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## On the systematics of *Trimeresurus labialis* Fitzinger in Steindachner, 1867, a pitviper from the Nicobar Islands (India), with revalidation of *Trimeresurus mutabilis* Stoliczka, 1870 (Squamata, Viperidae, Crotalinae)

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### Abstract

The Asian pitviper currently identified as *Trimeresurus labialis* Fitzinger in Steindachner, 1867 is revised on the basis of morphological data obtained from 37 preserved specimens originating from seven islands of the Nicobar Islands. Multivariate analyses shows that these specimens can be divided into two clusters of populations which differ by a series of constant taxonomically informative morphological characters. The first cluster, which includes the name-bearing types of *Trimeresurus labialis* Fitzinger in Steindachner, 1867, is present only on Car Nicobar Island. The second cluster, which includes the name-bearing types of *Trimeresurus mutabilis* Stoliczka, 1870, is distributed on the Central Nicobar Islands. We regard these clusters as distinct species, which are morphologically diagnosable and isolated from each other. As a consequence, *Trimeresurus mutabilis*, long considered a synonym of *T. labialis*, is here resurrected to specific level. A lectotype is designated for *Trimeresurus mutabilis*.

**Key words:** Reptilia, Serpentes, Nicobar Islands, India, *Trimeresurus labialis*, *Trimeresurus mutabilis*, taxonomy

### Introduction

Pitvipers of the genus *Trimeresurus* Lacépède, 1804 are an important component of the snake fauna of tropical Asia. This genus and related genera of crotaline snakes have been the subject of numerous revisions during the past decade which resulted in the descriptions of several new taxa at genus and species levels (see Vogel 2006, for a summary up to 2005, and David *et al.* 2011 for a list of species recognized in the genus *Trimeresurus* at the end of 2011). However, pitvipers of the Andaman and Nicobar Islands have been rather neglected. Currently, four species are recognized from these archipelagos located in the Bay of Bengal, in northeastern Indian Ocean, i.e. *Trimeresurus albolabris* (Gray, 1842), *Trimeresurus andersoni* Theobald, 1868, *Trimeresurus cantori* (Blyth, 1846) and *Trimeresurus labialis* Fitzinger in Steindachner, 1867. The three later species are endemic to these archipelagos. Malhotra *et al.* (2004) referred these four species to the genus *Cryptelytrops* Cope, 1860, a taxon which was placed in the synonymy of *Trimeresurus* Lacépède, 1804 by David *et al.* (2011).

The Nicobar Archipelago is composed of a group of 23 islands, covering a total area of 1,930 km<sup>2</sup> (Fig. 1). These islands form three spatially discrete clusters, North Nicobars (Car Nicobar & Battimalv Islands), Central Nicobars (Chowra, Tarasa, Bompoka, Tillanchong, Prairie rock, Isle of Man, Katchall, Trinkat, Camorta and Nancowry Islands) and South Nicobars (Meroe, Trak, Treis, Little Nicobar, Pulo Milo, Menchal, Kondul, Cabra, Pigeon, Great Nicobar and Megapode Islands). The Nicobar Archipelago is separated from the Andaman Islands on the North by the Ten-degree Channel. The Great Channel separates Great Nicobar, the southernmost island of the Nicobar archipelago from the large Indonesian island of Sumatra, only 155 km south of Great Nicobar Island. Nicobar Islands are covered with lowland rain forests and, especially on Great Nicobar, with lowland monsoon evergreen forests (Collins *et al.* 1991).

it would be wise to regard them as subspecies. As a consequence, we regard *T. labialis* and *T. mutabilis* as distinct species.

Both species are quite rare (Vijayakumar & David 2006). These authors found specimens of *T. mutabilis* mostly in forested areas and also in grassland, grassy swamps and in a coastal plantation. This pitviper is terrestrial, living mostly on the forest floor in the leaf litter or among grasses, or semi-arboreal, climbing on logs and tree trunks. Most specimens recorded by Vijayakumar & David (2006) were found at day time.

## Conclusions

There is no complete phylogeny available for the *Trimeresurus* lineages currently recognized in the Nicobar Islands. This is partly due to the general lack of revisionary work on the reptiles of the Oriental region but partly also due to the restrictive regulations of India, which makes investigations in the fauna of the Nicobars quite difficult. However a complete survey of the fauna of the islands of the Andamans and Nicobars seem to be of major concern. Small islands like Car Nicobar might be a victim of natural catastrophes, as demonstrated by the Tsunami of 2004. Smaller islands might also suffer from invasive species (Vogel & Harikrishnan 2013) and populations might vanish, before even getting noticed.

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