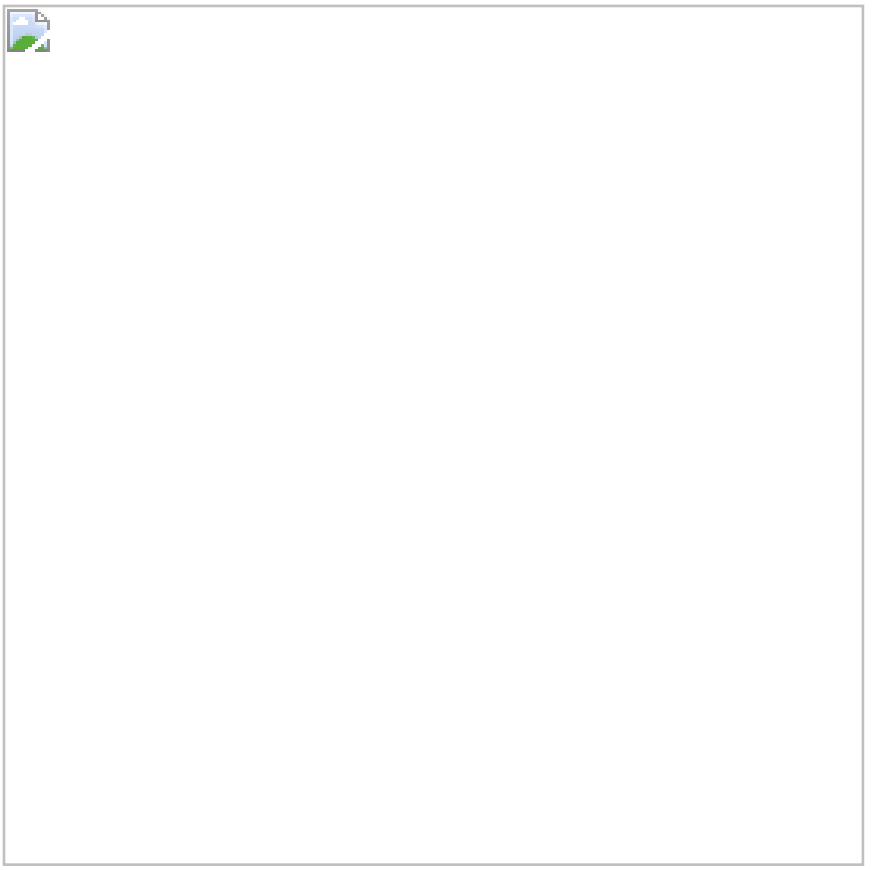

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Morphological Extremes—Two New Snakes of the Genus *Atractus* from Northwestern South America (Colubridae: Dipsadinae)

CHARLES W. MYERS[1] AND WALTER E. SCHARGEL[2]

ABSTRACT

Two new Andean snakes exhibit extreme morphology in a genus of South American dipsadine colubrids. One, *Atractus attenuatus*, new species, is a slender, exceptionally attenuated snake 420 mm in total length (adult male holotype), with 17 scale rows, a high ventral + subcaudal count (226), and an extremely vague pattern of numerous, closely spaced, indistinct dark crossbars on a brown ground color. *Atractus attenuatus* comes from 1000 m elevation in the northern end of the Cordillera Central (Sabanalarga, Antioquia, Colombia). A geographic neighbor, *Atractus sanguineus* Prado, is of similar morphology but differs in having distinct, widely spaced crossbars on a red ground color.

At another extreme, *Atractus gigas*, new species, is a very robust snake that exceeds a meter in length (adult female holotype 1040 mm in total length), with a hint of pale transverse dorsal bars on a brown ground color. It is the largest known *Atractus*, differing in color pattern and details of scutellation from the several other congeners that attain lengths $>$ 700 mm. The only known specimen has an azygous frontonasal scale that is atypical of colubrids (but is not an obvious aberrancy). *Atractus gigas* comes from 1900 m elevation on the Pacific versant of the Andes (Bosque Protector Río Guajalito, Pichincha, Ecuador).

RESUMEN

Dos serpientes nuevas Andinas exhiben morfología extrema en un género Suramericano de colúbridos dipsadineos. Una de ellas, *Atractus attenuatus*, especie nueva, es una serpiente

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excepcionalmente delgada, de 420 mm en largo total (holotipo macho adulto), con 17 hileras de escamas dorsales, un alto número de ventrales + subcaudales (226), y un patrón muy vago de barras transversales numerosas y cercanas sobre un color de fondo marrón. *Atractus attenuatus* proviene de 1000 m de altitud en el extremo norte de la Cordillera Central (Sabanalarga, Antioquia, Colombia). *Atractus sanguineus* es una especie cercana geográficamente que posee una morfología similar pero difiere en tener barras tranversales bien definidas y espaciadas sobre un color de fondo rojo.

En el otro extremo, *Atractus gigas*, especie nueva, es una serpiente muy robusta con un largo total de 1040 mm (holotipo hembra adulta), que presenta indicios de barras transversales pálidas sobre un color de fondo marrón. Se trata del *Atractus* más grande conocido y difiere de las otras especies en el género que exceden un largo total de 700 mm en aspectos del patrón de coloración y en escamación. El único ejemplar conocido de la nueva especie presenta una escama frontonasal media, atípica en colúbridos (no es una aberración obvia). *Atractus gigas* proviene de una altitud de 1900 m en la vertiente del Pacífico de los Andes (Bosque Protector Río Guajalito, Pichincha Ecuador).

INTRODUCTION

With more than 100 recognized species, *Atractus* is by far the largest genus of colubrid snakes in the New World. The genus is confined almost entirely to the South American mainland, extending northward only to Central Panama. There are some widely distributed species, especially in lowlands east of the Andes, but geographic ranges elsewhere tend to be small, with many taxa being known only from their type localities.

