

Asia

Siau Island Tarsier

Tarsius tumpara Shekelle, Groves, Merker & Supriatna, 2008
Indonesia
(2006, 2008)

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The Siau Island tarsier, *Tarsius tumpara*, is a newly described species that is Critically Endangered and faces an imminent threat of extinction. Shekelle and Salim (2009) used GIS data and field surveys to list specific threats. They include: a very small geographic range, of 125 km², and an even smaller area of occupancy, perhaps as little as 19.4 km²; a high density of humans (311 people per km²) that habitually hunt and eat tarsiers for snack food; and an extent of occurrence that is entirely volcanic in its geological composition, with Mount Karengetang, a massive and highly active volcano, dominating more than 50% of its geographic range. Furthermore, there are no protected areas within its range (Riley 2002; Shekelle *et al.* 2007; Shekelle and Salim 2009), and all captive breeding programs for tarsiers, including several by leading zoos and primate centers, have been dismal failures, leaving no *ex situ* conservation options for any tarsier species anywhere (Fitch-Snyder 2003).

The most reasonable interpretation of the scant data is that population size is very small, in the low thousands at best, and declining (Shekelle and Salim 2009). Despite the fact that Sangihe Island is renowned for its Critically Endangered avifauna (Whitten *et al.* 1987; Whitten 2006), Shekelle and Salim (2009) found that the conservation threat for *Tarsius tumpara*, on Siau Island, was greater, for every variable measured, than that faced by *T. sangirensis*, which nevertheless is Endangered (Shekelle and Salim 2009). Thus, in spite of the fact that *T. tumpara* was only recently described and remains almost unknown, sufficient evidence indicates that it teeters on the brink of extinction on an island where the entire endemic fauna and flora are at risk (Shekelle *et al.* 2007).

The taxonomic distinctiveness of Siau Island tarsiers was predicted by the Hybrid Biogeographic Hypothesis for Sulawesi (Shekelle and Leksono 2004). Sangihe and Siau Islands are part of a volcanic arc and are separated by approximately 60 km of deep ocean, greater than 1,000 m in depth; far greater than the 180 m depth normally used by biogeographers for the maximum extent of dry land exposed during glacial



maxima. There is no feasible means for recurrent gene flow between these islands today, nor is there any historical indication of a land connection between them. Shekelle *et al.* (2008a) reported acoustic and morphological evidence that supported taxonomic separation of the Siau Island population, but a sister-taxon relationship between *T. tumpara* and *T. sangirensis* relative to other known species of tarsier. Shekelle *et al.* (2008b) reported genetic data for *T. sangirensis* along with numerous other tarsiers and comparative primate data. These data revealed that *T. sangirensis* is the sister-taxon of a clade consisting of all other Sulawesi tarsiers in their data set, with

an average genetic distance between *T. sangirensis* and other Sulawesi tarsiers being approximately 80%, as great as that found between *Homo* and *Pan*, as measured at the same locus. They infer, therefore, that *T. sangirensis* split from other Sulawesi species several million years ago. Although tissue samples were collected for *T. tumpara*, genetic data are not available at this time owing to the extremely strict control of tarsier tissue for export from Indonesia in recent years, and the comparatively weak capacity for collecting such data within country (M. Shekelle pers. obs. and unpubl. data). Given the isolation between Sangihe and Siau Islands, however, it is reasonable to infer that the taxonomic uniqueness of *T. tumpara* is measured in hundreds of thousands, or even millions of years. Aside from the skull in Dresden, there is no further evidence in the literature of research on this species.

Shekelle's surveys found evidence of tarsiers in only two places, on the shores of a small fresh water pond at the extreme southern end of the island, and on a steep cliff face along the east coast road where it runs next to the ocean. Numerous other sites that looked promising based upon our experience with *T. sangirensis* turned up no evidence of tarsiers. Interviews with several locals indicated that tarsiers had formerly been common at these sites as recently as 10 years ago, but were now rare or non-existent. They also added that tarsiers, and other small endemic mammals such as the dwarf cuscus, were a popular snack food called "tola-tola", and that it had formerly been common to eat 5 to 10 animals at a single sitting after hunting them with air rifles. More recently, reports by a colleague (Noldi Kakauhe pers. comm.) indicated that tarsiers are present high on the flanks of Mt. Karengetang, near the edge of the caldera, by the village of Salili. Furthermore, as reports of *Tarsius tumpara* have spread and circled back to Siau Island, it has become apparent that some residents of Siau Island are sensitive to reports that some of the islanders eat tarsiers. Thus a careful line needs to be drawn between accurately reporting genuine threats to this species, and sensationalism that could damage relations between conservationists and island residents. Indeed, the specific name, *tumpara* (the word for tarsier in the local dialect on Siau Island) was given as a means to honor local residents, in the hope that they would actively work to preserve their biological heritage (Shekelle *et al.* 2008a).

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