

Pacific lowland snakes of the genus *Atractus* (Serpentes: Dipsadidae), with description of three new species

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Abstract

The taxonomic status of the Pacific lowland *Atractus* is revised on the basis of meristic, morphometric, colour pattern, and hemipenial characters. Geographical variation is reported for six *Atractus* species (*A. boulengerii*, *A. clarki*, *A. iridescens*, *A. melas*, *A. multicinctus*, and *A. paucidens*). *Atractus boulengerii* is rediscovered and redescribed from a specimen from the Colombian coast. The first voucher specimens are reported for *A. melas*. The current status of *A. microrhynchus* is maintained based on the discovery of new material referable to that species. Three new species of *Atractus* are described from the Pacific lowland of Colombia: *A. echidna* sp. nov., *A. medusa* sp. nov., *A. typhon* sp. nov. Two new *Atractus* species groups (*multicinctus* and *paucidens*) are proposed based on external morphology, maxillary dentition, and hemipenial characters. A new key to Pacific lowland species of *Atractus* is provided.

Key words: South America, rainforest, Pacific lowland, *multicinctus* group, *paucidens* group, taxonomy, hemipenis

Introduction

Members of the Neotropical snake genus *Atractus* are widely distributed in South America, occurring from Panama south to Argentina (Giraudo & Scrocchi 2000; Myers 2003). This genus comprises small to moderate sized snakes, having a secretive (fossorial or cryptozoic) lifestyle and feeding on earthworms, arthropods, and molluscs (Cunha & Nascimento 1993; Martins & Oliveira 1993, 1999; Cisneros-Heredia 2005a). *Atractus* is the most speciose alethinophidian snake genus, with about 130 valid species, most of them known only from their type specimens (Myers 2003; Passos *et al.* 2005; Passos & Fernandes 2008; Prudente & Passos 2008; Passos *et al.* 2009a, b). Although the number of *Atractus* specimens available in collections has increased through the years, the proper identification of material belonging to several poorly known taxa has been achieved only in recent detailed studies (Cisneros-Heredia 2005b; Passos *et al.* 2007a; Passos & Arredondo 2009; Passos *et al.* in press a, b, c; Prudente & Passos in press). To date, the taxonomic status of several species remains unclear, and there have been attempts of taxonomic revisions only for some countries (Savage 1960; Roze 1961; Myers 2003), and geographically restricted regions of Amazonia (Cunha & Nascimento 1983; Martins & Oliveira 1993; Silva 2004) or the Andes (Esqueda & La Marca 2005; Myers & Schargel 2006; Passos *et al.* 2009a, b). Most of *Atractus* diversity is concentrated in the Andes, with the three Colombian mountain ranges attaining the highest species diversity for the genus (Pérez-Santos & Moreno 1988; Passos *et al.* 2009b).

The major problem of *Atractus* taxonomy is that most species are still known only from the type specimens, and geographical, ontogenetic, and sexual variation (usual in the genus) cannot be assessed for most currently recognized taxa (Passos *et al.* in press a). The historical scarcity of several *Atractus* species in collections has been interpreted as a result of collecting difficulties due their secretive habits and/or restricted altitudinal range of distribution (Roze 1961; Schargel & Garcia-Pérez 2002; Myers 2003; Esqueda & La Marca 2005; Myers & Schargel 2006). Nevertheless, as pointed out by Passos *et al.* (2007a), the present scenario of highly restricted distributional ranges for several *Atractus* species is also an artifact of a large number of misidentifications of specimens in herpetological collections, so that many taxa might be relatively common within defined geographic ranges. Currently, the following seven species of Pacific lowland *Atractus* (below 1000 m elevation) are recognized as occurring from Colombia to Ecuador: *Atractus boulengerii*, *A. clarki*, *A. iridescens*, *A. melas*, *A. microrhynchus*, *A. multicinctus*, and *A. paucidens*. The aim of this study is to provide a comprehensive review of Pacific lowland (*sensu* Lynch & Suárez-Mayorga 2002) *Atractus* in order to evaluate taxon validity, and offer diagnostic characters and data on intraspecific and interspecific variation for all recognized species. Three new species of *Atractus* from this region are also described.

Materials and Methods

We examined specimens housed in the following institutions: USA—United States National Museum (USNM), Smithsonian Institution, Washington, D.C.; UK—Natural History Museum (NHM), London; Colombia—Colegio San Jose (CSJ), Medellín, Antioquia; Instituto Alexander von Humboldt (IAvH), Villa de Leyva, Boyacá; Instituto de Ciencias Naturales, Universidad Nacional de Colombia (ICN), Bogotá D.C.; Museo de Historia Natural de la Universidad de Antioquia (MHUA), Medellín, Antioquia; Museo de la Universidad La Salle (MLS), Bogotá D.C.; Colección Herpetológica de la Universidad del Valle (UV-C), Cali, Valle del Cauca; Ecuador—Escuela Politécnica Nacional, Instituto de Ciencias Biológicas (EPN), Quito; Brazil—Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo. Examined specimens and localities are listed in Appendix 1.

The observed characters are meristic, morphometric, dental, and hemipenial. Terminology for *Atractus* cephalic shields follows Savage (1960), whereas the method of counting ventral scales follows Dowling (1951). The condition of the loreal scale follows Passos *et al.* (2007b). Sex was determined by the presence or absence of hemipenes through a ventral incision at the base of the tail. Measurements were taken with an

analogical caliper to the nearest 0.1 millimetre under an optical stereoscope, except for snout-vent (SVL) and caudal length (CL), which were taken with a flexible ruler to the nearest millimetre. We defined the following states for body size (SVL) and tail length (CL): short = up to 299 mm SVL, moderate = 300 to 599 mm SVL, and long = above 600 mm SVL; tail length: small = up to 10% SVL, moderate = 10–15% SVL, long = 15–20% SVL, very long = above 20% SVL.

Techniques for hemipenis eversion from preserved specimens follow Pesantes (1994), Myers and Cadle (2003), and Dowling (2004). Most terminology employed for hemipenis descriptions follows Dowling and Savage (1960), as augmented by Myers and Campbell (1981) and Zaher (1999). Maxillary bones were examined *in situ* by tenuous latero-medial incision of the mouth between supralabials and maxillary arch. Tissue covering the maxillary arch was removed and teeth, as well as empty sockets were counted. Maxillary diastema conditions were defined as: short: length equivalent to interspaces between teeth, evident only by inspection of the small size of postdiastemal teeth; moderate: equal or slightly smaller than size of the last prediastemal tooth at horizontal line; long: longer than last prediastemal.

The subheading “Variation” concerns meristic and morphometric data within our main, examined sample only. Nevertheless, we include the range of variation for characters of the specimens previously reported in the literature (principally the original species descriptions) in diagnoses. All remaining character variation is reported under specific subheadings (e.g., colour, maxillary arch, hemipenis morphology), and includes only our data.

Results

Species Accounts

Atractus boulengerii Peracca, 1896

Fig. 1

Atractus boulengerii Peracca, 1896; Boll. Mus. Zool. Anat. Comp. Torino 11(252):1.

Holotype: Adult male, from “America Meridionali” (= South America), originally deposited in Museo di Zoologia dell’ Università degli Studi di Torino, Turin MZUT R1832, now housed at Museo Regionali di Scienze Naturali, Turin (Andreone & Gavetti 2007), (specimen examined via photographs).



FIGURE 1. Dorsal (A) and ventral (B) views of *Atractus boulengerii* (UV-C 6591). SVL 310 mm, CL 52 mm.

Diagnosis: *Atractus Boulengerii* is distinguished from all congeners by the combination of the following characters: (1) 17/17/17 smooth dorsals; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) six infralabials, first three contacting chinshields; (7) five maxillary teeth; (8) four gular scale rows; (9) four preventrals; (10) 176–189 ventrals in males; (11) 41–44 subcaudals in males; (12) dorsum beige with black round blotches decreasing in size posteriorly; (13) venter uniformly creamish white, tail brown pigmented on the median suture of subcaudals; (14) moderate body size, with male reaching 316 mm SVL; (15) long tail size in the male (16.8% SVL).

Comparisons: Among all congeners, *A. Boulengerii* shares only with *A. medusa* sp. nov. (see below) 17 dorsal scale rows, five well-spaced maxillary teeth with a single postdiastemal tooth, more than 40 subcaudals in males, and dorsum with black nuchal collar and round body blotches decreasing in size posteriorly. *Atractus Boulengerii* differs from *A. medusa* in having 176–189 ventrals in males, first three infralabials contacting chinshields, four gular scale rows, and four preventrals (vs. 133 ventrals in the single male, first four infralabials contacting chinshields, three gular scale rows, and two preventrals).

Description: Head twice as long as wide, arched in lateral view, rounded in dorsal view; snout truncate in lateral view, rounded in dorsal view; cervical constriction barely defined; rostral sub-triangular in frontal view, broader than high, poorly visible in dorsal view; internasal longer than wide; internasal suture sinistral with respect to prefrontal suture; prefrontal as long as wide; supraocular sub-trapezoidal, twice as long as wide; frontal pentagonal, as long as wide; parietal about 1.5 times as long as wide; nasal divided; nostril located between prenasal and postnasal; prenasal twice as high as long; postnasal as high as long; loreal long, contacting second and third supralabials; pupil round; two postoculars of similar size; upper postocular slightly longer than lower postocular; temporals 1+2; first temporal twice as long as high; upper posterior temporal elongate, four times as long as wide; seven supralabials, third and fourth contacting orbit; first three supralabials of similar size and lower than fourth; fifth supralabial higher than first four and lower than sixth supralabial; sixth supralabial higher and seventh longer than remaining supralabials; symphyisial sub-triangular, twice as broad as long; six infralabials, first three contacting chinshields; first pair of infralabials in contact behind symphyisial, preventing symphyisial/chinshields contact; four gular scale rows; four preventrals; 17/17/17 smooth dorsals; dorsals lacking apical pits, supra-anal tubercles, and keels; terminal spine moderate, conical, and acuminate.

Maxillary arch: Arched in dorsal view, with four prediastemal and one postdiastemal teeth; prediastemal teeth large, well spaced, curved posteriorly, angular in cross section, robust at base, narrower at apices, decreasing abruptly in size; maxillary diastema short; postdiastemal tooth slightly smaller than last prediastemal tooth.

Colour in preservative: (based on holotype original description and specimen UV-C 6591) Dorsum of head with black cephalic cap extending from rostral to anterior third of parietals; wide occipital band creamish yellow, situated between anterior region of parietals and second dorsal scale rows; background of head black to dorsal margin of supralabials ventrally and to the level of postoculars posteriorly; temporal and occipital regions creamish yellow; supralabials, infralabials, chinshields, and gular region cream; venter uniformly cream; tail cream with small dark brown dots concentrated along the median sutures of subcaudals, forming an irregular line; dorsal ground colour of body beige with about 60 round black blotches paired above paravertebral region; body anteriorly with a wide black collar (six scales long) and large transversal blotches (four or five scales wide); transverse blotches paired or alternating on the flanks, decreasing gradually in size; blotches reaching second dorsal scale rows anteriorly and restricted to paravertebral region posteriorly; vertebral line (one scale wide) distinct on the anterior and posterior thirds of body and tail; vertebral line connected to dorsal blotches; tail dorsally with pattern similar to body.

Variation: Additional male specimen have 310 mm SVL, 52 mm CL; tail 16.8% of SVL; 176 ventrals; 141 subcaudals; four gular scale rows; four preventrals; eight or nine dorsal scales on the level of second subcaudal; body diameter 5.2 mm.

Distribution: Rediscovered at the lower Anchicayá River, on the old road between Cali and Buenaventura (03°44'N, 76°58'W, ca. 100 m), department of Valle del Cauca, Pacific lowlands of Colombia. *Atractus Boulengerii* apparently inhabits rainforest near sea level (Fig. 2).

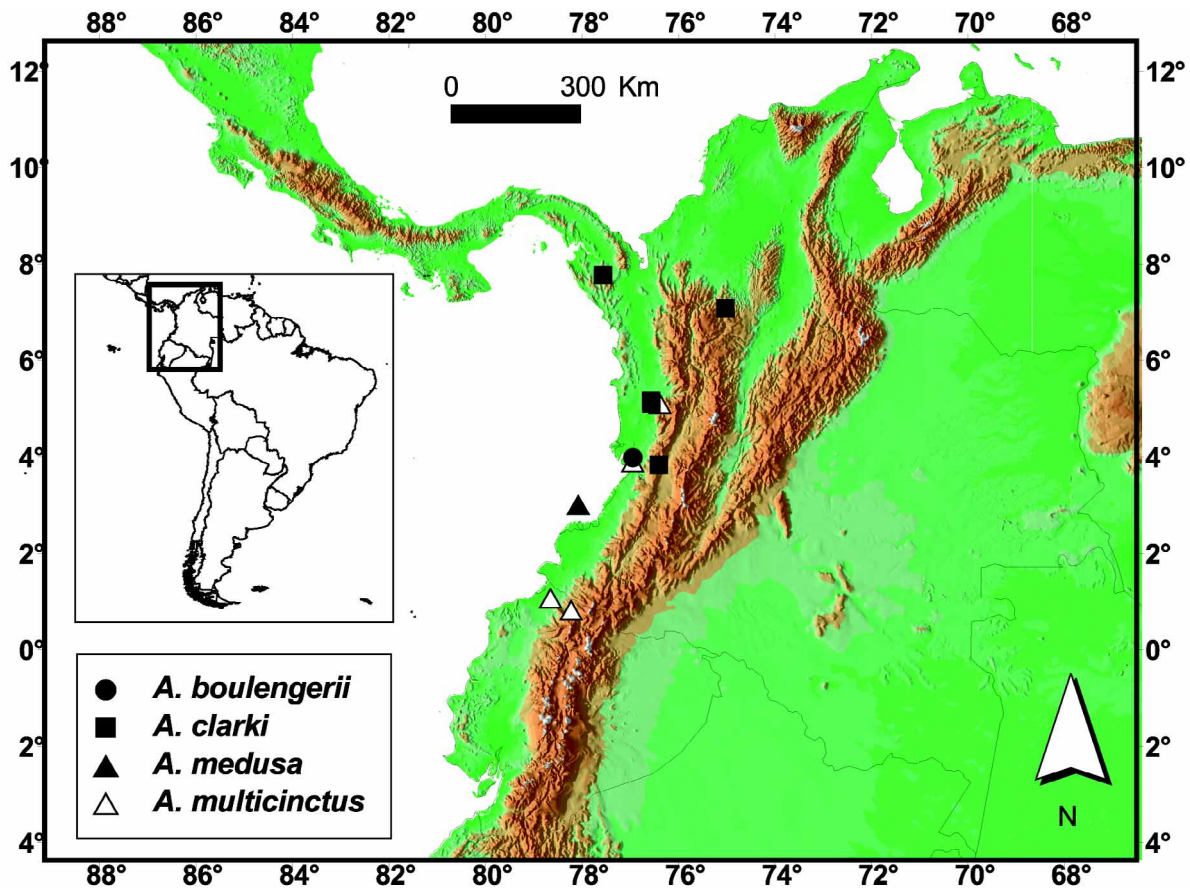


FIGURE 2. Geographic distribution of the *Atractus multicinctus* species group.

Remarks: Peracca (1896) described *Atractus boulengerii* and *A. iridescens* on the basis of two specimens from “America Meridionali”, without precise collection data. Boulenger (1913) associated three individuals from Peña Lisa and Condoto in the department of Chocó in Colombia with *A. iridescens* (see remarks of *A. iridescens*), but *A. boulengerii* remained known only from the holotype. In the course of this revision of the Pacific *Atractus*, we found a specimen (UV-C 6591, adult male), from the municipality of Buenaventura, department of Valle del Cauca, Colombia, which matches the original species description, except for having 176 ventrals and 41 subcaudals (vs. 189 ventrals and 44 subcaudals in the holotype of *A. boulengerii*). These small count differences are entirely acceptable in accordance with the pattern of variation of ventral and subcaudals reported for the genus (Savage 1960; Passos 2008), and therefore we refer herein this specimen to *A. boulengerii*.

Atractus clarki Dunn and Bailey, 1939

Fig. 3

Atractus clarki Dunn and Bailey, 1939, Bull. Mus. Comp. Zool. 86:8.

Atractus clarki—Myers, 2003, Amer. Mus. Novit. 3391:10.

Holotype: Adult female, Museum of Comparative Zoology, Harvard University, MCZ 28800, from a mine at Santa Cruz de Cana ($\pm 07^{\circ}46'N$, $77^{\circ}41'W$, ca. 500 m), province of Darién, Panamá, collected on 1938 by a native worker (photographs examined).

