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of the Honduran Herpetofauna

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Abstract

Six species, *Hypopachus barberi*, *Triprrion petasatus*, *Abronia montecristoi*, *Celestus bivittatus*, *Imantodes inornatus*, and *Sibon fischeri*, are reported for the first time from Honduras. Notes are included on an additional five species (*Leptodactylus silvanimbus*, *Celestus montanus*, *Leptophis modestus*, *Rhadinaea godmani*, and *Scolecophis atrocinctus*). *Celestus atitlanensis* Smith is placed in the synonymy of *C. bivittatus* (Boulenger).

Field work in Honduras during the year 1980 was especially fruitful. We amassed a number of noteworthy specimens, among which are several new country records.

From 29 January to 2 February, the second author, in the company of Howard E. Lawler, worked in the vicinity of La Esperanza in the Sierra de Opalaca, Depto. Intibucá. They concentrated on a remnant patch of cloud forest at Zacate Blanco. Smaller collections were also made at Santa Elena, Depto. Cortés, near Zambrano, Depto. Francisco Morazán, and near Jesús de Otoro, Depto. Intibucá.

During 1980 the first author spent four months in Honduras, from May through August, and was joined by the third author from 18 May-16 June, working cloud forest localities in the Sierra de Omoa, Cordillera de Celaque, Sierra de Merendón, Montaña de Azacualpa, Cordillera Nombre de Dios, and Cerro La Tigra. Minor collections were made in the vicinity of Catacamas, Depto. Olancho.

From 16-29 June, Wilson was accompanied by Porras and Gordon W. Schuett, during which time they worked in the Cordillera de Opalaca (at Zacate Blanco), the Cordillera de Montecillos, in the area of Cedeño, Depto. Choluteca, on Isla Zacate Grande, Depto. Valle, and the environs of Lago de Yojoa, Depto. Cortés.

The first author was joined by Kenneth L. Williams from 17-31 July. They collected on Cerro Santa Bárbara, Depto. Santa Bárbara, in the region of Lago de Yojoa, in the Cordillera de Montecillos, and in the Montaña de Comayagua.

The noteworthy material resulting from the above collections, as well as additional material presented to us, has been deposited in the University of Kansas Museum of Natural History (KU), Louisiana State University Museum of Zoology (LSUMZ), Northwestern State University of Louisiana, Natchitoches (NSU), and the University of Texas at Arlington Collection of Vertebrates (UTACV) and is reported below.

Hypopachus barberi Schmidt

Nelson (1974) reviewed the systematics of the Middle American upland populations of the genus *Hypopachus* and concluded that these populations, which had been assigned various names were all conspecific and referred them to *H. barberi*. Nelson reported *H. barberi* from the highlands of El Salvador, Guatemala, and Chiapas, México. On 24 May 1980 we discovered *Hypopachus barberi* in Honduras at Belén Gualcho, Depto. Ocotepeque, 1470 m (KU 194230), and on 25 May 1980 at El Chagüitón, Depto. Ocotepeque, 1870 m (KU 194231-32). Both localities are discussed in greater detail in the *Leptodactylus silvanimbus* section of this paper. The frogs were found at night moving among grasses in marshy areas similar to breeding sites reported by Nelson (1973). Other *H. barberi* were heard calling at both localities.

On 18 June 1980 a specimen of *H. barberi* (KU 194233) was regurgitated by an adult *Thamnophis fulvus* collected near a pond in hardwood cloud forest at Zacate Blanco, Depto. Intibucá, 2020 m. Another specimen was collected (KU 194234) nearby, from underneath a log in pine forest at 11 km WNW La Esperanza, 1860

m. On 21 June 1980, in the southern portion of the Sierra de Montecillos (ca. 5 km S Santa Elena, Depto. La Paz), another specimen (KU 194235) was secured at 2020 m underneath a log in a clearing previously supporting hardwood cloud forest.

Nelson (1974) reported that *H. barberi* and the wide-ranging *H. variolosus* occur either sympatrically or at closely adjacent sites in portions of their range. The upper limites of distribution for *H. variolosus* in Honduras were given by Meyer and Wilson (1971) as 1400 m; we are reporting *H. barberi* in Honduras from elevations upward of 1470 m. However the upper vertical distribution of *H. variolosus* can now be extended. On the evening of 30 July 1980 a series of *H. variolosus* (NSU 5238-42) was collected at a pond below the village of San José de los Andes on the eastern slope of Cerro Santa Bárbara, Depto. Santa Bárbara, at 1610 m. Although this is the highest known elevation for *H. variolosus* in Honduras (where one might predict the presence of *H. barberi*), other anurans normally found at lower elevations (*Bufo valliceps*, *Phrynohyas venulosa*, and *Smilisca baudinii*) were also present in the same pond.

In view of the number of localities at which *H. barberi* was found in 1980, we suspect that the frog is widespread throughout the upper elevations of the Pacific versant of Honduras.

Leptodactylus silvanimbus McCranie,
Wilson, and Porras

Leptodactylus silvanimbus was recently described by McCranie et al. (1980) from several specimens collected at Belén Gualcho and one from El Portillo de Ocotepeque (both localities in Depto. Ocotepeque). The data on ecology presented in the original description was partially based on second-hand information that was, to some extent, speculative.

For this reason, two of us (JRM and LDW) journeyed to the type locality (Belén Gualcho) in an attempt to locate the frog and obtain some basic ecological data. Belén Gualcho is a small town located in the extreme eastern portion of Depto. Ocotepeque. It lies on the western slope of the Cordillera de Celaque and is reached by a dirt road that diverges from Hwy. 18 (from San Pedro Sula to Nueva Ocotepeque) at Cucuyagua, and progresses from the valley of the Río Higuito up the slopes of the Cordillera de Celaque to an elevation of about 1870 meters (at El Chagüitón). The road then dips to pass into a valley where the headwaters of the Río Mocal, a tributary of the Río Lempa, lie. Belén Gualcho, then, lies near one of the tributaries of the Río Mocal, at an approximate elevation of 1500 meters at the upper edge of the Subtropical Moist Forest formation of Holdridge (1962).

