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A new arboreal lizard of the genus *Celestus* (Squamata: Anguidae) from Northern Honduras

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Abstract: A new species of arboreal lizard of the genus *Celestus* is described from north-central Honduras. This new species appears to be most closely related to *C. bivittatus* and is easily distinguished from that species by having longer digits on both the fore- and hindlimbs.

Key words: Reptilia, Squamata, Anguidae, *Celestus,* new species, Honduras.

Wilson *et al.* (1986) reported *Celestus bivittatus* (Boulenger, 1895) from Honduras, based on a series of specimens collected on the Pacific versant near the Continental Divide in southwestern Honduras. Subsequently, we collected a single specimen of *Celestus* from the Caribbean versant of northern Honduras, some 130 airline km NE of the easternmost Honduran locality for *Celestus.* Wilson *et al.* (1991) assigned this specimen to *C. bivittatus* (northwestern Nicaragua to south-central Guatemala). Reexamination of the Caribbean versant specimen in May 1993 showed it to differ significantly from the other material of *C. bivittatus* in having a higher number of subdigital lamellae on the fourth toe. In July 1993, we collected an additional specimen of *Celestus* from near the previous Caribbean locality in northern Honduras which has a similar number of subdigital lamellae. Careful examination of these two specimens demonstrated other differences from *C. bivittatus.* Consequently, we believe that the northern Honduran specimens represent an undescribed taxon, which we herein describe.

MATERIAL AND METHODS

Measurements were made with a dial caliper under a dissecting microscope to the nearest 0.1 mm. Morphometric abbreviations are SVL (snout vent length), TL (tail length), A-GL (axilla to groin length), HW (head width: measured at angle of jaws), and HL (head length: measured from tip of snout to anterior rim of auricular opening). Specimens have been deposited in the Field Museum of Natural History, Chicago, Illinois (FMNH), the Museum of Natural History, The University of Kansas, Lawrence (KU), and the National Museum of Natural History, Washington, D. C. (USNM). Color notes used were taken from living specimens by LDW. Comparative data for the other species of *Celestus,* except for *C. bivittatus,* were taken from Campbell & Camarillo (1994) and Savage & Lips (1994). The following *C. bivittatus* were examined for this study: Honduras—Intibucá, KU 194665-68, USNM 335050-55; Lempira, KU 194679. Nicaragua—Chinandega, KU 194658.

Celestus scansorius sp. n.
(Fig. 1)

Holotype: USNM 335049, adult female, from 2.5 airline km NNE La Fortuna (15°25'N, 87°19'W), 1550 m elevation, Cordillera Nombre de Dios, Departamento de Yoro, Honduras, collected 31 July 1993 by James R. McCranie, Kenneth L. Williams, and Larry David Wilson. Original number LDW 10059.

