (circle).

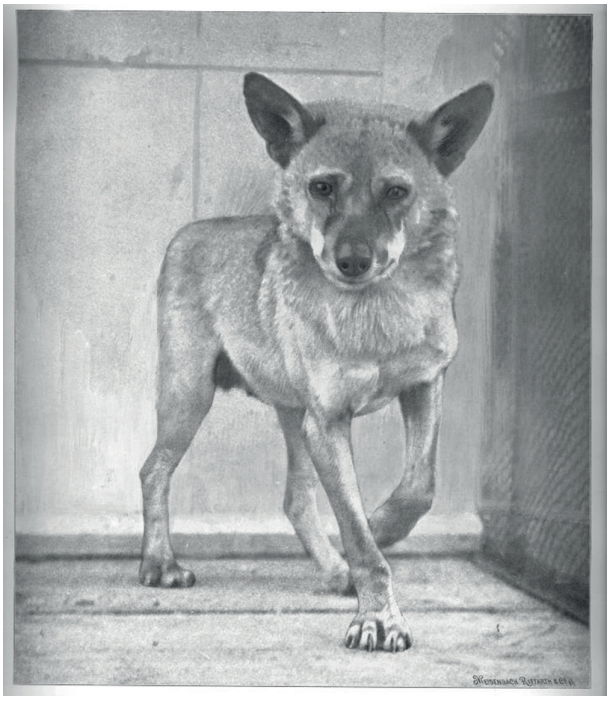

Fig. 4. A living *Canis mengesi* at Berlin Zoo before his formal description by Noack. From Heck (1899) who labeled it *Canis hadramauticus* Noack. Note the white area over the lips, which was emphasized by Noack (1897) in his description of *mengesi*.

tively propose that a small reddish member of the genus *Canis* occurs in Danakil, Ethiopia and Somaliland and his name is *Canis mengesi* Noack, 1897.

The taxonomic history of *Canis mengesi* is quite typical of the systematic attitude of the previous century. Anderson (1902) studied a skin and skull of *C. mengesi* (not one of the typical series, apparently) in Berlin and maintained it as specifically distinct, a position that also De Winton (footnote in Anderson 1902: 220) clearly accepted, changing his previous opinion "In my paper on African Canidae, *C. mengesi* was doubtfully referred to this species [*C. variegatus*]. Further material has enabled me to see my mistake, and I fully agree with the view here expressed". Anderson (1902) provided the following measurements taken on the mounted skin: head and body length 510 mm, tail length 223 mm, height at shoulder 290 mm, ear length 75 mm anterior and 90 mm posterior. Interestingly, some of these measurements are lower than those reported for the red fox *Vulpes vulpes* in Egypt (Osborn & Helmy 1980). The skin (no number but skull n. 6073) was described by Anderson (1902: 219–220) as follow "Greyish yellow throughout on the trunk, but many of the hairs with long black tips; slightly rufous on the upper surface of the muzzle and white along the upper lip and on the side of the face before the eyes; chin and throat white, but a brown area on the middle of the upper lip. Side of head below the ears yellow, back of ears yellow with black hairs intermixed. Inside of ears clothed with white hairs. A tendency to form a dark collar. Fore limbs bright yellowish, but with a faintly dark area down the front to near the wrist. Outsides of hind limbs yellow. Under parts white, with the exception of the base of the throat in front. Tail concolorous with the body, towards the tip broadly marked with dark blackish brown; the black spot on its dorsal surface well defined." Schwarz (1926) synonymized several taxa, among them *mengesi*, under the name *Canis aureus riparius* Hemphrich & Ehrenberg, 1832. Glover Allen (Allen 1939), followed Schwarz and maintained *mengesi* as a synonym of *Thos aureus riparius* but considered *Thos lamperti* distinct at the specific level although stressing the need for further studies that never happened. Therefore Coetzee (1971) felt justified to state that "*Canis mengesi lamperti* [….] is regarded here as a synonym of *C. a. riparius*", apparently without justification, but *de facto* relegating the taxon to oblivion.

After reviewing the few available data and the photographic evidence here presented, it seems reasonable to conclude that

1. A small-sized member of the genus *Canis* is found in the interior of Ethiopian Danakil,
2. Its reddish color, size and pattern generally agree with that of a forgotten taxon, *Canis mengesi*, so far historically known only from the interior of Somaliland,
3. Photographic evidence offered by Tiwari & Sillero-Zubiri (2004) seems to confirm that *Canis mengesi* is a distinct taxon from the one occupying the coastal plain zone of Eritrea (i.e., *Canis anthus riparius*),
4. This new record may indicate that *C. mengesi* is a specialist of arid rocky habitats.

Apparently for the first time in decades we propose a much richer diversity of African canids taxa than usually recognized, particularly of the genus *Canis* – now that the species *mesomelas* and *adusta* are separated in the genus *Lupulella* (Atickem et al. 2017; but see also Machado & Teta 2020). The few data concerning golden

Fig. 5. Holotype of *Canis mengesi lamperti*, courtesy C. Leidenroth, State Museum of Natural History Stuttgart

jackals in the Eritrean coastal region (Fig. 3), historically assigned to the taxon *riparius*, are clearly limited to the sandy alluvial coastal plain while we documented a totally different canid in interior Danakil, that has been never observed in the much better studied coastal region. We propose therefore that the so far under-appreciated geomorphological diversity of the Horn of Africa is one of the reasons to explain the presence of several lineages of *Canis* (Gippoliti 2018). In agreement with Groves et al. (2017) and Gippoliti (2019), we think that such diversity is better described by ranking these lineages as species, and this is particularly the case with *Canis mengesi* whose dwarf size, specialized habitat and hair color is well outside the known variability shown by the 'African golden jackal/wolf' *Canis anthus* Cuvier, 1820 as it is now universally understood.

Acknowledgements. The late Colin Groves and Arnd Schreiber provided valuable help in the translation of German papers and are warmly thanked for this. We wish to thank Stefan Merker and Carsten Leidenroth, State Museum of Natural History Stuttgart, for the photo of the holotype of *Canis mengesi lamperti*. Richard Weigl and Jan Robovský helped with the old Berlin photo. Bruce Patterson (Chicago), Rainer Hutterer (Bonn), Nikolai Spassov (Sofia) and Boris Kryštufek (Ljubljana) made valuable revisions of previous versions of the manuscript.

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