McCranie et al. (1980) noted that the "holotype and paratopotypes came from a small permanent pond about 5 by 100 meters in size on a plain" located at an elevation somewhere between 1700 and 1900 m. It was partially upon this basis that we described *L. silvanimbus* as a cloud forest frog. The elevational datum for Belén Gualcho published in the original description is incorrect; the correct elevation is noted above.

McCranie and Wilson arrived in Belén Gualcho on 24 May 1980. Afternoon rains on that day stimulated frog vocalization and *L. silvanimbus* (KU 194188-94, 194200-03) was located in a shallow depression in a pasture on the outskirts east of town at 1470 m. In this depression there were a number of variously interconnected smaller depressions which, at the time, held water. *Leptodactylus silvanimbus* males

were found calling from underneath grasses overhanging the edges of these shallow depressions. Most of the frogs were not visible and had to be located by sound and touch. Only a single male was found exposed at the edge of one of the depressions. Females, on the other hand, were generally found exposed, some in the grasses around the edges of the depressions and some in the water.

The male frogs call from their hiding places. The call is a single note repeated from 40 to 64 times a minute and may be described as a low raucous twang. No eggs were found and it seems likely that breeding activity was just commencing.

One of the males used its thumb spines to poke Wilson's finger when it was placed between the frog's forelegs. Apparently, this maneuver is a defensive reaction but, because of the limited range of its use for protection, it is also possible it is simply an amplexic response.

Other frogs collected while calling in the same area were *Bufo coccifer*, *Hypopachus barberi*, and *Rana "pipiens"*.

The next day McCranie and Wilson returned on the road by which they had reached Belén Gualcho, stopping at a spot called El Chagüitón. El Chagüitón is a small group of dwellings in a farming area located at 1870 meters in the Lower Montane Moist Forest formation of Holdridge (1962). The area has been largely deforested but remnants of hardwood cloud forest vegetation remain. Alongside the Cucuyagua-Belén Gualcho road there is a low swampy area used as pasture. During the evening *L. silvanimbus* began to call. In contrast to the situation at Belén Gualcho, several males (KU 194195-99) were found moving among the grasses in the pasture. Males were heard calling from their hidden positions at the edge of shallow, water-filled depressions, but none were collected. Six other anuran species were found in the area, including *Bufo coccifer*, *Eleutherodactylus* sp., *Hyla salvadorensis*, *Hypopachus barberi*, *Ptychohyla spinipollex*, and *Rana "pipiens"*.

Only preserved specimens of male *L. silvanimbus* were available for the original description. Color notes in life taken on males from Belén Gualcho are as follows: (KU 194189) dorsum gray-brown; interocular spot brown with irregular black edging bounded by pale yellowish tan; dorsolateral dark stripe dark gray-brown, bordered above by an irregular black line; lip markings dark gray-brown separated by pale yellowish tan; postocular bar dark gray-brown bounded by very dark brown; a pale orange suffusion from behind angle of mouth to forearm; forearm gray-brown with very dark brown markings; yellow-gold blotching in axilla and groin; some pale orange markings just anterior to vent on dorsum; hind legs gray-brown above with dark gray-brown markings; posterior of thigh yellow-gold with very dark brown blotching; underside of legs suffused with yellow-gold; venter pinkish pearl gray on throat, becoming suffused with yellow-gold posteriorly; some scattered small white dots along edge of lower lip and posterior throat area; iris copper-bronze with much dark reticulation. KU 194190 had a coloration similar to that of KU 194189 but with more noticeable pale orange suffusion on the upper forelimbs and behind the angle of the mouth. KU 194191 was colored as was KU 194189 but with little orange.

Triprion petasatus (Cope)

The biology of the casque-headed hyliid *Triprion petasatus* was reviewed in detail by Duellman and Klaas (1964) and presented as a summary by Duellman (1970). The frog then was known to occur in the lowlands of the Yucatan Peninsula in México southward to the savannas of central El Petén, Guatemala. Hoevers and

Henderson (1974) subsequently reported its occurrence in northern Belize.

Surprisingly, a large number of these hylids was shipped to wildlife dealers in Florida from Honduras during the summers of 1978 and 1979. In February of 1980 the site where the *Triprrion* originated was located. The locality is an intermittent pond behind the home of Don Catarino Zuñiga on the outskirts of the village of Santa Elena, Depto. Cortés. The villagers are well-acquainted with *Triprrion* and call them "huesudas" ("bony ones"). They know the frogs to occur in a few small ponds and adjacent hillsides in the general vicinity of Santa Elena, but emphasized that they are rarely seen at any time other than the last week in May "when they all come out and sound like ducks." Stuart (1935) reported *T. petasatus* from La Libertad, Guatemala, as breeding from 23 May to 30 May, yet, in the Yucatan Peninsula, most breeding observations have been made in July (Duellman, 1970). A small, somewhat poorly-preserved series of *T. petasatus* (KU 194659-64) collected by Don Catarino Zuñiga behind his home during the last week of May, 1979, is reported herein.

Duellman and Klaas (1964) indicated that *T. petasatus* exhibits a preference for subhumid xerophilous forest where it breeds in solution pits, sink holes, and aguadas. At Santa Elena, *T. petasatus* apparently breeds in shallow or temporary ponds and, according to villagers, not in the nearby Lago de Yojoa. Santa Elena lies within the Subtropical Wet Forest formation of Holdridge (1962), although patches of Subtropical Moist Forest are interspersed throughout the area.

Anuran associates collected in February and June 1980 at the pond behind Don Catarino's home were as follows: *Agalychnis callidryas*, *Bufo valliceps*, *Hyla loquax*, *H. microcephala*, *H. staufferi*, *Hypopachus variolosus*, *Leptodactylus fragilis*, *Phrynohyas venulosa*, *Physalaemus pustulosus*, *Rana "pipiens"*, and *Smilisca baudinii*. Duellman and Klaas (1964) noted that in the southern part of the range of *T. petasatus* (Guatemala), the species is associated with eight other hylids, but that in Yucatán, only *Smilisca baudinii* has been observed to breed sympatrically and synchronously with *Triprrion*.