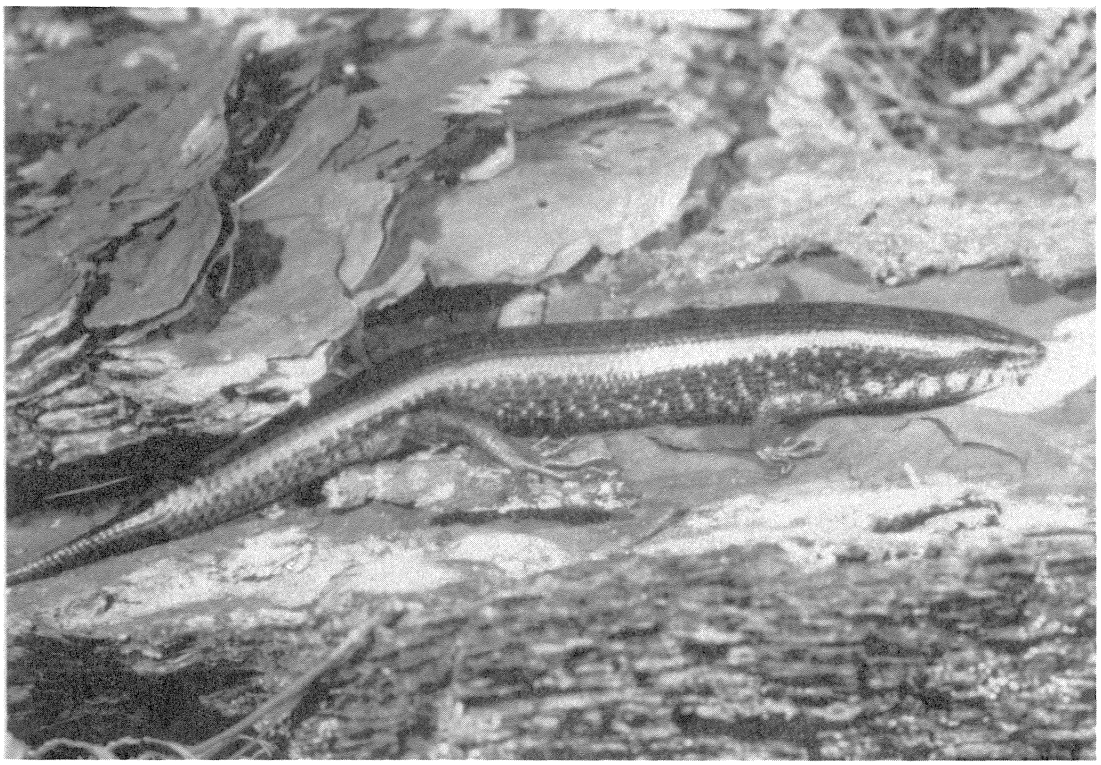

Fig. 1. Adult female holotype (USNM 335049) of *Celestus scansorius;* SVL 110.5 mm.

Paratype: FMNH 236386, adult female, from Montaña Macuzal (15°04'N, 87°20'W), 1590 m elevation, Departamento de Yoro, Honduras, collected 6 July 1983 by James R. McCranie and Larry David Wilson. Original number LDW 6333.

Diagnosis: *C. scansorius* appears to be most closely related to *C. bivittatus* (includes *C. atitlanensis* Smith, 1950; but see Discussion) and can be distinguished from that species by having 21-22 lamellae under the fourth toe (14-18 in *C. bivittatus*), 15-16 lamellae under the third finger (12-14), and ventral surface pale gray in preservative (cream with zero to less than one-half of ventral scales with gray pigment). The other mainland species of *Celestus* (*sensu* Savage & Lips, 1994) can be distinguished from *C. scansorius* as follows (features for the compared species in parentheses): from *C. cyanochloris* Cope, 1894, by maximum known SVL of 111.1 (98.6), 29-31 scales around midbody (32-34), 74 scales along dorsal midline (65-73), 11-12 preanals (10), HL/SVL 0.162-0.164 (0.190-0.235), pale spots or markings present laterally (absent), and dorsolateral pale stripe weakly evident in adults (absent); from *C. enneagrammus* (Cope, 1861) by having 21-22 lamellae under the fourth toe (14-18), maximum known SVL of 111 (89), suboculars and postoculars juxtaposed (in single series), 74 scales along dorsal midline (77-85), 76-78 scales along ventral midline (81-91), and dorsolateral pale stripe weakly evident in adults (absent); from *C. hylaius* Savage and Lips, 1994, by having 74 scales along dorsal midline (76-81), 76-78 scales along ventral midline (84-92), adult HW/SVL 0.131-0.133 (0.082-

0.124), each ventral scale with gray anterior edges in life (immaculate yellow-green); from *C. legnotus* (Campbell and Camarillo, 1994) by having 21-22 lamellae under the fourth toe (15-17), suboculars and postoculars juxtaposed (in single series), seventh and eighth or eighth and ninth supralabials below eye (usually sixth and seventh), 29-31 scales around midbody (33), 74 scales along dorsal midline (75-79), suture between first and second supralabials beneath anterior edge of naris (center of naris), lacking dark vertical bars laterally (present), and dorsolateral pale stripes weakly evident in adults (absent); from *C. montanus* Schmidt, 1933, by having a single prefrontal bordering frontal anteriorly (three prefrontals [or two prefrontals and one frontonasal as used by Savage & Lips, 1994]), maximum known SVL of 111 (93), second medial supraocular not in contact with prefrontal (in contact), 29-31 scales around midbody (33), 74 scales along dorsal midline (67-72), flanks of body with pale colored scales, frequently arranged into irregular vertical lines (flanks with conspicuous pale spots), and dorsolateral pale stripes weakly evident in adults (absent); from *C. orobius* Savage and Lips, 1994, by maximum known SVL of 111.1 (82.9), 29-31 scales around midbody (33), 74 scales along dorsal midline (66), 11-12 preanals (8), 11-12 supralabials (9), 9-10 infralabials (7-8), and dorsolateral pale stripes weakly evident in adults (absent); from *C. rozellae* Smith, 1942, by maximum known SVL of 111 (102), middle loreal vertically elongate, occupying canthal area (a canthal usually present), lacking dark vertical bars laterally (present), and dorsolateral stripes weakly evident in adults (absent).