As an aside to other ongoing work on *Atractus*, we describe herein two additional species of presumably limited distribution. The new snakes represent morphological extremes within the genus, the first being notable for its elongated slenderness, the second for its stocky hugeness.

Atractus attenuatus, new species
Figures 1–3, Map 1

HOLOTYPE: AMNH R-19998, an adult male obtained by Hermano Nicéforo María on May 16, 1921, at Sabanalarga, on Cauca River, [6°51′N, 75°49′W, Department of Antioquia], Colombia. The type locality, Sabanalarga (Nicéforo María, 1942: 87, map), lies on the east bank of the Río Cauca at an elevation of about 1000 m (Paynter, 1997: 372), in the northern end of the Cordillera Central.

ETYMOLOGY: The species name *attenuatus* is the passive past participle of the Latin verb *attenuo* (to stretch or make thin), and also (as used here) a derived adjective meaning stretched out and slender.

DIAGNOSIS: *Atractus attenuatus* is distinguished by its exceptionally slender, drawn-out habitus, combined with 17 scale rows, a high ventral + subcaudal count (226), and an extremely vague pattern of numerous, closely spaced, indistinct crossbars. The most relevant comparison is with *Atractus sanguineus*, which has fewer, more widely spaced crossbars that are distinctly darker than the ground color and that are connected by a vertebral dark line. In life, the dorsal ground color of *A. attenuatus* is probably brown, whereas *A. sanguineus* is red. See Comparisons.

DESCRIPTION OF HOLOTYPE

The specimen is a male judged to be adult because the hemipenial spines are mineralized. It is fairly well preserved, undissected except for the tail, and the stratum corneum is largely intact. See table 1 for detailed measurements.

PROPORTIONS AND SCUTELLATION: Total length 420 mm, tail length 66 mm (15.7% of total). Elongated and slenderly proportioned (fig. 1). Body slightly wider than high, rounded ventrolaterally; greatest head width 70.1% of head length from snout to end of parietals and 57.3% of length from snout to end of mandible; head width and greatest body width each 1.7% of SVL. Dorsal scales smooth, lacking apical pits, in 17-17-17 rows. Ventrals 178, anal plate undivided, subcaudals in 48 pairs.

Head (fig. 2) barely wider than neck; snout bluntly rounded in dorsal view, rounded in profile; rostral wider than high, visible from above; internasals small, as wide as long, less

TABLE 1
Measurements[a] (in mm) of Holotypes of *Atractus attenuatus* and *Atractus gigas*

	A. attenuatus adult ♂	*A. gigas* adult ♀
Total length	420	1040
Tail length	66	124
Tail/total length × 100	15.7	11.9
Head length, snout to ends of parietals	9.9	27.5
Head length, snout to end of mandible	12.2	37.5
Head, greatest width	7.0	27.4
Body, greatest width	7	ca. 29
Body, greatest height	6	ca. 28
Eye to snout tip (sagittal)	3.7	10.0
Eye length	1.3	3.6
Lower edge of eye to lip	1.4	4.3
Nasal length	1.8	4.2
Loreal length	2.0	6.3
Loreal, maximum height	1.0	1.9
Internasal, greatest length	1.1	2.8
Internasal, greatest width	1.1	3.5
Internasal suture length	0.9	1.0
Prefrontal, greatest length	3.0	7.0
Prefrontal, greatest width	2.4	6.5
Prefrontal suture length	2.5	5.0
Frontal length	3.0	7.5
Frontal width (anterior)	3.0	7.6
Supraocular length	1.5	4.8
Supraocular, greatest width	1.4	3.9
Parietal, greatest length	5.0	14.5
Interparietal suture length	2.6	7.2
Genial length	3.8	9.7
Genial width	1.5	4.7

[a]Measurements < 12 mm were made with ocular micrometer in a dissecting microscope (Wild M7S), with the main objective displaced coaxially to the left beam path, to eliminate problems of parallax. Other measurements were taken with a dial caliper or by stretching the specimens along a metric ruler.

than half (44%) the length of prefrontal suture; prefrontals large, longer than wide (greatest prefrontal width 80% of greatest length); prefrontal suture asymmetrical, noticeably dextral to the internasal suture; prefrontal suture 83% length of frontal plate; supraoculars large, nearly as broad as long; frontal as long as broad, roughly pentagonal in shape; interparietal suture slightly longer than prefrontal suture, 87% of frontal length.

Eye moderate, contained 1.4 times in loreal length, 2.8 times in snout length (sagittal); eye length slightly smaller (93%) than distance to lip; eye not protuberant to edge of lip and not visible from below. Nasal divided above and below naris, its greatest length 90% of loreal length; loreal long, 2 times longer than greatest height, well separated from internasal, entering eye; no preoculars; supralabials 7, 3rd and 4th each as wide as high and touching eye; 6th supralabial on right side separated from lip by an aberrant anteroventral projection of 7th labial; postoculars 2, subequal; temporals 1 + 2, the upper one in row 2 elongated, reaching past end of parietal.

Infralabials 7, first pair in contact behind mental, first three in contact with genials; single pair of large genials, 2.5 times longer than wide; three large median gulars or preventrals between genials and 1st ventral. Head plate tubercles tiny, inconspicuous, most concentrated on rostral plate, otherwise sparse.

COLOR PATTERN: The specimen in preservative (fig. 1) is medium brown dorsally, somewhat lighter on the lower two scale rows, with an *extremely* vague pattern of narrow dorsal crossbars.[3] The indefinite crossbars are narrow (about 2–3 scales wide) and closely spaced (about 1 scale apart), and extend to about the 4th or 5th scale row on each side. Although impossible to count accurately, there are an estimated 95 dorsal crossbands on the body; there are an indefinite two or three such markings on the base of the tail, which otherwise is patternless.