The Honduran population of *T. petasatus* is obviously relictual, Santa Elena being approximately 310 km SE from the nearest locality in Guatemala and across such geographical barriers as the Sierra de Santa Cruz, the Sierra de las Minas, and the Cordillera de Merendón. Duellman (1970) indicated, however, that "*Triprrion* evidently was more widespread in México and northern Central America prior to the Pleistocene," and that its relictual distribution has been "the result of isolation due to changing environmental conditions in the Pleistocene."

Abronia montecristoi Hidalgo

Hidalgo (1983) recently described two new species of *Abronia* belonging to the *aurita* group from the cloud forests of El Salvador. Each of the species (*montecristoi* and *salvadorensis*) was described from a single specimen, both of which came from very close to the border with Honduras. Nonetheless, it was surprising to obtain two specimens of *Abronia* in Honduras. These specimens represent the first record for a member of this anguid genus for the country.

One of the two specimens (KU 195560) was collected on 18 June 1980 at Zacate Blanco, 2125 m, Depto. Intibucá. It was collected in the open in a cornfield carved from hardwood cloud forest. The other specimen (KU 195561) was found on the edge of a dirt road in hardwood cloud forest on 21 June 1980 at 2020 m ca. 5 km S Santa

Elena, Depto. La Paz.

Both specimens agree well with the description of *Abronia montecristoi*. Both possess the following characteristics: first superciliary in broad contact with cantholoreal; parietals separated from median supraoculars by fourth uppermost primary temporal; supra-auricular scales small and round, not elongate; four primary temporals, two reaching postoculars; three or four occipitals; four pairs of chinshields, last pair divided; postmental single; anterior canthal present; antepenultimate supralabial reaching orbit; four scales between eye and ear opening; 32 and 33 transverse rows of dorsal scales between occipital and base of tail; 59 and 56 ventral scales between postmental and vent; 14 longitudinal rows of dorsal scales; 14 and 12 longitudinal rows of ventral scales. The only significant differences between our specimens and the holotype involve the presence of 14 longitudinal rows of ventral scales in one specimen (as seen in the other members of the *aurita* group), instead of 12 as in the holotype, and 3 to 4 occipitals, instead of 5.

Inasmuch as *A. montecristoi* was described on the basis of a preserved, faded specimen, it is useful to record the color in life of KU 195560, as follows; dorsum pale brown with indistinct brown crossbands; head horn color; chin white; venter dirty white; palms of hands and feet yellowish-tan.

The holotype of this species was collected at Hacienda Montecristo on Cerro Montecristo at an elevation of 2250 meters in El Salvador. The Honduran specimens were found about 85-95 km ESE of the type locality, within a few kilometers of the type locality of *A. salvadorensis*. We consider *montecristoi* and *salvadorensis* to represent distinct species but it will be informative to examine additional material in this respect.

Celestus bivittatus (Boulenger)

The generic status of the anguid lizard genera *Celestus* and *Diploglossus* continues to be the subject of controversy. Recognition of these genera has been based upon the interpretation of the condition of the claws (sheathed or naked, retractile or not) and, to a lesser degree, upon the number of certain supracephalic scales (one or three prefrontals). An excellent summary of the literature concerning this controversy was presented by Myers (1973), who pointed out that the only author to consider the above problems in depth was Underwood (1959). Underwood concluded that no constant set of characters would separate the genera, and that they should be merged under the older name *Diploglossus*. Underwood's conclusions have received mixed support (see Myers, 1973: 16, and Strahm and Schwartz, 1977: 59). Strahm and Schwartz (1977) studied another character in detail, the structure of the osteoderm, in the entire subfamily Diploglossinae.

Strahm and Schwartz (1977) stated that the claws of diploglossines are sheathed or not, as a permanent, species-constant condition, and they discounted the idea that any diploglossine has retractile claws. They further correlated differences in the structure of the osteoderm with significant scutellational data and concluded that the Diploglossinae is composed of five genera, two of which are *Celestus* and *Diploglossus*.

Few specimens of *Celestus* or *Diploglossus* are known from Nuclear Central America (southern México southward to northern Nicaragua), and certain species are known from but one or two localities (Strahm and Schwartz, 1977). As a result, the status of two taxa, *Celestus bivittatus* (Boulenger) and *Diploglossus atitlanensis*

(Smith), has been poorly understood. *Diploglossus atitlanensis* was described in abbreviated form by Smith (1950), — as *Celestus* — from a single specimen collected at Atitlán, Guatemala (probably San Lucas Atitlán, according to Stuart, 1963). The holotype of *atitlanensis* previously had been allocated to *D. (= C.) steindachneri* Cope by Bocourt (1879), an allocation accepted by Günther (1885) and Boulenger (1885). Cope (1887) reported the specimen as *C. steindachneri*, but later (1900) labelled it as *C. enneagrammus* Cope. Stuart (1963) viewed the occurrence of *Celestus* (i.e., *D. atitlanensis*) on the Pacific versant of Guatemala as doubtful and questioned the locality data provided by Bocourt (1879). Hidalgo (1982), however, reported the discovery of *atitlanensis* in neighboring El Salvador from a specimen found at Finca El Imposible, Depto. Ahuachapán.

Celestus bivittatus was described by Boulenger (1894), also from a single specimen (BMNH 1946.8.29.37), collected at Hacienda Rosa de Jericho (= Jérico), Nicaragua (near Matagalpa; Villa, 1971), 3250 feet (= 991 m). The species has been unreported since.

On 31 January 1980 a diploglossine (KU 194665) was collected underneath a log above a small stream 14.4 km WNW of La Esperanza, Depto. Intibucá, 1982 m. The vegetation alongside the stream consisted of various species of broad-leafed trees and shrubs, but the surrounding area previously was dominated by pine forest (*Pinus pseudostrobus*). Two days later three additional specimens were secured (KU 194666-68) in a contiguous flat pine-forested area at 11.3 km WNW of La Esperanza near the junction of the road to Zacate Blanco at 1860 m. A similar specimen was collected inside a log in pine forest on 27 May 1980 at 3 km N Gualcince, Depto. Lempira, at 1510 m (KU 194679).