Description of holotype: Rostral less than twice as wide as high (3.0 x 1.7 mm), visible from above, laterally in contact with first supralabial and nasal; four internasals, anterior pair shorter than posterior pair, anterior pair laterally in contact with nasal and upper postnasal, posterior pair laterally in contact with upper postnasal and first two loreals; prefrontal single, large, wider than long (4.5 x 3.7 mm), laterally in contact with second loreal and anterior median supraocular; frontal longer than wide (4.9 x 3.6 mm), laterally in contact with anterior three medial supraoculars; paired frontoparietals and parietals separated from their counterparts by interparietal; interparietal larger than frontoparietals, smaller than parietals; frontoparietals laterally in contact with third and fourth medial supraoculars (the third narrowly) and upper primary temporal; parietals separated from medial supraoculars by upper primary temporal; occipital smaller than parietals, rounded posteriorly; 5-5 medial supraoculars, the fifth smallest; 5-5 lateral supraoculars, anteriormost one situated between third loreal and anteriormost medial supraocular; 5 (right)-6 (left) small scales separating lateral supraoculars from upper ciliaries; 6-6 vertically elongate translucent scales in lower eyelid; canthus rostralis rounded, side of snout concave just anterior to eye; 1-1 nasals, longer than high (1.7 x 0.9 mm on left side), contacting first two supralabials, nostril pierced in posterior end of scale; 2-2 postnasals, lower slightly larger, contacting second and third supralabials; 3-3 loreals, all single, middle one enlarged and vertically elongate, occupying canthal area; first loreal contacting third and fourth supralabials, second loreal fourth (right side)-fourth and fifth (left side, the latter narrowly), third loreal fourth and fifth (right side, the former narrowly)-fifth and sixth (left side, the latter narrowly); 1-1 preoculars; 3-3 suboculars; 5-5 postoculars, series juxtaposed to suboculars; temporal scales little differentiated, 5-5 primary temporals, lower four in contact with one or two postoculars; six scales between postoculars and anterior edge of auricular opening; 11 (right)-12 (left) supralabials, seventh and eighth (right) and eighth and ninth (left) below center of eye; suture between first and second supralabials at level about equal to anterior edge of naris; mental wider than long (3.5 x 1.3 mm), larger than adjacent infralabials; 10-10 infralabials, first contacting postmental, first three contacting first chinshield; postmental smaller than mental; four pairs of chinshields, first pair in contact medially; dorsal scales cycloid, imbricate, each middorsal scale with ca. 20-23 strongly developed striae; 74 dorsal scales along midline from occipital to posterior edge of thigh, 50 between axilla and groin; ventral scales cycloid, imbricate, each midventral scale with ca. 5-8 rather weakly developed striae; 76 ventral scales along midline between first pair of chinshields and anterior edge of vent, 47 between axilla and groin; 31 scales around midbody; 11 scales on anterior edge of vent; pentadactylous; digits laterally compressed; third finger longer than others, with

15-15 subgital lamellae (first digit on left forelimb missing); fourth toe longer than others, with 21-21 subdigital lamellae; digital claws unsheathed; upper caudal scales not keeled on original portion of tail, weakly keeled on posterior portion of regenerated part.

SVL 110.5; TL 65.8 (partially regenerated); A-GL 64.2, 58.1% SVL; HW 14.7, 13.3% SVL; HL 18.1, 16.4% SVL; anterior insertion of forelimb to tip of snout 34.0 mm, 30.8% SVL; anterior insertion of forelimb to posterior rim of auricular opening 13.5, 12.2% SVL.

In life, dorsum Verona Brown middorsally (color 223B in Smithe 1975) with fragmented dark brown stripe down each row; dorsolateral stripe Verona Brown with metallic sheen; middorsum of head coppery brown; head stripes coppery tan; lateral surface of head pale coppery brown anterior to eye, coppery brown posterior to eye; labial surface cream with bronze sheen; lateral surfaces of body mottled creamy bronze, coppery brown, and very dark brown; dorsal surfaces of limbs coppery brown with indistinct very dark brown spotting; dorsal surface of tail same as that of body; ventral surfaces of head, body, and tail pale golden yellow with pale gray scale edges; iris dark brown with gold flecking.

