A New Snake of the Genus *Hologerrhum* Günther (Reptilia; Squamata; Colubridae) from Panay Island, Philippines

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Abstract.- We describe a new species of snake in the genus *Hologerrhum* from two forested localities in Antique Province, Panay Island, Philippines. To clarify species boundaries, we also redescribe its only known congener, *H. philippinum*, on the basis of historical collections and newly-acquired material from the Islands of Luzon, Marinduque, Polillo, and Catañduanes. The new species is the first *Hologerrhum* from the Visayan Aggregate Island Complex and differs from *Hologerrhum philippinum* in color pattern and scalation of head and body. The new species is one of several recently described vertebrates from Panay Island. Together, they indicate that forested regions of the individual islands of the Visayan Aggregate Island Complex (Negros, Panay, Cebu, Masbate, and other associated smaller islands) contain low levels of taxonomic endemicity that warrant further study.

Key words.- Colubridae, *Hologerrhum*, Philippines, Panay Island, Visayas.

Introduction

Günther (1858) erected the monotypic genus *Hologerrhum* to accommodate a single specimen from Hugh Cuming's Philippine collections that had been deposited in the Natural History Museum, London (Günther, 1873; Fig. 1A). Günther distinguished the new genus and species from members of the Philippine genus *Cyclocorus* by the presence of slight grooves in the enlarged fang-like teeth at the posterior end of the maxilla. Other slight differences between *Hologerrhum* and some species of *Cyclocorus*, not emphasized by Günther but mentioned by other workers (Taylor, 1922a, 1922b; Leviton, 1965), include color pattern, slight scale pattern differences, and less strongly enlarged middle series of maxillary teeth in *Hologerrhum*.

At the time of the description of *Hologerrhum*, no specific (island) locality data were available, but Günther later (1879) referred a specimen from Placer, northeast Mindanao Island to this species. That specimen (not seen by us) apparently is a representative of the genus *Cyclocorus* Taylor 1922c (*vide* Boulenger, 1896; see also comment by Taylor, 1922a:116).

Jan and Sordelli (1870) described *Cyclochorus maculatus* (generic name misspelled), on the basis of a specimen reportedly from Java Island, Indonesia (Fig. 1B). Fischer (1885) followed by recognizing *Cyclochorus lineatus* var. *maculatus* reportedly from S. Mindanao Island, Philippines, but without reference to new material. The type specimen of *Cyclochorus maculatus* later was shown to be a representative of *H. philippinum* (Günther, 1873, 1879; Boettger, 1886; Taylor, 1922a), suggesting locality errors by both Jan and Sordelli and Fisher. Later, Leviton (1965) inadvertently included *Cyclochorus maculatus* in the synonymy of *Cyclochorus lineatus*.

Castro de Elera (1895) reported *Hologerrhum philippinum* from Baco, Mindoro Island. This important specimen could not be examined as it was destroyed during dissections by a biology class at the University of Santo Thomas, Manila (R. I. Crombie, personal communication) but the "Mindoro" locality information suggests a misidentification of a specimen of *C. lineatus* (Taylor, 1922a; Leviton, 1963, 1965). Griffin (1910) did not include *Hologerrhum* in his list of snakes from Polillo but did include the species in his key to the Philippine snakes (Griffin, 1911), although he erred in attributing the type description to Boulenger and supplied no precise locality data.

It was not until E. H. Taylor's extensive work in the Philippines that specimens of *H. philippinum* with reliable locality data became available. Taylor (1922a, 1922b, 1922c, 1922d) consistently reported that this species was collected in montane habitats in primary forest and usually was associated with rocky stream beds on Luzon and its land-bridge satellite island of Polillo (Fig. 2). Still, Taylor (1922b:200) considered the species rare and only obtained eight specimens in two years of nearly continuous field work.

During the nearly 80 years that have elapsed since Taylor's work, several additional specimens of *H. philippinum* have been collected on Luzon and its associated land-bridge islands (Marinduque, Polillo, and Catañduanes; see Specimens Examined; Fig. 2). During the same period, none have been found on Mindanao, Mindoro, or any of the other Philippine islands, thus bolstering the notion that *H. philippinum* is endemic to the Luzon Pleistocene Aggregate Island Complex (Fig. 2; *sensu* Heaney, 1986; Alcala, 1986; see also comments by Leviton, 1963).

In 1992, while participating in the National Museum of the Philippines/Cincinnati Natural History Museum Philippine Biodiversity Inventory (PNM/CMNH PBI), one of us (RMB) collected specimens of what appeared to be a distinctive new species of snake, similar to but obviously specifically distinct from *H. philippinum*, at 1025 m elevation on the west face of Mt. Madja-as, Panay Island. In addition to representing a previously unrecognized species, this specimen appears to be the first vouchered record for the genus on the Visayan Aggregate Island Complex (Fig. 2; Heaney, 1986; Hall, 1996, 1998). During the course of this study we examined all available US and Philippine museum collections of *H. philippinum* and

