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# Scientific contributions

## Documented record of *Triaenops menamena* (Family Hipposideridae) in the Central Highlands of Madagascar

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The endemic Malagasy trident bat *Triaenops menamena* Goodman and Ranivo, 2009, formerly named *T. rufus* A. Milne-Edwards, 1881 (GOODMAN and RANIVO, 2009), has a broad distribution in the western portion of the island, particularly in areas of sedimentary rock, utilizing caves, rock shelters, and mine shafts for day roosts (GOODMAN, 2011; GOODMAN and RAMASINDRAZANA, 2013). Colony size is known to vary from a few to over 40,000 individuals (CARDIFF, 2006; OLSSON *et al.*, 2006). The elevational range of this species falls from near sea level to about 1000 m (GOODMAN and RAMASINDRAZANA, 2013). However, there are reports of *T. menamena* from higher elevations, including the Réserve Spéciale d'Ambohitantely in the Central Highlands (RAKOTONDRAMANANA, 2004). While the Ambohitantely record has been cited in the literature on the bats of Madagascar, documentation of this species occurrence at this site is ambiguous and a voucher specimen appears to be lacking.

In April 2014, we conducted a biological inventory of the Réserve Spéciale d'Ambohitantely, including documentation of bat species occurring in the Grotte des Chauves-souris (18°10'52.1"S, 47°17'21.0"E, 1500 m). This cave is located within the largest remaining forest block (about 1000 ha) in the protected area and in relatively intact montane forest. On 7 April 2014, a single *Triaenops menamena* was found roosting in the cave (Figure 1) with a group of *Miniopterus* sp. (Several haplotypes of a small *Miniopterus* occur in this cave and unnamed species might be present [CHRISTIDIS *et al.,* 2014].) The captured *T. menamena* was a female that showed no sign of recent reproductive activity. It had a forearm length of 52 mm, falling within the typical range of females of this species given by GOODMAN (2011): 46-53 mm. The animal was collected as a voucher specimen (Field Museum of Natural History [FMNH] SMG-18575).

During the same visit to the cave as when the voucher specimen was collected, a second individual of *T. menamena* was observed roosting with another group of *Miniopterus* sp. The following day, the cave was revisited and at least one individual of *T. menamena* was observed amongst a group of *Miniopterus* sp. We have no evidence that *T. menamena* breeds at the Grotte des Chauves-souris or anywhere in the immediate vicinity in the Central Highlands.

Genetic studies conducted on *T. menamena* based on about 750 bp of mitochondrial cytochrome *b* indicate little phylogeographic structure across its broad range on Madagascar (RUSSELL *et al.* 2007). This species demonstrates largely panmictic genetic structure. This pattern is presumably associated with considerable dispersal and, hence, mixing of genetic pools. *Triaenops menamena* has been found at a few sites at the fringe of lowland eastern Madagascar, with less than 10 individuals roosting near Tolagnaro (extreme southeast) with a large colony of *Rousettus madagascariensis* G. Grandidier, 1929 (JENKINS *et al.*, 2007) and in the Parc National de Marojejy (northern central area) (PONT and ARMSTRONG, 1990). Both of these sites are within relatively short distances to dry forest areas where breeding populations of *T. menamena* are known or suspected to occur. Whether records of this species from Ambohitantely and the lowland eastern sites represent seasonal vagrants, some form of more regular dispersal, or local breeding populations can only be determined by further fieldwork.


FIGURE 1. Individual of *Triaenops menamena* captured in the Grotte des Chauves-souris, Réserve Spéciale d'Ambohitantely, 7 April 2014. The female was collected as a voucher specimen (FMNH SMG-18575).

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