

## A review and correction of data on a poorly known leaf litter snake, *Trimetopon slevini* (Dunn, 1940), from Panama, including additional data on defensive behaviours

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It has been suggested that some of the most poorly studied snakes in the Neotropics, and likely around the world, are small, leaf litter inhabitants (Heinen, 1992). Because of their size and secretiveness, leaf litter snakes are rarely seen, so even the most basic information on natural history and behaviour are lacking in the literature (Savage, 2002; Solórzano, 2004). Snakes of the genus *Trimetopon* serve as an excellent example. Reaching just 300 mm in total size, with a limited range primarily in Costa Rica and Panama, the six leaf litter species are rarely reported on, and most museum specimens have been collected in Costa Rica (Savage, 2002); very few records exist for the three species that occur in Panama.

*Trimetopon barbouri*, previously reported from the Panama Canal Zone (Köhler, 2008) and recently recorded in Coclé Province (Ray et al., in review), has the easternmost distribution of any species in the genus. *Trimetopon pliolepis* and *T. slevini* reach their southeastern range limits along the Costa Rican-Panamanian border, ca. 40 km to the east of the political border (Köhler, 2008). Based on the number of specimens in museums, of these three Panamanian species, *T. slevini* likely is encountered more often than the others (Myers, 2002).

*Trimetopon slevini* was described from near Boquete, Chiriquí, Republic of Panama (CAS field number 633 [catalogue number CAS 78938]) (Myers, 2002; Slevin, 1942; Dunn, 1940). *Trimetopon slevini* is considered a highland species (ranging between 1200 and 1825 m).

The holotype was reported from “4000 feet” (Dunn, 1940) or ca. 1219 m. Savage lists elevation ranging down to 120 m for Panamanian species, but we suspect this is a typographical error, given all other accounts of the species (Köhler, 2008; Myers, 2002). Pérez Santos (1999) includes a specimen (KU75760) from Cerro Punta, Chiriquí Province, at 1825 m, which is the highest known elevation for the species.

Individuals reach a maximum size of 294 mm for females (Savage, 2002) and 221 mm for males (Myers, 2002); have 17 scale rows at mid-body and two separate pre-frontals. Dorsal colour is dark brown or dark grey with a reddish orange relatively unmarked venter. Pale spots are evident in the nuchal area.

Observations in Panama of *Trimetopon slevini* have been reported by Dunn (1940) near Boquete and at Finca Lerida near Boquete, ca. 1645 m, and by Köhler et al. (2010) at the site where the holotype of *Sibon perissostichon* was found (near Lost and Found Ecohostel, Reserva Forestal La Fortuna, 8.6745N, 82.2162W, 1434 m elevation). Solórzano (2004) includes a picture from Chinchona de Sarapiquí, Heredia Province, Costa Rica and implies that it is the holotype (KU R-31952). In fact, this was the first specimen reported from Costa Rica (Taylor, 1954). Another specimen is known from El Muñeco in Cartago Province, Costa Rica (MVZ 24225) (Figure 1). Pérez-Santos (1999) notes three specimens from Panamá Province (ANSP 24717-19) but others Myers (2002) include this specimen in a series collected in Finca Lérica, Chiriquí Province at ca. 1600 m (Myers 2003, Savage and Watling, 2008).