Through the courtesy of Jorge Porras Orellana we received another specimen (KU 194658) from Nicaragua which he found on 26 December 1979 under a log at Volcán Chongo in the Cordillera de los Marrabios, Depto. Chinandega.

On 1 March 1980 one of the Honduran specimens (KU 194667- Fig. 1) gave birth to ten living young (Fig. 2). The neonates (KU 194669-78) were strikingly different in coloration from the above-mentioned specimens (all adult or sub-adult), which are similar to one another in color and pattern. Color notes in life for a representative adult specimen (KU 194665) are as follows: middorsal area dark brown with each scale darker medially, paler laterally; dorsolateral stripes bright golden pink grading to dull copper at about midbody, fusing on the base of tail to become color of tail; lateral area anterior to forelimb insertion dark brown, posterior to that point lateral stripe invaded by small pale spots from venter; venter pale yellow with copper patina; limbs brown with bronze patina, upper forelimbs with few small drab spots; head dark brown medially, laterally with bright copper stripes; temporal area dark brown; preorbital area pale brown; supralabials with cream-colored markings; area between ear opening and anterior limb insertion cream mottled with brown; chin pale yellow. Variation in color and pattern of remaining non-juvenile specimens was relatively minor, primarily involving the overall intensity in brown shading and gradual change of color in the dorsolateral striping.

The juvenile diploglossines (KU 194669-78), on the other hand, displayed the following color in life: dorsum of body dark chocolate; dorsolateral stripes gold on head grading to golden bronze posteriorly; tail brilliant red-orange; limbs dark reddish brown; labials and lateral neck area pale chartreuse; posterior portion of venter orangish green grading to brilliant reddish orange on tail just anterior to vent; underside of limbs brick red.

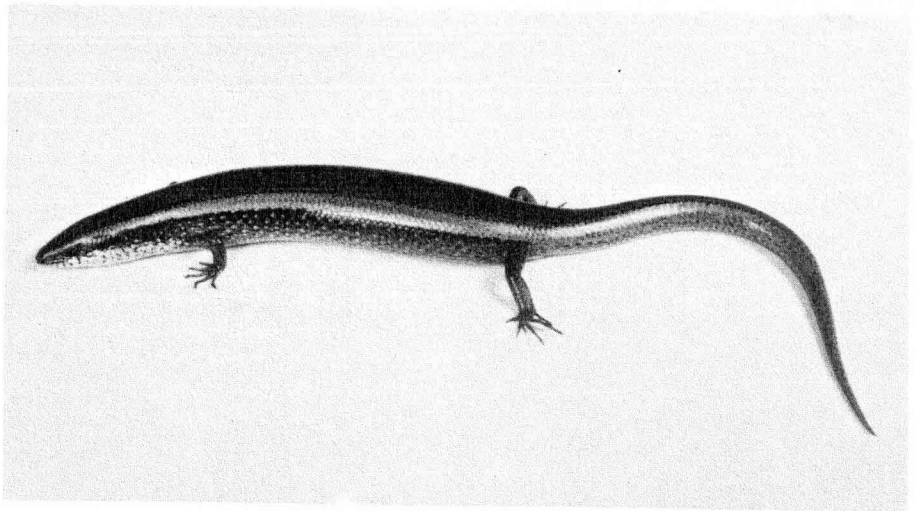


Fig. 1. Adult female *Celestus bivittatus* (KU 194667) from 11.3 km WNW La Esperanza, Depto. Intibucá, Honduras.

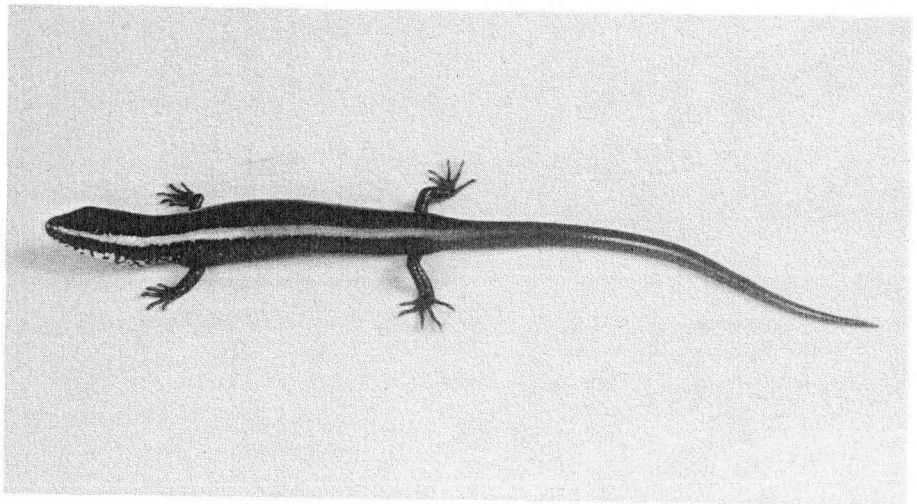


Fig. 2. Juvenile *Celestus bivittatus*, offspring of specimen in Fig. 1.

At this point, it is pertinent to compare the information available on color and pattern in life of the holotypes of *atitlanensis* and *bivittatus* with that of our specimens. Smith (1950) reported the holotype of *atitlanensis* (MNHP 5206) as having "two dorsolateral stripes separating three dark stripes from each other." This description may have been deduced from the specimen's color in life as reported by Bocourt (1879). The specimen subsequently has undergone considerable fading in preservative and now its pattern is virtually indiscernable (see below). Our interpretation of Bocourt's color description is as follows: dorsum brown with olive-yellow dorsolateral stripes extending from tip of snout to base of tail; each of five median scale rows with a central dark stripe; lateral region patterned with closely-knit purplish black-outlined yellow ocellated spots; legs and thighs spotted with yellow and black; infra-labial region and venter yellow, throat paler yellow.

