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Research Article

## Raising of Lazarus: Rediscovery and redescription of *Apostolepis niceforoi* Amaral, 1935 (Serpentes: Dipsadidae: Elapomorphini)

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### Abstract.

*Apostolepis* is a speciose Neotropical snake genus, encompassing 38 species, widely distributed in South America. Most species of the genus are known based on small series, which has contributed to a convoluted taxonomic history. In this study, we report the rediscovery of *Apostolepis niceforoi*, a taxon that remained known from a single specimen since its original description in 1935, providing a detailed redescription, with comments on putatively close congeners, as well as taxonomic misidentifications related to this species.

**KEY WORDS:** CAENOPHIDIA; COLOMBIA; NEOTROPICAL; TAXONOMY.

### Introduction

The dipsadid tribe Elapomorphini Jan, 1862 comprises approximately 50 species of semi-fossorial or cryptozoic snakes, widely distributed throughout cis-Andean America (Ferrarezzi 1993; Hofstadler-Deiques & Lema 2005; Entiauspe-Neto *et al.* 2019). Four genera are recognized (*Apostolepis* Cope, 1862; *Coronelaps* Lema & Hofstadler-Deiques, 2010; *Elapomorphus* Wiegmann, 1843; *Phalotris* Cope, 1862), diagnosed based on pholidosis and

osteological synapomorphies (Hofstadler-Deiques & Lema 2005; Lema & Hofstadler-Deiques 2010). Among them, *Apostolepis* is the most speciose, with 38 species distributed from southern Colombia and the Guyana shield to southern Brazil and northern Argentina, in a wide array of natural regions (Ferrarezzi 1993; Guedes *et al.* 2018a; Entiauspe-Neto *et al.* 2019; Entiauspe-Neto *et al.* 2020).

### Figure 1

Overview of *Apostolepis niceforoi* (ICN 10422) from Florencia, Caquetá department, Colombia.  
Photograph credits: Juan David Fernández. Scale bar = 5 mm.

## Material and Methods

**A***postolepis* has a particularly unstable taxonomy; it is poorly represented in scientific collections, likely related to its fossorial habits and a natural rarity, has accounted for a confused taxonomic history, with several synonymizations, revalidations, and descriptions, usually based upon small type series and relying exclusively on external morphology (Vanzolini 1986; Ferrarezzi 1993; Entiauspe-Neto *et al.* 2019). Of these, the recondite *Apostolepis niceforoi* Amaral, 1935 represents an interesting case: the species was described based on a single specimen from lowland Amazonian forest, at "La Pedrera", Bajo Caquetá, southern Colombia, close to the Brazilian border, and has remained undetected ever since. Its holotype is now lost, after the tragic fire at Instituto Butantan, in 2010 (Kumar 2010; Giuseppe Puerto *pers. comm.*).

Aside from its brief original description, no other studies have addressed new data on the taxonomy, morphology, or natural history of *A. niceforoi*. Amaral (1935:21) presents a short morphological description, followed by brief remarks, in which the author states that this species "seems close to *Apostolepis coronata* (*Apostolepis quinque linea* and *Apostolepis pymi*), and to *Apostolepis assimilis* and *Apostolepis cearensis*" from which he diagnosed based on pholidosis and coloration. *Apostolepis coronata* (Sauvage, 1887) would later be synonymized as *Coronelaps lepidus* (Reinhardt, 1861) by Lema & Deiques (1995), and the taxa *Apostolepis quinque linea* Boulenger, 1896 and *Apostolepis pymi* Boulenger, 1903 would remain with controversial status, prone to synonymizations and revalidations (for discussion beyond the scope of this work, see Lema & Renner 1998; Curcio *et al.* 2011).

As no other specimens have been recorded, *A. niceforoi* is considered poorly-known regarding its geographic distribution (Guedes *et al.* 2018b); the species was previously reported from Brazil by Bérnails & Costa (2011), but has been excluded from the Brazilian List of Reptiles, under the basis that no additional specimens have been recorded in the Brazilian territory, as its type-locality is in the Colombian side of the border (Bérnails & Costa 2012). In this study, we report the rediscovery of the species after almost 100 years, the first specimen found since its description, while also providing a detailed redescription for the species, and comments on its congeners and previous misidentifications.

