

# **“Survey of Microchiropteran Bats of Mafia, Pemba and Unguja and Subsequent Creation of Innovative Educational, Scientific and Conservation Tools”**

**CEPF Grant #12308 to the Field Museum of Natural History**

## **Final Report**

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On December 31, 2007 the Field Museum of Natural History exhausted money awarded by the Critical Ecosystem Partnership Fund (CEPF) for a project titled “Survey of Microchiropteran Bats of Mafia, Pemba and Unguja and Subsequent Creation of Innovative Educational, Scientific and Conservation Tools” (CEPF Grant #12308). Because of the support from CEPF, the Field Museum was able to make significant strides in expanding our knowledge about the bat fauna of three islands off the coast of Tanzania: Mafia, Pemba and Unguja. In addition, innovative educational outreach tools were created and distributed on all three islands. Finally, the specimens and data collected have allowed the initiation of an in-depth analysis of the biogeographic patterns exhibited by this unique fauna in relation to populations of bats from other Indian Ocean islands such as Madagascar and the Comoros. There will be many resulting products of this analysis in the near future. Below are the goals of the project and detailed explanations of each of the accomplishments to achieve those objectives.

### **1) Document the natural history and biogeography of microbats that occur on Mafia, Pemba, and Zanzibar in relation to islands in the western Indian Ocean.**

Using a series of mist nets and harp traps, as well as collection by hand, we conducted surveys on Mafia, Pemba and Unguja islands from 2005 to 2007. Many different microhabitats were investigated including caves, forests, and buildings. While the surveys may not have documented all species of chiroptera that occur on each island (especially Unguja), we significantly augmented existing faunal lists in both species occurrence and distribution of species on each island. For example, on Mafia Island our surveys documented two bat species (*Hipposideros caffer* and *Nycteris thebaica*) for the first time. Similarly, on Pemba Island, we found the first *Scotophilus viridis* for the island, and on Unguja, *Miniopterus minor* was recorded for the first time.

The specimens from Pemba were also noteworthy in that among them was a species new to science. A population of bats found living in the attic of a hospital in a village next to Ngezi forest turned out to be a new species of free-tailed bat (Family Molossidae), and a manuscript is now in review describing this bat. Also submitted is a manuscript describing the bats (and other mammals) of Mafia Island, arguably the most

poorly known of all three islands. The specimens of Unguja are currently being analyzed.

The relationship of the bats of these three islands to bats of other islands is of primary interest to us. Indeed, discussions with Dr. Steve Goodman and colleagues on Madagascar formed a significant part of the initiative to investigate these faunas. Dr. Goodman and I are contributing to a paper soon to be submitted by Fanja Ratrimomanarivo of the University of Antananarivo, Madagascar investigating the patterns of geographic and phylogeographic variation among populations of another free-tailed bat, *Chaerephon leucogaster*, across islands in the western Indian Ocean. This is the first of many papers planned to utilize the material collected during this project to elucidate the history and conservation status of the bat faunas of these islands. For example, we have started to focus our attention on the *Miniopterus* we recently collected on Unguja to compare it to populations on other islands, and the mainland.

## **2) Produce site-specific educational outreach posters and booklets, in English and Kiswahili, for distribution to local schools and community centers in survey areas.**

Educational outreach materials have been designed for, and distributed to all three islands. Approximately 50 large laminated posters exhibiting photographs of the various species of bats documented, with natural history notes regarding each, were produced for both Mafia and Pemba Islands. A version for Unguja is in the final stages of production. These products were delivered to a wide variety of venues on mainland Tanzania and the individual islands including: Tanzania National Parks (TANAPA), Tanzania Wildlife Research Institute (TAWIRI), the Wildlife Conservation Society of Tanzania (WCST), Tanzania Forest Conservation Group (TFCG), Mafia Island Marine Park, Division of Fisheries on Mafia, Kinasi Lodge on Mafia; Department of Commercial Crops, Fruits and Forestry on Unguja (which distributed these posters to a variety of schools and community centers) and the community centre focused on the Pemba Flying Fox, established by the Flora and Fauna International.

Also produced were approximately 100 calendars for 2008, illustrating the different bats of Zanzibar (Pemba and Unguja). These calendars were sent to Dr. Bakari Asseid, Department of Commercial Crops, Fruits and Forestry, Zanzibar, for distribution in both Pemba and Unguja. All of these products were bilingual, with the lead language being Kiswahili, with translation into English.

Finally popular articles were written and published in Kakakuona, the magazine of the Tanzanian Wildlife Protection Fund of the Wildlife Division of Tanzania. The latest was an article of the bats of Pemba, written by Dr. Asseid and me. This magazine reaches a wide audience throughout Tanzania, including many tourists that visit the country.

## **3) Produce a comprehensive web-based pictorial identification guide to the species of bats that occur on Mafia, Pemba, and Zanzibar.**

Using images and data generated by the surveys of the three islands we are finalizing a website dedicated to the bats of these three islands to educate people

regarding this unique fauna. This site is modeled after Tanzania Mammal Key, an innovative web-based tool that was developed by The Field Museum for identification (to genus) of Tanzanian mammals, and is actually being produced as an aspect of the Mammal Key. When completed, the user will be able to identify bat species now known to occur on each of the islands, and view a distribution map of the records (both historical and those of this study) of each species across the islands. The finished product (also in Kiswahili and English) will be placed on CDs for free distribution to interested parties within Tanzania and particularly the islands of focus. We anticipate this site will be launched in late October. We also are in the process of polishing the data associated with each specimen, for eventual transfer (also slated for late October) to the database housed at the University of Dar es Salaam, so that biologists there will have access to it.

### **Final Project Budget**

		<b>Proposed</b>	<b>Spent to Date</b>	<b>Remaining</b>
Salaries/Benefits	\$	5,350	5,432.60	(82.60)
Professional Services	\$	1,500	1,189.32	310.68
Supplies	\$	2,114	2,543.16	(429.16)
Furniture and Equipment	\$	1,330	964.00	366.00
Travel	\$	8,720	8,768.71	(48.71)
Miscellaneous	\$	940	1,056.21	(116.21)
Total Budget	\$	19,954	19,954.00	0