Diagnosis: *Atractus clarki* is distinguished from all congeners by the combination of the following characters: (1) 17/17/17 smooth dorsals; (2) generally two postoculars; (3) loreal long; (4) temporals 1+2; (5)

seven supralabials, third and fourth contacting orbit; (6) six or seven infralabials, generally first three contacting chinshields; (7) six or seven maxillary teeth; (8) generally four gular scale rows; (9) three or four preventrals; (10) 169–195 ventrals in females, 153–165 in males; (11) 32–33 subcaudals in females, 34–40 in males; (12) dorsum black with tiny transversal bands in flanks, occasionally contacting the opposite one on the vertebral region; (13) venter cream with dark lateral margins and posterior region of ventrals with dark brown diffuse dots; (14) moderate body size, females reaching 354 mm SVL, males 300 mm SVL; (15) moderate tail size in females (11.3–13.6% SVL), moderately to long (13.2–18.3% SVL) in males; (16) hemipenis strongly bilobed, semicapitate, semicalyculate.

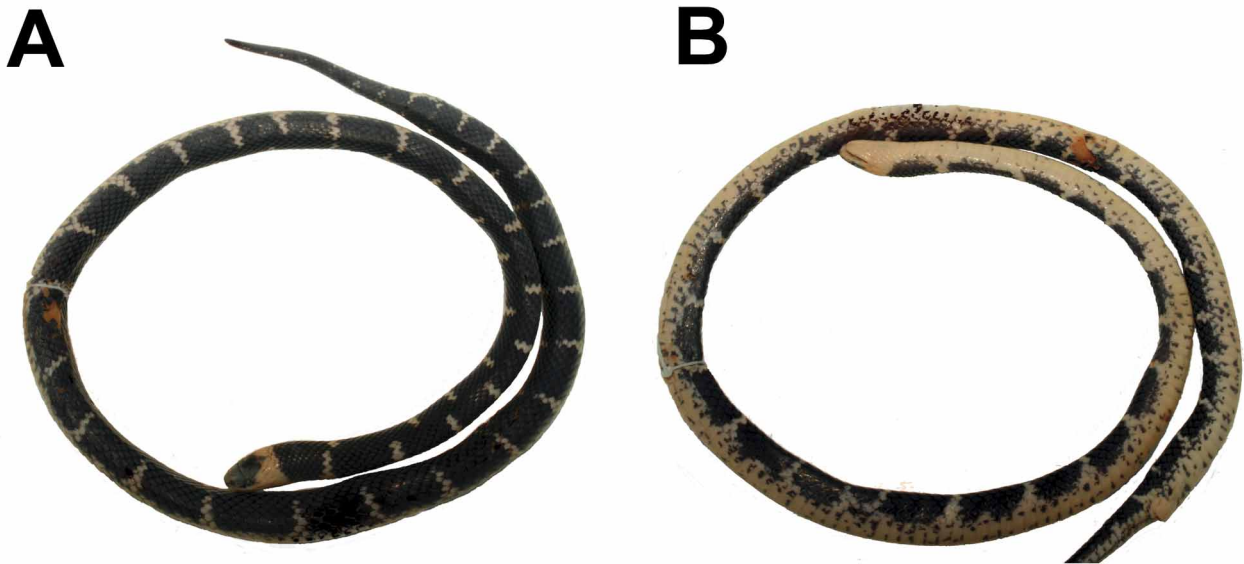


FIGURE 3. Dorsal (A) and ventral (B) views of *Atractus clarki* (MHUA 14000). SVL 327 mm, CL 37 mm.

Comparisons: Among all congeners, *A. clarki* shares only with *A. boulengerii* and *A. multicinctus* 17 dorsal scale rows, more than 35 subcaudals in males, generally six infralabials, five to seven well spaced maxillary teeth, colour pattern with transversal blotches or bands, complete occipital cream band, occipital band wide laterally and constricted dorsally, venter almost interely cream (if spotted, only on posterior third of body), body diameter less than 5 mm. *Atractus clarki* differs from *A. boulengerii* and *A. multicinctus* by having 153–165 ventrals in males and dorsum black with tiny cream bands (vs. ventrals 176–189 in males of *A. boulengerii* and 168–183 in males of *A. multicinctus*; dorsum beige with dark blotches [*A. boulengerii*] or bands [*A. multicinctus*] alternating above the flanks).

Description: Head twice as long as wide, arched in lateral view, rounded in dorsal view; snout truncate in lateral view, slightly rounded in dorsal view; cervical constriction indistinct; rostral sub-triangular in frontal view, broader than high, poorly visible in dorsal view; internasal longer than wide; internasal suture sinistral with respect to prefrontal suture; prefrontal as long as wide; supraocular sub-trapezoidal, twice as long as wide; frontal pentagonal, as long as wide; parietal twice as long as wide; nasal divided; nostril restricted to prenasal; prenasal about twice as high as long; postnasal as high as long; loreal long, contacting second and third supralabials; pupil round; generally two postoculars of similar height; upper postocular slightly longer than lower postocular; temporals 1+2; first temporal twice as long as high; upper posterior temporals elongate, four or five times as long as wide; seven supralabials, third and fourth contacting orbit; second and third supralabials higher than fourth; sixth supralabial higher and seventh longer than remaining supralabials; symphyisial triangular, twice as broad as long; six or seven infralabials, generally first three contacting chinshields; first pair of infralabials in contact behind symphyisial, preventing symphyisial/chinshields contact;

chinshields about three times as long as wide; generally four gular scale rows; three or four preventrals; 17/17/17 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; caudal spine short, robust, and rhomboidal.

Maxillary arch: Arched in dorsal view, with four or five prediastemal and one or two postdiastemal teeth; first three prediastemal teeth large and moderately spaced; third and fourth teeth well spaced; fourth and fifth teeth smaller and more curved than anterior ones; prediastemal teeth angular in cross section, robust at base, narrower at apices; maxillary diastema moderately long; postdiastemal teeth slightly smaller than last prediastemal tooth; lateral process poorly developed, lacking posterior projection.

Colour in preservative: Dorsum of head with black cephalic cap extending from rostral to anterior third of parietals; cream occipital band covering median to posterior portion of parietals, temporals, and occipital region; background of head black to dorsal margin of supralabials; ventral and posterior limits of black cap reaching dorsal margins of supralabials and postoculars, respectively; supralabials cream; mental region generally immaculate cream; occasionally infralabials and anterior portion of chinshields dark; preventrals cream; venter anteriorly cream, with black pigment reaching lateral edges of ventrals; posterior portion of venter frequently with scattered small dark brown dots distributed irregularly; tail generally cream with lateral margins black; tail occasionally cream with small black dots concentrated on median suture of subcaudals; tail rarely black with cream spots in centre of each subcaudal; dorsal ground colour black with about 30 tiny transverse light bands (one scale long) reaching paraventral region; transverse bands cream, occasionally connected to opposite side across vertebral region.

Hemipenis morphology (everted organ $n = 1$): Retracted organ bifurcates at eighth and extends to the level of 11th subcaudal. Hemipenis strongly bilobed, semicapitate, and semicalyculate; lobes clearly distinct from *capitulum* and of similar size to hemipenial body; lobes subcylindrical, centrifugally oriented, flattened on apices; lobes and *capitulum* covered with concentrate papillate calyces; capitular groove indistinct on sulcate and well marked on asulcate side of hemipenis; *capitulum* located just above bifurcation of *sulcus spermaticus*, longer than hemipenial body, and similar in size to lobes; intrasulcar region of *capitulum* with three large, narrow, hooked spines; non-lobular portion of *capitulum* with spinulate calyces and moderate alary spines; *sulcus spermaticus* bifurcates on basal portion of hemipenial body; branches of *sulcus spermaticus* centrifugally oriented, running to tips of lobes; *sulcus spermaticus* margins stout, moderately expanded, bordered with spinules at basal portion of organ and papillae on the lobular region; hemipenial body subelliptical, broader than *capitulum*, uniformly covered with moderate hooked spines; large spines concentrated on basal portion of hemipenial body; basal naked pocket extending to basal third of hemipenial body; basal portion of hemipenis with longitudinal plicae and disperse spinules (Fig. 4a).

Variation: Largest male 300 mm SVL, 51 mm CL, largest female 354 mm SVL, 42 mm CL; tail 13.2–18.3% ($\bar{x} = 15.6$; SD = 2.6; $n = 4$) SVL in males, 11.3–13.6% ($\bar{x} = 12.8$; SD = 1.0; $n = 4$) SVL in females; 153–165 ($\bar{x} = 164.2$; SD = 11.6; $n = 4$) ventrals in males, 169–195 ($\bar{x} = 181.7$; SD = 13.0; $n = 3$) in females; 34–40 ($\bar{x} = 37.7$; SD = 2.9; $n = 4$) subcaudals in males, 31–36 ($\bar{x} = 32$; SD = 1; $n = 3$) in females; 6 ($n = 16$ sides) or 7 ($n = 6$ sides) infralabials; 1 ($n = 1$ side) or 2 ($n = 21$ sides) postoculars; 3 ($n = 20$ sides) or 4 ($n = 2$ sides) infralabials contacting chinshields; 3 ($n = 1$ side) or 4 ($n = 8$ sides) gular scale rows; 3 ($n = 3$) or 4 ($n = 3$) preventrals; 8–10 ($\bar{x} = 8.5$; SD = 0.6; $n = 10$ sides) dorsal scale rows at the level of second subcaudal; 3.1–5.4 mm ($\bar{x} = 4.0$; SD = 0.6; $n = 5$) body diameter; 5 ($n = 2$ sides), 6 ($n = 2$ sides) or 7 ($n = 4$ sides) maxillary teeth; retracted hemipenis bifurcates between sixth to ninth and extends between eighth to 11th subcaudal ($n = 2$).

Distribution: Pacific region of Panama and Colombia from Santa Cruz de Cana (07°46'N, 77°41'W) in the province of Darién, Panama south to Istima (05°09'N, 76°41'W) in the department of Chocó, Colombia, and on both sides of the Cordillera Occidental of the Colombian Andes from Anori (07°11'N, 75°04'W) in the department of Antioquia, south to Restrepo (03°49'N, 76°31'W) in the department of Valle del Cauca. *Atractus clarki* inhabits rainforest and riparian forests of the Rivers derived from Cordillera Occidental, at elevations of 100–1500 m (Fig. 2).

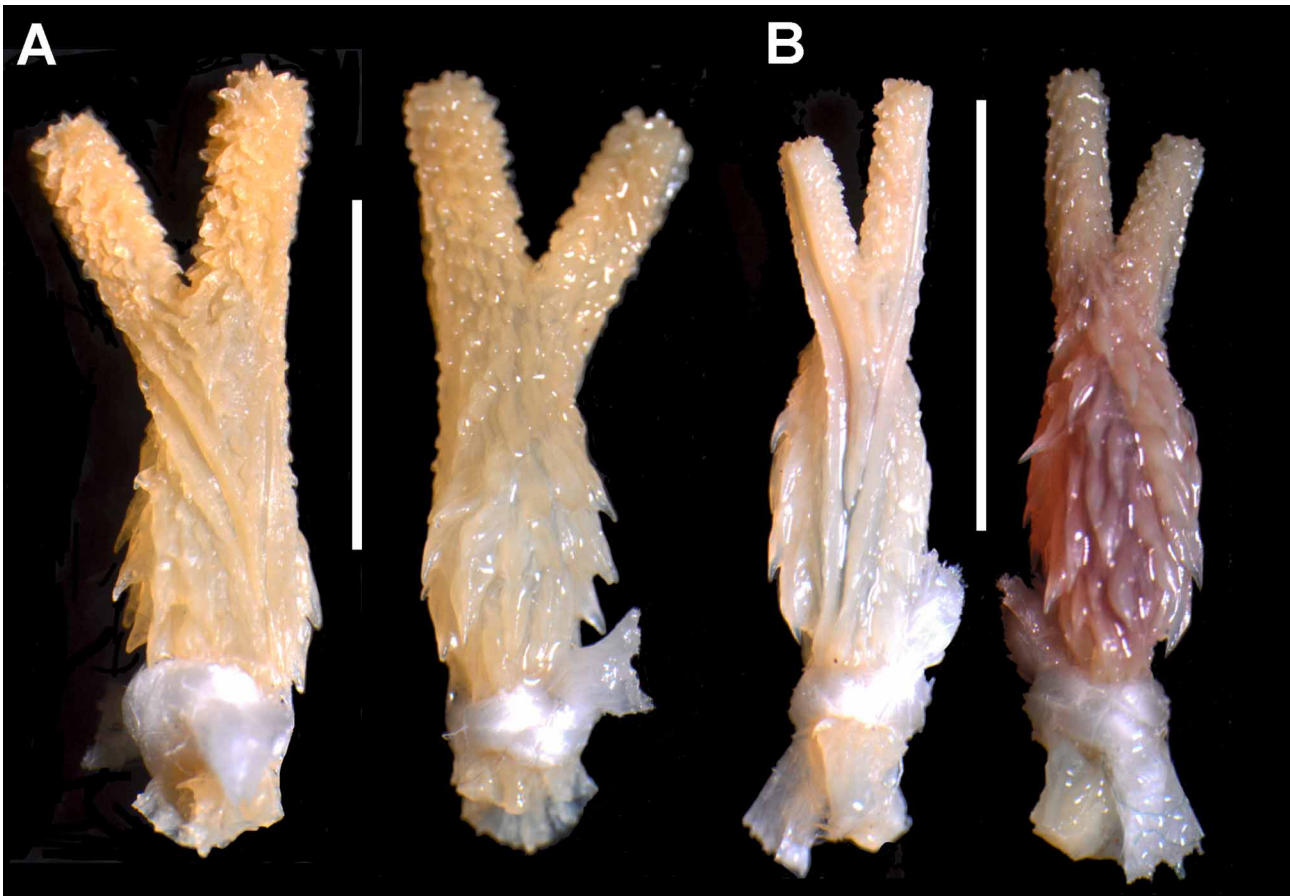


FIGURE 4. Sulcate and asulcate sides of the hemipenis of (A) *Atractus clarki* (ICN 10826) and (B) *Atractus multicinctus* (ICN 7075). Scale = 5mm.

Remarks: Dunn and Bailey (1939) described *A. clarki* based on a single specimen. Myers (2003) redescribed the holotype and reported the second known specimen on the basis of an individual collected at Colombian Chocó but lacking specific collection data. We report herein meristic, morphometric, colour, and hemipenial variation based on eight additional specimens from this poorly known species.

***Atractus echidna* sp. nov.**

Fig. 5

Holotype: Adult male, UV-C 7718, from estero San Antonio, Flor de la Briza, corregimiento Robles (01°42'N, 78°42'W, ca. 10 m), municipality of Tumaco, department of Nariño, Colombia.

Diagnosis: *Atractus echidna* is distinguished from all congeners by the combination of the following characters: (1) 15/15/15 smooth dorsals; (2) two postoculars; (3) long loreal; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first three contacting chinshields; (7) six maxillary teeth; (8) three gular scale rows; (9) three preventrals; (10) 127 ventrals in the single male; (11) 36 subcaudals; (12) dorsum light brown with irregular dark brown blotches decreasing in size posteriorly; (13) venter uniformly cream anteriorly and scattered with brown posteriorly; (14) small body size, male reaching 201 mm SVL; (15) tail long in male (23.4% of SVL).

Comparisons: Among all congeners, *A. echidna* and *A. iridescens* are the only species with fewer than 150 ventrals and more than 35 subcaudals in males, four or five prediastemal and two postdiastemal well-spaced teeth, and dorsum reddish brown with irregular pale-bordered dark blotches. *Atractus echidna* differs

from *A. iridescens* by having 15 dorsal scale rows, very long tail (23.4% of SVL), and venter with irregular dark spots posteriorly (vs. 17 dorsal scale rows, tail 14–18.9% SVL in males, and venter with a median dark line along all body).

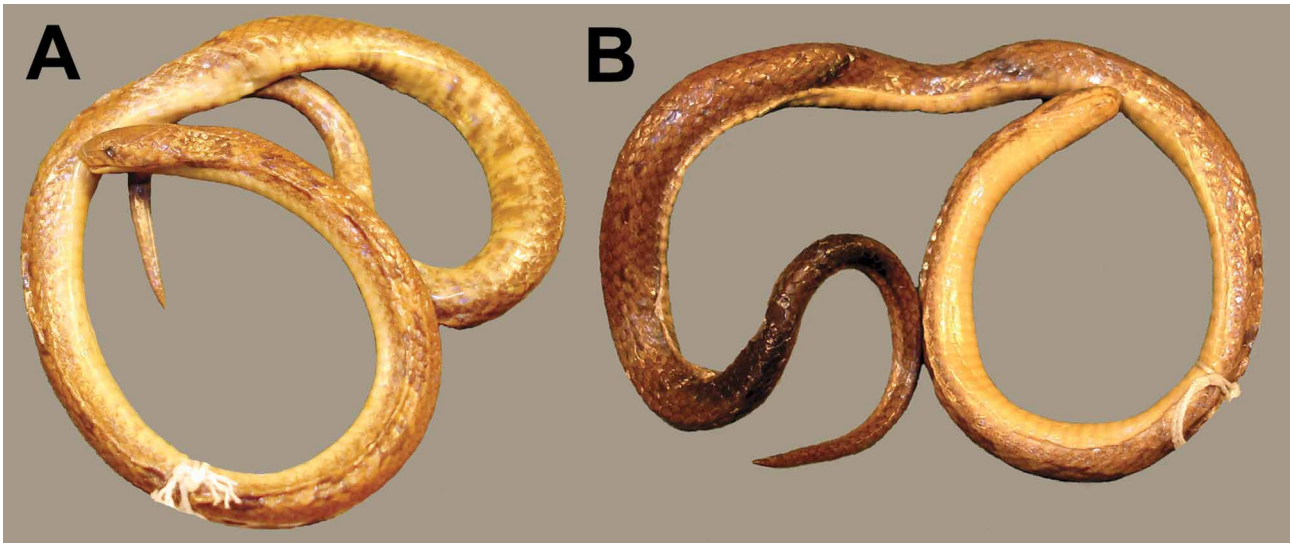


FIGURE 5. Dorsal (A) and ventral (B) views of the holotype of *Atractus echidna* sp. nov. (UV-C 7718). SVL 201 mm, CL 47 mm.