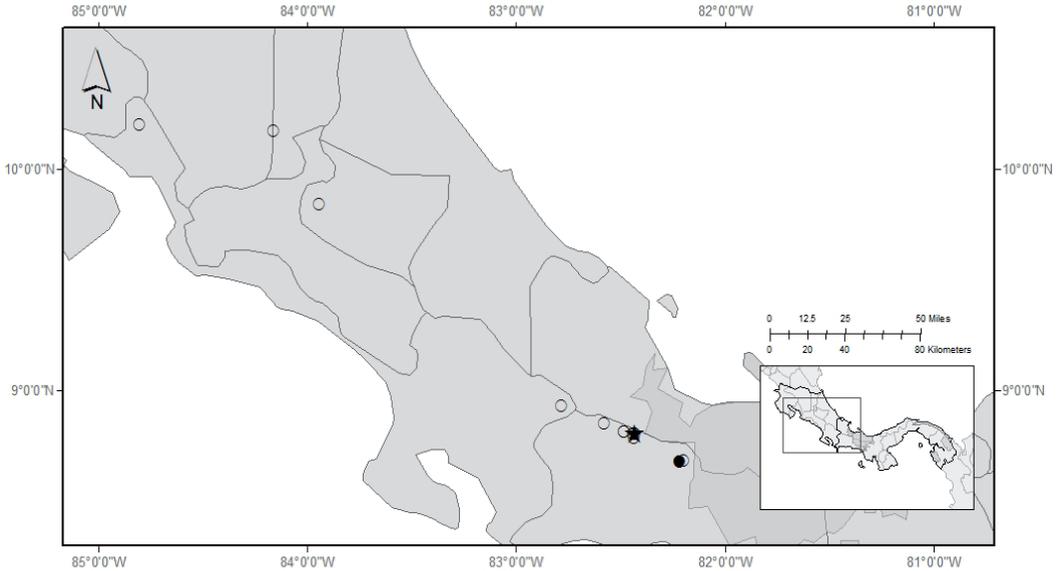
Aside from the mention of reproductive activity in the species description, little has been published on the natural history or behaviour of *Trimetopon slevini*. Solórzano (2004) reports that nothing is known about diet or the reproductive cycle, although the snake is oviparous. Dunn (1940) described two paratypes, one with two fully developed eggs and one with one fully

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**Figure 1.** Map of Costa Rica and Panama with known localities of *Trimetopon slevini*. The star designates the site locality of the holotype and the open circle the site of the snake described in this paper. Dots are other localities confirmed by museum specimens.

developed egg. Measurements of the eggs were not given. Hamad (2009) reports that the specimen mentioned in Köhler et al. (2010) was found active during the night. A second specimen from the same site was found active during the day (S. Lotzkat, pers. comm.).

Here we report on a snake found *ca.* 30 airline km east of that of the holotype in Chiriquí Province, Panama.

While hiking in Reserva Forestal de Fortuna, Chiriquí Province, Republic of Panama (8.6786N, 82.2192W) on 24 January 2013 at 21:00 h MH found a single individual of *Trimetopon slevini* (Figure 2) partially exposed from beneath a protruding rock in the centre of a trail on a steep southwest-facing windward slope, at an elevation of *ca.* 1350 m, less than 100 m vertically and 200 m horizontally from a saddle on the ridgeline. The weather was relatively cool (*ca.* 15°C), with a steady wind and light misty rain, which was barely penetrating the canopy. The individual was removed from beneath the rock, observed, photographed, and released. Approximately one cm of the most anterior portion of the snake's neck appeared to have been injured and healed prior to the encounter; the wound consisted mostly of rigid scar tissue. The snake was completely alert and physically agile, persistently attempting to escape.

The individual was identified based on the following

characteristics: pair of nuchal spots, absence of definite nuchal collar, red venter, dark brown overall coloration, and lack of light dorsal stripes. The individual was discriminated from *Trimetopon viquezi* by presence of nuchal spots, and both *T. gracile* and *T. pliolepis* by lack of yellowish or white venter. Species identification was based on the field guide of Savage (2002). Additionally, subcaudals were not punctuated with brown as suggested by Savage (2002). Nuchal spots were orange/red, not white, and a pair of small orange/red spots was present beneath each eye.

The individual was lying still when found with only the posterior half of the body exposed, but immediately responded when grasped by attempting to burrow deeper beneath the rock. While being handled and photographed, the snake squirmed, opened its mouth, and made multiple strikes. No musk was excreted. When released, the snake quickly moved off the trail and under the leaf litter.

*Trimetopon slevini*, for a small leaf litter snake, is reportedly relatively common near Boquete, Chiriquí Province, Republic of Panama, yet very little has been studied on the general biology and behaviour of this species. Information provided here on behaviour, albeit limited, is some of the first ever documented. The known



**Figure 2.** Photographs of *Trimetopon slevini* with distinctive red venter and light spots on the head and neck.

population must now be studied to better understand the snake's diet, reproductive cycle, defensive behaviour, and population status. Without these basic data, no assessment on the conservation status of *T. slevini* can be made.

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