

Rediscovery and Range Extension of the Malatgan River Caecilian (*Ichthyophis Weberi* Taylor, 1920) in Palawan, Philippines

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Abstract— A herpetological survey was undertaken in the Cleopatra's Needle Mountain Range in Palawan, Philippines, in December 3-12, 2015 organized by the Center for Sustainability – a non-government, non-profit environmental organization in Palawan. The survey aimed to gather initial data on wildlife, including reptiles and amphibian populations from this biogeographically distinct region as supplementary requirements for its declaration as an official protected area. The survey led to the rediscovery of Malatgan River Caecilian (*Ichthyophis weberi* Taylor, 1920) in Palawan, Philippines - an elusive caecilian that has not been observed since 1961. We described here several aspects on biogeography of the species in Palawan biogeographic region, Philippines.

Keywords— River Caecilian, Palawan, Amphibians, Palawan, *Ichthyophis Weberi* Taylor.

INTRODUCTION

Palawan is a large island province in the southwest of the Philippines, in close vicinity to Borneo. The island is known for its relatively high level of remaining forest cover and for its high level of vertebrate endemism (Brown et al. 2007, Diesmos et al. 2015, Leviton et al. 2018). Although the biodiversity on the island is relatively poorly studied, there have been several, recent, noteworthy herpetological observations in the northern half of the island, including rediscoveries of the Palawan Toadlet, *Pelophryne albotaeniata*, (van Beijnen and Jose, 2017), the Palawan Wolf gecko, *Luperosaurus palawanensis*, (Jose and van Beijnen, 2020) and of Perkin's Short-headed Snake, *Oligodon perkinsi*, (Supsup and Carestia, 2020).

Another mystery that needs to be resolved in order to increase our scientific understanding of the island's herpetofauna involves the Malatgan River Caecilian, *Ichthyophis weberi*. The holotype was collected in central Palawan near the Malatgan River which flows south from the top of Thumb Peak, in the direction of the prison settlement of Montible, which is part of the Iwahig Penal Colony, whereafter it flows into Puerto Princesa Bay. The holotype, and only known specimen

at the time was lost after a bombing campaign during the Second World War which destroyed much of the country's taxonomic collections based at the Bureau of Science in Manila (Taylor 1965).

Ichthyophis weberi was not encountered again until 1961 when a team of local biologists collected another 12 specimens during extensive fieldwork in the same area as the original type locality (Alcala 1961). Based on their original field notes (CAS Herpetology Collection Database, 2020), 12 specimens were found between March and April of that year at the height of the island's extensive dry season. With locations ranging from around 13 to 15 kilometer southwest of the penal colony, near the small village of Montible with general coordinates 9° 40' 42.71" N 118° 34' 51.6" E, in dipterocarp forest and at an altitude varying from 100 to 400 meters, near the southern slope of Thumb Peak and close to the Malatgan River at an altitude of around 150 meters. Although most specimens were found under rotting logs, at least one specimen (CAS 139831) was found in a small pool at the river. Despite several attempts to find the species in recent years (Diesmos, 2012), these observations from 1961 mark the last time *I. weberi* was observed by scientists in the wild.

METHODS

As part of a conservation project to designate the Cleopatra's Needle Mountain Range in the north of the municipality of Puerto Princesa, Palawan, as a protected area (Hoevenaars and van Beijnen, 2015), a research program was launched in 2015. Several expeditions were organized including one trip focusing on the herpetofauna of the area. From December 3 to December 12 of that year, two areas were visited covering the barangay (local village unit) of Conception on the eastern slope of the mountain range and barangay Langogan on the northern section of the mountain range.

The team consisted of five biologists and a number of local assistants. Forests were opportunistically visually surveyed for the presence of herpetofauna using traps, passive encounter surveys and opportunistic observations (Eekhout, 2010). Specimens were identified using available taxonomic keys during

fieldwork. Photographs were subsequently reexamined for identification using the literature (Brown et al., 2009; Das, 2008; Diesmos & Brown, 2011; Diesmos et al., 2002).