Description of holotype: Adult male, SVL 201 mm; CL 47 mm (23.4% SVL); head length 9.5 mm (4.7% SVL); head width 4.3 mm (45.3% head length); interorbital distance 3.4 mm; rostro-orbital distance 3.2 mm (0.95 times interorbital distance); naso-orbital distance 2.7 mm; head arched in lateral view, rounded in dorsal view; snout truncate in lateral view, rounded in dorsal view; canthus rostralis well marked in lateral view; cervical constriction indistinct; rostral sub-triangular in frontal view, 1.7 mm wide, 0.8 mm high, poorly visible in dorsal view; internasal 0.9 mm long, 0.7 mm wide; internasal suture sinistral with respect to prefrontal suture; prefrontal 2.1 mm long, 1.7 mm wide; supraocular sub-rectangular, 0.9 mm long, 0.5 mm wide; frontal sub-pentagonal, 2.6 mm long, 2.4 mm wide; parietal 4.0 mm long, twice as long as wide; nasal divided; nostril located between prenasal and postnasal; prenasal 0.7 mm high, about twice as high as long; postnasal 0.5 mm high, slightly higher than long; loreal 2.3 mm long, 0.4 mm high, contacting second and third supralabials; eye diameter 1.0 mm; pupil subelliptical; two postoculars; upper postocular 0.5 mm high and long, slightly longer than lower postocular; temporals 1+2; first temporal 1.5 mm long, about as long as high; upper posterior temporal elongate (3.2 mm), about three times as long as high; seven supralabials, third and fourth contacting orbit; second supralabial higher than first and smaller than third; sixth supralabial higher and seventh longer than remaining supralabials; symphyisial semicircular, 1.3 mm wide, 0.4 mm long; seven infralabials, first three contacting chinshields; first pair of infralabials contacting behind chinshields; chinshields 2.4 mm long, 0.8 mm wide; three gular scale rows; three preventrals; 127 ventrals; 36 subcaudals; 15/15/15 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; eight dorsal scale rows at level of second subcaudal; body diameter 4.4 mm (2.2% of SVL); caudal spine large, conical, and acuminate.

Maxillary arch: Arched in dorsal view, with four prediastemal and two postdiastemal teeth; prediastemal teeth large, curved, well spaced, decreasing gradually in size posteriorly, angular in cross section, robust at base, narrower at apices; maxillary diastema moderately long; postdiastemal teeth half of the size of last prediastemal ones.

Colour in preservative of holotype: Dorsum of head uniformly brown; background of head uniformly brown to dorsal margin of supralabials, except for beige temporal region constituting a light temporal stripe;

dorsal edge of supralabials forming a dark postocular stripe interrupted posteriorly by beige pigmentation; supralabials with diagonal invasion of brown pigment on posterior region of each scale, reaching lip margins; symphisial, infralabials, gular region, and preventrals cream with disperse brown dots; venter ground colour cream with diffuse brown spots concentrated on posterior region of body; tail light brown with irregular invasion of cream pigment anteriorly and uniformly brown posteriorly; dorsal ground colour light brown with irregular dark brown blotches decreasing in size posteriorly; anterior blotches large (four or five scales long and four to six scales wide), weakly distinct from ground colour; anterior blotches alternate and extending above first six dorsal scale rows; blotches decreasing progressively in size, posterior blotches (one scale long and wide); posterior blotches clearly distinct from dorsal ground colour, bordered by beige pigment, and disposed in two longitudinal series above fifth and sixth dorsal scale rows.

Etymology: The specific epithet “*echidna*” refers to the half woman–half snake monster goddess *Echidna* (Greek: *χιδνα*) from Greek mythology. According to Greek legends, Echidna married the massive monster Typhon, becoming mother of all major monsters of Greek myths (e.g., Hydra, Cerberus). Her name is used herein in reference to the contrastasting anterior/posterior coloration pattern of the new species, alluding to Echidna’s hybrid nature.

Distribution: Known only from the municipality of Robles, on the southwestern portion of the department of Nariño, Pacific lowlands of Colombia. *Atractus echidna* apparently inhabits rainforest near sea level (Fig. 6).

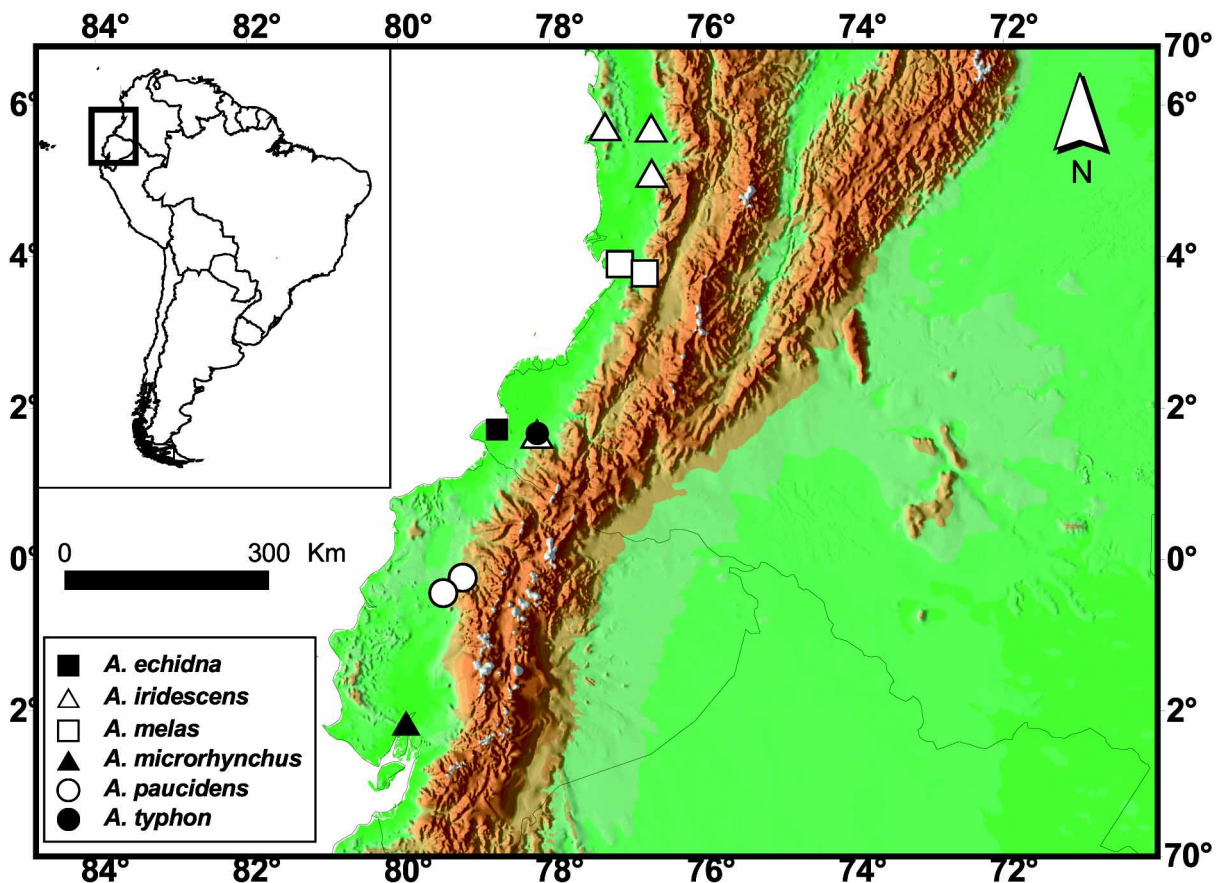


FIGURE 6. Geographical distribution of the *Atractus paucidens* species group.

Remarks: On the basis of morphological similarity, *A. echidna* appears to be closely related to *A. iridescens*. In fact, most characters displayed in the holotype of *A. echidna*, except for some diagnostic features (see above), overlap the variation reported herein for *A. iridescens*. Although relative tail length,

number of ventrals, and general colour pattern are susceptible to considerable intraspecific variation in *Atractus*, the occurrence of both 15 and 17 dorsal scale rows within a single species is known only for one species (the Venezuelan *A. erythromelas*) among more than 130 currently recognized in the genus. Furthermore, the two species differ in relative tail size of males, which is generally correlated with the length of the hemipenial lobes in *Atractus* (Passos 2008).

***Atractus iridescens* Peracca, 1896**

Figs. 7, 8

Atractus iridescens Peracca, 1896; Boll. Mus. Zool. Anat. Comp. Torino 252:2.

Atractus iridescens—Boulenger, 1913; Proc. Zool. Soc. London 4:1035.

Holotype: Adult male, from “América Meridionali” (= South America) originally deposited at Museo di Zoologia dell’ Università degli Studi di Torino, Turin MZUT R1830, now housed at Museo Regionali di Scienze Naturali, Turin (Andreone & Gavetti 2007), (photographs examined).

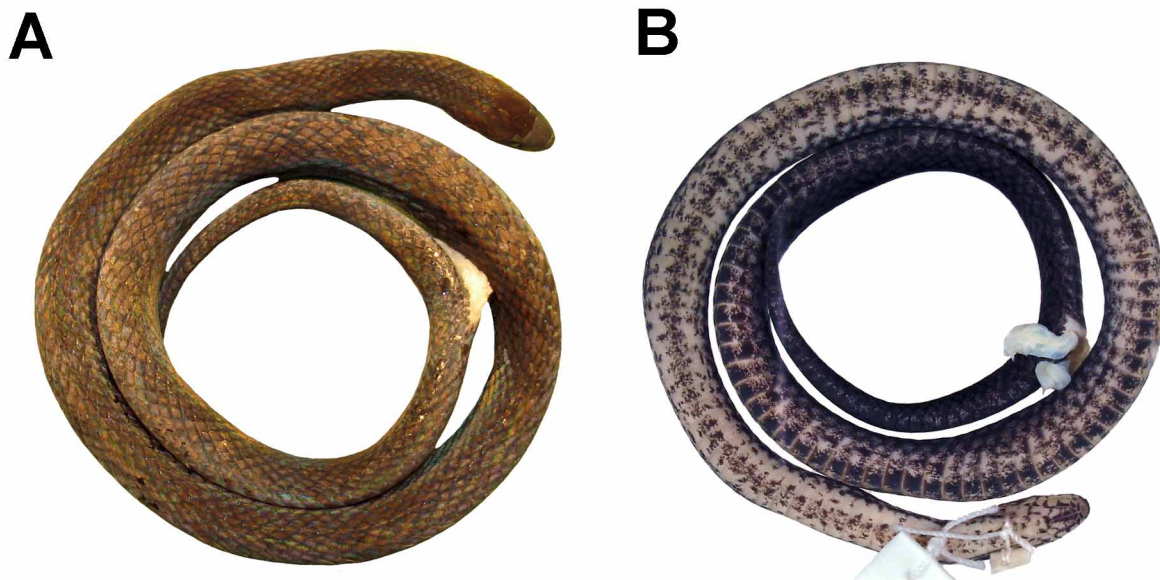


FIGURE 7. Dorsal (A) and ventral (B) views of *Atractus iridescens* (ICN 10902). SVL 353 mm, CL 50 mm.

Diagnosis: *Atractus iridescens* is distinguished from all congeners by combination of the following characters: (1) 17/17/17 smooth dorsal scale rows; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first three or four contacting chinshields; (7) six or seven maxillary teeth; (8) generally four gular scale rows; (9) three prefrontals; (10) 135–144 ventrals in females, 135–150 in males; (11) 25–37 subcaudals in females, 33–38 in males; (12) dorsum reddish brown scattered with small and irregular dark blotches; (13) venter beige with a median line comprised of small black dots; (14) moderate body size, single subadult female with 170 mm SVL, males reaching 353 mm SVL; (15) long tail in females (16.4–17.6% SVL) and males (14.2–18.9% SVL); (16) hemipenis moderately bilobed, slightly semicapitate, and non-calyculate.

Comparisons: *Atractus iridescens* is distinguished from all congeners, except *A. typhon* by having a lateral projection on the base of the hemipenis. *Atractus iridescens* differs from *A. typhon* by having 17 dorsal scale rows at midbody, 135–150 ventrals in males, dorsum with irregular dark blotches, venter with median black stripe (vs. 15 dorsals, 156–163 ventrals, banded dorsum, venter with quadriculate dark bars).

Additionally, *A. iridescens* shares only with *A. echidna* (hemipenis unknown) 36 subcaudals in males, three prefrontals, six to eight maxillary teeth, dorsum brown with irregular dark blotches. *Atractus iridescens* is distinguished from *A. echidna* by having 17 dorsal scale rows, 135–150 ventrals in males, venter with a median black stripe anteriorly and entirely black posteriorly (vs. 15 dorsals, 127 ventrals in the single male, venter cream with irregular brown spots posteriorly); from *A. boulengerii*, *A. clarki*, and *A. multicinctus* by having venter heavily marked with black dots, sometimes concentrated on the center of each ventral scale forming a conspicuous midline (vs. venter immaculate creamish white, occasionally with a few disperse black dots posteriorly in *A. clarki*).

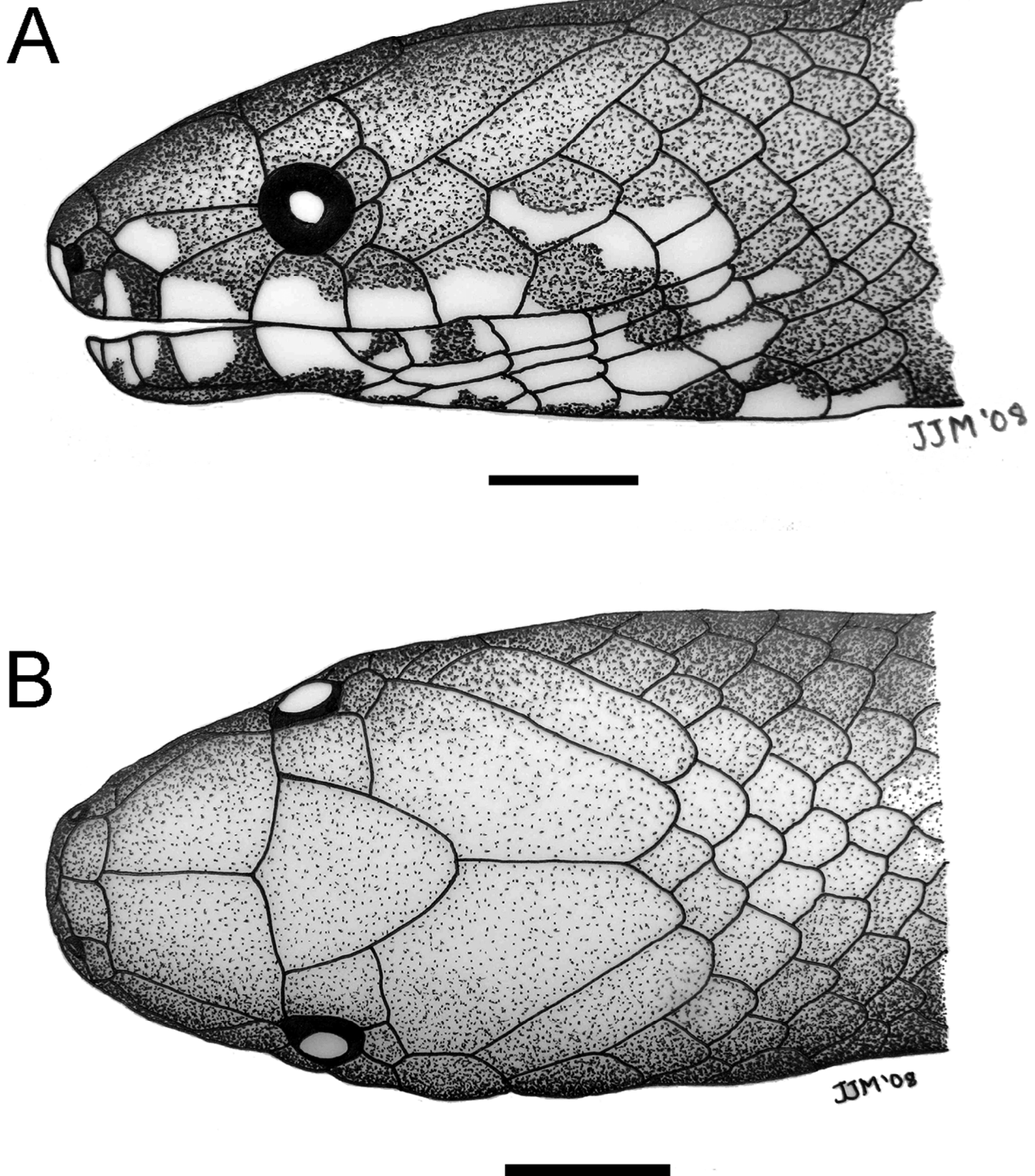


FIGURE 8. Dorsal (A) and lateral (B) views of the head of *Atractus iridescens* (ICN 10902). Scale = 5 mm.