In applying the specific epithet *atitlanensis* to the Salvadoran specimen (KU 184048), Hidalgo (1982) noted that "the Salvadorean specimen agrees well with the original description given by Bocourt (1879) and the diagnosis given by Smith (1950) for *Diploglossus atitlanensis*." In ostensibly reporting the color and pattern of KU 184048 in life, Hidalgo (1982) indicated that the lizard had "two brownish gray dorsolateral stripes" with the "throat, venter and undersurfaces of limbs bluish pale gray." Bocourt's (1879) description, however, states that the dorsolateral stripes were olive-yellow and the venter yellow in the holotype. The colors described by Hidalgo are evident in our preserved specimens from Honduras and Nicaragua, as well as in the preserved Salvadoran specimen (see below).

The color and pattern (in life?) described by Boulenger (1894) for the holotype of *Diploglossus bivittatus* are closely matched by those of the juvenile diploglossines (KU 194669-78) from Honduras. The specimen was noted to be 75 mm in total length with the following color and pattern: "black above, with two greenish-white stripes from the end of the snout, where they unite, to the base of the tail, passing above the eye; lips and sides of neck whitish with bars; throat whitish; belly grayish; tail salmon-pink."

Smith (1950) compared the holotype of *atitlanensis* with what he considered as related species of *Celestus*, viz., *enneagrammus*, *rozellae*, and *bivittatus*. Indicated as "similar" to *bivittatus*, he distinguished *atitlanensis* from it on the presence of three instead of two loreals and seven instead of six supralabials to a point below the middle of the eye.

In discussing the relationships of the genera *Celestus* and *Diploglossus* based on osteoderm anatomy and scutellation, Strahm and Schwartz (1977) were of the opinion that certain mainland taxa (*bivittatus* and *enneagrammus* allocated to *Celestus*; *atitlanensis* to *Diploglossus*) exhibit characteristics intermediate between those of the two genera. They suggested that *atitlanensis* "may be a remnant of the intermediate stock which gave rise to Central American *Celestus*" and that *bivittatus* and *enneagrammus* also "may represent transitional remnant forms which are now relict."

In light of the confused relationships between the taxa *atitlanensis* and *bivittatus*, an easy application of a name to our material from Honduras and Nicaragua is not possible. As a result, we elected to borrow all pertinent material assigned to both taxa. In discussing this material, we have used, with slight modification, the terminology of Tihen (1949), Bogert and Porter (1967), and Myers (1973). We have not included scutellational data on the ten juvenile specimens, except where noted, because their poorly-developed scale sutures precluded making accurate scale counts. The following analysis also includes data taken from the holotype of *D. atitlanensis*

(MNHP 5206), the Salvadoran *atitlanensis* (KU 184048) reported by Hidalgo (1982), and the holotype of *C. bivittatus* (BMNH 1946.8.29.37).

Measurements of selected dimensions and the respective ratio of each dimension and snout-vent length (SVL) are listed in Table 1. The resulting data indicate that no appreciable proportional difference in size is evident among the various examples except in the head length/SVL ratio of the smaller specimens (the holotype of *C. bivittatus* and ten juveniles). We presume these differences relate to the ontogenetic growth of the animal.

All specimens have a rostral plate about twice as wide as high, visible from above, followed by a pair of anterior internasals and a pair of slightly larger posterior internasals. Posterior to these scales is a prefrontal which is wider than long, except in KU 194667 and one of her offspring (KU 194673), in which the prefrontal is divided to form a medial and two lateral prefrontals. Behind the prefrontal(s) is the frontal (the largest cephalic plate), which is approximately one and one-half times longer than wide. The frontal is flanked by five medial supraoculars, the first and/or second in contact with a prefrontal (Table 2). Three lateral supraoculars lie adjacent to the medial supraoculars, except in BMNH 1946.8.29.37, which has two. Posterior to the frontal are paired small frontoparietals followed by larger parietals separated medially by an interparietal which is, in turn, followed by a moderately large, rounded occipital.

The rostral contacts the nasal and first supralabial in all specimens except one (KU 194666), in which contact on one side is prevented by a dorsal extension of the first supralabial. The nostril is large, ovoid, and situated on the posterior portion of an elongate nasal which appears divided anterior to the nostril, although inconclusively so because of scale damage in KU 194679. A pair of postnasals per side is present in all specimens except for one side of BMNH 1946.8.29.37, which has a single postnasal. The upper postnasal is in contact with the anterior and posterior internasal, except in KU 194679 in which a small supranasal on one side prevents the upper postnasal from contacting the anterior internasal.

The loreal region merits special consideration. Two specimens (KU 184048, 194658) have three loreals of approximately equal size on both sides. Each posterior loreal is bordered dorsally by a slightly larger canthal, a scale considered by Hidalgo (1982) to be a lateral prefrontal. Two loreals are present on each side of KU 194666 and KU 194668, the anteriormost one being tall and extending over the canthal ridge. Four specimens (MNHP 5206, BMNH 1946.8.29.37, KU 194665, KU 194679) have three loreals on one side, the middle one tall and extending over the canthal ridge. This latter condition is evident on one side of KU 194667, whereas a canthal situated above the middle loreal is present on the opposite side. All specimens have a single preocular; enlarged upper ciliaries in some specimens might be interpreted as preoculars. The superciliaries are irregular in shape. The anteriormost is the largest, and is in contact with a canthal (or one of the tall loreals) and could be considered a canthal.

Variation in other scutellational features is indicated in Table 2. The only other scale feature necessary of comment is the number of anterior supralabials to the center of the eye. The number ranges from 6 to 7 but usually is seven on both sides. Two specimens, however, including the holotype of *atitlanensis*, have 6 on one side and 7 on the other. Smith (1950) distinguished *atitlanensis* from *bivittatus* partly on the basis of the presence of 7 anterior supralabials to the center of the eye instead of 6.

Hidalgo (1982) noted the number of dorsal striae in the holotype of *atitlanensis* and the Salvadoran specimen to range between 20 and 25. Our observations indicate that dorsal striae are not visible in juveniles (including the holotype of *bivittatus*). They are visible but poorly-developed and uncountable in a subadult (KU 194668) and best-developed in adults from which we obtain counts up to 30.