RESULTS

Ichthyophis Weberi was described by Taylor in 1920 based on a single specimen collected in 1909 (Taylor, 1968) rediagnosed the species as “A small species, reaching a length of 256 mm; above uniform dark lilac to violet, the ventral surface a little lighter and showing a slightly brownish lilac shade; cream spot at vent; eye in a socket, visible through skin. Transverse folds (primaries, secondaries and tertiaries indistinguishable from each other superficially), from 304-322, ventral

count to 313-329, dorsal count; splenial teeth absent in adult, present in at least some larva. Body width in total length about 25 times. Vertebrae, 104-108.

On December 10 the team was present on the eastern slopes of the mountain range that falls within Sitio Marandang, Barangay Conception, Puerto Princesa City, following the Sulpan River. After severe rains during the night, a single caecilian was observed crawling on the leaf litter between the roots of a large Ficus sp. This was carefully collected and the preliminary identification was determined as *I. weberi* (Fig. 1). The new specimen meets the original description and several recorded measurements of the holotype and paratypes (Table 1)



Figure 1: Live image (a) and an illustrated appearance of the Malatgan River Cecilian collected in the Cleopatra’s Needle Mountain Range (Photo by Rafe Brown and Illustration by Vena Adamczyk).

Table 1: An overview of the morphological characteristics and other data measured and collected by Taylor for several specimens of *I. weberi*, and compared with the newly collect individual.

Measurements of several specimens of <i>I. weberi</i>							
Designation	Holo-type	Neotypes					New specimen
Measurements (mm):							
Total length	250	256	226	230	209	148.5	272.8
Tail length		4	3.1	3.1	3.3	4.5	2.5
Eye level to snout tip	5	4.9	4.4	4.8	4.9	2.3	5
Tentacle to eye	1.5	1.8	1.35	1.35	1.28	in eye spot	1.5
Total folds (#):							
dorsolateral		304	332	312	316	320	324
Splenial teeth		0-0	0-0	0-0	0-0	5-5	0-0

The specimen was recorded in the Cleopatras needle mountain (10.09°; E: 119.00°), and at an altitude of 404 meter above sea level (Figure 2). The vegetation at this site is characterized as primary riverine forest dominated by dipterocarp trees, Ficus spp. and palms. The understory is dominated by a variety of gingers, smaller palms and rattans, similar to other lowland riverine

forest areas in Palawan (van Beijnen & Jose, 2020). The soil can be classified as sandy loam with the presence of limestone fragments and quartz. The location of the individual was about 22 meters from the main river and positioned at a mild incline at about 6 meter above the water level of the river.

