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BOCAGE'S FRUIT BAT (*LISSONYCTERIS ANGOLENSIS*), A NEW SPECIES FOR MALAWI

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Bocage's fruit bat, *Lissonycteris angolensis* (Bocage 1898), is a medium-sized species of fruit bat, distributed in sub-Saharan Africa from Senegal and Ethiopia in the north to Angola and Mozambique in the south (Bergmans 1997, Simmons 2005). This species is characterised by its intermediate size (forearm length 67.889.6mm), connection of the wing membrane to the second toe and by a ruff of specialized hairs in males (Bergmans 1997, Taylor 2000). From the southern part of Africa, *L. angolensis* was reported only from the border area of Zimbabwe and Mozambique, but it was never found in Zambia or Malawi.

From Malawi, the occurrence of nine species of fruit bats (Pteropodidae) has been reported (Happold, Happold & Hill 1987, Happold & Happold 1997, Kock, Burda, Chitaukali & Overton 1998, Bergmans & van Strien 2004), viz. *Epomophorus* cf. *labiatus* (Temminck 1837), *E. gambianus* (Ogilby 1835), *E. anselli* Bergmans & van Strien 2004, *E. wahlbergi* (Sundevall 1846), *Epomops dobsonii* (Bocage 1889), *Rousettus aegyptiacus* (Geoffroy 1810), *R. lanosus* Thomas 1906, *Eidolon helvum* (Kerr 1792), and *Plerotes anchietae* (Seabra 1900). Two of the present authors (JŠ & RŠ) caught five fruit bats in 2005 on the Zomba Plateau, southern Malawi, which were identified as *L. angolensis*. By now, the number of Malawi species of fruit bats has increased to ten.

During two nights, on 30 April and 1 May 2005, a mist net (10m) was placed above a stream near the Chitinji campsite on the Zomba Plateau (15°20'S, 35°17'E, 1820m a.s.l.). The vegetation around the site consists of a mosaic of original montane forest, introduced conifers and open grassland. One male of *L. angolensis* per night was caught, one of them was collected. The netting attempt was repeated on 8 October 2005 with two 10m nets above a streamlet and a nearby dirt road crossing a forest, some 400m to the south-west from the former netting site. Two males and one female of *L. angolensis* were caught together with one female of *Epomophorus wahlbergii* and three species of microbats. One male of *L. angolensis* killed in the net by an unidentified predator was collected.

The collected specimens have been deposited in the collection of National Museum, Prague, the Czech Republic (NMP), as alcohol preparations with skulls extracted, and tongues and soft palates saved. Some external dimensions were taken in the field, more in the two collected specimens according to Bergmans (1988). Forearm lengths of the released bats were

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85.0 and 80.3mm (males), and 82.8mm (female), respectively. Weights of the males netted at 30 April and 1 May were 91g (NMP 90938) and 96g (released). Dimensions of the collected males are as follows (NMP 90938, coll. 30 April 2005; NMP 90939, coll. 8 October 2005); in millimetres: head and body length 146; 156; tail length ; 5.6; tibia length 35.3; 36.8; foot length 18.9; 20.4; ear length ca. 20.1; ; forearm length 83.0; 86.1; length of 3rd metacarpal 61.8; 64.1; length of 5th metacarpal 58.8; 61.2; greatest skull length 43.68; ; condylobasal length 42.65; ; rostrum length 16.43; 16.35; palatal length 23.45; ; cranium width 16.23; ; interorbital width 7.26; ; postorbital width 8.31; ; zygomatic width 26.28; ; mandible length 33.43; 34.72; mandible height 14.68; ; width between C^1-C^1 (incl.) 8.67; 8.83; length of tooth row C^1-M^2 length 16.25; 16.55; width between M^2-M^2 (incl.) 14.05; 13.58; tooth row C_1-M_3 length 17.92; 18.47; length × width of P^3 2.53×1.82; 2.74×1.87; length × width of P^4 2.73×2.21; 2.74×2.19; length × width of M^1 2.88×1.98; 2.64×1.96. The skull of the latter individual (NMP 90939) was heavily damaged by a predator, thus only a few measurements were taken.

The finding of *L. angolensis* in southern Malawi is not too surprising as it connects the known spots of its occurrence in the border area of Zimbabwe and Mozambique in the south and in southern part of the Congo DR and central Tanzania in the north (see the map by Bergmans 1997). Due to the geographical position, the Malawian population of *L. angolensis* should be the subspecies *L. a. goliath* Bergmans 1997, described from Gleneagles, Inyanga, Zimbabwe, some 400km south-west from the netting site in Malawi. This form is typical by its large body size; its individuals are the largest among the Bocage's fruit bats from the whole species range.

However, some of the dimensions of the collected bats lie close to mean values or to the lower margin of their variation ranges of the form *goliath* showed by Bergmans (1997) and are close to the ones given for the Central African subspecies, *L. a. ruwenzorii* (Eisentraut 1965). The Malawi individuals seem to be of an intermediate position between the two forms and suggest rather a cline shift in decreasing of body size from south to north. This shift is evident also in northern parts of the species variation range, as the smallest forms of *L. angolensis* represent the subspecies in West Africa and in Ethiopia, *L. a. smithii* (Thomas 1908) and *L. a. petraea* Bergmans 1997, respectively (Bergmans 1997). A question arises, is it appropriate to designate a separate subspecies statuses for marginal variations of such a cline? Undoubtedly, more rich material is needed for a valuable assessment of intraspecific variation in *L. angolensis* in the southern part of its distribution range (see also Simmons 2005). However, such cline shifts in size seem to be more common in African mammals, as they are known in other species, e.g. in *Rhinolophus clivosus* Cretzschmar 1828 among bats or in *Procavia capensis* (Pallas 1766) among non-volant mammals (Csorba Ujhelyi & Thomas 2003, Yom-Tov 1993).

Based on our limited data from nettings, it seems that *L. angolensis* is a dominant species of fruit bat in the area surrounding the examined sites.

Further research is required to draw a population status of this bat on the Zomba Plateau and to prove its possible occurrence in other regions possessing similar habitats.

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