Top of head brown like body, vaguely mottled, becoming paler yellowish brown on lower three-fourths of supralabials and beneath head and neck. The venter becomes increasingly and irregularly blotched with light brown posteriorly; subcaudal surfaces nearly uniform light brown.

MAXILLO-PALATO-PTERYGOID ARCH: Some teeth on each side are broken; the left maxilla itself is broken, as is the right ectopterygoid. Description is of right side in situ. Maxilla rather robust, weakly arched, extending anteriorly to first supralabial, with 10 recurved

[3]The crossbarred pattern is best visualized by the naked eye, with the specimen immersed in alcohol. The indefinite markings virtually disappear when the specimen is viewed under a dissecting microscope. The vagueness of this pattern does not seem to be the result of fading in preservative, and the pattern was probably indistinct in life.

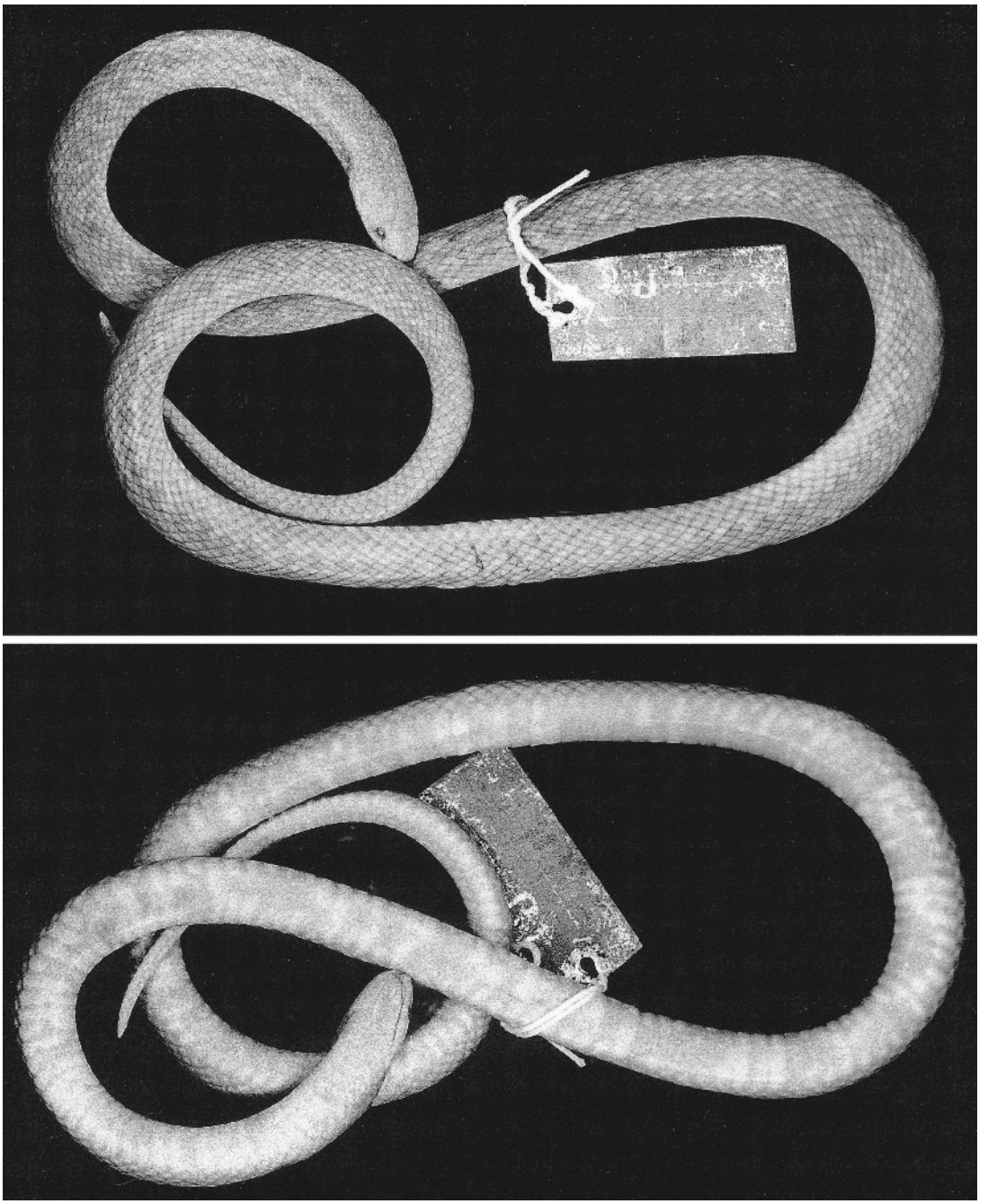


Fig. 1. *Atractus attenuatus*, new species. Dorsal and ventral views of the adult male holotype (AMNH R-19998), shown 1.5 times life size.

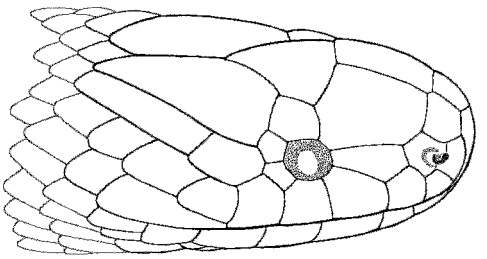


Fig. 2. *Atractus attenuatus*, new species. Head of holotype (AMNH R-19998), ×5.

teeth, large anteriorly, decreasing in size posteriorly. Anterior 8 teeth closely to moderately spaced, not firmly ankylosed, with alternate teeth represented only by sockets; teeth rounded in cross section (lacking an angular edge on labial side). A gap between the small teeth (9–10), these posterior two teeth broken but apparently much smaller than those anteriorly. Maxilla extending posteriorly past small teeth as a short toothless process. An expanded curved flange on maxilla extending mediad and ventrad; anterior edge of flange adjacent to ultimate small tooth, with most of flange lying posterior to the small teeth. Ectopterygoid (broken; described from left side) weakly and shallowly bifurcated, the ventromedial branch being more robust; ectopterygoid fork braced

Fig. 3. Everted hemipenis of *Atractus attenuatus*, new species, in sulcate and asulcate views. Left organ of holotype (AMNH R-19998), ×8.9. (Laboratory preparation from hemipenis preserved in retracted condition; fully everted but not necessarily completely expanded.)

against posterior half of flange on maxilla. Palatine lacking a maxillary process.