The data discussed above indicate that no significant differences exist among the material we examined and that separation of the taxa *atitlanensis* and *bivittatus* cannot be maintained. We, therefore, synonymize the two and place the species within the genus *Celestus* in light of its resemblance to *enneagrammus* and *rozellae*. We believe that the osteodermal differences between the two nominal taxa noted by Strahm and Schwartz (1977) are due to ontogenetic variation (i.e., lack of a canal system on the basal portion of the osteoderm in juveniles, present in adults).

Because of the scant information available on the biology of *C. bivittatus*, we hereby summarize the available natural history notes on the species. Hidalgo (1982) indicated that the Salvadoran specimen was found on a tree trunk 2.5 meters off the ground and that another escaped "by climbing higher on the same tree." This specimen was taken in October at the height of the rainy season. In contrast, the Honduran specimens taken in late January and early February during the dry season were found within and under logs. Those specimens collected within logs were found on a day when a "norte" had moved through and the air temperature was 8°C early that morning. The Honduran specimen found in May was likewise in a log and the Nicaraguan specimen came from beneath a log in late December, both in the dry season. We suggest that during the dry season these lizards will seek refuge within or under logs to obtain moisture or to escape cold and that they adopt scansorial habits when the weather becomes warm and wet. The El Salvadoran specimen came from 800 meters, whereas the Honduran specimens came from elevations ranging from 1510 to 1982 meters, which may also account, in part, for the difference in habits.

Celestus montanus Schmidt

Schmidt (1933) described *Celestus montanus* on the basis of a single specimen from "the mountains west of San Pedro, Honduras (the Sierra de Merendon)" [= Sierra de Omoa] at an elevation of 4500 feet (= 1372 m). Herein we report the second and third known specimens of this lizard. The two specimens (LSUMZ 36659 and UTACV R-9443) were collected on a hill (915 m) a few kilometers south of Santa Elena, Depto. Cortés. This locality is approximately 68 airline kilometers south of the type locality and is near the eastern shore of Lago de Yojoa.

Both specimens are females and agree in every detail with the diagnosis given by Schmidt (1933) and also agree remarkably well with his description of scutellation. In life one specimen (UTACV R-9443; Fig. 3) had the following coloration: dorsum of body uniform brownish olive; sides brownish olive with numerous black-outlined pale lime green ocelli; venter pale yellowish green; head grayish blue. There is slight difference between this color description and Schmidt's (1933); he recorded the presence of small black spots on the back and no distinction between the head and dorsal body color.

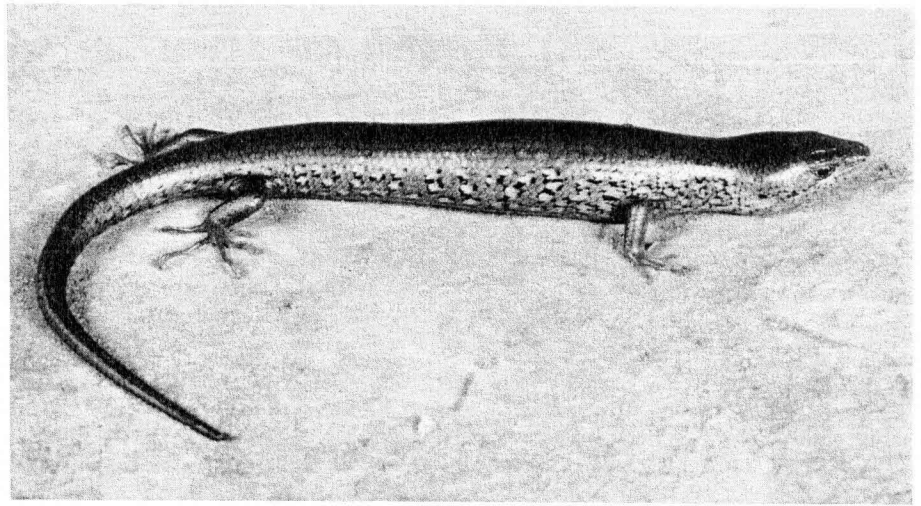


Fig. 3. *Celestus montanus* (UTACV R-9443) from Santa Elena, 915 m, Depto. Cortés, Honduras.

Imantodes inornatus (Boulenger)

Imantodes inornatus was described by Boulenger (1896) from two specimens (one represented by the head only) collected at "Hacienda Rosa de Jericho" (see *Celestus bivittatus* account). The known range of the snake is "Nicaragua to northwestern Ecuador" (Myers, 1982). We here report the first Honduran record for this species from a specimen (KU 194338) collected in a cultivated field near El Zapotal (approximately 5 km NNW San Pedro Sula), Depto. Cortés, in early April, 1980. This locality is approximately 355 km northwest of the only recorded Nicaraguan locality.

The specimen is a male with the following characteristics: ventrals 204; anal plate divided; subcaudals 121; dorsal scale rows 17-17-15, vertebral row slightly but not abruptly enlarged; rostral with large central concavity; supralabials 8; infralabials 10; total length 812 mm; tail length 244 mm; relative tail length 0.300. The coloration of this snake agrees generally with the descriptions provided by Boulenger (1896), Taylor (1951), and Myers (1982). In life, the tip of the mental was yellow-orange, this color fading to dull yellow on the labial edge of the first four infralabials. The underside of the tail was pinkish tan. The iris was orange-brown, except for an orange suffusion at the top of the orbit; the pupil was edged with gold.

Leptophis modestus (Günther)

The presence of *Leptophis modestus* in Honduras was reported by Wilson et al. (1978) from a specimen found 22.5 km E Nueva Ocotepeque, Depto. Ocotepeque, at an elevation of 1890 m in the Sierra de Merendón. A second specimen (LSUMZ 38829) from Honduras was found 1 February 1980 at Zacate Blanco, 14 km WNW La Esperanza, 2020 m, Depto. Intibucá, in the Sierra de Opalaca. The snake was killed by a native near the edge of a potato field adjacent to a remnant patch of hardwood cloud forest. Zacate Blanco lies approximately 88 km ESE of the Ocotepeque locality and is the southernmost locality for this species.

The specimen is a male with the following characteristics: ventrals 171; anal plate

divided; subcaudals 172 (1 or 2 scales possibly missing from tip); dorsal scales 15-15-11; total length 1785 mm; tail length 712 mm; tail/total length ratio 0.399. The specimen agrees with the color description provided by Wilson et al. (1978), except that it lacks a postocular stripe.