Description: Head about twice as long as wide, flattened in lateral view, rounded in dorsal view; snout

truncate in lateral view, rounded in dorsal view; cervical constriction indistinct; rostral subtriangular in frontal view, broader than high, poorly visible in dorsal view; internasal as long as wide; internasal suture linear or sinistral with respect to prefrontal suture; prefrontal as long as wide; supraocular sub-trapezoidal, about twice as long as wide; frontal sub-triangular, as long as wide; parietal about twice as long as wide; nasal divided; nostril restricted to prenasal; prenasal twice as high as long; postnasal as high as long; loreal long, contacting second and third supralabials; pupil round; two postoculars; upper postocular slightly higher and longer than lower; temporals 1+2; first temporal twice as long as high; upper posterior temporal elongate, three times longer than wide; seven supralabials, third and fourth contacting orbit; first two supralabials of similar size and smaller than third; sixth higher and seventh longer than remaining supralabials; symphyisial semicircular, about three times broader than long; seven infralabials, first three or four contacting chinshields; first pair of infralabials in contact behind symphyisial, preventing symphyisial/chinshields contact; chinshields about three times longer than wide; four gular scales rows; three or four preventrals; generally 17/17/17 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; caudal spine moderate, conical, and acuminate.

Maxillary arch: Arched in dorsal view, with four or five prediastemal and two postdiastemal teeth; prediastemal teeth large, moderately spaced, of similar size, curved posteriorly, angular in cross section, robust at base, narrower at apices; maxillary diastema moderately long; postdiastemal teeth half size of the last prediastemal tooth; lateral process absent.

Colour in preservative: Dorsum of head reddish brown, occasionally with small beige spots at the orbital region; head background reddish brown to dorsal margin of supralabials, except for black postorbital and creamy temporal stripes; temporal region and posterior portion of seventh supralabial creamish white, forming lower portion of temporal stripe; supralabials mostly cream, with invasion of brown pigment on posterior suture of supralabials; fifth and sixth supralabials predominantly dark brown, constituting the descending portion of postocular stripe; infralabials, chinshields, gulars, and preventrals creamish white with diffuse dark brown dots; ventral ground colour beige with three series of dark brown spots disposed linearly, forming ventral lines; two small paraventral stripes restricted to lateral or latero-medial region of ventrals; large median stripe increasing in size posteriorly; ventral lines collapsed on posterior regions of belly, covering ventral scales entirely; tail uniformly black; dorsal ground colour reddish brown with about 30 irregular black blotches; dark blotches with creamy borders and disposed linearly, extending from third to sixth dorsal scale rows; blotches (two or three scales long and wide) generally clearly distinct from dorsal ground colour and paired on paravertebral region; blotches occasionally collapsed at vertebral region on the first third of body; posterior blotches decreasing in size (one or two scales long and wide) and not connected to opposite one above vertebral region; blotches occasionally weakly distinct from dorsal ground colour, forming almost reticulate pattern.

Hemipenis morphology (everted organs $n = 4$): Organ moderately bilobed, slightly semicapitate, and non-calyculate; lobes attenuate, centrifugally oriented, covered with disperse spinules, and slightly smaller than hemipenial body; apices of lobes curved and oriented medially, forming well defined distal clasps; tips of lobes covered with disperse papillae; hemipenial body with intrasulcar region thick (capitular area) on both sides of organ; weakly defined capitular groove with inverted “V” shape, delimiting capitulate area on the sulcate side, and with median retraction on the asulcate side of hemipenis; capitular region delimited on the sulcate side by large hooked spines arranged in diagonal series; intrasulcar region with six moderate hooked spines; median spines decreasing in size toward proximal portion of asulcate side of organ; *sulcus spermaticus* bifurcates on basal portion of hemipenis; *sulcus spermaticus* branches centrifugally oriented, running to the tips of lobes; margins of *sulcus spermaticus* stout and narrow; hemipenial body mostly smooth, with a series of moderate spines on asulcate side of organ immediately below large spines, which delimit the capitular region of hemipenis; basal portion of hemipenis body with a large lobular projection; proximal region of hemipenis with longitudinal plicae and disperse spinules (Fig. 9a, b).

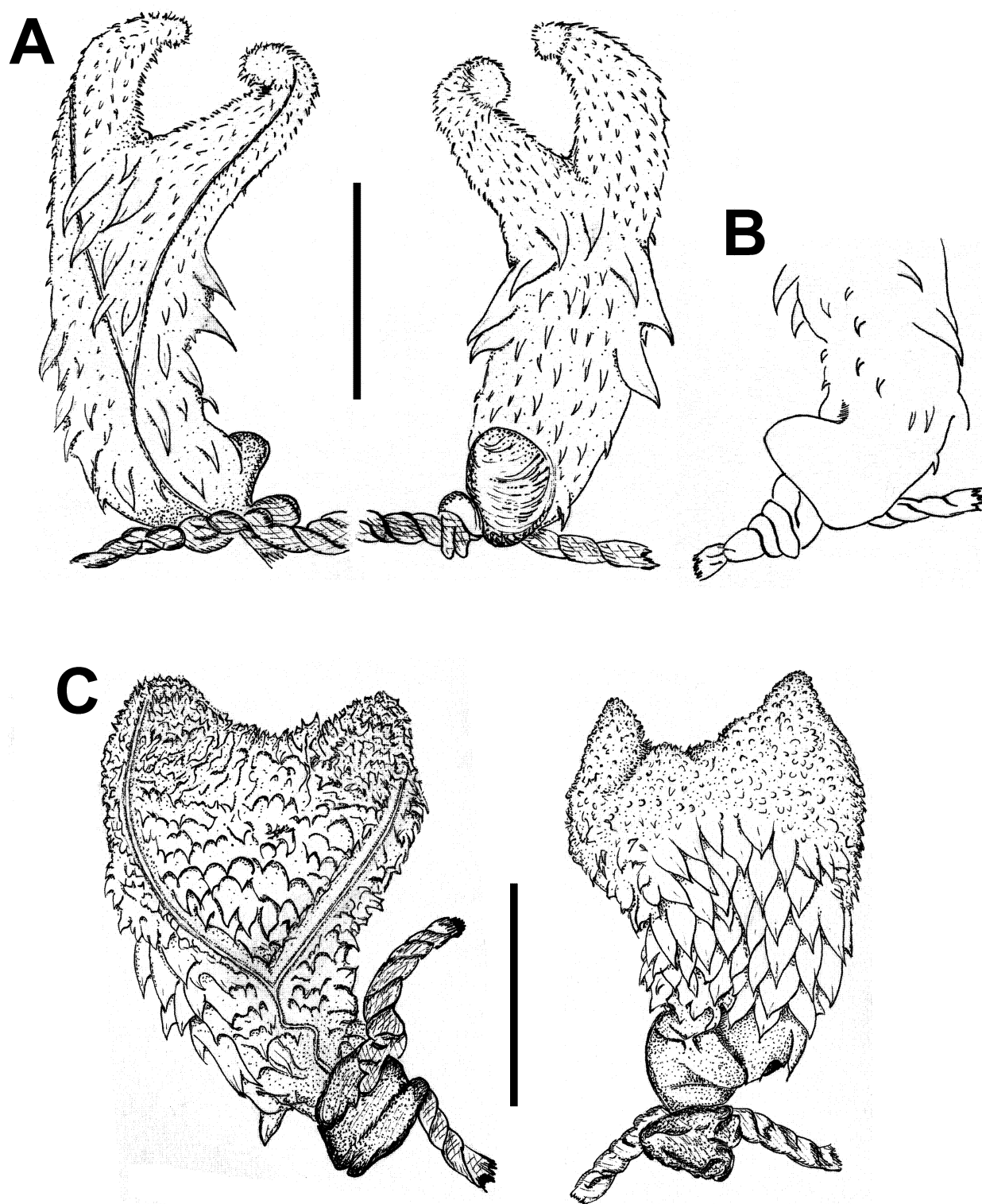


FIGURE 9. Sulcate and asulcate sides of the hemipenis of (A) *Atractus iridescens* (ICN 10902), (B) detailed view of lateral expansion of the hemipenis of *Atractus iridescens*, (C) sulcate and asulcate sides of the hemipenis of *Atractus typhon* sp.nov. (ICN 10901). Scale = 5mm.

Variation: Largest male 353 mm SVL, 50 mm CL, largest female 170 mm SVL, 38 mm CL; tail 14.2–18.9% (\bar{x} = 17.7; SD = 2.5; n = 4) SVL in males, 16.4–17.6% (n = 2) SVL in females; 135–150 (\bar{x} = 137.8; SD = 3.3; n = 5) ventrals in males, 134–144 (\bar{x} = 139; SD = 4.6; n = 3) in females; 33–43 (\bar{x} = 37.7; SD = 1.6; n =

5) subcaudals in males, 25–37 ($n = 2$) in females; 3 ($n = 1$ side) or 4 ($n = 15$ sides) first infralabials contacting chinshields; 3 ($n = 3$ side) or 4 ($n = 10$ sides) gular scale rows; 3 ($n = 5$) or 4 ($n = 2$) preventrals; 8–11 ($\bar{x} = 8.8$; $SD = 0.7$; $n = 12$ sides) dorsal scale rows at the level of second subcaudal; 4.4–6.6 mm ($\bar{x} = 5.4$; $SD = 1.2$; $n = 6$) body diameter; 6 ($n = 4$ sides) or 7 ($n = 4$ sides) maxillary teeth; 5 ($n = 2$ sides) palatine teeth; 10 ($n = 1$) or 11 ($n = 1$) pterigoyd teeth; 8 ($n = 1$) dentary teeth.

Distribution: Pacific lowlands of Colombia from Nuqui (05°43'N, 77°16'W) west of Condoto (05°08'N, 76°39'W) in the department of Chocó south to Barbacoas (01°39'N, 78°10'W) in the department of Nariño. *Atractus iridescens* inhabits rainforest at elevations of 50–150 m (Fig. 6).

Remarks: Peracca (1896) described *A. iridescens* based on a specimen from “America Meridionali” (= South America) without precise collection data. Boulenger (1913) associated the name with three specimens collected at Peña Lisa, Condoto in the department of Chocó, Colombia. Analyses of data and photographs of the holotype of *A. iridescens* corroborate Boulenger’s identification. We report herein three additional specimens extending the species’ distribution about 500 km south. We found another specimen (CSJ 563) that may be referable to *A. iridescens*, but it is labelled as coming from “San Pedro”, a municipality on the other side of the Andes. There are at least five localities named San Pedro in the department of Antioquia, Colombia, and it is very likely that the specimen came from San Pedro de Urabá (08°17'N, 76°23'W, ca. 200 m), on the northern portion of the Pacific lowlands of Colombia. If this record would be considered, the species range would extend 300 km north from Nuqui. However, the colour pattern of this specimen is poorly preserved and its identity cannot be properly established, thus we prefer not to include this doubtful record of *A. iridescens* until further specimens become available.

***Atractus medusa* sp. nov.**

Figs. 10, 11

Holotype: Adult male, IAvH 2981, from Playa Blanca, Gorgona Island (03°00'N, 78°12'W, ca. 0 m), municipality of Guapi, department of Cauca, Colombia, collected by J. V. Rueda (field number VR 1213).

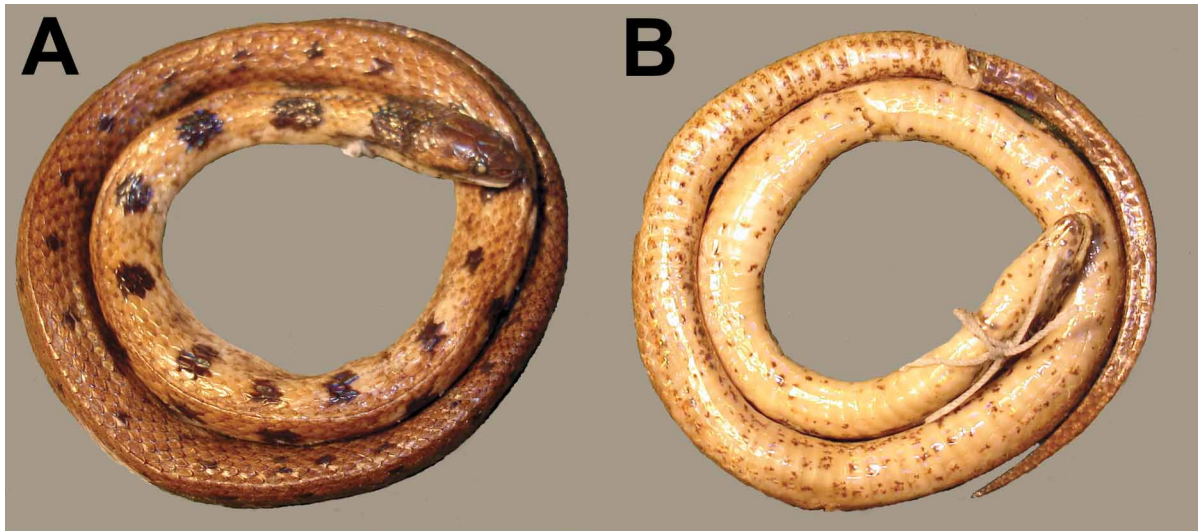


FIGURE 10. Dorsal (A) and ventral (B) views of the holotype of *Atractus medusa* sp. nov. (IAvH 2981). SVL 325 mm, CL 60 mm.

Diagnosis: *Atractus medusa* is distinguished from all congeners by the combination of the following characters: (1) 17/17/17 smooth dorsal scale rows; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first four contacting chinshields;

(7) five maxillary teeth; (8) three gular scale rows; (9) two prefrontals; (10) 133 ventrals in the single male; (11) 46 subcaudal; (12) dorsum beige with light occipital band and round dark brown blotches, decreasing in size posteriorly; (13) venter cream with diffuse dark brown dots concentrated posteriorly; (14) moderate body size, male with 325 mm SVL; (15) long tail (18.4% SVL); (16) hemipenis strongly bilobed, semicapitate, and semicalyculate.

Comparisons: *Atractus medusa* is distinguished from all congeners by having lobes twice as long as the hemipenial body. Additionally, *A. medusa* shares exclusively with *A. boulengerii* 17 dorsal scale rows, five or six maxillary teeth, large black band on neck, and rounded dorsal blotches decreasing in size posteriorly. *Atractus medusa* differs from *A. boulengerii* by having 133 ventrals in male, single postdiastemal tooth, and venter posteriorly black (vs. 180–189 ventrals in males, two postdiastemal teeth, and venter immaculate creamish white).

Description of holotype: Adult male, 325 mm SVL; 60 mm CL (18.4% of SVL); head length 10.5 mm (3.2% of SVL); head width 4.9 mm (47% of head length); head arched in lateral view, rounded in dorsal view; snout slightly acuminate in lateral view, rounded in dorsal view; cervical constriction barely distinct; rostral sub-triangular, 1.8 mm broad, 0.7 mm high, poorly visible in dorsal view; internasal 0.8 mm long, 0.3 mm wide; internasal suture sinistral with respect to prefrontal suture; prefrontal 2.2 mm long, 2.0 mm wide; supraocular sub-trapezoidal, 1.3 mm long, 0.6 mm wide; frontal sub-pentagonal, 2.6 mm long, 2.5 mm wide; parietal 4.1 mm long, 2.4 mm wide; nasal divided; nostril located between prenasal and postnasal; prenasal 0.6 mm long, twice as high as long; postnasal 0.3 mm high, as high as long; loreal 2.2 mm long, 0.5 mm high, contacting second and third supralabials; eye diameter 1.4 mm; pupil round; two postoculars with similar size; upper postocular 0.6 mm high, 0.4 mm long, slightly longer than lower postocular; temporals 1+2; first temporal 1.5 mm, slightly longer than high; upper posterior temporals elongate, 3.3 mm long, 0.8 mm wide; seven supralabials, third and fourth contacting orbit; second and third supralabials of similar size and higher than first supralabial; sixth higher and seventh longer than remaining supralabials; symphyseal semicircular, four times broader than long; seven infralabials, first four contacting chinshields; first pair of infralabials in contact behind symphyseal, preventing symphyseal/chinshields contact; chinshields 2.9 mm long, 0.8 mm wide; three gular scale rows; two prefrontals; 133 ventrals; 46 subcaudals; 17/17/17 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; body diameter 5.5 mm (1.7% of SVL); caudal spine moderate, conical, and slightly acuminate.