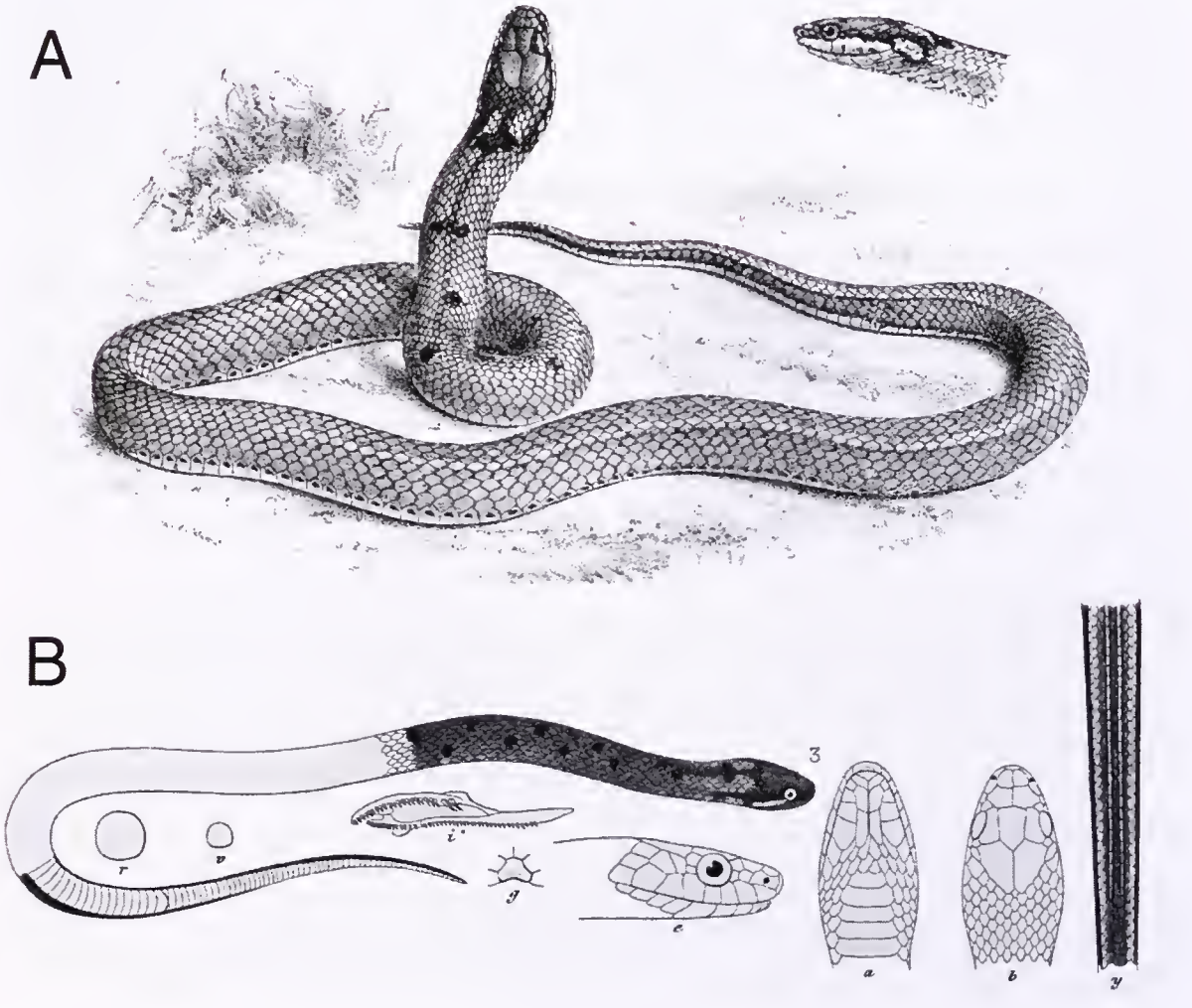

Figure 1. The first illustrations of *Hologerrhum*. (A) Günther's (1879) drawings of *H. philippinum* and (B) Sordelli's plate of *Cyclochorus maculatus* (= *H. philippinum*) from Jan and Sordelli (1870).

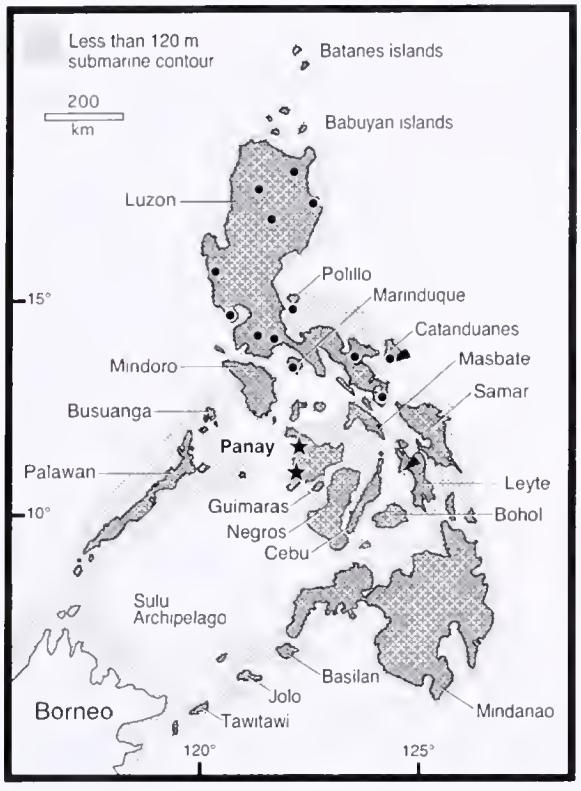

Figure 2. Map of the Philippine islands with the major Pleistocene aggregate island platforms indicated by the position of the 120 m underwater bathymetric contour (following Heaney, 1986); known collection localities of the two species of *Hologerrhum* are indicated. Darkened circles represent collection localities for *Hologerrhum philippinum* Günther, 1858, stars are localities for *Hologerrhum dermali* new species.

Hologerrhum n. sp. In this paper, we redescribe *H. philippinum* and describe the new species from Panay.

Material and Methods

We surveyed the forested slopes of Mt. Madja-as from 6 April–1 May 1992, utilizing elevational transects as described by Ruedas et al. (1994) and as modified by Brown et al. (1995, 1996, in press; Ferner et al., this issue). Sampling techniques employed a variety of search and trapping methods, including multiple-person time-constrained searches, sticky traps, and pitfall traps (Simmons, 1987). Specimens were fixed in 10% buffered formalin and transferred to 70% ethanol approximately 2 months following preservation.

Museum specimens (see Specimens Examined, below) were examined for color pattern and scale character differentiation and only data scored by RMB and AEL were used in an effort to minimize inter-observer sources of variation (Lee, 1990). We used Dowling's (1951a, 1951b) methods for counting scales and expressing scale row reduction formulae, and applied the Evolutionary Species Concept (Simpson, 1961; Wiley, 1978; Frost and Hillis, 1990) in making taxonomic decisions.

