

SCIENTIFIC CONTRIBUTIONS

African Bat Conservation News publishes brief notes concerning the biology of bats, new geographical distributions (preferably at least 100 km from the nearest previously published record), sparsely annotated species lists resulting from local surveys including roost counts and echolocation and sonograms of bat species occurring on the African continent and adjacent regions, including the Arabian peninsula, Madagascar, and other surrounding islands in the Indian and Atlantic oceans.



RECORDS OF TREE ROOSTING BATS FROM WESTERN MADAGASCAR

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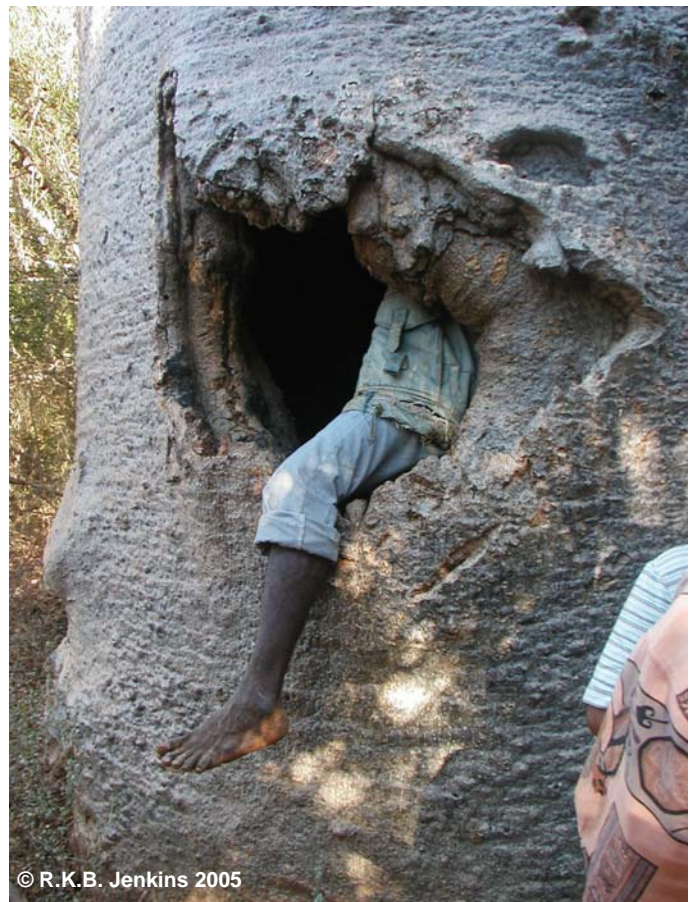
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A recent survey of the bats of western Madagascar found a higher species richness in forests on karst limestone formations than at sites located on alluvial substrata (GOODMAN *et al.* 2005). An abundance of roost sites associated with rocks and caves in sedimentary rock formations was put forward as the main reason to explain the relationship between bat species richness and geology. However, a considerable proportion of recent bat survey work in western Madagascar has been conducted in areas of limestone and sandstone deposits, and this may influence conclusions about the link between roost site availability and species richness.

In this note we describe new information on roost use of three microchiropteran species on the edge of Kirindy-Mitea National Park in western Madagascar, a zone without any sedimentary rock deposits. On 28 June 2005 we located a large baobab tree (*Adansonia grandidieri*, Baill.) approximately 3 km from Marofihitsy village (20°47'S, 44°01'E) and 1.5 km outside of the park's boundary. The tree (circumference 9.9 m, height ca. 18 m) was situated in dry and scrubby degraded forest. Approximately 1.0 m from the base of the tree was a large hole, 0.6 m across and 0.6 m wide. The interior of the tree was completely hollow, smelled strongly of bat faeces and the bats were clearly audible from the tree's base (Figure 1).