HEMIPENIS: Before removal, the left retracted hemipenis of the holotype bifurcated at the level of the middle of subcaudal 8 and terminated at the end of subcaudal 9, with the two slips of retractor muscle merging at the middle of subcaudal 11 and the muscle originating at the end of subcaudal 30. Although the lobes of this bifurcated hemipenis were equal in length and width, the dorsal lobe was noticeably higher than the ventral lobe, with a more massive appearance (the size differential was not noticeable after eversion); the lobes appear equal in the right hemipenis as examined in situ.

The left hemipenis was removed and the retractor muscle was severed across the insertion slips close to the lobes. The organ was immersed for 3.5 hours in a 2% solution of potassium hydroxide (KOH), after which it was moved to 3% KOH for another 3 hours to hasten the softening process. It was then everted with forceps; the tips of the lobes were pushed out using the round head of an insect pin. Finally, the organ was inflated with carmine-dyed petroleum jelly for study and illustration.

The manually everted left hemipenis (fig. 3) is 12.9 mm long, with lobes comprising about 30% of its length. The sulcus spermaticus divides about 8 mm (62%) above the base, with the branches extending in centrifugal orientation to the tips of the lobes. The organ is noncapitate.

The hemipenial lobes are completely covered by papillate calyces, which extend proximally between the sulcus branches to the fork. Two rows of small spines below the sulcus branches extend chevronlike to the sides of the organ; these rows do not retain their integrity on the asulcate side, which bears small spines immediately below the lobes. The midsection of the hemipenis is encircled by numerous medium-sized spines, which decrease in size proximally; no large spines. Except for being nude at the base, the proximal 30% of the organ is spinulate. A nude pocket is present on the basal side (dextral to sulcus spermaticus), extending distad nearly to the edge of the spines.

DISTRIBUTION: *Atractus attenuatus* is known only from its type locality in the Río Cauca drainage, about 1000 m elevation, on the western side of the northern end of the Cordillera Central (map 1).

COMPARISONS

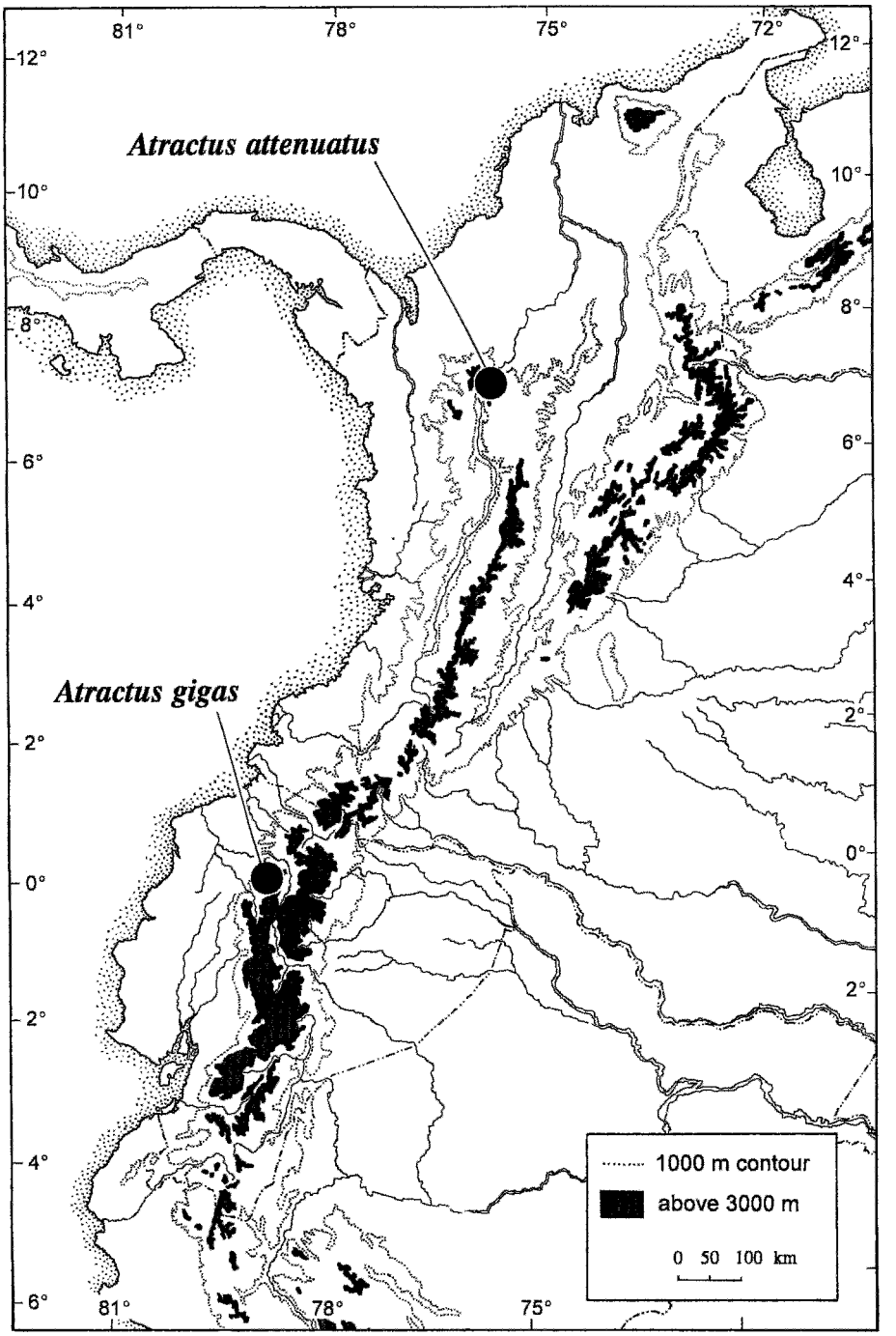
Very few *Atractus* have such a strikingly slender habitus, the main exception we are aware of being *Atractus sanguineus* Prado (1944, 1946). This species also is known only from its holotype (a male 424 mm in total length), whose size and scutellation are comparable to *A. attenuatus*.[4] Each has a high ventral + subcaudal count (222 in *sanguineus*, 226 in *attenuatus*), and *sanguineus* appears to be similarly attenuated based on a photograph published first with the original description (Prado, 1944) and later reprinted (Prado, 1946). The second printing was of better quality and is reproduced here as figure 4.