Rhadinaea godmani (Günther)

Wilson and Meyer (1972) first reported *Rhadinaea godmani* from Honduras on the basis of one specimen from Cerro Uyuca and another from El Hatillo, both localities in Depto. Francisco Morazán. A third specimen was reported by Wilson et al. (1979) from 12.5 km E Nueva Ocotepeque, Depto. Ocotepeque.

From 17-21 June 1980 six additional specimens were collected from two cloud forest localities in the adjacent sierras of Opalaca and Montecillos in southwest-central Honduras. Three specimens (KU 194346-48) originated from ca. 5 km S Santa Elena, Depto. La Paz, at elevations ranging from 1990-2010 meters. The other three (KU 194343-45) came from Zacate Blanco, Depto. Intibucá, at elevations from 2030-2130 meters.

The material from these two localities is easily segregated into two color pattern morphs. Myers (1974) discussed the considerable geographic variation in the color pattern of this species, which is reflected in the several names given to various populations of *R. godmani* (sensu Myers, 1974). The specific names *zilchi*, *altamontana*, and *binfordi* were all recognized as having been applied to pattern morphs of *R. godmani*. The extremes in pattern variation are exemplified by the bold-striped "*zilchi*" pattern and the pale "*altamontana*" pattern. Specimens with the "*zilchi*" pattern have been recorded from El Salvador (Mertens, 1952; Uzzell and Starrett, 1958) and Honduras (Wilson and Meyer, 1972). The "*altamontana*" pattern is known from Costa Rica (one specimen) and a similarly-patterned specimen is known from Guatemala (Myers, 1974). The remainder of the range is occupied by snakes with striped patterns of varying intensity.

Two specimens from Santa Elena (KU 194346-47) are of the "*zilchi*" pattern. The third specimen (KU 194348), a juvenile, has a poorly-developed pattern, approximating the "*altamontana*" type. The dorsal ground color of the adults in life was brown with very dark brown to black striping; that of the juvenile was pale brown with faint, narrow grayish brown striping. The venter ranged from pale yellow in the juvenile to a bold yellow in the adults.

The color pattern of the specimens from Zacate Blanco (KU 194343-45) is surprisingly at variance with that seen in specimens from the other known localities in Honduras and El Salvador. The dorsum was rust red in life with extremely muted striping limited to a diffuse and/or disjunct middorsal stripe. The venter was bright golden yellow. This color pattern is similar to the "*altamontana*" type but even more closely resembles that described for *R. hempsteadae*. The holotype of this species was described by Stuart and Bailey (1941) as having a reddish brown dorsum and lemon yellow venter in life. Some specimens of *R. hempsteadae* have a dark dorsolateral stripe, others lack it (Myers, 1974).

Ventral counts for the three Santa Elena specimens are 163 and 166 for two males and 168 for the female; for one Zacate Blanco male the count is 170 and for two females 177 and 178. Subcaudal counts for the two male Santa Elena specimens are 85 and 91, and 73 for the female. The Zacate Blanco male has 80; the two females have 75 and 76. These values all fall within the known ranges for both *R. godmani*

and *R. hempsteadae*. The dorsal scale rows of all six specimens are 21 throughout, a character in which they agree with *R. godmani*. Most *R. hempsteadae* have 19 scale rows throughout. As noted by Myers (1974), a few specimens of *R. hempsteadae* are known with 21 scale rows at midbody (19 at the neck and vent) and one specimen of *R. godmani* has 19-21-17 scale rows. He also noted the close relationship of *R. godmani* and *R. hempsteadae* in a number of characteristics and indicated the possibility that the two hybridize or are conspecific. Our material lends support to Myers' thesis that the two species are but variants of a single species but does not conclusively demonstrate so.

Scolecophis atrocinctus (Schlegel)

The available information pertaining to *Scolecophis atrocinctus* in Honduras was recently reviewed by Wilson and Meyer (1982). These authors noted that the holotype of the synonym *Elaps zonatus*, whose type locality was given by Hallowell (1855) as "Honduras," could not be located and that the species was represented previously in collections by a single specimen from Gracias, Depto. Lempira.

A second specimen of *S. atrocinctus* from Honduras (KU 194681) collected at a military outpost 10 km E of El Zamorano, Depto. Francisco Morazán, on 16 August 1981, is now available. It is a female with the following characteristics: ventrals 187; anal plate divided; subcaudals 49; dorsal scale rows 15 throughout the body; total length 165 mm; tail length 24 mm; tail/total length ratio 0.145; coloration in preservative with 45 alternating black and white bands on the body, 8 on the tail.

The range of *S. atrocinctus* was given by Wilson and Meyer (1982) as "low and moderate elevations along Atlantic and Pacific versants from eastern Guatemala to Costa Rica." The above specimen, however, represents the first record from the Pacific versant in Honduras.

Sibon fischeri (Boulenger)

Kofron (1985) summarized the data on variation in external and dental features of *Sibon fischeri* and gave the range of the species as "the highlands of western [= eastern] Oaxaca, Chiapas, Guatemala, western and northern El Salvador, and *probably also western Honduras*" (italics ours). The species is known to occur at elevations ranging from about 1350 to 3350 meters in pine-oak forest, hardwood cloud forest, and cypress-pine forest. This elevational range of 2000 meters makes *S. fischeri* one of the more broadly distributed snakes altitudinally in Middle America.

Kofron (1985) anticipated the occurrence of *Sibon fischeri* in western Honduras and we are able to confirm it. He expected the snake to occur in the Honduran portion of the mountain mass which comprises the southeastern highlands of Guatemala and continues along the common border of El Salvador and Honduras. Although we suspect that *S. fischeri* does occur in this area, we found it in the Sierra de Opalaca to the north. On 17-18 June 1980 three specimens of *S. fischeri* were collected from elevations of 2020-2150 m at Zacate Blanco in the department of Intibucá. Remnants of hardwood cloud forest exist at this locality but the snakes came from within or under logs in corn or potato fields or pasture. *Sibon fischeri* occurs at elevations higher than those recorded for any other snake in Honduras (Wilson and Meyer, 1982).

