

INDONESIA

Project Title: The Effect of Human Impact on Cave and Karst Biodiversity: Indonesia Component

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Various caves and ecological sites located in Maros Karst, South Sulawesi, Indonesia were studied to assess their biodiversity and the impacts brought about by human activities such as logging, tourism and agriculture. The study included the creation of a cave biota reference collection with respect to the National Museum and development of a database from the collected samples, and the drafting of recommendations to effect a national policy change for the management of cave biodiversity.

The Project started in August 2001 and will terminate in July 2003. There has been enormous data on collected and identified specimens, but only some accomplishments will be discussed. Specimens of mammals, mollusks and arthropods were collected and studied.

Mammals. Seventy-six specimens of small mammals were collected. Thirteen localities were sampled but only 11 localities provided mammal species. Collected materials consist of 64 specimens of 9 bat species (Chiroptera), 1 specimen of 1 shrew species (Insectivora) and 11 specimens of 5 rat species (Rodentia). Most species are endemic.

Suncus murinus, commonly named House Shrew, was the only Insectivora found in TWA Bantimurung and regarded as a cosmopolitan species. For Chiroptera, there were six species found. These are *Hipposideros dinops*, *Emballonura alecto*, *Dobsonia*

exoleta, *Cynopterus luzoniensis*, *Nyctimene cephalotes*, and *Rousettus celebensis*. Three more species were found, such as *Miniopterus schreibersii*, *Rhinolophus arcuatus*, and *Rhinolophus philippinensis*. Among rat species, *Paruromys dominator*, the largest rat in Sulawesi, was found. Other species include *Maxomys musschenbroekii* and *Rattus hoffmanni*. There is no new record of rodent in the study sites.

Outside the caves, occurrence of some species like *Rattus tanezum* (house rat) in a nature tourism forest like TWA Bantimurung, is likely an indicator that disturbance already exists. The effect of disturbance affects species richness and abundance inside and outside the caves, in particular at the Kacici and Pattunuang Caves where tourists often visit and local people do their laundry and take their baths. Most of the species were gathered at night using traps. Very few species of bats were collected. There was one large cave where not even one species of living bat was collected. Local folks confirmed the presence of bats before but due to human disturbances, mostly treasure diggings, the bats disappeared.

Molluscs. Terrestrial snails are represented by the families: Cyclophoridae, Clausiliidae, Subulinidae, Helicarionidae, Ariophantidae, and Camaenidae. Only the Family Thiariidae with species *Melanoides granifera* represents the freshwater snails.

Arthropods. About 1,417 specimens representing more than 46 species of Microlepidoptera and 169 species of moth were collected from four sites with different types of ecological stress: Bantimurung Nature Reserve, Karaenta Nature Reserve and Pattunuang TWA and Cani Karst (disturbed area of cacao plantation). The study found out that Bantimurung Nature Reserve has the highest number of species while the lowest was that of Karaenta



Cyclophoridae



Isopoda