

A long night of male fruit bats on the island of Príncipe, Gulf of Guinea

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Due to their small size and geographical isolation, the islands of São Tomé and Príncipe, located 220 km off the west coast of Africa in the Gulf of Guinea, support only a few species of bats. Ten species are known to occur on the islands, of which three are fruit bats (Megachiroptera: Pteropodidae) and seven are insectivorous (Microchiroptera; with four families represented) (Juste and Ibanez 1994). Nine of these species occur on São Tomé, while only four occur on Príncipe. Although species-richness is low, São Tomé boasts two endemic species and three endemic subspecies. A further species and sub-species are endemic to Príncipe (Juste and Ibanez 1994). Despite these high levels of endemism, and the conservation threats of habitat loss on such small islands, very little work has been done on the ecology of the bats of the Gulf of Guinea islands. Therefore, while conducting a mist-net survey of the birds of the islands from December 2001 to February 2002 (King and Dallimer, 2003), we took the opportunity to survey the bats.

After five weeks and over 300 net-hours of surveys at five different sites in São Tomé, we had yet to capture a single bat. We shifted our attention to the smaller island of Príncipe, where we took a motorised dug-out canoe in the open sea around the coast to a beautiful location in the south-west of the island. Beautiful, but still no bats. We walked for a day, crossing the island until we reached a small fishing camp at Praia da Nova (1°36'N 7°20'E). Finally, on 26 January 2002, we found a bat in one of the nets. An adult male *Rousettus egyptiacus princeps*, a subspecies endemic to the island, with two dipteran ectoparasites indicative of its cave-roosting habits. Encouraged, we set the nets again the following night, secretly hoping to capture one of the large, golden-furred *Eidolon helvum* from a near-by tree-roost (Dallimer *et al.*, in prep.). After our standard evening meal of rice and fish, we checked the first net at 20h30, two and a half hours after dusk. No *E. helvum*, but no less than seven *R. egyptiacus*, all very tangled in the net. Four adult males and three juveniles, it took us over two hours to remove them, measure them, and refresh them with sugar-water from a teaspoon. Exhausted, we climbed the rocky hill to the other net, hoping for an empty net and the chance to sleep before midnight and the long walk almost the length of the island the following day. No such luck – four more *R. egyptiacus*, one juvenile, two adult males, and finally, the last bat of the night, an adult female. Until this point our very experienced local guide had insisted that there was only one species of fruit bat on the island, and that all the bats we had caught were simply babies from the *E. helvum* roost. We had shown him the impressive testicles of the males, hoping that would prove they were adults and therefore a different species, but he argued that all young boys had testicles so refused to believe us. The fully ossified joints of the wing digits were even less convincing. At just past midnight, fortunately under a full moon as our torch batteries were fading fast, we triumphantly presented him the swollen nipples of this last remaining bat, challenging him to finally admit this was indeed an adult animal, and therefore that it was not the same species as the much larger *E. helvum*. After nearly four hours of arguing over the males, he finally accepted that these nipples proved the existence of a second species of fruit bat on his island. Probably the most respected forest-goer on the island, surely this was grass-roots community education in action?

But why, out of 12 bats captured over the two evenings, was only one adult female captured compared to seven adult males and four juveniles? This endemic subspecies, *Rousettus egyptiacus princeps*, has already been demonstrated to be a dwarf compared to

continental forms of the species (Juste and Ibanez 1993, 1994). Never-the-less, the adult males we captured appear to be even smaller than those of the same sub-species captured by other researchers. The mean fore-arm measurement of our males was just 87.3 mm (sd 3.17, range 82.9 to 91.0), compared to a mean of 91.3 mm (sd 3.58) given by Juste and Ibanez (1993). In contrast, our single adult female had a fore-arm of 86.5 mm, a figure similar to that given by Juste and Ibanez (1993) for females. Therefore, it is unlikely that our sample was taken from a population of bats even smaller than elsewhere on the island, but probable that the males captured were small simply due to being young. Together with the high male:female ratio, and the relatively high juvenile:adult ratio, this may indicate the presence of a roost of juveniles and young, possibly non-breeding, males close to our survey site. The female may have come from a separate breeding roost slightly further away from the survey site. If so, could it be that the population is partitioned, by sex, age or breeding capacity, between several different cave roosts in the area? Unfortunately we did not have the time to locate any *R. egyptiacus* roosts, surveys of which would be necessary to test our hypothesis. However, the small size of Príncipe (approximately 128 km², Juste and Fa 1994) and the restrictions this places on the movements of bats, makes this a perfect site for investigating bat ecology. Along with the outstanding natural beauty, we recommend anyone to visit and to contribute to the very limited knowledge of the unique biodiversity of the island.

References

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