In preservative, dorsum pale brown with bluish cast and diffuse, fragmented stripe down middle of each scale row; dorsolateral stripe pale brown with bluish cast; middorsum of head pale bluish gray, smudged with dark brown; labials cream with dark brown smudging; lateral surfaces of body mottled with pale blue and dark brown; dorsal surface of anterior limbs mottled with pale blue and dark brown; dorsal surfaces of hind limbs dark gray-brown; dorsal surfaces of original portion of tail as for body; ventral surfaces of head, body, and tail pale gray except preanal scales which are cream.

Variation in paratype: The paratype is remarkably similar to the holotype in overall scutellation. The following counts obtain for the pertinent scales: prefrontal single; 11-11 supralabials, with seventh and eighth below middle of eye on both sides; 3-3 loreals; 4-4 postoculars; 10-9 infralabials; 74 dorsal scales along midline between occipital and posterior edge of thigh, 51 between axilla and groin; 78 ventral scales along midline between first pair of chinshields and anterior edge of vent, 47 between axilla and groin; 29 scales around midbody; 12 scales on anterior edge of vent; 15-16 subdigital lamellae on third finger, 22-22 on fourth toe.

SVL 111.1; TL 96.5 + tip; A-GL 66.1, 59.5% SVL; HW 14.6, 13.1% SVL; HL 18.0, 16.2% SVL; anterior insertion of forelimb to tip of snout 30.0, 27.0% SVL; anterior insertion of forelimb to posterior rim of auricular opening 12.6, 11.3% SVL.

In life, dorsum coppery brown with very dark brown streaks on each scale; dorsolateral stripe coppery brown; middorsum of head coppery brown with very dark brown markings; supralabials brown above, pale yellow below; dark brown temporal band grading into darker colored lateral band; lateral band on body with small coppery brown spots; dorsal surfaces of limbs dark brown; dorsal surfaces of tail coppery brown with very dark brown streaking; ventral surfaces of head, body, limbs, and tail greenish yellow with pale gray scale edges.

In preservative, the paratype essentially is colored the same as the holotype save for being somewhat more faded due to longer emersion in preservative.

Etymology: The specific name *scansorius* is Latin, meaning "of climbing," and is used in allusion to the arboreal habits exhibited by the two known specimens of this species.

Natural history notes: The holotype was collected during the late morning from underneath the bark of a tall pine tree stump ca. 2 m above the ground on a pine-covered ridge at 1550 m in the Premontane Moist Forest formation (Holdridge 1967). When the portion of bark underneath which the lizard was hidden was removed, the lizard fell to the ground but quickly reclimbed the opposite side of the tree stump. The paratype was collected in early afternoon at 1590 m while lying on a horizontal tree trunk growing from a vertical cliff in the Lower Montane Wet Forest formation (Holdridge 1967). The lizard was ca. 2.5 m above the forest floor and appeared to be asleep, as it made no effort to escape while JRM worked his way through considerable vegetation to position himself underneath the lizard in order to capture it.

DISCUSSION

Savage & Lips (1994) reviewed the characteristics and status of the diploglossine genera

Celestus and *Diploglossus* and demonstrated that the two genera were readily distinguishable from each other on the basis of claw structure. In *Celestus,* the claws are exposed for most of their length, whereas in *Diploglossus* the claws are enclosed within a scaly sheath. The species *scansorius* clearily belongs to the genus *Celestus* following Savage & Lips (1994).

Wilson *et al.* (1986) recomended placing *C. atitlanensis* in the synonymy of *C. bivittatus.* Savage & Lips (1994) accepted this arrangement. However, Campbell & Camarillo (1994) considered *atitlanensis* to be a distinct species, separated from *bivittatus* on the basis of size (SVL to 113 mm in *atitlanensis,* 103 mm in *bivittatus*) and habits (arboreal in *atitlanensis,* terrestrial in *bivittatus*). We are unable to add any new information towards the solution of the taxonomic status of *C. atitlanensis* other than to corrobate that *C. bivittatus* appears to be strictly terrestrial in Honduras. Contrariwise, *C. scansorius* is found in arboreal situations much like that reported by Hidalgo (1982) for the Salvadoran specimen that was assigned to *C. atitlanensis* by Campbell & Camarillo (1994). If one considers *C. atitlanensis* as a distinct species, then that taxon can be most easily distinguished from *C. scansorius* by number of subdigital lamallae on the fourth toe (17-18 in *atitlanensis,* 21-22 in *scansorius*).