Species accounts

Hologerrhum philippinum Günther 1858

Figures 3–6

Hologerrhum philippinum, Günther (1858:186).

Cyclochorus maculatus, Jan and Sordelli (1870:36; generic name misspelled; the specimen illustrated is *H. philippinum* with doubtful locality data).

Hologerrhum philippinum, Günther (1873: 171; specimen is a member of the genus *Cyclocorus*, *vide* Boulenger, 1896).

Cyclochorus lineatus var. *maculatus* Fischer, 1885:81.

Hologerrhum philippinum, Boettger (1886:115) Castro De Elera (1895:438; specimen probably *Cyclocorus lineatus*); Boulenger (1896:33); Taylor (1922a:116; 1922b:200, 1922c:138); Ross and Gonzales (1991:67); Brown et al. (1996:13).

Hologerrum philippinum Griffin, 1911:263 (generic name misspelled).

Diagnosis: *H. philippinum* differs from its congener, *H. dermali*, by (1) the presence of 12–30 (vs. 7–10) pairs of alternating black spots on nuchal region and anterior dorsum, (2) a pale orange to salmon (vs. bright yellow) venter, (3) absence (vs. presence) of a black midventral stripe, (4) labials cream or yellow (vs. labials bright white with thin midlabial black stripe), (5) dorsum tan to orangish brown or dark brick red (vs. dark purplish brown), (6) chin and throat of adults pale tan to orange, immaculate or with faint white spots in some specimens (vs. darker purplish brown with black and white ocelli), (7) invariable presence of moderate to enlarged pretemporal (length more than half that of secondary temporal; vs. pretemporal reduced or absent), and (8) posterior tips of parietals extend caudally, posterior parietal suture forming a medially inverted V-shaped cleft (vs. posterior portions of parietals squared off, with no medial cleft).

Description: Body cylindrical, ventrals convex, head slightly distinct from neck, not flattened; eyes small, pupil round; vertebral ridge absent.

Rostral scale much broader than deep, scarcely visible from above, subtriangular with ventromedial groove in dorsal aspect; nasal divided, naris piercing

Figure 3. Live photograph of *Hologerrhum philippinum* from the Zambales Mountains of western Luzon Island (female, PNM 2490; photograph copyright D. Wechlser).

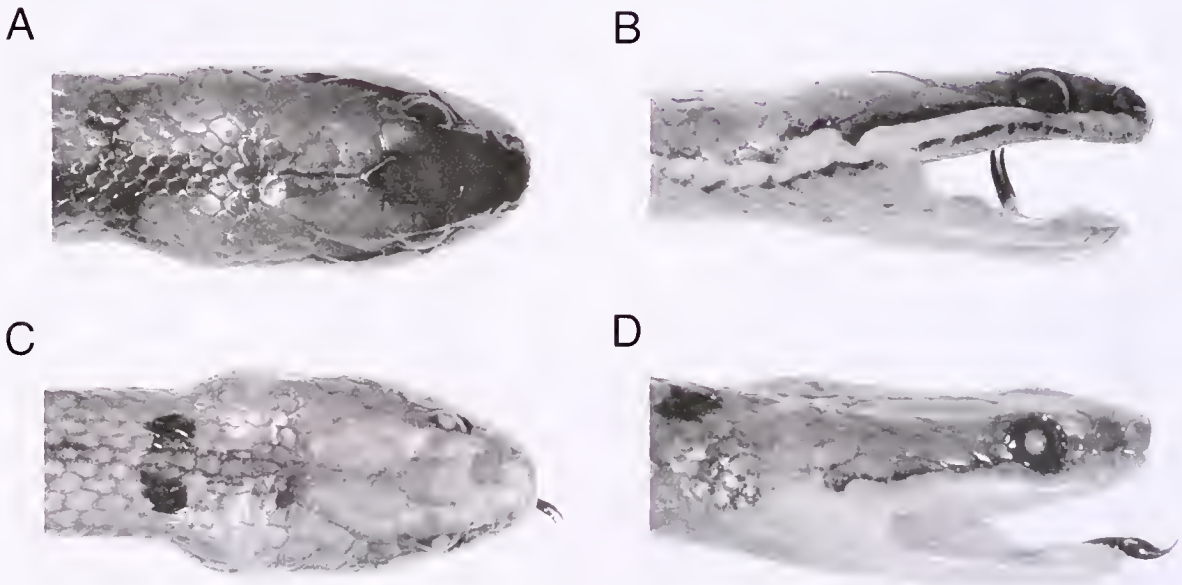

Figure 4. (A) Dorsal and (B) lateral view of the head of *Hologerrhum dermali* (CMNH 5075); (C) dorsal and (D) lateral view of the head of *Hologerrhum philippinum* (PNM 2490).

Table 1. Summary of diagnostic characters distinguishing *Hologerrhum dermali* (new species; from Panay Island) from *Hologerrhum philippinum* (Günther, 1858; from the Luzon Aggregate Island Complex).

Characters	*H. philippinum*	*H. dermali*
Pretemporals	enlarged	reduced or absent
Ventral nuchal blotches	–, +	–
Lateral black ventral spots	–, +	+, fused into line
Dorsal nuchal spots	12–30	7–10
Midlabial stripe	–	+
Dorsal live color	tan to reddish brown	purplish brown
Ventral live color	orange to salmon	bright yellow
Adult throat color	tan to orange (some spotted white)	purplish brown with black and white ocelli
Midventral dark stripe	–	+
Parietal suture	notched	unnotched
Ventral scale at 2nd dorsal reduction	97–112*	84–97
Subcaudals (females)	42–53	57–61

* Excluding apparently aberrant counts of CAS 61554 (Table 2).