It is evident from comparisons of photographs (figs. 1, 4) that the dorsal crossbars are fewer, more widely spaced, and more pronounced in *A. sanguineus*, which also has these markings interconnected by a vertebral dark line that is lacking in *A. attenuatus*. *Atractus attenuatus* has a ground color of medium brown in preservative and presumably was similarly colored in life,[5] whereas the lighter ground color of the preserved specimen of *A. sanguineus* was described by Prado (1944, 1946) as *vermelho-sanguinea* (blood-red). Daniel (1949: 317) later also commented on the red color of the *sanguineus* holotype.

Atractus attenuatus and *A. sanguineus* are geographic neighbors in northern Colombia. Their type localities are only 46 km apart, but at different elevations and on opposite sides of the northern end of the Cordillera Central. *Atractus sanguineus* came from Yarumal (2300 m fide Paynter, 1997: 471) on the eastern side of the Central Andes, whereas *A. attenuatus* is from Sabanalarga, at a lower elevation (1000 m) on the western side.

[4]Prado noted *3 infralabias em contacto com a mental*, but, from his various descriptions of *Atractus* spp., it is clear that he used the term "mental" for the paired genials. *Atractus* normally has on each side 3 or 4 infralabials in contact with the single pair of genials, with the 1st pair of infralabials usually in contact behind the azygous mental plate (e.g., fig. 7B).

[5]Medium brown pigmentation usually changes relatively little in preservative unless faded in light.



Map 1. Type localities of the new species in the northern Andes. *Atractus attenuatus* in the northern end of the Cordillera Central, Río Cauca drainage, Colombia. *Atractus gigas* on the Pacific versant of western Ecuador. The symbol over the *Atractus attenuatus* locality nearly overlaps the type locality of *A. sanguineus* Prado, 46 km northeastward, at a higher elevation on the opposite side of the Cordillera Central.

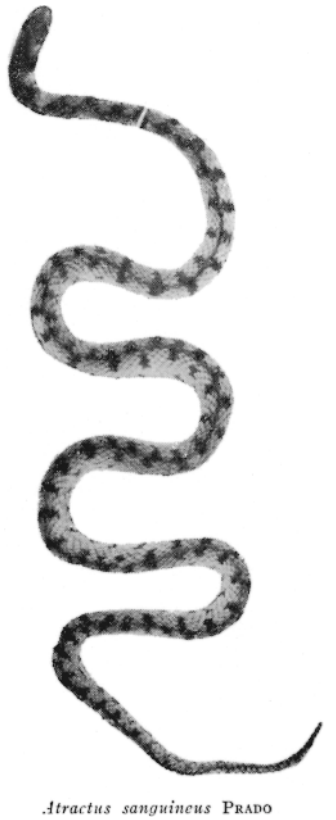


Fig. 4. *Atractus sanguineus* Prado. The holotype, reproduced from Prado (1946), by permission of Instituto Butantan.

REMARKS

The holotype of *Atractus attenuatus* (AMNH R-19998) inexplicably was catalogued originally as "*Atractus major*", a reasonably well-known Amazonian snake. It remained under that suspect identification for decades, until curatorial attention was given to the AMNH *Atractus* collection. Pérez-Santos and Moreno (1988: 86) commented on the specimen as *A. major* without indicating that they had not examined it.[6] The catalogued locality was "Sabanalarga, on Cauca River", which Pérez-Santos and Moreno interpreted as Sabanalarga at an elevation below 100 m in the Department of Atlántico, on the north coast of Colombia. However, the specimen and locality were provided by Brother Nicéforo María, who mapped his locality as being the Sabanalarga that is situated much higher in the Cauca Valley (Nicéforo María, 1942: 87); Paynter (1997: 372) provided an elevation of 1000 m. Nicéforo María had sent to the American Museum unidentified specimens that were not included in his 1942 report, which recorded only *Mastigodryas pleei* (as *Dryadophis*) and *Bothrops atrox* from Sabanalarga.

[6]Pérez-Santos' visits to the American Museum were spent in copying geographic records; he unfortunately never got time to examine specimens and confirm names. It is a regrettable fact of life that *all* major museum collections have many specimens bearing identifications that are out of date or obviously wrong to begin with.

Atractus gigas, new species
Figures 5–7, Map 1

HOLOTYPE: Fundación Herpetológica "Gustavo Orcés" (FHGO) no. 194, an adult female, from Bosque Protector Río Guajalito, antigua Hacienda Las Palmeras, old highway between Quito and Santo Domingo, 1900 m, Pichincha, Ecuador (00°14′S, 78°49′W). Collected by Vlastimil Zak in January 1990.

ETYMOLOGY: The species name *gigas* (a giant) is a Latin noun of Greek origin. (The *gigantes* or giants, born of Mother Earth, were enormous beings who had thick serpents for legs. They fought a losing battle with the gods and man.)