Maxillary arch: Arched in dorsal view, with five prediastemal and one postdiastemal teeth; prediastemal teeth large, well spaced, of similar size, curved posteriorly, angular in cross section, robust at base, slightly narrower at apices; maxillary diastema moderately long; postdiastemal tooth half the size of prediastemal ones.

Colour in preservative of holotype: Dorsum of head dark brown with invasion of beige pigment above latero-posterior portion of parietal, occipital, and temporal regions; background of head dark brown to the median region of supralabials, except for beige temporals; descending postocular stripe dark brown, covering postoculars, first temporal, and last two supralabials; first four supralabials with ventral margin creamish white, posterior and ventral margins of fifth supralabial marked by dark brown, sixth and seventh uniformly dark brown; infralabials, genials, and gular region predominantly creamish white, with dark brown spots above symphyseal, first pair of infralabials, and anterior portion of genials; mental region cream, except for proximal region of second and third pair of infralabials dark brown; venter cream spotted diffusely with dark brown dots, concentrated on posterior third of body; tail dark brown, except for cream lateral borders of anterior subcaudals; dorsum of body with dark brown collar covering first seven scale rows; collar connected to cephalic cap; dorsal ground colour beige with 26 round black blotches alternate on the flanks; paired blotches decreasing gradually in size posteriorly; anterior blotches large (five scales long and wide), reaching paraventral region; midbody blotches (two scales long and wide), restricted to paravertebral region; posterior blotches (one scale long and wide), located above sixth scale row and scarcely distinct from the ground colour; tail dorsally uniformly beige.

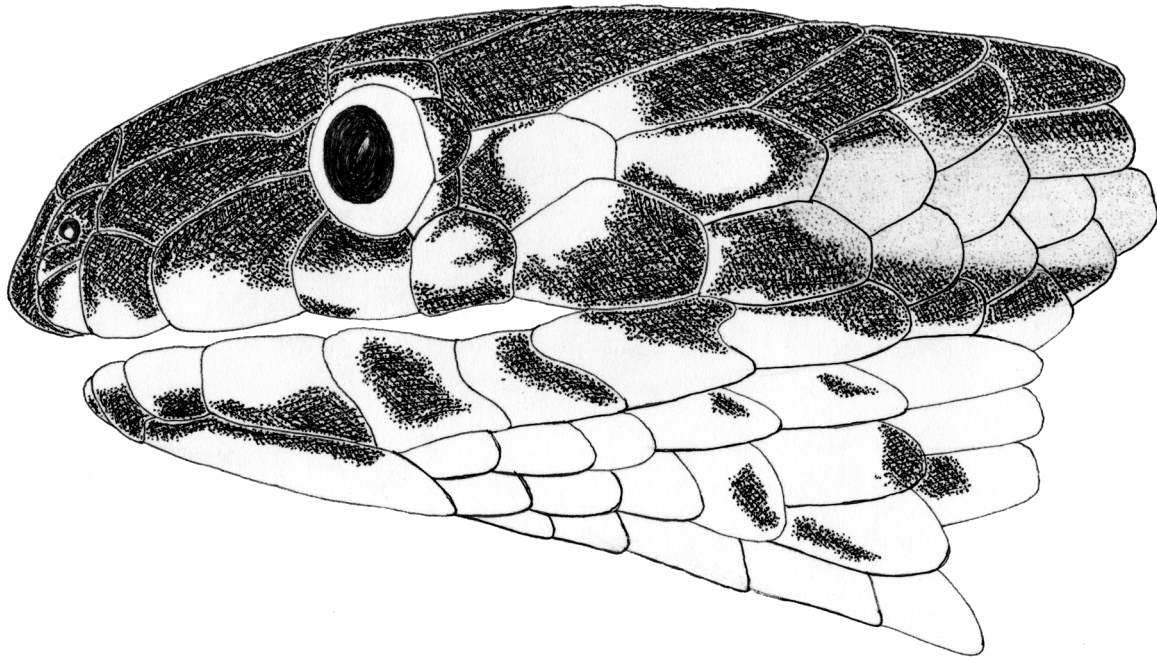


FIGURE 11. Lateral view of head of the holotype of *Atractus medusa* sp. nov. (IAvH 2981). Scale = 5mm.

Hemipenis morphology (everted organ $n = 1$): Organ strongly bilobed, semicapitate, and semycalyculate; lobes clearly distinct from *capitulum* and longer than hemipenial body; lobes attenuate, centrifugally oriented, and with flattened apices; lobes uniformly covered with concentrated spinulate calyces; capitular groove indistinct on the asulcate side and well marked on sulcate side of hemipenis; *capitulum* situated just above *sulcus spermaticus* bifurcation, longer than hemipenial body and shorter than lobes; intrasulcar region with large and narrow hooked spines; proximal area of *capitulum* with spinulate calyces and moderate alary spines; *sulcus spermaticus* bifurcates in the basal portion of hemipenial body; *sulcus spermaticus* branches centrifugally oriented and running to apices of lobes; margins of *sulcus spermaticus* stout and moderately expanded, bordered by spinules along hemipenial body and papillae in the lobular region; hemipenial body subelliptical, broader than *capitulum*, covered with hooked spines; large spines concentrated laterally on basal portion of hemipenial body; basal naked pocket extending to first third of hemipenial body; proximal portion of the organ with longitudinal plicae and diffuse spinules.

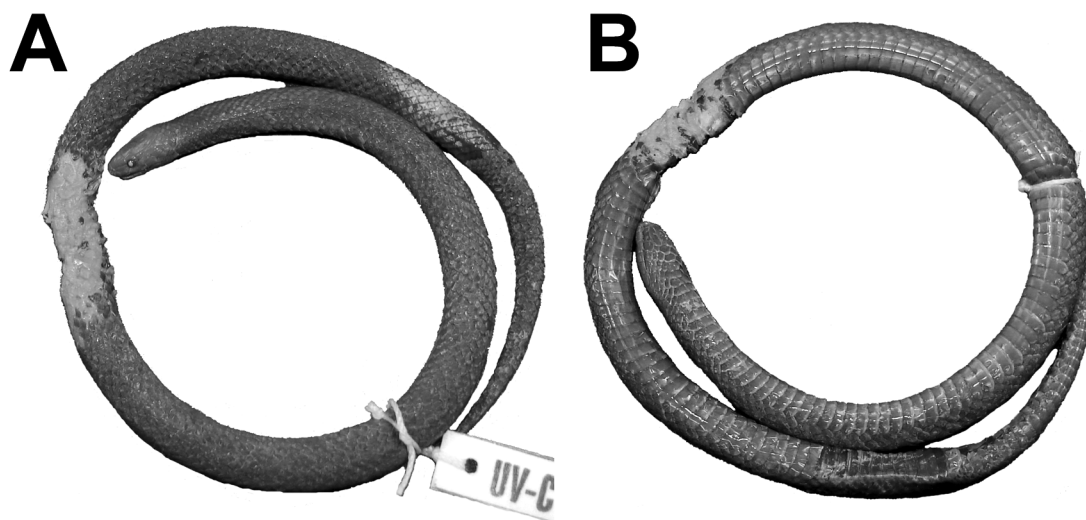
Etymology: The specific epithet “*medusa*” refers to the female monster Medusa (Greek: μέδουσα) of Greek mythology. According to the Greek writer Hesiod, Medusa was one of the three Gorgons, daughters of the gods Phorcys and Ceto, their home being on the farthest side of the western ocean. Medusa had snakes for hair and her look could petrify anyone looking into her eyes, but was beheaded by the Greek hero Perseus. Herein the word alludes to the type locality of the species, Gorgona Island, an island on the western portion of the genus’ range.

Distribution: Known only from the continental Gorgona Island, municipality of Guapi, department of Cauca, Pacific region of Colombia (Fig. 2).

Remarks: Despite the fact that *A. medusa* is described on the basis of a single specimen, it is apparently abundant on Gorgona Island (M. Rada, pers. commun.). The island is a national park of Colombia and, as a consequence, collecting is limited.

Atractus melas Boulenger, 1908

Fig. 12

Atractus melas Boulenger, 1908; Ann. Mag. Nat. Hist. 8(1):114.*Atractus melas* Prado, 1940; Mem. Inst. Butantan 12:15.**Holotype:** Adult female, NHM 1946.1.6.33 (formerly 1908.5.29.54), from Los Mangos (= Juntas, 03°46'N, 76°45'W, ca. 300 m), department of Valle del Cauca, Colombia, collected by Palmer (specimen examined).**FIGURE 12.** Dorsal (A) and ventral (B) views of *Atractus melas* (IV-C 8533). SVL 184 mm CL 34 mm.

Diagnosis: *Atractus melas* is distinguished from all congeners by the following combination of characters: (1) 17/17/17 smooth dorsal scale rows; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first four contacting chinshields; (7) six or seven maxillary teeth; (8) four gular scale rows; (9) four or five preventrals; (10) 144 ventrals in the single known female, 134–140 in males; (11) 25 subcaudals in female, 33–34 in males; (12) dorsum uniformly black; (13) venter uniformly black; (14) small body size, female with 205 mm SVL, males reaching 194 mm SVL; (15) long tail in female (17.1% of SVL) and males (18.5–19.1% of SVL); (16) hemipenis moderately bilobed.

Comparisons: *Atractus melas* differs from all currently recognized *Atractus* in having a uniformly black dorsum and venter, without any invasion of light pigment.

Description: Head twice as long as wide, flattened in lateral view, rounded in dorsal view; snout slightly acuminate in lateral view, rounded in dorsal view; cervical constriction barely distinct; rostral subtriangular in frontal view, slightly broader than high, clearly visible in dorsal view; internasal longer than wide; internasal suture sinistral with respect to prefrontal suture; prefrontal longer than wide; supraocular sub-rectangular, about twice as long as wide; frontal subtriangular, as long as wide; parietal twice as long as wide; nasal divided; nostril restricted to prenasal; prenasal twice as high as long; postnasal as high as prenasal, slightly higher than long; loreal long, contacting second and third supralabials; pupil round; two postoculars of similar size; temporals 1+2; anterior temporal twice as long as high; upper posterior temporal occasionally elongate, six times longer than wide; seven supralabials, third and fourth contacting orbit; second supralabial higher than first and as high as third; sixth higher and seventh longer than remaining supralabials; symphyisial semicircular, twice as broad as long, contacting chinshields posteriorly; six or seven infralabials, first four

contacting chinshields; chinshields four times longer than wide; four gular scale rows; three to five preventrals; 17/17/17 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; eight dorsal scale rows in the level of second subcaudal; caudal spine long, conical, and acuminate.

Maxillary arch: Arched in dorsal view, with five or six prediastemal and one or two postdiastemal teeth; prediastemal teeth large, similar in size, curved posteriorly, angular in cross section, robust at base, and narrower at apices; first four teeth moderately spaced, fifth tooth more widely spaced from these and postdiastemal teeth; maxillary diastema short; postdiastemal teeth half size of last prediastemal tooth; lateral process poorly developed, lacking posterior projection.

Colour in preservative: Dorsum and belly uniformly black; occasionally there is a weakly indicated dark brown blotch in the nuchal region (evident only through alcohol immersion).

Variation: Largest male 184 mm SVL, 34 mm CL; largest female 205 mm SVL, 25 mm CL; tail 18.5–19.1% ($n = 2$) SVL in males, 17.1% SVL in female; 134–140 ventrals in males ($n = 2$), 144 in female; subcaudals 33–34 ($n = 2$) in males, 25 in female; 6 ($n = 2$ sides) or 7 ($n = 4$ sides) infralabials; 3 ($n = 1$), 4 ($n = 1$) or 5 ($n = 1$) preventrals; 4.0–4.2 mm body diameter; 6 ($n = 1$ side) or 7 ($n = 3$ sides) maxillary teeth; retracted hemipenis extends to 14th subcaudal ($n = 1$).

Distribution: Pacific region of Colombia from corregimiento de Guayabal (05°44'N, 76°38'W) in the department of Chocó to Municipality of Juntas (03°46'N, 76°45'W) in the department of Valle del Cauca. *Atractus melas* inhabits rainforest at elevations of 80–300 m (Fig. 6).

Remarks: Boulenger (1908) described *A. melas* on the basis of a single specimen. Prado (1940) cited another individual of *A. melas* from the MLS collection but did not provide a collection number or voucher specimen data (it is likely that one of our specimens represent Prado's individual from MLS, but the original catalogue number at MLS has been changed). No additional records for this species have been reported. This species is herein reported from two new specimens obtained in different localities in the Pacific coast of Colombia, extending the species range 300 km north of Juntas (Fig. 6). Additionally, another specimen of *A. melas* (not collected) from Buenaventura, department of Chocó, Colombia was examined indirectly via photographs taken in life.

Despite *A. melas* having a very particular colour pattern, it is similar in several respects to *A. iridescens*. The two species share several features: 130–140 ventrals in males, 135–145 in females; 30–40 subcaudals in males, 25 in females; generally seven supralabials; first four infralabials contacting chinshields; six or seven large and well spaced maxillary teeth; long tail in males and females. Nonetheless, *A. melas* has a symphyisial scale in contact with chinshields (vs. first pair of infralabials preventing symphyisial/chinshields contact in *A. iridescens*). Elsewhere in the entire genus, the only species consistently having symphyisial/chinshield contact is the Guianan *A. favae* (Passos 2008).

Atractus microrhynchus (Cope, 1868)

Rhabdosoma microrhynchum Cope, 1868; Proc. Acad. Nat. Sci. Philadelphia 1868:102.

Atractus badius—Boulenger, 1896; Catalogue of the Snakes in the British Museum vol. 2:308. (part.).

Atractus microrhynchus – Savage, 1960; Misc. Publ. Mus. Zool. Univ. Michigan 112:2.

Atractus badius—Dixon and Soini, 1977; Contrib. Biol. Geol. Milwaukee Publ. Mus. 12:33.

Atractus microrhynchus—Dixon and Soini, 1986; Milwaukee Public Museum 12:52.

Holotype: Unknown sex, California Academy of Science (CAS 6693), from Guayaquil (02°10'S, 79°54'W, ca. 50 m), province of Guayas, Ecuador, collected by the Orton Expedition in 1865. Savage (1960) pointed out that the holotype was missing at the CAS and it is probably lost (see Remarks).

Diagnosis: *Atractus microrhynchus* is distinguished from all congeners by the following combination of characters: (1) 17/17/17 smooth dorsals; (2) one or two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) unknown number of infralabials, first two contacting chinshields; (12) dorsum uniformly dark brown, with a incomplete occipital light band; (13) venter light

brown with dark brown dots in the lateral region of ventrals; (14) small body size (but the age and sex were unreported in the original description, likely based on a juvenile specimen), holotype about 100 mm SVL.

Comparisons: The brief data available from original description are inadequate to distinguish it from many *Atractus* having 17 scale rows and uniform colour pattern. Still, the lacking of illustration on description precludes the confirmation of some uncommon *Atractus* features (only two pairs of infralabials contacting chinshields) of *A. microrhynchus*. Nonetheless, if the original description is accurate, *A. microrhynchus* shares only with *A. alphonsehogeii*, *A. caxiuana*, *A. collaris*, *A. gaigeae*, *A. limitaneus*, and *A. surucucu*: 17 dorsal scale rows; seven infralabials, with third and fourth contacting orbit; dorsum uniformly dark brown colour; incomplete occipital light band; and lateral portion of ventral scales dark brown pigmented. *Atractus microrhynchus* differs from these six species in having a light brown venter and only two pairs of infralabials contacting chinshields (vs. venter uniformly creamish white and three pair of infralabials contacting chinshields).

Description (according Cope 1868): Rostral broader than high; nasal divided; prenasal higher; internasal of similar size to postnasal; postnasal 1/6 of the parietal size; frontal sub-triangular; parietal longer than wide; loreal long; sixth supralabial longer than high; one or two postoculars; temporal 1+2; upper posterior temporals elongate; seven supralabials, third and fourth contacting orbit; first pair of infralabials in contact behind symphyisial, preventing symphyisial/chinshields contact; first two infralabials contacting chinshields; 17/17/17 smooth dorsal scale rows.