suture between pre- and postnasal; together, nasal scales square to triangular; dorsal border of nares formed by thick shelf of prenasal, ventral border formed by extension of postnasal; internasals as long as broad, slightly shorter than prefrontals, laterally contacting both pre-and postnasals, forming a vague right triangle with 45° face oriented anterolaterally; loreal single, as large as or only slightly smaller than ventral preocular, half as high as postnasal, pentagonal, surrounded by postnasal, lateral edge of prefrontal, dorsal and ventral preoculars, and second supralabial; prefrontals longer than internasals, with irregular lateral extensions caused by presence of concave curved suture with preoculars (concave surface oriented posterolaterally); frontal twice as long as broad, longer than to equal to its distance to the end of the snout, shorter than parietals; anterolateral corner of frontal barely contacting medial point of preocular (e.g., CAS 31553, 60951, MCZ R-25693–94, PNM 6505), or with substantive contact between frontal and preocular squeezed off by contact between supraocular and prefrontal (e.g., CAS 60950, 61554, 62430, 134075; PNM 2120, 2490; USNM 498718, MCZ R-25695); posteromedial point of frontal extends past posterior margin of supraoculars for distance shorter than or equal to length of internasals; supraoculars very large, nearly as long as and slightly narrower than frontal; parietals very large, laterally contacting dorsal postocular, pretemporal, and highly enlarged secondary temporal, together bordered posteriorly by three (CAS 61554, 134075), four (CAS 60950, 61553; USNM 498718, MCZ R-25695) or five (CAS 60951, 62430; PNM 2490, MCZ R-25693–94) undifferentiated nuchals; posterior tips of parietals extend caudally, parietal suture forming a distinct medially inverted V-shaped cleft, in which a single slightly enlarged to undifferentiated nuchal (Fig. 6) lies; temporals arranged in three to four irregular vertical rows with enlarged posttemporals extending caudally beyond posterior ends of parietals; temporal formulae: (L) 2/1+1/1+2, (R) 1+1+1/1+2 (PNM 2490), (L, R) 1+2+1/1+2 (CAS 60950), (R, L) 1+1+2+3 (MCZ R-25695), (L) 1+1+2+3, (R) 1+1+2+2 (CAS 60951), (L) 1+1+2+3, (R) 1+1+2+4 (MCZ R-25694) (L) 1+1+1/1+2, (R) 1+1+2+3 (CAS 61554, PNM 6505), (L, R) 1+1+1/1+2 (CAS 62430, 61558, 134075; USNM 318363, 498718; TNHC 60114, MCZ R-25693, PNM 2120), (L) 1+1+2+3, (R) 2+1/1+2 (USNM 319037), (L); pretemporal relatively enlarged, its length much more than half that of secondary temporal.

Orbit surrounded by supraocular, two preoculars (dorsal larger than ventral), two postoculars, and supralabials 3–5; supralabials eight, fifth largest;

Table 2. Scale row reduction formulae (Dowling, 1951b) variation in *H. philippinum philippinum* (Günther, 1858; from the Luzon Aggregate Island Complex) and the type series of *H. dermali* (new species; from Panay Island).

Specimen (sex)	Reduction 1	Reduction 2
Hologerrhum phillippinum		
CAS 60951 (juv.)	$19\frac{3+4=3(4)}{4+5=4(5)}17$	$17\frac{3+4=3(107)}{3+4=3(106)}15$
CAS 60950 (juv.)	$19\frac{4+5=4(5)}{3+4=3(4)}17$	$17\frac{3+4=3(103)}{3+4=3(105)}15$
CAS 61553 (f)	$19\frac{3+4=3(7)}{4+5=4(5)}17$	$17\frac{3+4=3(109)}{3+4=3(112)}15$
CAS 61554 (f)	$19\frac{3+4=3(7)}{4+5=4(6)}17$	$17\frac{3+4=3(93)}{3+4=3(95)\ +4(96)\ 3+4=3(100)}15$
CAS 62430 (juv.)	$19\frac{3+4=3(7)}{3+4=3(6)}17$	$17\frac{3+4=3(101)}{3+4=3(103)}15$
PNM 2490 (f)	$19\frac{3+4=3(16)}{5+6=5(5)}17$	$17\frac{3+4=3(110)}{4+5=4(109)}15$
PNM 2120 (f)	$19\frac{5+6=5(5)}{5+6=5(6)}17$	$17\frac{3+4=3(95)}{-4(99)}15$
PNM 2120 (juv)	$19\frac{3+4=3(4)}{3+4=3(4)}17$	$17\frac{3+4=3(97)}{-4(96)}15$
USNM 319037 (f)	$19\frac{3+4=3(6)}{3+4=3(5)}17$	$17\frac{3+4=3(105)}{3+4=3(109)}15$
USNM 318363 (f)	$19\frac{3+4=3(5)}{3+4=3(7)}17$	$17\frac{3+4=3(100)}{3+4=3(99)}15$
USNM 498718 (m)	$19\frac{3+4=3(5)}{3+4=3(5)}17$	$17\frac{-4(100)}{-4(105)}15$
TNHC 60114 (f)	$19\frac{3+4=3(5)}{3+4=3(8)}17$	$17\frac{3+4=3(102)}{-4(100)}15$
MCZ R-25693 (f)	$19\frac{4+5=4(4)}{3+4=3(4)}17$	$17\frac{3+4=3(100)}{3+4=3(100)}15$

Table 2. (continued)

Specimen (sex)	Reduction 1	Reduction 2
MCZ R-25694 (f)	$19\frac{4+5=4(4)}{4+5=4(4)}17$	$17\frac{3+4=3(102)}{3+4=3(103)}15$
MCZ R-25695 (juv)	$19\frac{5+6=5(8)}{5+6=5(6)}17$	$17\frac{3+4=3(97)}{3+4=3(100)}15$
Mean	$\bar{x}$ = 6.3 ± 3.2 SD; n = 12 $\bar{x}$ = 5.5 ± 1.2 SD; n = 12	$\bar{x}$ = 102.2 ± 4.9 SD; n = 12 $\bar{x}$ = 103.6 ± 4.9 SD; n = 12
Hologerrhum dermali		
PNM 2711 H (f)	$19\frac{3+4=3(5)}{3+4=3(6)}17$	$17\frac{3+4=3(94)}{3+4=3(92)}15$
PNM 6505 P (f)	$19\frac{-4(3)}{3+4=3(6)}17$	$17\frac{-4(97)}{-4(92)}15$
CMNH 5075 P (f)	$19\frac{3+4=3(5)}{3+4=3(7)}17$	$17\frac{3+4=3(84)}{3+4=3(84)}15$
Mean	$\bar{x}$ = 4.3 ± 1.2 SD; n = 3 $\bar{x}$ = 6.3 ± 0.6 SD; n = 12	$\bar{x}$ = 91.7 ± 6.8 SD; n = 12 $\bar{x}$ = 89.3 ± 4.6 SD; n = 12