We examined a total of 621 specimens of *Apostolepis* from the following collections:

Academy of Natural Sciences, ANSP, USA;  
The Natural History Museum, BMNH, England;  
Coleção Herpetológica Universidade Federal do Rio Grande, CHFURG;  
Coleção Herpetológica da Universidade Federal do Ceará, CHUFC, Brazil;  
Coleção Herpetológica da Universidade Federal de Sergipe, CHUFS, Brazil;  
Instituto Butantan, IBSP, Brazil;  
Instituto de Ciencias Naturales, Universidad Nacional de Colombia, ICN, Colombia;  
Coleção Herpetológica, Instituto de Pesquisas Amazônicas, INPA, Brazil;  
Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul, MCP, Brazil;  
Muséum National d'Histoire Naturelle, MNHN, France;  
Museo de Historia Natural Para la Tierra, MHNP, Paraguay;  
Museu Nacional, MNRJ, Brazil;  
Museu de História Natural da Universidade Federal de Alagoas, MUFAL, Brazil;  
Museu de Zoologia, Universidade Estadual de Feira de Santana, MZUEFS, Brazil;  
Museu de Zoologia da Universidade Federal da Bahia, MZUFBA, Brazil;  
Museu de Zoologia da Universidade de São Paulo, MZUSP, Brazil;  
Naturhistorisches Museum Wien, NMW Austria;  
Coleção Herpetológica da Universidade Federal do Mato Grosso, UFMT-R, Brazil;  
Coleção Herpetológica da Universidade Federal de Rondônia, UFRO-H, Brazil;  
University of Michigan Museum of Zoology, Herpetology collection, UMMZ, USA;  
Zoologisches Forschungsmuseum Alexander Koenig, ZFMK, Germany;  
Zoologisches Museum für Naturkunde Berlin, ZMB, Germany.

A list of examined material is provided in Appendix 1.

Scale counts follow Dowling (1951). Sex determination was done with a ventral incision in the base of the tail. An emended diagnosis is based on the nomenclature used by Entiauspe-Neto *et al.* (2020). Morphometric characters are as follows: head length, measured from center of rostral to the corner of mouth; head width, measured at the corner of mouth; snout-vent length, ventrally measured from center of rostral to the posterior margin of cloacal scale; tail length, measured from posterior margin of cloacal scale to terminal scale. Head and tail measurements were taken with a dial caliper to the nearest 0.01 mm; for others, a flexible ruler was used. Scales were measured on the right side of head.

## Results

*Apostolepis niceforoi* Amaral, 1935 (Figs. 1–3)

*Apostolepis niceforoi* Amaral, 1935:221.

**Holotype:** Adult female, IBSP 9197, from "La Pedrera" ( $1^{\circ}19'27.70"S - 69^{\circ}35'1.24"W$ , coordinates estimated based on municipality), 79 m above sea level, Bajo Caquetá, Amazonas department, Colombia. Collected by I. Niceforo Maria on an unknown date previous to 1935. Specimen lost in the Instituto Butantan fire in 2010.

**Additional material:** Adult male, ICN-R 10422 (field tag GFM 084, from Florencia municipality, corregimiento de Orteguaza, vereda San Antonio de Atenas, sector Sebastopol ( $1^{\circ}42'4.65"N - 75^{\circ}35'9.47"W$ ), 593 m above sea level, Caquetá department, Colombia. Collected by GFM, on 5 January 2005 in leaflitter of Amazonian Andean foothill tropical rainforest.