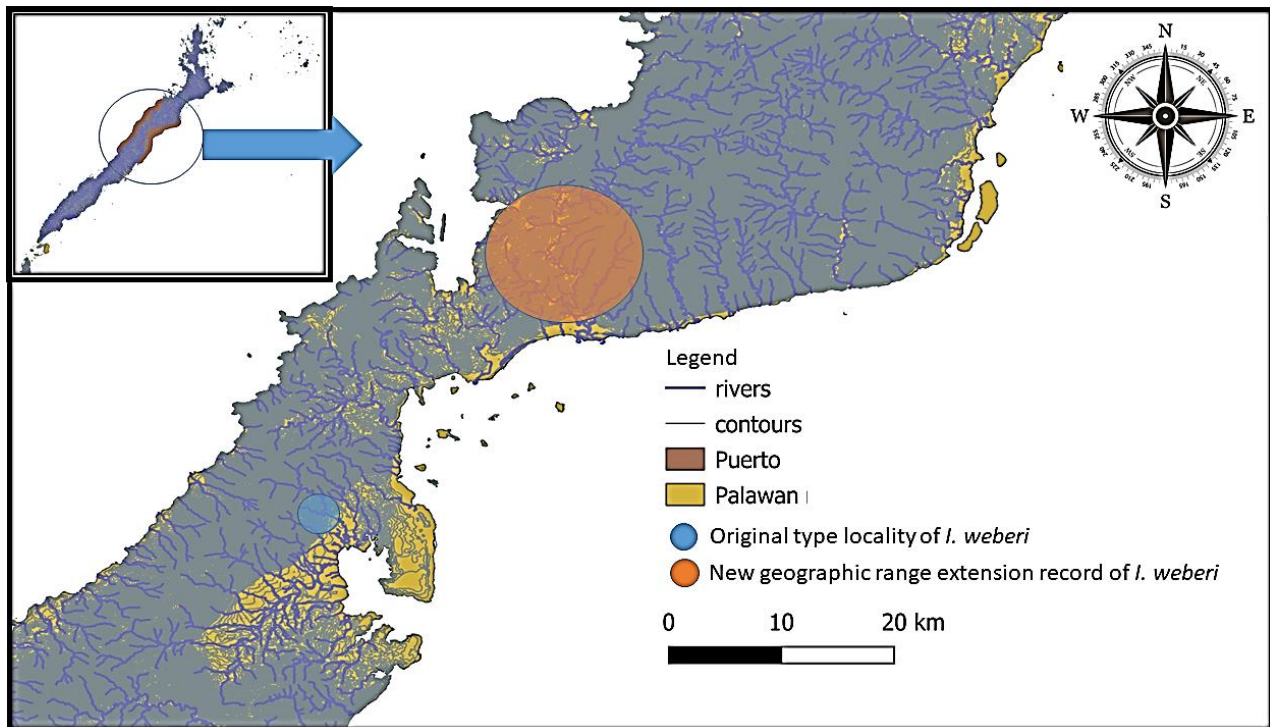


Figure 3: Map of Palawan, Philippines (inset), Puerto Princesa and the two known geographic records of *I. weberi*.

The individual specimen collected was deposited at the National Museum of the Philippines in Manila and the preserved specimen was confirmed as *I. weberi* by experts present on site (Diesmos & Brown pers. Comm.). At the time of writing this article the photographs taken of the specimen were lost after a tragic error. Several other herpetofauna species were recorded during this expedition including 6 amphibians: *Staurois nubilus*, *Sanguirana sanguinea*, and *Hylarana moellendorffi* (Ranidae), *Limnonectes acanthi* (Dicroglossidae), *Leptobrachium tagbanorum*, and *Megophrys ligayae* (Megophryidae) and 3 reptiles: *Trimeresurus schultzei* (Viperidae), *Rhabdophis chrysargos* (Colubridae) and *Cyclemys dentata* (Emydidae).

DISCUSSION

This new record for the species confirms its continuing existence. Additionally, the record provides an expanded range for the species as the new location is almost 80 kilometers north of the original type locality. Much remains unknown, specifically the low number recordings of the species, which could potentially be explained by its natural rarity or secretive ground-burrowing behavior. All 13 specimens encountered of this species have all been caught outside the island's rainy season (which last from May to July) ruling out the possibility that the species might only be active above ground during the most humid season, as are few other amphibians on the island such as *Chaperina fusca*. As the team in 1961 was able to locate 12 individuals at one main site and within several weeks, it is very well

possible that the species is locally common but just cryptic.

The current IUCN conservation status of *I. weberi* is Endangered. Between the new recording of the species and the writing of this paper, the Cleopatra's Needle Mountain Range has been successfully declared as a protected area, designated as a critical habitat covering 41,350 hectares. In addition, the forest at the original type locality of the species at Thumb peak still falls under the Iwahig Penal Colony and has been declared as a protected site as well. The extent of occurrence is estimated to be less than 5,000 km² with the species only confirmed in two locations within 80 kilometers from each other and on one single island. Other potentially suitable habitat for the species, e.g. lowland rainforest, are under severe threat due to the high pace of development on the island, especially land clearings and land speculation to cater the booming local tourism industry, as well as land grabbing by influential businessmen and politicians, are the main treat to the island's last remaining unprotected lowlands forest fragments. Assessing these data and also taking into consideration the IUCN criteria, this data still supports the current Endangered conservation status of the species (IUCN, 2012). We recommend more extensive research within these known geographic range of the species and including the remaining potential forest habitats in the Palawan Man and Biosphere Reserve for better understanding of its biology and ecology, as well as defining proper actions for species conservation and management.

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