H = Holotype; P = Paratype

infralabials eight; mental subtriangular, with highly pointed posterior tip caused by medially concave curved suture with first infralabial; first infralabials differentiated, elongate, with curved medial points nearly contacting anterior to genials; second infralabials reduced, squarish; infralabials 2–5 increasing dramatically in size (fifth largest in verntral aspect), then decreasing sharply to infralabial 8; infralabials 1–4 in contact with anterior genials, 4–5 in contact with posterior genials; mental groove distinct and broad; sublabials thin, followed medially by 3–4 similarly-sized, longitudinal rows of gulars, medial two pairs (anterior to first ventral) slightly enlarged; number of gular pairs between posterior genials and first ventral two (CAS 61553) or three (remaining specimens).

Dorsals smooth, without apical pits, vertebrals undifferentiated from paravertebrals, in 146–176 ($\bar{x}$ = 157.4 ± 8.1 SD; n = 12) transverse rows on body, 42–

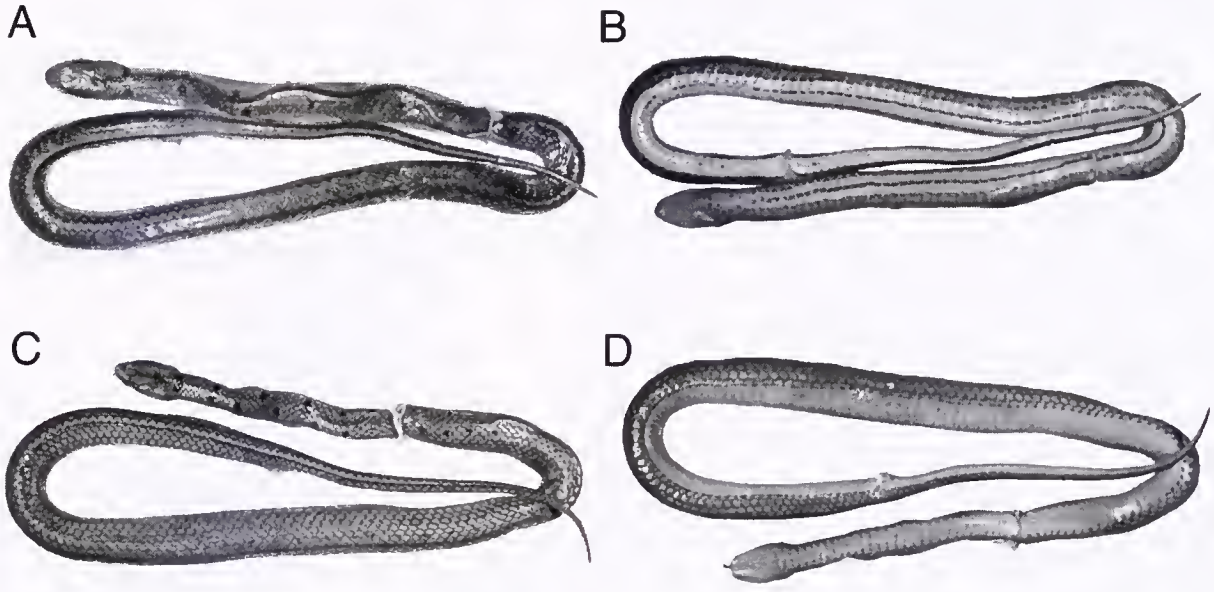

Figure 5. (A) Dorsal and (B) ventral view of a paratype of *Hologerrhum dermali* (CMNH 5075); (C) dorsal and (D) ventral view of *Hologerrhum philippinum* (PNM 2490).

56 ($\bar{x}$ = 49.3 ± 5.3 SD; n = 12) on tail; first scale row reduction (i.e., reduction of 19 to 17 scales around body; Table 2) occurring at point on body corresponding to ventrals 4–16 (left: $\bar{x}$ = 5.5 ± 1.2 SD; n = 12; right; $\bar{x}$ = 6.3 ± 3.2 SD; n = 12), second (17 to 15) occurring between ventrals 93–110 (left: $\bar{x}$ = 103.6 ± 4.9 SD; n = 12; right $\bar{x}$ = 102.2 ± 4.9 SD; n = 12); ventrals broad, each slightly angulated laterally, 136–158 ($\bar{x}$ = 146.7± 6.4 SD; n = 12); subcaudals 42–56 ($\bar{x}$ = 47.5 ± 4.6 SD; n = 12). The single adult male specimen (USNM 498718) has 156 vertebrals, 149 ventrals, 56 caudals, and 55 subcaudals. Anal undivided; tail with enlarged vertebral row (dorsocaudals) formed by fusion of midvertebral row with both flanking paravertebral rows. Hemipenes of USNM 498718 are extremely narrow and elongate, and are covered with uniformly minute spines; hemipenes extend *in situ* to the 14th subcaudal plate.

Measurements (in mm): SVL 251–347 mm ($\bar{x}$ = 280.8 ± 47.1 SD) for ten mature females; tail length $\bar{x}$ = 56–96 ($\bar{x}$ = 73.8 ± 15.0 SD) for eight mature females with complete tails.