DIAGNOSIS: *Atractus gigas* is distinguished from all species of *Atractus* by its unparalleled large size (> 1 m) and robust body (fig. 5). It differs from adult specimens of other large species (≥ 700 mm) in having pale dorsal crossbars (indistinct in the only known specimen) rather than a false coral snake pattern (*A. obesus*) or definite dark markings on a brown ground color (*A. depressiocellus*, *A. major*, *A. torquatus*). See Comparisons for further comments.

Although the juvenile color pattern of *Atractus gigas* is unknown, young specimens conceivably might be confused with a few much smaller species of *Atractus* from the Pacific versant of Ecuador. *Atractus dunni* has fewer ventrals (125–136 in males, 138–150 in females) than *A. gigas* (170 in one female) and small dark spots dorsally (Cisneros-Heredia, 2005). *Atractus multicinctus* differs from *A. gigas* in having 5 or 6 maxillary teeth (8 in

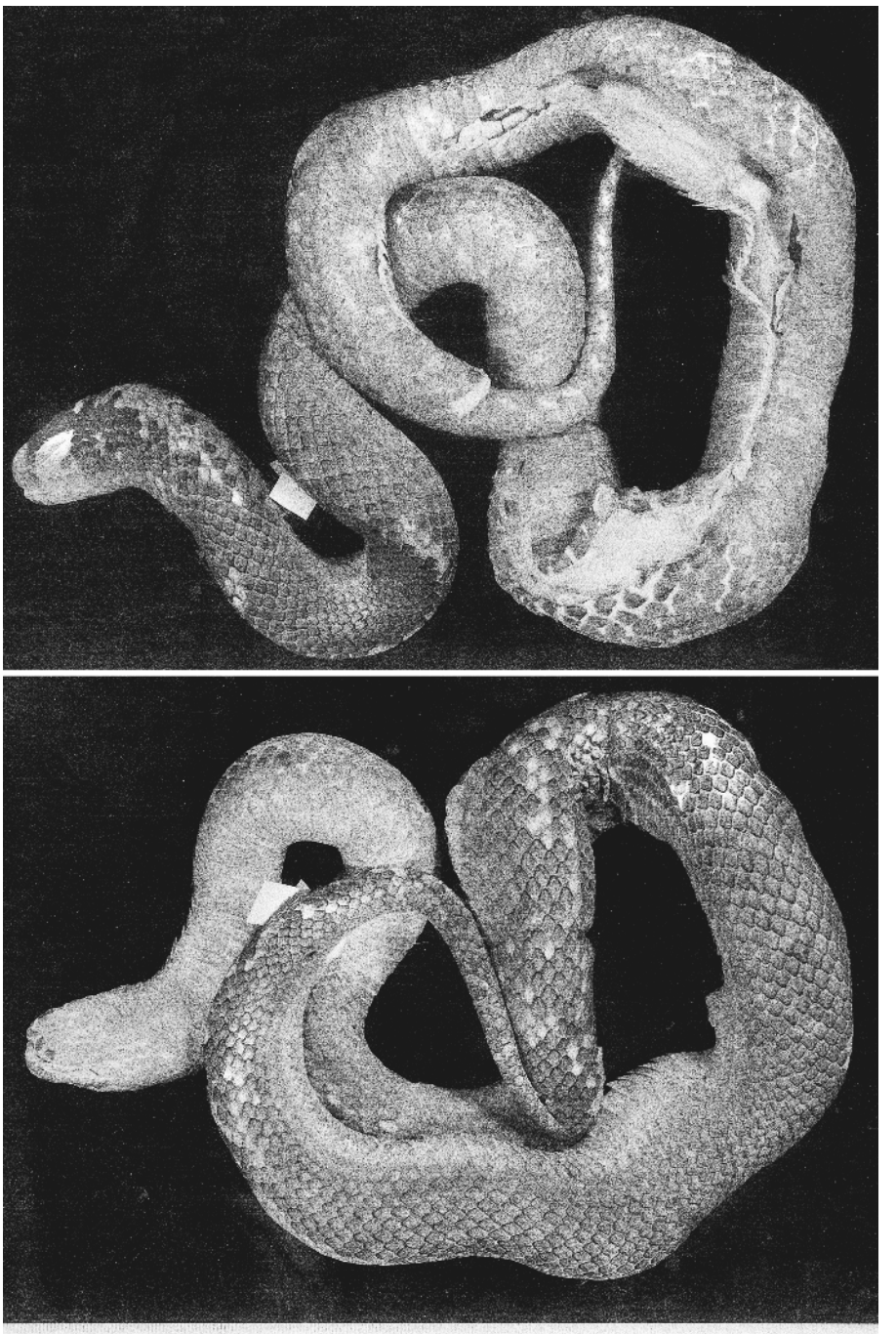


Fig. 5. *Atractus gigas*, new species. Views of the adult female holotype (FHGO 194), shown much smaller than life (×0.48).

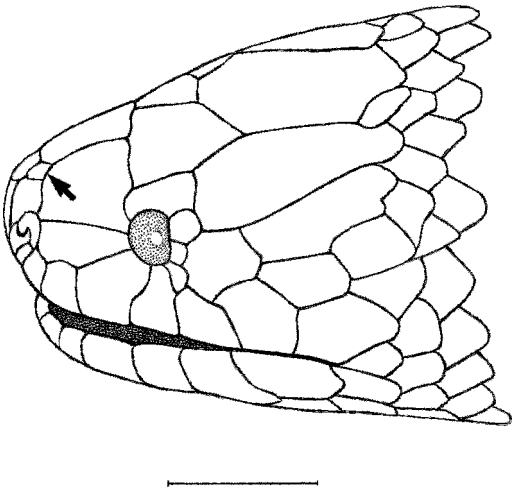


Fig. 6. *Atractus gigas*, new species. Head of holotype (FHGO 194) in dorsolateral view, nearly twice life size (line = 10 mm). Arrow points to diamond-shaped frontonasal scale between internasal and prefrontal sutures (see also fig. 7).

gigas) and a mostly white venter (mostly grayish brown in *gigas*). *Atractus paucidens* also differs from *A. gigas* in having 5 or 6 maxillary teeth, and it has 4 infralabials in contact with the genials (3 in *gigas*). *Atractus multicinctus* and *A. paucidens* are rather slender snakes, whereas *A. gigas* juveniles are expected to have relatively stout bodies.