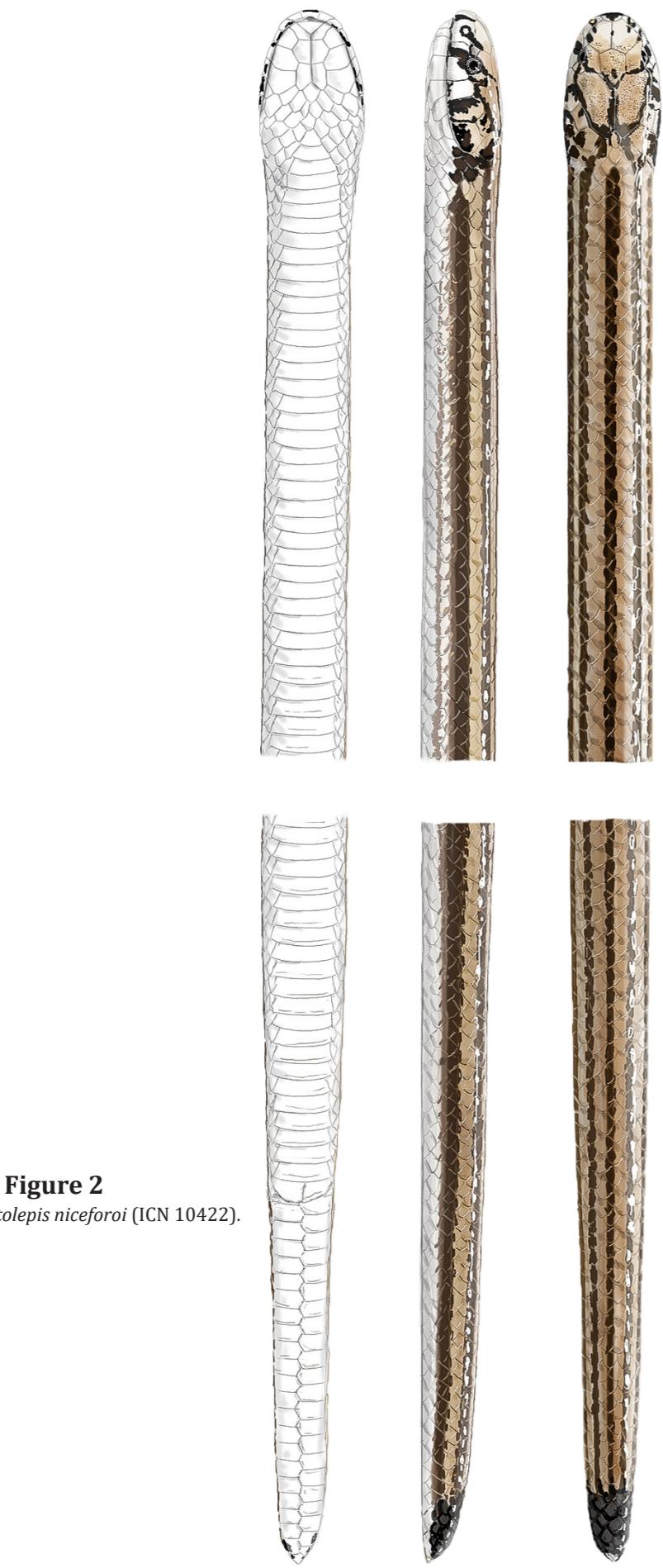
**Diagnosis:** *Apostolepis niceforoi* can be distinguished from all its congeners by the following combination of characters: (1) 15/15/15 smooth dorsal without apical pits; (2) preocular single, contacting nasal; (3) loreal absent; (4) temporals 0+1; (5) supralabials six, with 2nd and 3rd in contact with orbit; (6) infralabials six, with first four in contact with chinshield; (7) ventrals 246–248 (246 in the single male, 248 in female); (8) subcaudals 21–23 pairs (21 in the single male, 23 in female); (9) in preservative, dorsal pattern uniform yellow, head dorsally yellow, frontals, supraoculars and temporals with brown margin, tear shaped brown blotch on supralabials 2–3, white supralabial blotch large, covering most of supralabials 4–5, dorsal pattern with five large (two rows) dark brown and two thin (one row) lateral stripes, small black tail blotch, ventral pattern uniform yellow.

**Comparisons:** *Apostolepis niceforoi* occurs close (although not in sympatry) to three striped congeners, *Apostolepis nigrolineata*, *Apostolepis nigroterminata*, and *Apostolepis quinque linea*. Of these, *A. nigroterminata* has been recorded in Amazonian Lowland Forest in Acre, northern Brazil, not far from the type locality of *A. niceforoi* (960 Km south). *Apostolepis niceforoi* differs from *A. nigroterminata* in having seven dorsal brown stripes (vs. three), white nuchal collar absent (vs. present), and a light-yellow background coloration (vs. brown or red). The taxonomic status of the other two species (*A. nigrolineata* and *A. quinque linea*) remains largely confused, as both species have been synonymized and revalidated several times; in light of this, comparisons are made exclusively to the type series of *A. nigrolineata*, *A. quinque linea*, and *Apostolepis pymi* (currently considered a synonym of *A. nigrolineata*). Further comparisons are provided in Table 1.