Coloration in preservative: Dorsum tan, orangish-tan to brown, with 12–30 ($\bar{x}$ = 21.8 ± 7.5 SD; n = 12) alternating dark brown to black spots (Figs. 1A, 3, 5C), each with three associated small white spots (Fig. 3), fading in intensity posteriorly, where they are replaced on scale rows 4–5 by a pair of dorsolateral black lines, gaining intensity posteriorly and continuing to tip of tail; faint vertebral thick gray stripe (1–3 scales in width) becoming increasingly apparent posteriorly from midbody; a pair of light cream lines dorsal (medial) to black lines; posterior (distal) portions of each dorsal scale slightly to markedly darker than remainder of scale; dorsal occiput colored as body (PNM 2490) or slightly darker (CAS 60950) to markedly darker (CAS 134075); melanic pigment congregated on medial suture between parietals, on posterior portion of frontal, and on lateral edge of head; distinct longitudinal dark midnuchal stripe evident from posterior edge of parietals to second pair of nuchal spots (Fig. 1A), occasionally (e.g., juveniles CAS 134075 and MCZ R-25695, adult female USNM 318363) very dark and forming a distinct nuchal cross (Fig. 1B); one specimen with a pair of bright white nuchal spots immediately anterior to nuchal cross (USNM 319037; Fig. 1A); lateral aspects of head colored as dorsal, with distinct thin black line dorsally bordering supralabials (Fig. 4D) and stretching from tip of snout to just beyond supralabial 8; labials creamy yellow to tan, occasionally with a few black flecks (CAS 60950) or with ventral half of labials dark gray (USNM 319037); venter immaculate cream to pale yellow or orange; each ventral with dark lateral pigment in the form of a small black spot or brown to black longitudinal bar (Figs. 1A, 3), becoming a confluent black ventrolateral stripe on posterior portions of body and tail; some specimens with subtriangular black mark-

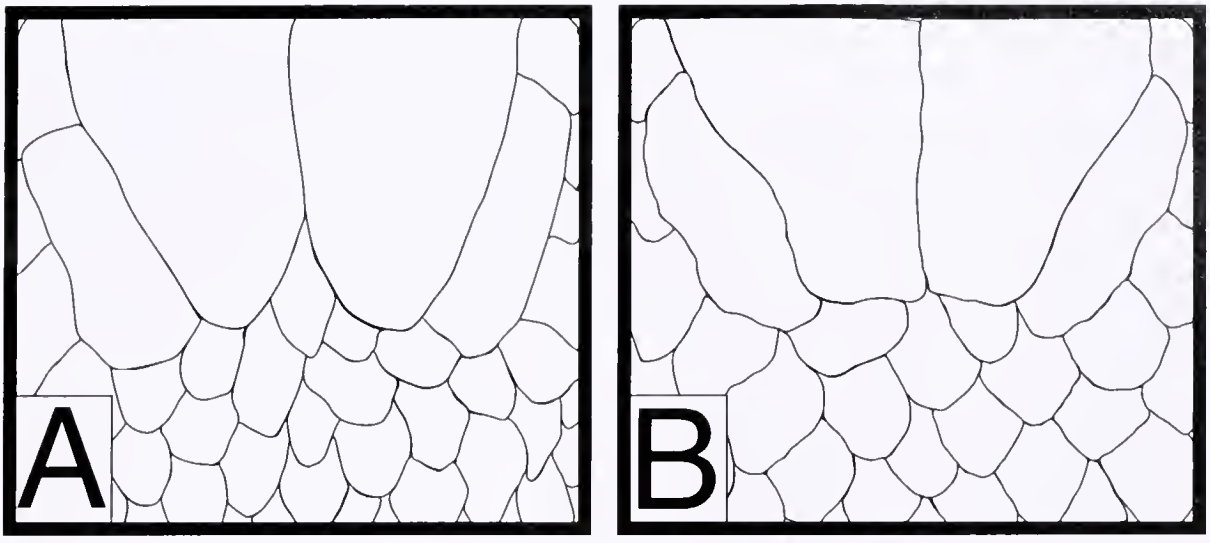

Figure 6. Comparison of the posterior portions of the parietal suture in (A) *Hologerrhum philippinum* (PNM 2490) and (B) *Hologerrhum dermali* (CMNH 5075).

ings on anterior 20 ventrals (USNM 319037, 498718; TNHC 60114); underside of head lighter (PNM 2490), to distinctly darker (USNM 319037) than remainder of venter, especially in juvenile specimens (MCZ R-25694–95; CAS 134075) where ventral head coloration resembles that of adult *Hologerrhum* n. sp. (see below); tongue black with pale gray tips of bifurcated portions.

Coloration in life: (Fig. 3) Dorsum described as "bright reddish to orange brown, darker anteriorly" or "reddish brown" (Taylor 1922b:200) or "grayish brown on neck, fading to orangish brown posteriorly" (Brown et al., 1996:13); labials dirty white to creamy yellow; venter "uniform pale, orangish tan" (Brown et al., 1996:13) to "bright reddish salmon, lighter anteriorly" or "uniform coral to red" (Taylor, 1922b:200); underside of head pale orange to "dusky with milk white spots" (Taylor, 1922b:200).

Hologerrhum dermali, n. sp.

Figures 4–6

Holotype: PNM 2711, an adult female, collected at 0900 hr on 9 April, 1992 by Rafe M. Brown at 1510 m above sea level in the area known locally as "Hanggud Tubig" ("Big Water"), on the western face of Mt. Madja-as, Barangay Alojipan, Municipality of Culasi, Antique Province, Panay Island, Philippines (11°23' N, 122° 09'E).

Paratypes: CMNH 5075, an adult female, same data as the holotype except collected at 1030 hr on 6 April 1992 by Rogelio V. Sison; PNM 3704, an adult female, collected February-March 1994 by Rogelio V. Sison at 750 m above sea level on Mt. Ranges, Sitio Banagon, Barangay Aningalan, Municipality of San Remegio, Antique Province, Panay Island, Philippines.

