

First record of the genus *Tropidonophis* (Serpentes: Colubridae) and rediscovery of *Parias flavomaculatus* (Serpentes: Viperidae) on Siquijor Island, Philippines

Wouter Beukema

The Philippine Islands are among the main biodiversity hotspots in the world (Myers et al., 2000) and have received an increasing amount of herpetological interest during recent decades (Brown, Diesmos and Alcala, 2008). Species diversity and composition on these islands are influenced by Pleistocene Aggregate Island Complexes (PAIC) which were in contact during glacial periods, and often support closely related herpetofauna. Islands of oceanic origin that did not have any recent contact with PAIC's are characterized by a high degree of floral and faunal endemism (e.g. Heaney, 2002). The Philippines are now threatened by severe habitat modification and destruction especially on lower elevations, which could have a devastating effect on the herpetofauna (Diesmos, 2008) and biodiversity in general.

Although the island of Siquijor is located close to the West Visayan Islands Negros, Bohol and Cebu, it is of oceanic origin. Due to its long isolation, Siquijor supports an endemic bird species (Kennedy et al., 2000) but does not have any mammalian endemism, in contrast to other small deep-channel islands (Heaney, 2002). The herpetofauna of Siquijor has not been studied in detail so far, but at least 22 species are known to be present of which none is thought to be endemic. However, when compared with data from other islands, considerable morphological divergence of at least one species on Siquijor has been identified (McGuire and Alcala, 2000) suggesting the need for additional research on this deep-channel island (Diesmos, 2008). This need becomes urgent now because a major threat has already formed in the shape of large-scale logging that has resulted in an almost complete disappearance of forests, with only four fragments (fig. 1) remaining (Mallari, Tabaranza and Crosby, 2001). It is not clear if

the currently known low amount of endemism is real, or related to severe habitat disappearance (e.g. Heaney, 2002). Documenting extant biodiversity is, therefore extremely important to set conservation priorities.

During a visit to a stream within a secondary, partially replanted forest fragment (fig. 2) of Mt. Bandila-an National Park (N 9°11'04, E 123°34'46, 518 m) central Siquijor on the 18th of May 2010, several individuals of the snake genera *Tropidonophis* and *Parias* were found. Other recorded herpetofaunal elements found at the same locality include two frogs, *Limnonectes visayanus* (Inger, 1954) and *Occidozyga laevis* (Günther, 1859), and the scincid lizard, *Sphenomorphus steeri* Stejneger, 1908. With respect to the snakes, this is the first record for *Tropidonophis* on Siquijor, while the little-known occurrence of *Parias* is now confirmed.

Parias flavomaculatus (Gray, 1842): Fig. 3. The Philippine pit viper is distributed on several major Philippine islands excluding Palawan (Leviton, 1964; Gaulke, 2001). Whereas two subspecies have been described from Batan and Polillo island, respectively (Leviton, 1964), individuals from Luzon to Mindanao are still considered to be conspecific despite some documented morphological and genetic differentiation (Leviton, 1964; Castoe and Parkinson, 2006). Recent

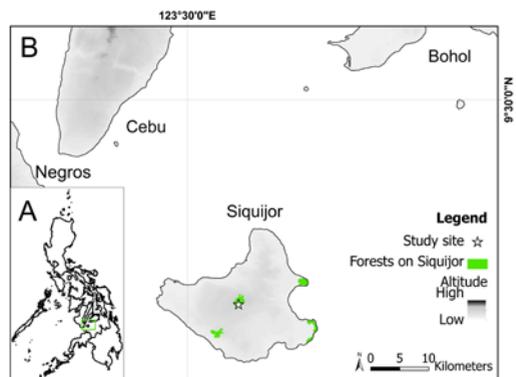


Figure 1. (A) Location of Siquijor in the Philippines; (B) Remaining forests (sensu Jakosalem et al., 2005) on Siquijor and location of the study site.



Figure 2. A stream in Mt. Bandila-an National Park.

literature and online databases do not show Siquijor as occurrence locality despite the availability of a single specimen collected in 1966 approximately 8 km NW of Lazi town in a rice paddy, which was subsequently deposited at the California Academy of Sciences (CAS-SU 26613). The occurrence of *P. flavomaculatus* is hereby confirmed. Three adult individuals (TL > 400 mm) were found hiding in crevices and under stones near a partially dried-up streambed. Phenotypical variation was high, but corresponds to the description of Leviton (1964).

Tropidonophis dendrophiops (Günther, 1883): Fig. 4. Two species of the genus *Tropidonophis* occur on the Philippine islands; *T. negrosensis* occupies islands of the Western Visayas while *T. dendrophiops* is found on major parts of the Mindanao PAIC, thus covering most of the western and southern Philippines (Malnate and Underwood, 1988). Siquijor was up till now a remarkable gap centered within the distribution of this genus (Malnate and Underwood, 1988). The individuals found on Siquijor are tentatively attributed to *T. dendrophiops* based on a divided preocular scale and colour pattern characteristics as shown by Malnate and Underwood (1988). Unfortunately, as none of the



Figure 4. Juvenile *Tropidonophis dendrophiops* from Mt. Bandila-an.



Figure 3. *Parias flavomaculatus* from Mt. Bandila-an.

individuals was collected, determination cannot be performed with absolute certainty. A total of five small juvenile *Tropidonophis* (TL < 150 mm) were observed swimming in small puddles within a partially dried-up streambed. One individual seemingly hunted the abundant tadpoles of *O. laevis*. The presence of newborn juveniles in April is congruent with data presented by Smith (1993).

The discovery of these two snake species is especially interesting from a biogeographical viewpoint. The nearby, large islands of Negros and Cebu have received substantial herpetological attention (Brown and Alcala, 1961; Brown and Alcala, 1986; Alcala, Alcala and Dolino, 2004) without producing any records of the relatively large and conspicuous *P. flavomaculatus*, while *T. negrosensis* occurs on these islands instead of *T. dendrophiops*. The geographically closest populations of *P. flavomaculatus* seem to be those in north-western Mindanao (Nuñeza, Ates and Alicante, 2010). *Tropidonophis dendrophiops* occurs on Bohol Island which is approximately 30 kilometres from Siquijor but belongs to the Mindanao PAIC (Malnate and Underwood, 1988). Phylogeographic analyses will be highly useful in testing the relations of both species from the isolated Siquijor Island with other Philippine insular populations.

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