Colour in preservative (according to Cope 1868): Dorsum of head with black cap, extending from frontal to neck; black cap interrupted by incomplete creamish yellow occipital band; occipital band extends from parietals to rictus of mouth; background of head dark brown to median portion of supralabials; supralabials with light brown ventral margin; venter light brown with lateral portion of ventrals dark brown pigmented; dorsum uniformly dark brown.

Distribution: Known only from Guayaquil in the province of Guayas, Ecuador. *Atractus microrhynchus* apparently inhabits Lowland Seasonal Evergreen forest near sea level (Fig. 6).

Remarks: Cope (1868) described *Rhabdosoma microrhynchum* based on a single individual, suggesting it was close related to *Atractus badius*. Cope (1871) reported *R. microrhynchum* from Pebas (= Pevas) in the Amazon lowlands of Peru on the basis of new material also from the Orton Expedition. Boulenger (1896) redefined the genus *Atractus* and synonymized *R. microrhynchum* with *A. badius*, without providing any comments. Savage (1960) resurrected *A. microrhynchus*, but considered that because Cope's description was so brief, the taxonomic status of this species could not be accurately addressed. Dixon and Soini (1977) proposed the synonymy of *A. microrhynchus* with *A. badius* based on specimens from the Iquitos region in Peru, stating that the type locality was erroneous and the species was probably Amazonian. Hoogmoed (1980) redescribed the lectotype of *A. badius* and did not consider *A. microrhynchus* as a synonym of that species. Dixon and Soini (1986) re-considered their synonymy and referred to the same specimens as *Atractus* cf. *microrhynchus*. The Dixon and Soini specimens actually refer to *A. natans*, recently described by Hoogmoed and Prudente (2002) (Passos 2008).

The type locality of *Atractus microrhynchus* is Guayaquil in Ecuador, but there are no other reports of *Atractus* from this locality (Savage 1960; Peters & Orejas-Miranda 1970; Passos 2008). Savage (1960) suggested the possibility that the type locality was in error, given that the Orton Expedition collected material also in the Amazonian lowlands. Given the possibility of an incorrect type locality, brief available description, and loss of the holotype of *A. microrhynchus*, perhaps we should consider it as a *nomen dubium* (ICNZ 1999). Nevertheless, most snake species from the Orton Expedition labelled from the Pacific lowlands of Ecuador in fact occur there (e.g., *Trachyboa gularis*, *Pelamis bicolor*, and *Micrurus mipartitus*). Furthermore, recent specimens from the Pacific lowlands of Ecuador collected a few kilometres from the type locality apparently conform well to Cope's description, suggesting it may be a valid taxon (D. Cisneros-Heredia, pers. comm.). Therefore, we prefer to maintain the *status quo* of recognizing *A. microrhynchus*, while waiting the formal report of the aforementioned specimens.

Atractus multicinctus (Jan, 1865)

Figs. 13, 14, 15

Rhabdosoma badium var. *multicinctum* Jan in Jan and Sordelli, 1865; Iconographie Générale des Ophidiens 10:plate 4, fig. 5.

Atractus badius—Boulenger, 1896; Catalogue of the Snakes in the British Museum 2:308 (part).

Atractus multicinctus—Boulenger, 1898; Proc. Zool. Soc. London 1898:116.

Atractus multicinctus—Boulenger, 1913; Proc. Zool. Soc. London 1913:1035.

Atractus multicinctus—Savage, 1960; Misc. Publ. Mus. Zool. Univ. Michigan 112:54.

Holotype: Specimen originally in the Museo Cívico di Historia Natural di Milano (MCHNM), from "Lima" without more precise data (see Jan and Sordelli, 1865). Specimen destroyed during World War II (S. Scali, pers. comm.). Savage (1960) considered as the locality to be Lima, capital of Peru (but see Remarks).

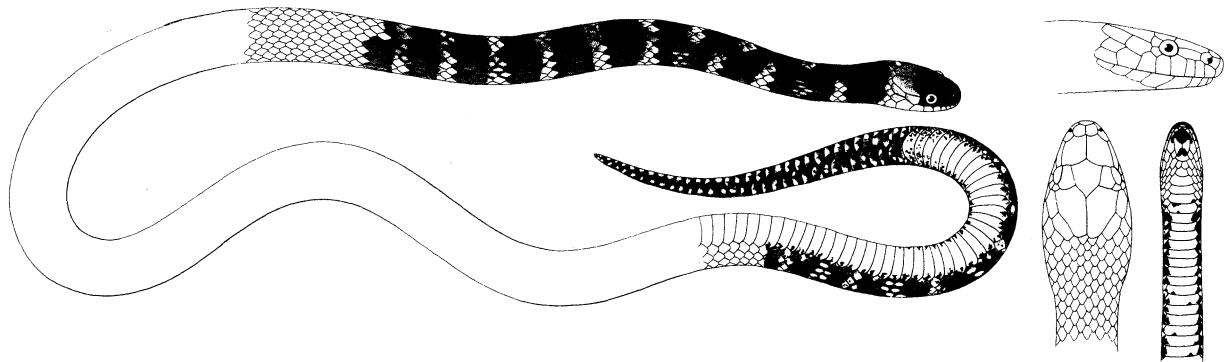


FIGURE 13. General view of original Sordelli's plate of the *Atractus multicinctus*. Modified from Jan & Sordelli (1865).

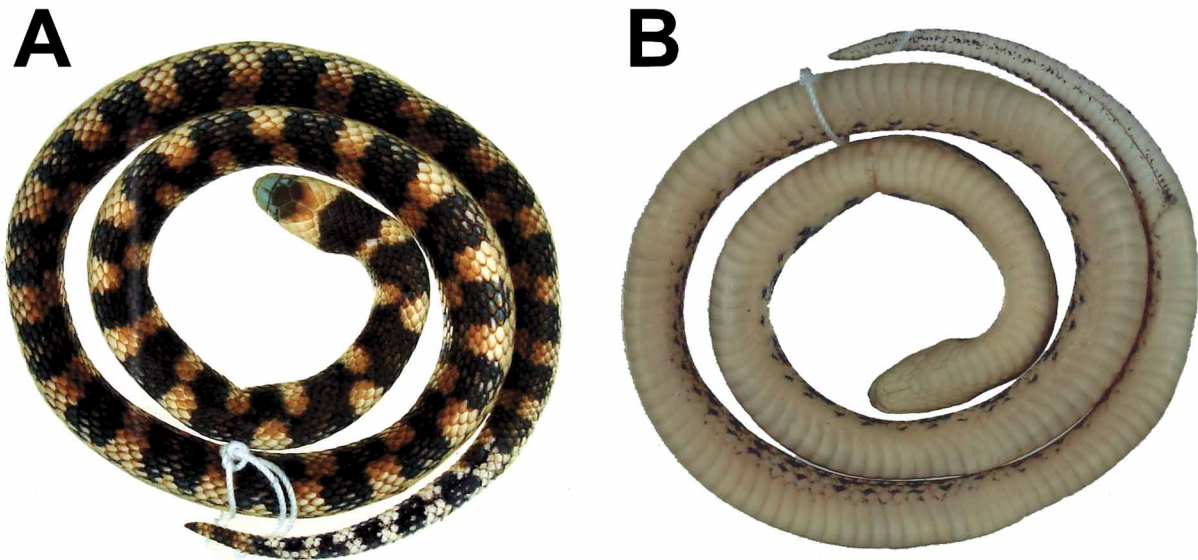


FIGURE 14. Dorsal (A) and ventral (B) views of *Atractus multicinctus* (ICN 7075). SVL 228 mm, CL 35 mm.

Diagnosis: *Atractus multicinctus* is distinguished from all congeners by the combination of the following characters: (1) 17/17/17 smooth dorsal scale rows; (2) two postoculars; (3) loreal long; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) six or seven infralabials, first three contacting chinshields; (7) five or six maxillary teeth; (8) four gular scale rows; (9) four preventrals; (10) 177–184

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ventrals in females, 168–183 in males; (11) 31–36 subcaudals in females, 40–43 in males; (12) dorsal ground colour beige with wide black bands alternating on flanks and occasionally contacting opposite bands in the vertebral region; (13) venter uniformly creamish white; (14) moderate body size in female 312 mm SVL, and small in males 249 mm SVL; (15) tail moderate in females (12.6–13.5% SVL) and long in males (15.3–20.5% of SVL); (16) hemipenis strongly bilobed, semicapitate, semicalyculate.

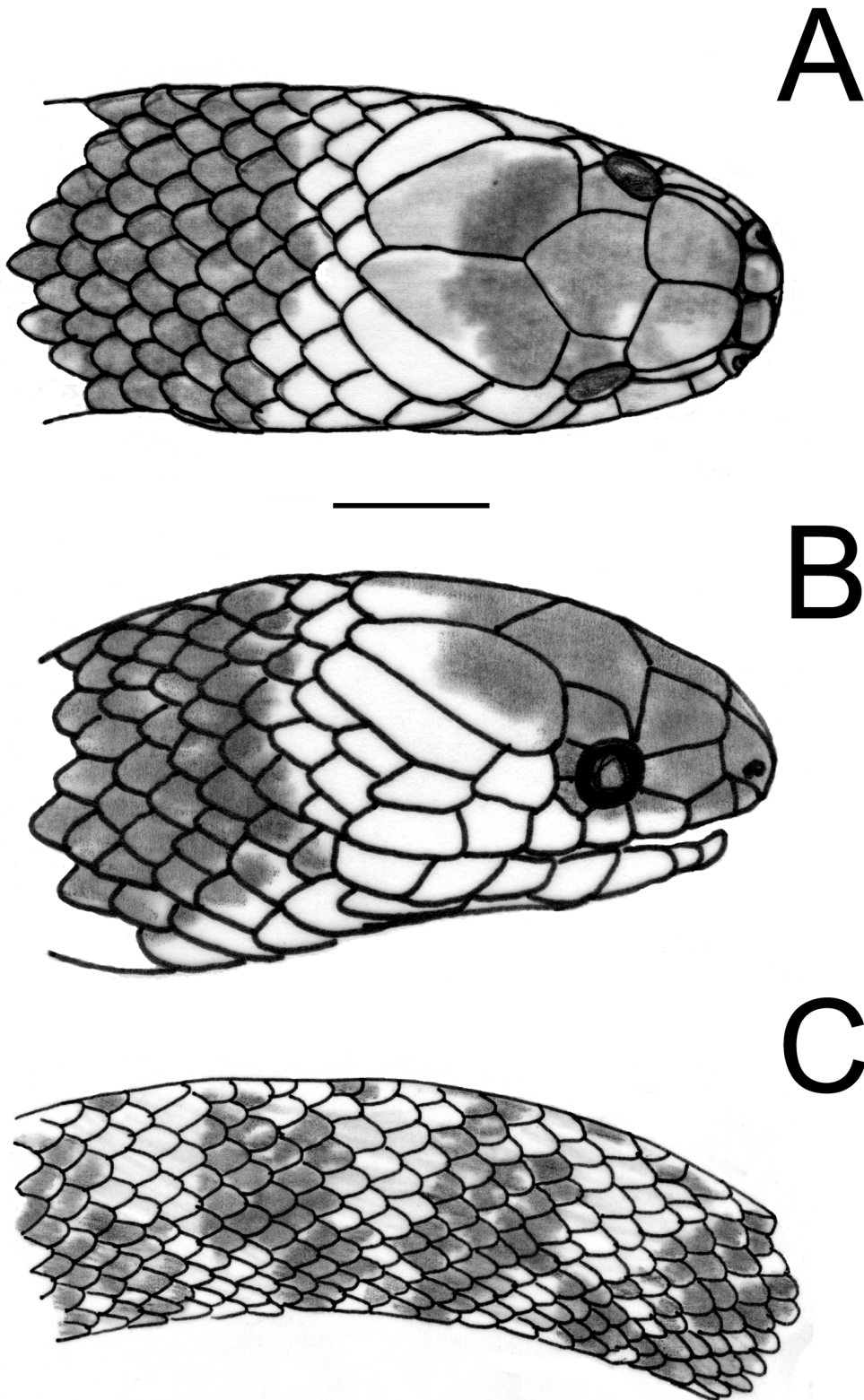


FIGURE 15. Dorsal (A) and ventral views (B) of head and lateral view of body (C) of *Atractus multicinctus* (ICN 7075). Scale = 5 mm.

Comparisons: Among all congeners, *A. multicinctus* shares only with *A. clarki* 17 dorsal scale rows, 31–36 subcaudals in females and 34–43 in males, generally six infralabials, generally three infralabials contacting chinshields, five to seven large and well-spaced maxillary teeth, body diameter below 5 mm, banded colour pattern, wide cream occipital band constricted dorsally, venter predominantly creamish white. *Atractus multicinctus* differs from *A. clarki* by having 177–183 ventrals in males, dorsal ground colour beige or creamish white crossed by black bands of similar width or broader than light interspaces (vs. 153–165 ventral in males and dorsal ground colour black with narrow light bands smaller than black interspaces).

Description: Head twice as long as wide, slightly arched in lateral view, rounded in dorsal view; snout truncate in lateral view, slightly rounded in dorsal view; cervical constriction indistinct; rostral subtriangular in frontal view, broader than high, poorly visible in dorsal view; internasal longer than wide; internasal suture sinistral with respect to prefrontal suture; prefrontal as long as wide; supraocular sub-trapezoidal, twice as long as wide; frontal pentagonal, as long as wide; parietal about twice as long as wide; nasal divided; nostril between pre- and postnasal; prenasal twice as high as long; postnasal about as high as long, as high as prenasal; loreal long, contacting second and third supralabials; pupil round; postoculars equally high; upper postocular slightly longer than lower postocular; temporals 1+2; first temporal about three times as long as high; upper posterior temporals elongate, about three times as long as wide; seven supralabials, third and fourth contacting orbit; first two supralabials equally high, smaller than third and fourth supralabials; sixth higher and seventh longer than remaining supralabials; symphyisial subtriangular, twice as broad as long; six infralabials, first three contacting chinshields; first pair in contact behind symphyisial, preventing symphyisial/chinshields contact; chinshields three times longer than wide; four gular scale rows; four preventrals; 17/17/17 smooth dorsal scale rows; dorsals lacking apical pits, supra-anal tubercles, and keels; caudal spine moderate, conical, and rhomboid.

Maxillary arch: Arched in dorsal view, with four prediastemal and one or two postdiastemal teeth; first three teeth large, similar in size, moderately spaced, curved posteriorly, angular in cross section, robust at base, and narrower at apices; maxillary diastema moderately long; postdiastemal teeth significantly smaller than last prediastemal tooth; lateral process moderately developed, lacking posterior projection.

Colour in preservative: Dorsum of head with black cephalic cap extending from rostral to anterior region of parietals; occipital band cream covering mid-posterior parietal, temporal, and occipital regions; background of head black to dorsal margin of supralabials ventrally and to the level of the postocular posteriorly; supralabials uniform cream below to dorsal spots; mental region, preventrals, and venter immaculate cream; tail cream with small black dots concentrated on middle portion between median subcaudal sutures; dorsal ground colour of body beige or reddish light brown, with about 30 black bands (three scales long) alternating on the body flanks; bands reaching first or second scale rows ventrally and frequently connecting the opposite band in vertebral region; bands laterally rhomboid shaped and occasionally scattered with light pigment at the centre; around 30 beige interspaces smaller or of similar size to black bands (two or three scales long); interspaces covered with small diffuse black dots in the flanks and irregular black blotches at paraventral region (two scales long); irregular blotches frequently connected to black bands dorsally.

Hemipenis morphology (everted organ $n = 1$): Retracted organ bifurcates at fifth and extends to the level of eighth subcaudal. Hemipenis strongly bilobed, semicapitate, semycalicate; lobes clearly distinct from *capitulum* and of equivalent size to hemipenial body; lobes centrifugally oriented, subcylindrical with flattened apices; left lobe longer than right; lobes and *capitulum* covered with small and concentrated spinulate calyces; spinules gradually relaxed with papillae toward apices of lobes; capitular groove indistinct on the sulcate and barely evident on the asulcate side of hemipenis; *capitulum* situated just above *sulcus spermaticus* bifurcation, and smaller than hemipenial body on the sulcate side; *capitulum* limited by moderately sized hooked spines arranged in diagonal series on the sulcate side of organ; *capitulum* retracted medially on the asulcate side, and slightly longer than hemipenial body; intrasulcar region of *capitulum* with three narrow and large hooked spines among calyces; *sulcus spermaticus* bifurcates at basal portion of hemipenial body; *sulcus spermaticus* branches running parallel to mid-*sulcus* extension before diverging at

the base of lobes; branches of *sulcus spermaticus* with centrifugal orientation, reaching tip of lobes; *sulcus spermaticus* margins moderately expanded, bordered with spinules before *sulcus spermaticus* bifurcation and later with papillae; hemipenial body subelliptical, slightly broader than *capitulum*, uniformly covered with moderately hooked spines; spines concentrated on lateral portion of sulcate side and region adjacent to *capitulum* on the asulcate side; basal naked pocket restricted to proximal region of hemipenial body; basal portion of hemipenis with longitudinal plicae and disperse spinules (Fig. 4b).