Description of Holotype

The holotype is a sexually mature female, with active ovaries and enlarged convoluted oviducts with developing ova. The specimen is in a fair state of preservation, although contorted and impossible to measure precisely. The digestive tract has been removed and the other internal organs somewhat disrupted. See table 1 for detailed measurements.

Proportions and Scutellation: Total length approximately 1040 mm, tail length 124 mm (11.9% of total). A very robust snake, with head barely wider than neck, and middle body slightly wider than head; body about as wide as high, either rounded or slightly angular ventrolaterally;[7] greatest head width about same as head length from snout to end of parietals and 73% of length from snout to end of mandible; head width (and also greatest body width) roughly 3% of SVL. Dorsal scales smooth, lacking apical pits, in 17-17-17 rows. Ventrals 170 (not counting a half-ventral anterior to anal plate); anal plate undivided; subcaudals in 35 pairs.

Snout rounded in dorsal and lateral view; rostral wider than high, visible from above; internasals small, wider than long, more than half (56%) the length of prefrontal suture; an azygous frontonasal scale situated between internasal and prefrontal sutures (figs. 6, 7A), diamond-shaped (1.9 mm long, 2.0 mm wide) with rounded points; prefrontals large, little longer than wide (greatest prefrontal width

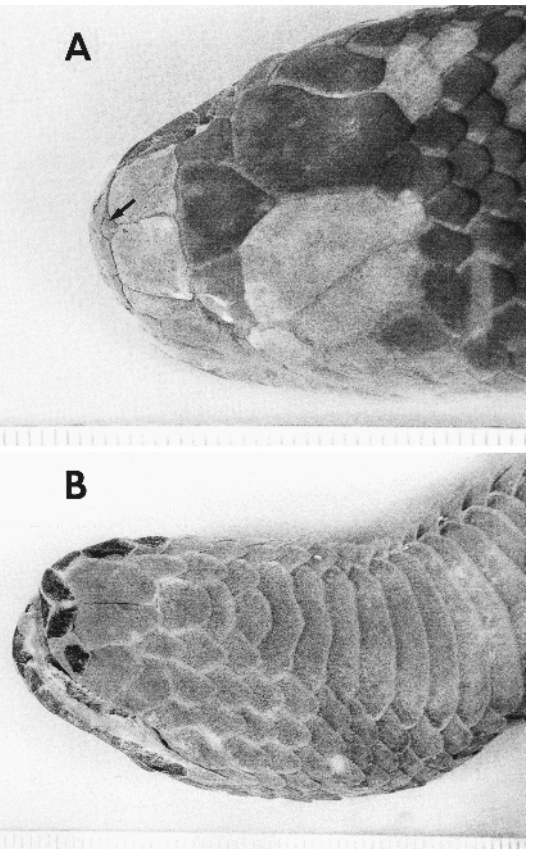


Fig. 7. *Atractus gigas*, new species. Head of holotype (FHGO 194). **A.** Dorsal view, ×1.7. Arrow points to diamond-shaped frontonasal scale between internasal and prefrontal sutures. **B.** Ventral view, ×1.2. Scale divisions = mm.

[7]Contortion makes it impossible to determine with confidence the nature of the ventrolateral edge, which seems to be slightly angular on part of the anterior body.

93% of greatest length); prefrontal suture 67% length of frontal plate; supraoculars large, anteriorly narrowed, longer than wide; frontal barely wider than long (length 99% of anterior width), roughly pentagonal in shape; interparietal suture longer than prefrontal suture, 96% of frontal length.

Eye moderate, contained 1.8 times in loreal length, 2.8 times in snout length (sagittal); eye length shorter (84%) than distance to lip; eye not protuberant; lips flared, eyes concealed in ventral view. Nasal weakly divided above and below naris, its greatest length 63% of loreal length; loreal long (6.3 mm), 3.3 times longer than greatest height, entering eye, loreals well separated from internasals. No preoculars. Supralabials 7 on right side with 3rd and 4th touching eye, 8 on left with 4th and 5th touching eye; supralabials entering eye are noticeably higher than their basal width. Postoculars 2 on right side, 3 on left, subequal; temporals 1 + 2, the upper one in row 2 elongated, extending almost to the end of parietals.

Infralabials 7, first pair in contact behind mental, first three on each side in contact with a genial; single pair of large genials, 2.1 times longer than wide; three large medial gulars (preventrals) between genials and first ventral (fig. 7B). Head plate tubercles not detected, probably due to loss of stratum corneum.

Color Pattern: In preservative (alcohol after formalin), the dorsal ground color is cinnamon-brown, turning gray on the lower two scale rows; the dorsal scales bear sparse gray specks that become denser on the bases of the scales—this pigmentation increasing ventrad to form an ill-defined gray stripe along the lower sides. There are about 30 faint, poorly defined, pale transverse bars along the body (barely evident in fig. 5); about 8 on the tail. The bars are pale amber color, one dorsal scale wide, and extend down to scale row 4 or 5. The bars are separated from each other by four to five dorsal scales. The color of the top of the head is similar to the dorsal color of the body, but with dark brown suffusions anteriorly and increasing toward the snout. Supralabials are grayish brown with cream specks toward the lips. Infralabials, mental, genials, and gulars are grayish brown with cream specks. Ventrals and subcaudals have an irregularly mottled pattern of grayish brown and cream.