We placed a 6 m mist net across the hole and the first bats, *Miniopterus manavi* (Thomas, 1906) emerged at 17h52. Between 18h00 and 18h30 we captured a total of 142 *M. manavi* emerging from the roost. At 18h55 we netted the first *Mops leucostigma* (Allen, 1918) and an additional seven individuals were netted



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Figure 1: A cavity in the lower section of a baobab tree used by emerging bats.

Table 1: Summary of specimens collected and deposited in the collections of the Département de Biologie Animale, Faculté des Sciences, Université d'Antananarivo.

Species	Field No.	Forearm Length (mm)	Weight (g)
<i>Mops leucostigma</i>	RBJ229	43.9	18.0
	RBJ231	39.8	13.0
<i>Mops midas miarensis</i>	RBJ230	63.5	41.5
	RBJ232	64.6	49.0

up until 22h00. A second, much smaller, exit was observed towards the top of the tree where the trunk and branched joined and a large number of bats were seen flying out from this hole throughout the trapping period. From 17h35 until the first bats emerged we observed a single Bat Hawk (*Macheiramphus alcinus* Bonaparte, 1850) that circled the tree and perched on the upper branches. Although known from a wide range of localities in Madagascar, this species is locally rare and there are few records of its association with bats (SINCLAIR & LANGRAND 2003).

On 13th July 2005 we netted at a colony of roosting microchiropterans (20°38'S, 44°04'E) situated in the canopy of a coconut palm (*Cocos nucifera*, L.) in Ambararata village approximately 4 km from the park's boundary (Table 1). The bats roosted together underneath the leaves at a height of approximately 8 m and we netted four *Mops midas miarensis* (Sundevall, 1843) and 25 *M. leucostigma*. Other records of molossid using trees are rare although GOODMAN & CARDIFF (2004) reported *Chaerephon leucogaster* from under loose bark of a dead standing tree in a baobab forest in the same region.

Miniopterus manavi is a common microchiropteran in Madagascar and had already been recorded from Kirindy-Mitea National Park (GOODMAN *et al.* 2005). *Mops leucostigma* and *M. midas* were not previously known from the park or its environs (GOODMAN *et al.* 2005), and although both species are quite widespread in western Madagascar this is the first description of a roosting site of the former that is not associated with synanthropic settings (GOODMAN & CARDIFF 2004).

Further, on 1 July, we mist-netted six *Rousettus madagascariensis* (Grandidier, 1928) fruit bats feeding beneath kapok trees (*Ceiba pentandra*) in Marofihitsy; this represents another new bat species for the park. This small fruit bat normally roosts in caves or rock shelters, and although there are no records of tree cavities used as roosts, such sites provide an alternative to caves. In the previously published survey results of bats from within and outside the Kirindy-Mitea National Park (GOODMAN *et al.* 2005), the site had the second lowest species richness (n = 8) of the 13 sites visited across western Madagascar. Our results indicate that the species richness of the park and surrounding habitats was incompletely described by Goodman *et al.*, (2005) and more rigorous surveys of tree cavities in Madagascar's forests will likely reveal additional information on the roosting ecology of Malagasy bats and augment protected areas species lists.

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REFERENCES

- GOODMAN, S. M., ANDRIAFIDISON, D., ANDRIANAIVOARIVELO, R., CARDIFF, S.G., IFTICENE, E., JENKINS, R.K.B., KOFOKY, A., MBOHOAHY, T., RAKOTONDRAVONY, D., RANIVO, J., RATRIMOMANARIVO, F., RAZAFIMANAHAKA, J., RAZAKARIVONY, V. and P. A. RACEY, P.A., 2005. The distribution and conservation of bats in the dry regions of Madagascar. *Animal Conservation* **8**: 153-165.
- GOODMAN, S. M. and CARDIFF, S.G., 2004. A new species of *Chaerephon* (Molossidae) from Madagascar with notes on other members of the family. *Acta Chiropterologica* **6**: 227-248.
- SINCLAIR, I. and LANGRAND, O., 2003. *Birds of the Indian Ocean Islands*. Struik Publishers. pp. 179.