Variation: Largest male 249 mm SVL, 51 mm CL; largest female 312 mm SVL, 42 mm CL; tail 15.3–20.5% (\bar{x} = 18.3; SD = 2.7; n = 3) SVL in males, 12.6–13.5% (n = 2) SVL in females; 168–183 (\bar{x} = 177; SD = 7.9; n = 3) ventrals in males, 177–184 (n = 2) in females; 40–43 (\bar{x} = 41; SD = 1.7; n = 3) subcaudals in males, 31–36 (n = 2) in females; 9–10 (n = 2) dorsal scale rows at the level of second subcaudal; 3.1–4.6 mm (n = 2) diameter of body; 5 (n = 2 sides) or 6 (n = 4 sides) maxillary teeth.

Distribution: Pacific coast of Colombia and Ecuador from Buenaventura (03°54'N, 77°04'W) in the department of Valle del Cauca of Colombia to Paramba (0°49'S, 78°21'W) in the province of Los Rios of Ecuador. *Atractus multicinctus* inhabits rainforest at elevations of 0–770 m (Fig. 2).

Remarks: Jan in Jan and Sordelli (1865) described *Rabdosoma badium* var. *multicinctus* on the basis of a specimen from Lima without specify country provenance. Boulenger (1896) synonymized *Atractus badium multicinctus* with the nominal species (*A. badius*). Subsequently, Boulenger (1898) resurrected *A. multicinctus* based on a specimen from Paramba, province of Imbabura, Ecuador, establishing that ventral count differences guarantee both species' distinction. Boulenger (1913) reported an individual of *A. multicinctus* from Peña Lisa, Condoto in the department of Chocó, Colombia. Savage (1960) agreed with Boulenger's associations and reported five additional specimens of *A. multicinctus* from the Pacific versant of Ecuador. Our study of the original plate from *R. b. multicinctum*, the examination of Boulenger's sample, and analysis of additional specimens from Buenaventura corroborates identifications by Boulenger (1898, 1913) and Savage (1960).

Savage (1960) interpreted the type locality of *A. multicinctus* as the capital of Peru and suggested this provenance was in error because *Atractus* records are lacking for the Pacific coast of Peru. However, Jan and Sodelli (1865) did not provide any information about the country origin of the holotype of *A. multicinctus*. In our view, there is no compelling evidence in the original publication to recognize the type locality of *A. multicinctus* as Lima capital of Peru. In the course of this study we found a locality called Lima in the Pacific lowlands of Ecuador in the province of Los Rios, 200 km south of Paramba (the southernmost record of the species, see Savage 1960), which could be considered as the type locality. However, the locality of Lima in Los Rios (also called Playa Lima) is a small hamlet that has its origins in the old Playa Lima farm, and was formed about 50 to 80 years ago. Even the Playa Lima farm is not as old as the specimen described by Jan (D. Cisneros-Heredia, pers. comm.). Therefore, although we agree with Savage (1960) that the holotype of *A. multicinctus* is not from Peru, the available evidence precludes a type locality restriction to Lima in the province of Los Rios, Ecuador.

Atractus paucidens Despax, 1910

Fig. 16

Atractus (Atractopsis) paucidens Despax, 1910; Bull. Mus. Hist. Nat. Paris 16:372.

Atractus paucidens—Savage, 1960; Misc. Pub. Mus. Zool. U. Michigan 112:62.

Holotype: Adult female, housed at Musée National d'Histoire Naturelle (MNHN 1906.245), from Santo Domingo de Los Colorados (00°15'S, 79°09'W, ca. 600 m), province of Pichincha, Ecuador (photographs examined).

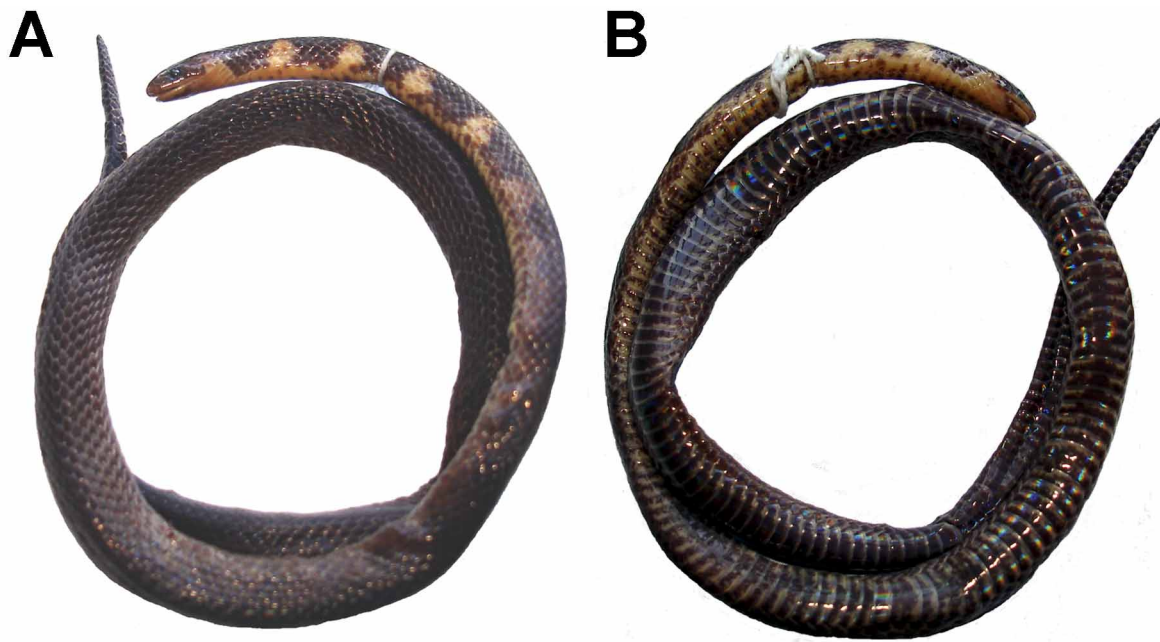


FIGURE 16. Dorsal (A) and ventral (B) views of *Atractus paucidens* (MZUSP 7703). SVL 263 mm, CL 49 mm.

Diagnosis: *Atractus paucidens* is distinguished from all congeners by the following combination of characters: (1) 17/17/17 smooth dorsals; (2) two postoculars; (3) loreal long; (4) temporals generally 1+2; (5) generally seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first four contacting chinshields; (7) five or six maxillary teeth; (8) generally four gular scale rows; (9) four preventrals; (10) 169–190 ventrals in females, 169–175 in males; (11) 31–38 subcaudals in females, 43–45 in males; (12) dorsal ground colour black with narrow cream bands on the flanks; (13) venter beige, heavily scattered with black dots to uniformly black; (14) moderate body size in females 419 mm SVL and small in males 263 mm SVL; (15) tail long in females (15.1–16.0% SVL) and males (18.6–21.3% SVL); (16) hemipenis moderately bilobed.

Comparisons: Among all congeners, *Atractus paucidens* shares the occasional occurrence of preoculars and long tail length in both sexes only with *A. favae*. *Atractus paucidens* differs from *A. favae* in having the first pair of infralabials preventing symphisial/chinshields contact, loreal long, 31–38 subcaudals in females and 43–45 in males, tail 15.1–16.0% SVL in females and 18.6–21.3% in males (vs. symphisial/chinshield contact, short loreal, 66 subcaudals in female and 57–67 in males, tail 33.5% SVL in females and 40.2% in male).

Description: Head twice as long as wide, arched in lateral view, rounded in dorsal view; snout truncate in lateral view, rounded in dorsal view; cervical constriction indistinct; rostral subtriangular in frontal view, broader than high, little visible in dorsal view; internasal as long as wide; internasal suture sinistral with respect to prefrontal suture; prefrontal as long as wide; supraocular sub-trapezoidal, slightly longer than wide; frontal sub-triangular, as long as wide; parietal twice as long as wide; nasal divided; nostril located between prenasal and postnasal; prenasal about three times as high as long; postnasal smaller than prenasal, about twice as high as long; loreal long, contacting second and third supralabials; small preocular (as long as high) occasionally present, preventing orbit/loreal contact; pupil subelliptical; two postoculars; upper postocular slightly longer than lower and lower slightly higher than upper postocular; temporals 1+2; first temporal twice as long as high; upper posterior temporal elongate, four times as long as wide; generally seven supralabials, third and fourth contacting orbit; second and third supralabials of similar size and slightly higher than first; sixth higher and seventh longer than remaining supralabials; symphisial semicircular, twice as broad as long; generally seven infralabials, first four contacting chinshields; first pair of infralabials in contact behind symphisial, preventing symphisial/chinshields contact; chinshields three or four times as long as wide; generally four gular scale rows; generally four preventrals; 17/17/17 smooth dorsal scale rows; dorsals

lacking apical pits, supra-anal tubercles, and kells; caudal spine moderated, conical, and rhomboid.

Maxillary arch: Arched in dorsal view with three or four prediastemal and two postdiastemal teeth; prediastemal teeth large, of similar size, curved posteriorly, well spaced, angular in cross section, robust at base, and narrower at apices; long maxillary diastema; postdiastemal teeth half size of the last prediastemal tooth; lateral process of maxilla well developed, lacking posterior projection.

Colour in preservative: Dorsum of head uniformly dark brown; temporal region slightly lighter (brown); background of head dark brown to middle of supralabials; temporal region and posterior portion of seventh supralabial creamish yellow; ventral edge of supralabials and proximal margin of infralabials cream; proximal region of infralabials and anterior portion of chinshields dark brown; gular region and preventrals predominantly beige, occasionally with disperse dark brown spots; anterior region of belly with diffuse dark brown spots; mid region to posterior third of venter uniformly black; tail uniformly black; dorsal ground colour of body black, with five to seven rounded lateral beige blotches restricted to anterior region of body; blotches (two or three scales long and five or six scales wide) reaching paraventral region not in contact with opposite blotches on vertebral line; blotches gradually darker posteriorly; black interspaces between light blotches five or six scales long.

Variation: Largest male 263 mm SVL, 49 mm CL; largest female 412 mm SVL, tail amputated; tail 18.6–21.3% (\bar{x} = 20.2; SD = 1.4; n = 3) SVL in males and 15.1–16.0% (\bar{x} = 15.5; SD = 0.4; n = 3) in females; 169–175 (\bar{x} = 170.7; SD = 3.1; n = 3) ventrals in males, 169–190 (\bar{x} = 182.7; SD = 9.3; n = 4) in females; 43–45 (\bar{x} = 44.3; SD = 0.7; n = 4) subcaudals in males, 31–38 (\bar{x} = 35.3; SD = 3.8; n = 3) in females; 6 (n = 3 sides) or 7 (n = 11 sides) infralabials; 1+1 (n = 2 sides), 0+2 (n = 1 side) or 1+2 (n = 11 sides); 6 (n = 2 sides) or 7 (n = 10 sides) infralabials; 2 (n = 1 side), 3 (n = 3 sides) or 4 (n = 6 sides); 3 (n = 1) or 4 (n = 4) preventrals; preoculars absent (n = 11) or present (n = 5); 8 (n = 7 sides) or 9 (n = 3 sides) dorsal scale rows at the level of second subcaudal; 5 (n = 4 side) or 6 (n = 5 side) maxillary teeth; retracted hemipenis bifurcates from fifth to tenth and extends from 10th to 11th subcaudal (n = 2).

Distribution: Pacific coast of Ecuador from the mouth of the Pitzara River (02°00'N, 79°09'W) to Santo Domingo de Los Colorados (00°15'S, 79°09'W) in the province of Pichincha. *Atractus paucidens* inhabits rainforest at elevations of 200–600 m (Fig. 6).

Remarks: Despax (1910) described *Atractus (Atractopsis) paucidens*, new subgenus and species distinguishing it from remaining *Atractus* by having a reduced maxillary bone with only four large teeth decreasing in size posteriorly. In a subsequent paper, Despax (1911) figured the maxilla of *Atractopsis paucidens*. Savage (1960) did not recognize *Atractopsis*, pointing out that the maxilla illustrated by Despax (1911) was apparently broken and for that reason lacked posterior teeth. Savage (1960) advocated that this taxon was concordant with other *Atractus* species with regard to maxillary dentition and also agreed in other morphological features, and therefore allocated it tentatively to the *A. trilineatus* species group. Savage (1960) reported the second individual of *A. paucidens* from Pitzara River at province of Pichincha. We report herein seven (four males and three females) additional *A. paucidens*, all topotypes. Although the study of maxillary bones of these specimens does not corroborate Savage's suspicion of a broken element (the species displays low number of maxillary teeth, see above), there is no reason to recognize the subgenus *Atractopsis* according to the actual *Atractus* concept (*sensu* Savage 1960). Furthermore, as suggested by Savage (1960), *A. paucidens* shows great morphological similarity to other *Atractus* from Pacific coast of Ecuador and Colombia (see discussion).

Atractus typhon sp. nov.

Figs. 17, 18

Holotype: Adult male, ICN 10901, from Reserva Natural Biotopo Selva Húmeda (01°25'N, 78°17'W, ca. 600 m), vereda Berlín, El Diviso, municipality of Barbacoas, department of Nariño, Colombia, collected by B. Cépeda and J. J. Mueses-Cisneros on 14 July 2006.

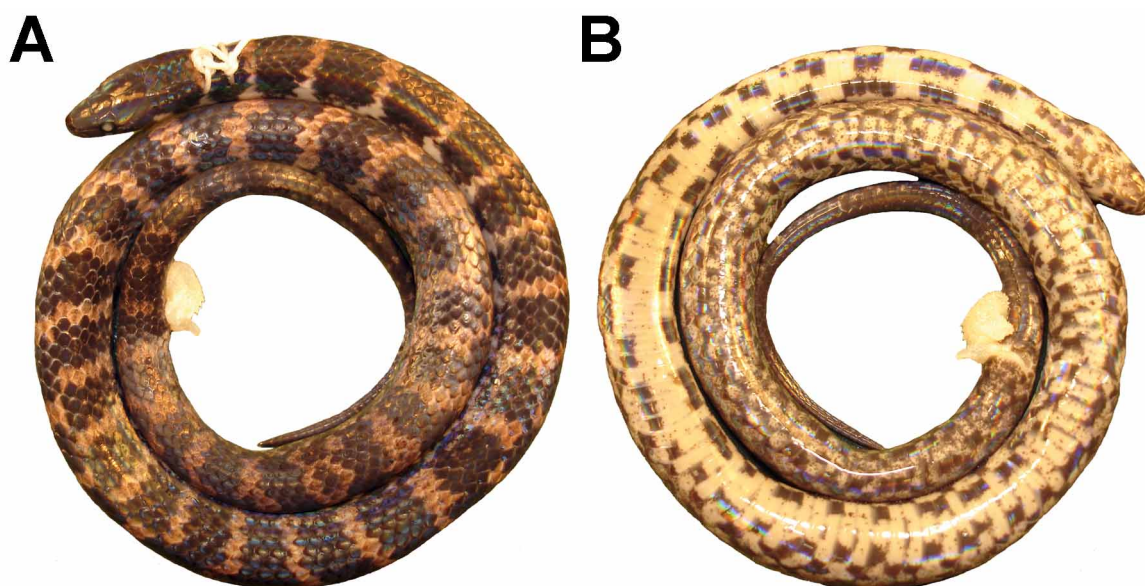


FIGURE 17. Dorsal (A) and ventral (B) views of the holotype of *Atractus typhon* sp. nov. (ICN 10901). SVL 293 mm, CL 79 mm.

Diagnosis: *Atractus typhon* is distinguished from all congeners by the following combination of characters: (1) 15/15/15 smooth dorsal; (2) two postoculars; (3) long loreal; (4) temporals 1+2; (5) seven supralabials, third and fourth contacting orbit; (6) seven infralabials, first three contacting chinshields; (7) seven maxillary teeth; (8) three gular scale rows; (9) three preventrals; (10) 156 ventrals in the single male; (11) 58 subcaudals in male; (12) dorsal ground colour beige with broad black bands alternated in the flanks; (13) venter cream with dark brown squared blotches concentrated on lateral portion of ventrals; (14) moderate body size, with males reaching 293 mm SVL; (15) long tail (27.0% SVL); (16) hemipenis moderately bilobed, semicapitate, semicalyculate.

Comparisons: *Atractus typhon* is distinguished from all congeners, except *A. iridescens*, by having a large lateral projection in the basal portion of hemipenis. *Atractus typhon* differs from *A. iridescens* by having 15/15/15 dorsals and 58 subcaudals in males (vs. 17/17/17 dorsals and 36–38 subcaudals in males).

