



## The unexpected discovery of blind snakes (Serpentes: Typhlopidae) in Micronesia: two new species of *Ramphotyphlops* from the Caroline Islands

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### Abstract

Two new blind snakes in the genus *Ramphotyphlops* are described from Ulithi (*R. hatmaliyeb* **sp. nov.**) and Ant Atoll (*R. adocetus* **sp. nov.**) in the Caroline Islands, the first blind snake species known from Micronesia east of Palau (excluding *Ramphotyphlops braminus*). Both species are unusual in being known only from small, low-lying atolls. They can be distinguished from other *Ramphotyphlops* by the combination of 22 scale rows over the length of the body; a wedge-shaped snout, without a keratinized keel; and a broad, pyriform (*R. adocetus*) or ovate (*R. hatmaliyeb*) rostral scale.

**Key words:** Ant Atoll, arboreality, hemipenes, Oceania, Scolecophidia, Ulithi

### Introduction

Blind snakes (Scolecophidia, family Typhlopidae) comprise approximately 250 nominate species (Uetz and Hosek 2011) with a distribution primarily in tropical and sub-tropical regions worldwide. Although there are numerous species in such archipelagos as the Greater and Lesser Antilles, the Philippines, and the Solomon Islands, none are known to have reached the many islands of Oceania north of Melanesia and east of Palau (with the exception of *Ramphotyphlops braminus*, a parthenogenetic species [McDowell 1974; Wynn *et al.* 1987; and Ota *et al.* 1991] known for its human-mediated dispersal abilities).

More than 30 blind snake species occur in the island arc bordering the western Pacific, from the Philippines in the northwest to Fiji in the southeast (McDiarmid *et al.* 1999; McDowell 1974; Watling *et al.* 2010) (Fig. 1). Only two species are reported to extend into Oceania to the north and east of this arc. Dryden and Taylor (1969) described *Typhlops pseudosaurus* from Guam (now regarded as *Ramphotyphlops braminus* [McDiarmid *et al.* 1999]), based on a shedding specimen (not an aberrant *R. braminus* as suggested by Pregill and Steadman 2009). *Ramphotyphlops acuticaudus* from Palau (Crombie and Pregill 1999), a species similar to *Ramphotyphlops flaviventer* and related species from Halmahera eastward through New Guinea and the Solomon Islands to Fiji (McDowell 1974; Wallach 1996; Watling *et al.* 2010), is the only recognized species that occurs inside this island arc, and other than *R. braminus*, no blind snakes occur eastward in Micronesia.

Two recent discoveries reveal that blind snakes occur, potentially widely, within the Caroline Islands. On 15 July 1999, a specimen of typhlopoid (USNM 529971) was collected on Pasa Island, Ant Atoll by Otto Sirom, who found the snake inside a rotted *Cocos* trunk that was lying on the ground. Subsequently, one of us (M. Falanruw)