Maxillo-Palato-Pterygoid Arch: Examined in situ on right side. Maxilla arched, extending anteriorly to middle of first supralabial, with a total of eight large to small recurved teeth, differentiated as follows: Teeth 1–5 large, subequal, tooth 6 noticeably smaller (medium-sized). Teeth 2–6 separated by increasingly wider gaps, followed by a somewhat wider diastema and two well separated small teeth (7–8), the ultimate of which is smaller than the penultimate.

First tooth rises from socket at anteroventral end of maxilla (not springing from anterior tip). All teeth firmly ankylosed, resistant to being dislodged (there are no empty sockets). All teeth angular in cross section, with a sharp longitudinal ridge on the labial side, this ridge gradually shifting from an anterior position on the first few teeth to a lateral position posteriorly.

Maxilla extending posteriorly past small teeth as a short toothless process. A large expanded flange on maxilla extending mediad and ventrad adjacent to the two small posterior teeth. Ectopterygoid strongly forked, with nearly equal-length stout branches cupping flange of maxilla. Palatine with an elongated shallow, nonprojecting maxillary process.

Distribution and Habitat: *Atractus gigas* is known only from the type locality (Bosque Protector Río Guajalito) on the Pacific slope of the Ecuadorian Andes (map 1). The much smaller *Atractus dunni* (< 350 mm SVL) also occurs in this forest (Cisneros-Heredia, 2005).

The Bosque Protector Río Guajalito (BPRG) was established as a private natural reserve in 1978 by its owner, Mr. Vlatismil Zak (who also collected the holotype of *A. gigas*), and acquired legal status as a protected forest (Bosque Protector) in 1993 (Freile and Hoeneisen, 2005). The vegetation in the neighboring Reserva Florística Río Guajalito—a smaller reserve adjacent to the BPRG—has been relatively well studied (see articles in Nieder and Barthlott, 2001). At the elevation (1900 m) where *A. gigas* was found, the vegetation has been classified as submontane rain forest (Mutke, 2001). This is the typical vegetation at similar elevations throughout the Pacific versant of the Ecuadorian Andes (Neill, 1999).

Interestingly, the greatest number of endemic and restricted-range species of plants in

Ecuador occurs at similar mid-elevations in the Andes (900–3000 m; Borchsenius, 1997). The following description of the area is based on information provided by Mutke (2001), who studied the Reserva Florística Río Guajalito. The primary forests of this site have trees attaining heights greater than 40 m, with the largest crown area of the forest having a canopy height of 20–25 m. The upper canopy is especially dominated by *Croton* sp.; the greatest percentage of individual trees reach heights of 5–11 m. The typical soils in the area are andosols on volcanic material (the BPRG lies about 30 km northwest, descending from Atacazo, a Pleistocene volcano). The annual mean precipitation is about 2700 mm, and the annual mean temperature is about 16.4°C at a nearby climatic station in Chiriboga.

Comparisons

We know of no other *Atractus* exceeding 1 m in length, although several species attain total lengths of about 700 mm or greater. These can be most quickly distinguished from *Atractus gigas* as follows.

Atractus depressiocellus Myers is known from its holotype (750 mm in total length) collected below 1000 m elevation in east-central Panama. The specimen has irregular black dorsal crossbars on a light brown ground color. It also differs from *A. gigas* in having a very small eye set in a pronounced depression, with very tall supralabials entering the eye. See Myers (2003: 20–22, figs. 1C, 2C, 3E).

Atractus obesus Marx (758–762 mm in total length) is known from the type and paratype from high elevation (2640–2700 m) in the Cordillera Occidental of western Colombia. It is the only other named giant Andean *Atractus*, and it is immediately distinguished from other large species by encircling black and pale rings in a false coral snake pattern (Marx, 1960: fig. 71).

Atractus major Boulenger and *Atractus torquatus* (Duméril, Bibron, and Duméril) are fairly wide-ranging Amazonian species attaining lengths in excess of 700 mm. They normally have color patterns of variably shaped dorsal dark markings distinctly different from the vague pattern of the trans-Andean *A. gigas*. See, for example, descriptions and photographs in Hoogmoed (1980 [*A. torquatus*]), Martins and Oliveira (1993 [*A. major*, *A. torquatus*]), and Savage (1960: 47–52 [*A. major*]).

We have at present no suggestions as to the nearest relationships of *Atractus gigas*. The barely discernible pale transverse lines on the dorsum conceivably might represent pale edging of dark markings (e.g., as in some *A. major*) that have been lost either phylogenetically or ontogenetically. Juvenile specimens might provide insight when available.

Remarks

To our knowledge the azygous frontonasal scale on the holotype of *Atractus gigas* is unique in the genus (figs. 6, 7A). Median scales on the upper anterior part of the snout are quite rare in colubrids (*Heterodon* and *Hydrops* come to mind as exceptions). The scale is symmetrical in its diamond shape, and the bordering internasals and prefrontals are of regular appearance, suggesting that the frontonasal is not a developmental aberrancy.

The upper anterior part of the snout seems to be an area of some plasticity in *Atractus*, as shown by two additional examples. (1) The median suture between the prefrontal plates either lies in a straight line with the internasal suture or else is asymmetrical and noticeably dextral to the internasal suture (Myers, 2003: 9). The straight-line condition of the prefrontal suture probably is the most common configuration among colubrids, although both sinistral and especially dextral asymmetries occur widely. The straight-line and dextral conditions may be species specific in *Atractus*, although the character has yet to be coded broadly or checked for intraspecific variation in large samples. (2) The internasals appear to be either exceptionally tiny or else fused with the prefrontals in *Atractus depressiocellus* (rostral abrasion in the unique specimen precluded precise interpretation; Myers, 2003: 20–22, fig. 3E).

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