In Honduras, *C. bivittatus* is known from between 1510-1980 m in pine-oak woodlands (Premontane Moist Forest formation of Holdridge 1967) on the Pacific versant of the southwestern portion of the country (Fig. 2). Pine-oak woodlands and elevations above 1500 m are largely uninterrupted between each of the Honduran collecting localities for *C. bivittatus.* On the other hand, *C. scansorius* is known from two localities on the Atlantic versant in north-central Honduras (Fig.2). The vast majority of the ca. 130 km separating the nearest localities of *bivittatus* and *scansorius* lie below 1400 m, with several significant breaks lying below 1000 m. We believe that the hiatus between the ranges of the two species is real, and not an artifact of collecting, as the intervening territory is too dry and open to support populations of these species of *Celestus.*

The following key is modified from the keys presented by Campbell & Camarillo (1994) and Savage & Lips (1994).

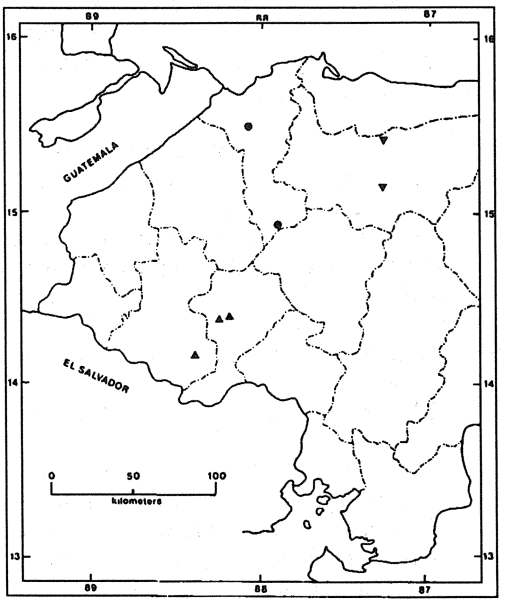

Fig. 2. Distribution of species of *Celestus* in Honduras. Inverted triangles = *C. scansorius;* triangles = *C. bivittatus;* circles = *C. montanus.* See the maps in Campbell & Camarillo (1994) and Savage & Lips (1994) for the localities of the mainland species of *Celestus* outside of Honduras.

A KEY TO THE MAINLAND SPECIES OF *CELESTUS*

1. Suboculars and postoculars in single continuous series 2
   Subocular and postocular series juxtaposed 4

2. 73 or fewer transverse rows of dorsal scales; 20-25 subdigital lamellae on fourth toe ..... *C. cyanochloris*
   75 or more transverse rows of dorsal scales; 14-18 subdigital lamellae on fourth toe 3

3. Flanks pale with irregular dark bars; posterior edges of supracephalic scales dark-edged; attaining SVL of 112 mm ..... *C. legnotus*
   Flanks dark with or without pale markings; supracephalic scales uniformly colored; maximum known SVL 85 mm ..... *C. enneagrammus*

4. 14-18 subdigital lamellae on fourth toe .....*C. bivittatus*[1]
20-27 subdigital lamellae on fourth toe... 5

5. Frontal plate bordered anteriorly by three scales; flank pattern of ocelli ....*C. montanus*
Frontal plate bordered anteriorly by a single large prefrontal; flank pattern without well-defined ocelli 6

6. Less than 70 transverse rows of dorsal scales.....*C. orobius*
73-81 transverse rows of dorsal scales ..7

7. Pale dorsolateral stripes absent; distinct alternating pale and dark vertical bars on neck and usually on flanks.....*C. rozellae*
Pale dorsolateral stripes evident; no distinct alternating pale and dark vertical bars on neck and flanks 8

8. 84-92 transverse rows of ventral scales; 76-81 transverse rows of dorsal scales ....*C. hylaius*
76-78 transverse rows of ventral scales; 74 transverse rows of dorsal scales ....*C. scansorius*

[1]includes *C. atitlanensis*

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RESUMEN

Se describe una especie nueva de *Celestus* arborea de el centro del norte de Honduras. Esta nueva especie parece ser mas relacionada a *C. bivittatus* y es mas facil de distinguir esta especie ya que tiene digitos mas largos en ambas extremidades del frente y traseras.

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