Etymology: The specific epithet is chosen to honor Ronald "Dermal" Crombie, in recognition of his numerous contributions to Philippine herpetology and in thanks for the guidance he has provided RMB and JWF during the past several years of our work with Philippine amphibians and reptiles.

Diagnosis: *Hologerrhum dermali* can be readily distinguished from its congener, *H. philippinum*, by (1) the presence of 7–10 (vs. 12–30) pairs of dark spots in nuchal and dorsal regions, (2) a bright yellow (vs. pale orange to reddish salmon) venter, (3) presence (vs. absence) of a black midventral stripe, (4) bright white labials with midlabial black stripe (vs. cream or yellow labials; midlabial stripe absent), (5) dorsum dark purplish brown (vs. tan to dark orangish brown or dark brick red), (6) chin and throat of adults dark purplish brown with black and white ocelli (vs. pale tan to orange, immaculate or with faint white spots in some specimens), (7) pretemporal absent or much reduced (length less than half that of secondary temporal; vs. pretemporal invariably present and enlarged), and (8) posterior portions of parietals squared off, with no medial cleft at parietal suture (vs. posterior tips of parietals pointed, extending caudally to form a medial inverted V-shaped cleft).

Description of the Holotype: An adult female. Body cylindrical, ventrals convex, head slightly distinct from neck, not flattened; eyes small, pupil round; vertebral ridge nonevident.

Figure 7. Habitat of *Hologerrhum dermali* at the type locality (following heavy rain).

Rostral much broader than deep, barely visible from above, subtriangular with ventromedial groove in dorsal aspect; nasal divided, naris piercing suture between pre- and postnasal; majority of dorsal border of nares formed by prenasal, majority of ventral formed by postnasal; internasals as long as broad, slightly shorter than prefrontals, laterally contacting both pre- and postnasals, forming a vague right triangle with 45° face oriented anterolaterally; loreal single, distinctly smaller than ventral preocular, half as high as postnasal, pentagonal, surrounded by postnasal, lateral edge of prefrontal, dorsal and ventral preoculars and second supralabial; prefrontals longer than internasals, with irregular lateral extensions caused by presence of concave curved suture with preoculars (concave surface oriented posterolaterally); frontal twice as long as broad, longer than its distance to the end of the snout, a little shorter than parietals; frontal–preocular contact squeezed off by substantive contact between posteriolateral corners of prefrontals and anteromedial corner of supraocular; posteromedial point of frontal extends past posterior margin of supraoculars for distance shorter than length of internasals; supraoculars very large, nearly as long as and narrower than frontal; parietals very large, laterally contacting dorsal postocular, pretemporal, and highly enlarged secondary temporal, together bordered posteriorly by five undifferentiated nuchals; posterior ends of parietals squared off, with no medially inverted V-shaped cleft at parietal suture (Fig. 6); enlarged posttemporals extend posteriorly only slightly beyond caudal margin of parietals; temporals (L) 1+1+2+3, (R) 1+1/1+2 (pretemporal much reduced, its length much less than half that of suture between parietal secondary temporal).

Orbit surrounded by supraocular, two preoculars (dorsal larger than ventral), two postoculars, and supralabials 3–5; supralabials eight, fifth largest; infralabials eight; mental subtriangular, with highly pointed posterior tip caused by medially concave curved suture with first infralabial; first infralabials differentiated, elongate, with curved medial points nearly contacting anterior to genials; second infralabials reduced, squarish; infralabials 2–5 increasing dramatically in size (fifth largest in ventral aspect), then decreasing sharply to infralabial 8; infralabials 1–4 in contact with anterior genials, 4–5 in contact with posterior genials; mental groove distinct; sublabials thin, followed medially by four similarly-sized, longitudinal rows of gulars, medial two pairs (anterior to first ventral) enlarged; two pairs of gulars between posterior genials and first ventral.

Dorsals smooth, without apical pits, vertebrals undifferentiated from paravertebrals, in 140 transverse vertebral rows on body, 64 on tail; scale row reduction from 19 to 17 in nuchal region and from 17 to 15 posterior to midbody (Table 2); ventrals 143, broad, each slightly angulated laterally; subcaudals 61; anal undivided; tail with enlarged vertebrals formed by fusion of midvertebral row with both flanking paravertebral rows; SVL 220 mm; tail length 68 mm.

Coloration in preservative: Dorsum dark purplish brown with 10 tightly paired black spots, decreasing in size posteriorly (Fig. 5A) on anterior one third of body; caudal third of body with a pair of dorsolateral black lines (on scale rows 4–5) gaining intensity posteriorly and continuing to tip of tail; vertebral stripe absent; a pair of light, bright yellowish lines dorsal (medial) to black lines, especially bright on tail; posterior (distal) portions of each dorsal scale markedly darker than remainder; dorsal occiput colored as body; melanic pigment congregated on medial suture between parietals, on posterior half of frontal, and on lateral edge of head; supralabials bright white, dorsal border composed of thin black stripe (Fig 4B), from tip of rostrum to beyond angle of jaw; white labial coloration continues in the form of a broad white stripe to point opposite fifth ventral; midlabial thin black stripe (Fig 4B) continues posteriorly as ventral border of the white stripe in nuchal region; distinct dark brown midnuchal stripe evident from posterior edge of parietals to first pair of nuchal spots, very dark and confluent with nuchal spots, forming a distinct nuchal cross; chin and throat purplish brown with white circular spots encircled in black (ocelli) much like juvenile coloration in *H. philippinum* specimens; venter pale yellow with midventral thin black stripe, becoming interrupted on caudal portions of body, nearly obliterated by vent and continuing again caudal to vent for five ventrals; each ventral with dark lateral pigment in the form of a small black spot (anteriorly) or black longitudinal bar (caudally), becoming a confluent black ventrolateral stripe on caudal portions of body and tail; tongue black with bright white tips on forked portions.