The three specimens (KU 194358-60), all males, exhibit the following meristic and mensural characteristics: ventrals 182-184 (\bar{x} = 183.0); anal plate single; sub-

caudals 59-63 (\bar{x} = 60.6); dorsal scale rows 17 throughout; supralabials 6 on 5 sides, 7 on one, with 3rd and 4th (5 sides) or 4th and 5th (1 side) entering orbit; infralabials 6 on one side and 7 on five, with 3 (1 side) or 4 (5 sides) in contact with anterior chin shields; total length 290-443 mm; tail length 93-109 mm; tail length/total length ratio 0.197-0.199.

Color in life is as follows: dorsal ground color rust red to brown with slight orangish tinge; dorsal blotches very dark brown, narrowly and vaguely outlined with cream, 32-40 (\bar{x} = 36.3) in number; venter cream to cream with slight yellowish tinge; ventral blotches very dark brown.

Snake associates in the area are *Bothrops godmani*, *Leptophis modestus*, *Rhadinaea godmani*, and *Thamnophis fulvus*.

We suspect that *Sibon fischeri* will eventually be found in the Sierra de Merendón, Montaña de Celaque, and the Sierra de Omoa of western Honduras.

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Table 1. Variation in mensural features in *Celestus bivittatus*. Ratio of measurement to snout-vent length enclosed in brackets. (R) denotes a regenerated tail. Range of measurements and ratios in juveniles followed by mean in parentheses.

Character	MNHP 5206 ¹	KU 184048 ²	KU 194665 ³	KU 194666 ³	KU 194667 ³	KU 194668 ³	KU 194679 ³	KU 194658 ⁴	BMNH 1946.8.29.37 ⁵	KU 194669-78 ⁶
Sex	♀	♀	♂	♀	♀	♂	♂	♀	♀	Unsexed
Snout-vent length	111.4	109.5	81.1	97.1	103.9	61.0	72.6	86.4	32.5	28.2-30.7(29.6)
Tail length	92.0(R)	116.4 [1.063]	48.0(R)	—	104.1 [1.002]	41.9(R)	97.0 [1.336]	63.5(R)	40.6 [1.249]	28.2-39.4(32.0) [0.925-1.359(1.082)]
Head length	17.9 [0.161]	17.8 [0.163]	13.7 [0.169]	14.6 [0.150]	15.7 [0.151]	11.2 [0.184]	13.3 [0.183]	14.2 [0.164]	7.5 [0.231]	7.2-7.9(7.6) [0.241-0.283(0.266)]
Head width	12.7 [0.114]	12.4 [0.113]	9.1 [0.112]	11.4 [0.117]	11.1 [0.107]	7.1 [0.116]	8.1 [0.112]	11.2 [0.130]	4.0 [0.123]	3.4-3.9(3.8) [0.113-0.138(0.128)]
Head height	8.9 [0.080]	8.5 [0.078]	6.9 [0.085]	8.6 [0.089]	8.4 [0.081]	5.1 [0.084]	6.1 [0.084]	8.4 [0.097]	2.7 [0.083]	2.5-2.8(2.6) [0.081-0.095(0.087)]
Anterior leg length	20.3 [0.182]	21.1 [0.193]	14.0 [0.173]	15.2 [0.157]	19.8 [0.191]	11.2 [0.184]	14.7 [0.203]	14.2 [0.164]	6.7 [0.206]	4.8-7.1(6.0) [0.173-0.245(0.204)]
Posterior leg length	29.9 [0.268]	28.2 [0.258]	21.3 [0.263]	22.7 [0.234]	22.9 [0.220]	15.2 [0.249]	19.3 [0.266]	20.1 [0.233]	9.1 [0.280]	7.1-9.1(8.3) [0.253-0.302(0.279)]
Axilla-groin length	68.6 [0.616]	63.8 [0.583]	50.8 [0.626]	62.7 [0.646]	64.8 [0.624]	37.9 [0.621]	39.9 [0.550]	53.6 [0.620]	18.5 [0.569]	15.3-17.0(16.4) [0.495-0.557(0.535)]

¹Holotype of *Diploglossus atitlanensis*

²Specimen from El Salvador

³Adult and sub-adult specimens from southwestern Honduras

⁴Specimen from Nicaragua

⁵Holotype of *Celestus bivittatus*

⁶Juvenile specimens from southwestern Honduras

Table 2. Variation in scutellation in *Celestus bivittatus* from El Salvador, Honduras, and Nicaragua (excluding juveniles from Honduras).

Character	MNHP 5206	KU 184048	KU 194665	KU 194666	KU 194667	KU 194668	KU 194679	KU 194658	BMNH 1946.8.29.37
Superciliaries	8-6	6-6	9-8	7-7	7-6	7-8	8-7	9-10	7-7
Suboculars	2-2	2-3	2-2	2-2	3-2	1-2	2-2	3-3	2-2
Postoculars	4-4	3-3	5-5	5-5	5-4	5-4	4-4	5-5	3-4
Primary Temporals	5-5	4-4	4-3	4-4	4-4	5-4	4-4	4-4	5-4
Secondary Temporals	4-4	5-5	5-5	5-4	5-5	5-6	5-5	5-5	3-4
Supralabials	9-9	10-10	9-9	9-8	9-8	9-9	9-9	9-9	10-11
Supralabials to center of eye	7-7	7-7	7-7	7-6	7-7	7-7	7-7	7-7	6-7
Infralabials	7-7	9-9	7-7	6-6	7-7	6-7	8-8	6-6	8-8
Chin Shields	3-3	3-3	4-4	3-3	3-3	3-3	4-4	4-4	4-3
First pair of chin shields in contact	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Middorsal scales	74	73	78	79	77	78	76	76	79
Scales around midbody	30	31	30	31	30	29	30	31	31
Scales between postmental and vent	84	79	85	84	80	80	82	80	81
Preanal scales	10	10	10	8	8	8	10	10	10
Subdigital lamellae on fourth toe	17-17	18-18	17-16	16-16	17-16	16-16	15-17	15-15	14-16

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