Description of holotype: Adult male, SVL 293 mm, CL 79 mm (27% SVL); head length 13.0 mm (4.4% SVL); head width 6.2 mm (48% of head length); body diameter 7.3 mm (2.6% of SVL); interocular distance 3.9 mm; rostro-orbital distance 3.9 mm; naso-rostral distance 3.0 mm; head flattened in lateral view, subtriangular in dorsal view; snout truncate in lateral view, rounded in dorsal view; cervical constriction indistinct; rostral subtriangular in frontal view, 1.5 mm wide, 1.2 mm high, poorly visible in dorsal view; internasal 0.9 mm long, 0.9 mm wide; internasal suture sinistral with respect to prefrontal suture; prefrontal 2.5 mm long, 2.3 mm wide; supraocular subtriangular, 1.9 mm long, 1.0 mm wide; frontal subtriangular, 3.1 mm long, 2.7 mm wide; parietal 5.1 mm long, 2.8 mm wide; nasal divided; nostril almost restricted to prenasal; prenasal 0.6 mm high, 0.3 mm long; postnasal 0.4 mm high, 0.5 mm long; loreal 2.4 mm long, 0.3 mm high, contacting second and third supralabials; eye diameter 1.6 mm; pupil round; two postoculars of similar size; upper postocular 0.4 mm high, 0.4 mm long; temporals 1+2; first temporal 1.6 mm long, 0.9 mm high; upper posterior temporal elongate, 4.2 mm long, 1.0 mm wide; seven supralabials, third and fourth contacting orbit; second supralabial higher than first and with similar size of third; sixth (left side) and seventh (right side) higher and longer than remaining supralabials; symphyisial subtriangular, 1.7 mm wide, 0.5 mm long; seven infralabials, first three contacting chinshields; first pair of infralabials in contact behind symphyisial, preventing symphyisial/chinshields contact; chinshields 2.9 mm long, 0.9 mm wide; three gular scale rows; three preventrals; 156 ventrals; 58 subcaudals; 15/15/15 smooth dorsal scale rows; dorsals lacking

apical pits, supra-anal tubercles, and keels; six dorsal scale rows at the level of second subcaudal; caudal spine long, conical, narrow, and acuminate.

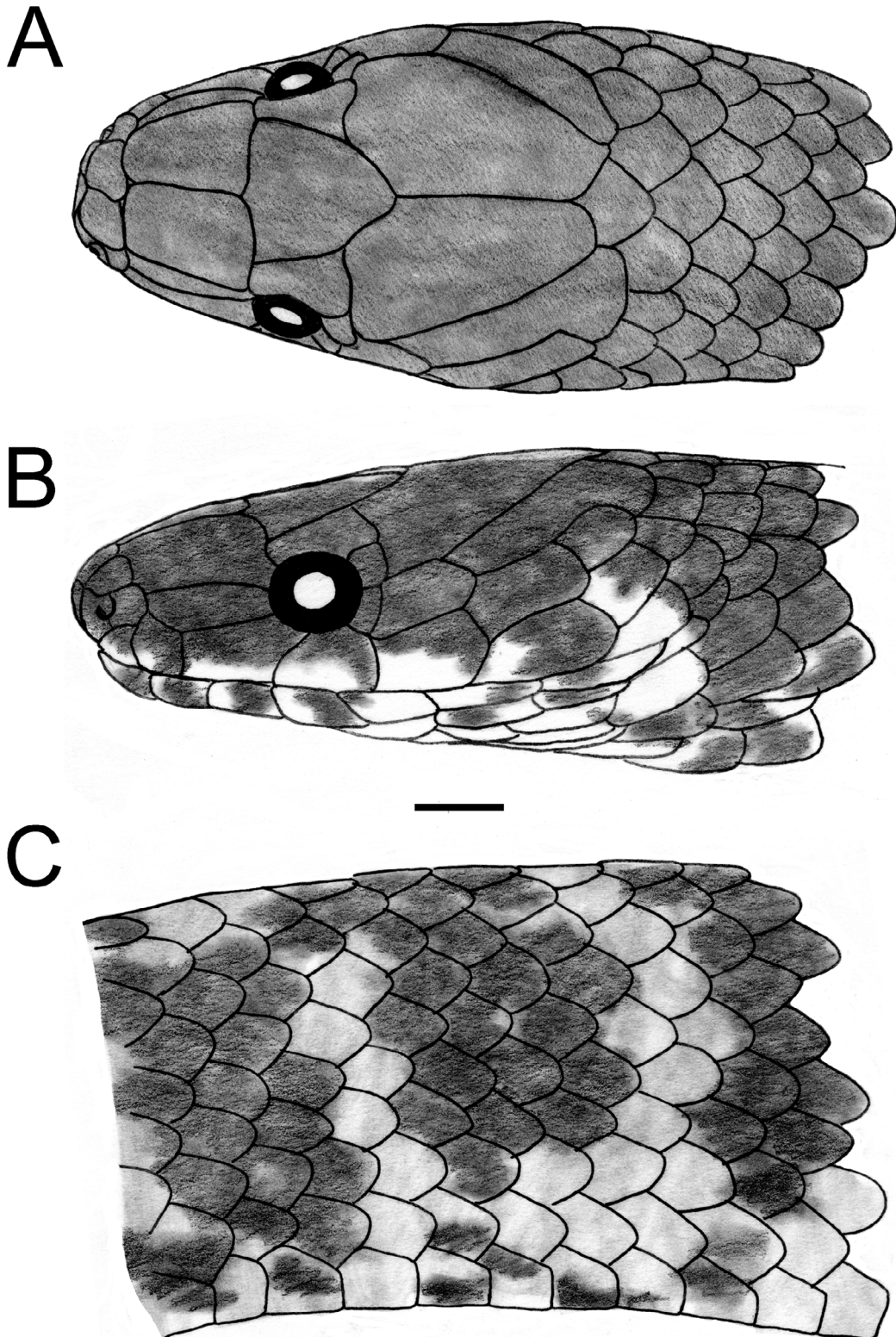


FIGURE 18. Dorsal (A) and lateral (B) views of head and lateral view of body (C) of the holotype of *Atractus typhon* sp. nov. (ICN 10901). Scale = 10 mm.

Maxillary arch: Arched in dorsal view, with six prediastemal and one postdiastemal teeth; prediastemal teeth large, of similar size, curved posteriorly, angular in cross section, robust at base, and narrower at apices; first four teeth poorly spaced, space between 4–5th and 5–6th teeth moderately long; maxillary diastema long; postdiastemal teeth half size of the last prediastemal tooth; lateral process moderately developed, lacking posterior projection.

Colour in preservative of holotype: Dorsum of head uniformly black; background of head uniformly black to ventral margin of supralabials; supralabials black, except for cream area on the anterior portions of each scale; mental region mostly black with light spots covering anterior region of each scale; fifth infralabial mostly cream; belly anteriorly cream with squarish black blotches concentrated on lateral portion of ventrals; ventral blotches lacking median connection at midbody; posterior third of belly with ground colour creamish gray; ventral blotches more concentrated posteriorly, forming a barely variegated pattern; lower surface of tail black, with diffuse cream spots; dorsal ground colour reddish light brown with 39–40 alternating black bands (three to five scales long), decreasing in size posteriorly; opposite bands connected along vertebral line, and reaching paraventral region along all of body; 43 reddish brown interspaces (one to three scales long), increasing in size from about midbody; paraventral region cream between dorsal bands; tail dorsally most black, with light interspaces weakly defined.

Hemipenis morphology (everted organ $n = 2$): Hemipenis moderately bilobed, semicapitate, and semicalyculate; lobes distinct of and restricted to distal region of *capitulum*; lobes attenuated and barely centrifugally oriented; lobes and *capitulum* uniformly covered with small spinulate calyces; calyces transversally arranged, forming conspicuous calyculate flounce above lobular region; capitular groove indistinct on the sulcate and weakly distinct on the asulcate side of organ; barely defined *capitulum* situated just above *sulcus spermaticus* bifurcation; *capitulum* slightly higher on the sulcate and smaller on the asulcate side than hemipenial body; *sulcus spermaticus* bifurcates at middle of organ; *sulcus spermaticus* branches centrifugally oriented, running to the tips of lobes; margins of *sulcus spermaticus* stout and narrow, bordered with spinules along sulcus' extension; hemipenial body subelliptical, broader than *capitulum*, covered with moderate hooked spines; large spines located at lateral portion of sulcate side of the hemipenis; basal naked pocket extends to distal portion of hemipenial body; proximal region of hemipenis with longitudinal plicae and a large lateral projection (Fig. 9b).

Etymology: The specific epithet “*typhon*” is derived from the name of the Greek monster Typhon (Greek: Τυφον). According to the Greek myth, Typhon married Echydna and fathered most mythological monsters that populated Earth. Typhon was described by the Greek writer Hesiod as one of the most fearsome of all creatures, “covered by a hundred serpent heads with dark flickering tongues flashing fire from their eyes”. This word is employed herein to allude to the impressive aspect of *Atractus typhon*.

Distribution: Known only from Barbacoas in the Pacific versant of Cordillera Occidental at the department of Nariño, Colombia. *Atractus typhon* inhabits rainforest at 600 m elevations (Fig. 6).

Key to Pacific lowlands species of *Atractus*

1. Contact between symphyisal and chinshield scales, dorsum and belly entirely black..... *A. melas*
- First pair of infralabials preventing symphyisal/chinshields contact, dorsum and belly never uniformly black 2
2. 15/15/15 dorsal scale rows..... 3
- 17/17/17 dorsal scale rows..... 4
3. Ventrals in males more than 155, subcaudals more than 45, dorsum with dark bands and light interspaces of similar size along body *A. typhon*
- Ventrals in males, fewer than 130, subcaudals fewer than 40, dorsum with irregular blotches decreasing in size posteriorly..... *A. echidna*
4. First two infralabials contacting chinshields, venter light with dark dots restricted to lateral portion of ventral scales forming paraventral lines..... *A. microrhynchus*
- First three or four infralabials contacting chinshields, venter creamish white or black but never having dark dots restricted to lateral portion of ventrals forming paraventral lines- 5

5. Venter heavily pigmented, at least posterior region uniformly black 6
 - Venter uniformly creamish white, occasionally with small black dots concentrated on posterior region of body but never entirely black 7
6. Preocular scales absent, 135–144 ventrals and 25–37 subcaudals in females, 135–143 ventrals and 33–38 subcaudals in males *A. iridescens*
 - Preocular scales occasionally present, 169–190 ventrals and 31–38 subcaudals in females, 169–175 ventrals 43–45 subcaudals in males *A. paucidens*
7. Dorsal ground colour light with round dark blotches paired on paravertebral region and decreasing in size posteriorly 8
 - Dorsal ground colour dark with alternating light transversal bands reaching paraventral region of flanks along all of body length, bands sometimes attain similar size to light interspaces 9
8. 180–189 ventrals, two postdiastemal teeth, venter immaculate creamish white *A. boulengerii*
 - 33 ventrals, single postdiastemal tooth, venter with dark brown dots posteriorly *A. medusa*
9. 177–183 ventrals in males, dorsal ground colour beige with dark brown bands similar in size to light interspaces, venter immaculate creamish white *A. multicinctus*
 - 153–165 ventrals in males, dorsal ground colour black with thin transversal light bands, venter with dark pigmentation invading lateral portion of ventral scales *A. clarki*.

Discussion

Savage (1960) defined three species groups of *Atractus* based on overall similarity among characters including pholidosis, hemipenis, and colour pattern. Only the *A. elaps* group appears to be monophyletic (Fernandes 1995; Passos 2008). The other two groups (*A. badius* and *A. trilineatus*) require revision because of the absence of unambiguous diagnostic characters that define each of them, as well as the significant increase in recognized species in the genus (Passos 2008). The species considered herein fall into two robust and geographically defined *Atractus* assemblages, diagnosable from all congeners in sharing non-ambiguous morphological features (Passos 2008).

The first species group we recognize among the Pacific lowland taxa is the *paucidens* group, which corresponds to Despax's subgenus *Atractopsis*. However, because a robust phylogenetic hypothesis is still lacking for *Atractus* we prefer to use, at this moment, the *A. paucidens* group within a context of exclusive combinations of characters without necessarily representing monophyletic lineages. Consequently, the *A. paucidens* species group is herein defined by sharing the following features (numbers correspond to diagnostic characters used in species accounts above): (6) generally six infralabials, first three contacting chinshields; (12) dorsum dark brown or black, occasionally with blotches or bands alternating on the flanks; (13) belly uniformly black or heavily pigmented with dark brown blotches or dots on the lateral portion of ventrals or posterior region of body; (14) small to moderate body size; (15) long tail females and males; (16) hemipenis moderately bilobed, slightly semicapitate, non-calyculate, and (as far as is known) lateral projection on the proximal region of hemipenis (see below). The following species are placed in this group: *A. echidna*, *A. iridescens*, *A. melas*, *A. microrhynchus*, *A. paucidens*, and *A. typhon*.

The other group, for which we propose the name *multicinctus*, includes all remaining Pacific lowland species of *Atractus* and can be defined by the following combination of character states: (6) seven infralabials, generally first four contacting chinshields; (12) dorsum light or dark with transverse bands or blotches generally decreasing in size posteriorly; (13) belly creamish white, with only small dark dots covering lateral portion of ventrals or posterior region of body; (14) moderate body size; (15) moderate to long tail in females and males; (16) hemipenis strongly bilobed, semicapitate, semicalyculate. The following species are placed on this group: *A. boulengerii*, *A. clarki*, *A. medusa*, and *A. multicinctus*.

At least the basal hemipenial projection (see Fig. 9b) seems to be a derived *Atractus* condition and may support the *A. paucidens* group as a natural assemblage (Passos 2008). However, given that fully everted hemipenes are lacking for some species in that group (i.e., *A. echidna*, *A. melas*, *A. microrhynchus*, and *A. paucidens*) we cannot use it as a lone feature for the group's diagnosis to date. Even so, it is most likely this character is widespread within the *paucidens* group rather than restricted to *A. iridescens* and *A. typhon*.

because these two species are probably not sister taxa (P. Passos, unpubl. data). Although the basal hemipenial projection may be homologous with the large basal clasp displayed in some dipsadine genera (e.g., *Chapinophis* and *Omoadiphas*), the reduction of the basal expansion, lateral projection re-orientation, and round apices would still be exclusive to the *paucidens* group.

The hemipenis of the *multicinctus* species group is characterized and unambiguously defined by very long lobes relative to a subelliptical and broader hemipenial body, with a basal bifurcation of the *sulcus spermaticus*. Myers (2003) considered the long hemipenial lobes of *A. clarki* to be a plesiomorphy. Although long lobes and basal bifurcation of the *sulcus spermaticus* correspond to symplesiomorphic features within Dipsadinae (Fernandes 1995; Zaher 1999), the long lobes with a basal bifurcation of the *sulcus spermaticus* and subelliptical hemipenial body of the *A. multicinctus* group apparently represents character state reversal in the cryptic goo-eaters (Fernandes, 1995; P. Passos, unpubl. data). Therefore, we suggest that regardless of their relationship to each other, the two species groups defined herein probably correspond to natural assemblages, and (in an operational perspective), can facilitate future taxonomic progress within this specious and complex genus.

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Appendix I

Specimens examined

Individuals marked with “*” had at least one hemipenis prepared in the fully everted condition.

Atractus Boulengerii: Colombia, Valle Del Cauca, Anchicayá, Bajo Anchicayá: (UV-C 6591).

Atractus clarki: Colombia, Antioquia, Anori: (MHUA 14000); Chocó: Andagoya: (MLS 1213), Istmina: (MLS 1214); Valle del Cauca: Restrepo: (ICN 10826*).

Atractus echidna: Colombia: Nariño: Robles: Corregimiento Flor de la Briza: Estero San Antonio: (UV-C 7718, holotype).

Atractus iridescens: Colombia: Chocó, Condoto, Peña Lisa: (NHM 1914.5.21.49), Nuqui: (IAvH 4539), Rio San Juan: (MLS 1212), Quibdó, Pacurita: (ICN 10904); Nariño, Barbacoas, El Diviso, Vereda Berlin, Reserva Natural Biotopo Selva Húmeda: (ICN10902*, 10903*).

Atractus cf. iridescens: Colombia: Antioquia: San Pedro de Arama: (CSJ 563).

Atractus medusa: Colombia: Cauca: Guapi: Isla de Gorgona (IAvH 2981*, holotype).

Atractus melas: Colombia, Chocó, Quibdó: (MLS 2537); Valle del Cauca: (UV-C 8533); Juntas: (NHM 1946.1.6.33, holotype).

Atractus multicinctus: Colombia: Chocó: Condoto, Peña Lisa: (NHM 1914.5.21.47–48); Valle del Cauca, Buenaventura, Queremal: (ICN 7075*), road to Buenaventura (USNM 151723).

Atractus paucidens: Ecuador, Pichincha, Santo Domingo de Los Colorados: (MZUSP 7703, USNM 232725–26), Finca La Esperanza: (EPN 8729–32).

Atractus typhon: Colombia: Nariño: Barbacoas: Vereda Berlín: El Diviso: (ICN 10901*, holotype).