Coloration in life: Dorsum and ventral surfaces of head light purplish brown, light areas dorsal (medial) to dorsolateral caudal lines medium yellow; labials bright milky white; venter very bright yellow with distinct black midventral stripe. Iris dark brown to brick red.

Variation: One paratype (female, CMNH 5075, SVL 268 mm; tail 91 mm) has seven pair of dark dorsal spots, slightly lighter midcephalic coloration and less yellow above the dorsolateral caudal black lines. The midventral black stripe continues to the tenth subcaudal. This specimen lacks the small pretemporals found in the holotype; temporals (R, L) 1+1/1+2; ventrals 143, subcaudals 60, vertebrals 156, dorsocaudals 64 . The other paratype (female, PNM 3704, SVL 327 mm; tail 93 mm) has nine pairs of nuchal spots, a faint midlabial line, and lacks midventral stripes on the subcaudals (present on anterior 2/3 of body). PNM 3704 has the following counts (R, L) 1+1+2+3, 1+1+1/1+2; ventrals 149; subcaudals 58; vertebrals 155; dorsocaudals 57. Scale row reduction formula presented in Table 2.

Ecology and habitat: The type of habitat in which *H. dermali* (Fig. 7) was collected on Mt. Madja-as has been classified as the transition zone between mixed dipterocarp (submontane) and mossy (upper montane) forests (Whitmore, 1984; Ferner et al., 1997). The forest consisted of two strata (a canopy of 10 m, and a subcanopy of 3–4 m with emergent trees as high as 18 m); herb and shrub layer vegetation was also abundant. The forest near the collection site was mossy and contained high densities of epiphytic ferns and orchids. Topography was qualitatively characterized as steep, with numerous valleys bordered by sheer rock escarpments and forest-covered ridges. The holotype was collected in a sun spot in the early afternoon in a rocky stream bed (10 m wide) with a central 4 m wide channel of rapidly running water. The specimen was basking 1.5 m from water on the top of a flat rock. The Mt. Madja-as paratype was collected in the mid-morning and was crawling through leaf litter on the forest floor (30 m from the same stream) when captured. Paratype PNM 3704, collected in San Remegio, was found on the floor of secondary forest near a small dry stream bed. The circumstances of collection are very similar to those reported for *H. philippinum* on Luzon (Taylor, 1922b; Brown et al., 1996; A. Diesmos, personal communication).

Discussion

The endemic Philippine genus *Hologerrhum* is now known to contain two species distributed on the Luzon and Visayan aggregate island complexes (Fig. 2). There are no known *Hologerrhum* from the Palawan, Mindoro, Mindanao, Sulu Archipelago, or the Batanes faunal subregions (Fig.2).

The absence of any clear close relatives of *Hologerrhum* (Leviton, 1963, 1965) among SE Asian colubrids renders speculations regarding the genus' affinities somewhat moot. However, we note that both *Hologerrhum* and *Cyclocorus* share characteristics

unique among Asian snakes, most notably, an unusual, presumably derived pattern of reduction in caudodorsal scale rows. In all species of *Cyclocorus* and *Hologerrhum*, caudodorsal reduction takes place by fusion of vertebral and paravertebral scale rows, resulting in an odd-numbered series of longitudinal rows of caudodorsals rather than an even number (characteristic of all other SE Asian colubrine snake genera known to us). The systematic affinities of the genus *Hologerrhum* are in need of further study.

The description of *Hologerrhum dermali* brings the number of new species of vertebrates recently described the by the PNM/CMNH PBI team in the coastal Madja-as mountain range to six (Sison et al., 1995; Gonzales and Kennedy, 1990, 1996; Brown et al., 1997; Ferner et al., 1997; Brown et al., 1999). Other collections from Panay contain at least three probable undescribed species of frogs and many other species of amphibians and reptiles of uncertain taxonomic status (many of which are, doubtlessly, undescribed species; Ferner et al., this issue). Most of these species presumably are reliant on the closed-canopy rain forests of the western portions of Panay. Accordingly, most should be considered severely threatened by deforestation (see Ferner et al., 1997:fig. 2). Recent survey work in the northwestern portions of Panay indicates that *Hologerrhum dermali* occurs in forested habitats at lower elevations as well as the montane localities reported here (M. Gaulke, personal communication). Unfortunately, the low elevation forests of Panay Island have nearly all been removed by an aggressive timber industry in the central Visayas. We expect that numerous other undescribed populations of amphibians and reptiles will be discovered in Panay and the remainder of the Visayas if biologists are permitted access to these forests in order to catalog and describe Philippine biodiversity.

Specimens Examined

Hologerrhum philippinum: Philippines, Luzon Island, Zambales Province, Municipality of Masinloc, Barangay Coto, 4.3 km N, 0.5 km E of Mt. High Peak, elevation 1550 m (15° 31' N, 120° 07' E): PNM 2490; Bataan Prov., Mt. Mariveles: CAS 60950–51; Isabela Prov., Municipality of Palanan, Barangay Didian, Sitio Natapdukan, elevation 50 m: PNM 6505; Kalinga Prov., Municipality of Balbalan, Barangay Balbalan: CAS 61553–54, MCZ R-25694; Caminares Sur Prov., Municipality of Naga City, Mt. Isarog, elevation 900 m: USNM 31863; Cagayan Prov., Municipality of Baggao, Barrio Santa Margarita, elevation 150 m: USNM 319037, 498718; CAS 134075; Quezon Prov., Municipality of Tayabas, Barangay Camaysa, Mt. Banahaw, 1150 m above sea level: TNHC 60114 Camarines Norte Prov., Municipality of Ruis, Barangay San Lorenzo, Mt. Labo Range: PNM 2120; Mountain Prov., Mt. Polis: PNM 67; Laguna Prov., Mt. Makiling: MCZ R-25695; Polillo Island, Polillo Prov., near town of Polillo: CAS 62430, MCZ R-25693; Catañduanes Island, Municipality of Gigmoto, Barangay Summit Bordan, elevation 200 m: USNM 319037.

Hologerrhum dermali: See Holotype and Paratypes sections for this species.

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