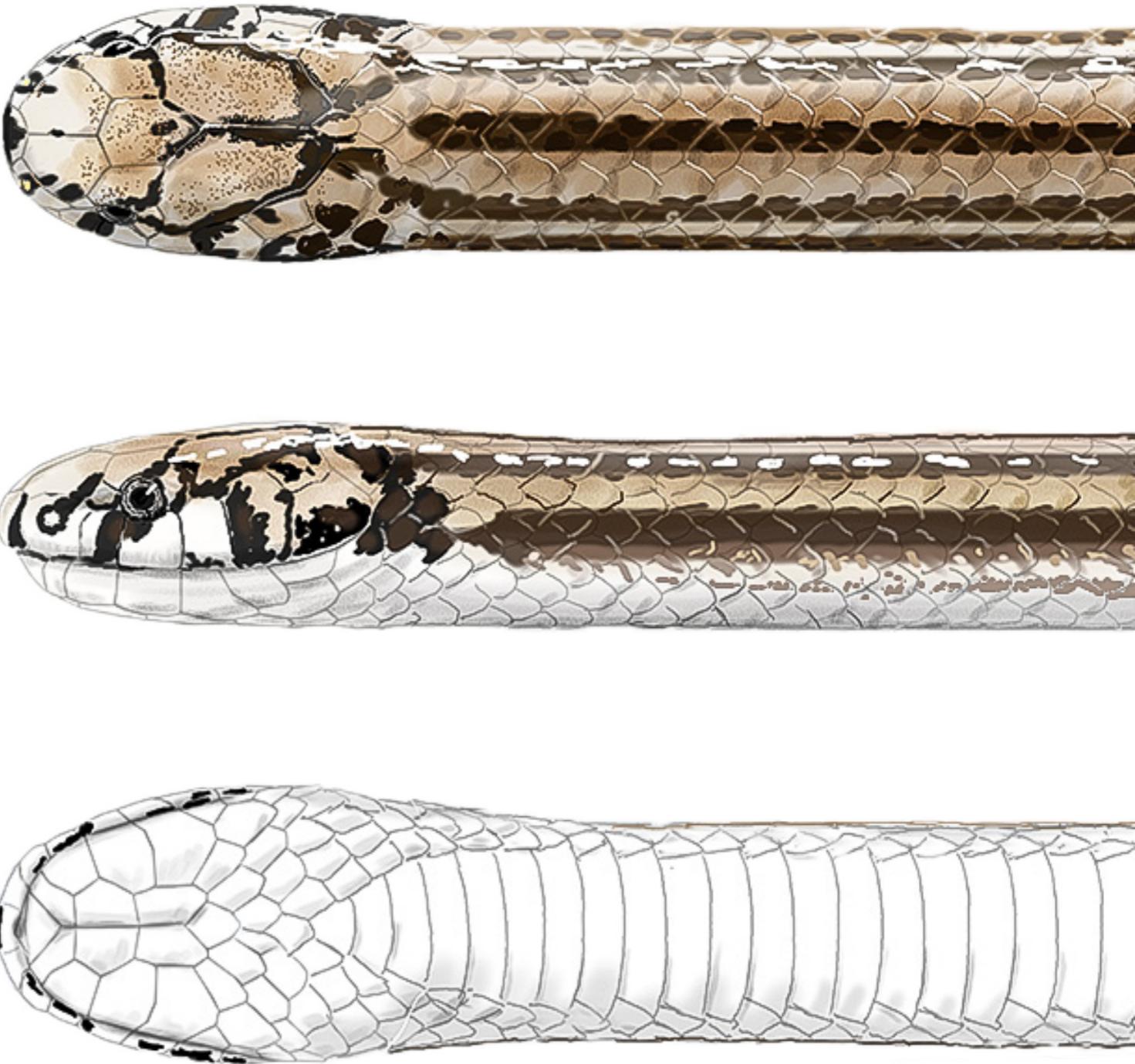
From the type series of *A. nigrolineata*, *A. niceforoi* can be distinguished based on slightly lower segmental counts (vs. ventrals 256, subcaudals 26), a dorsal black tail blotch (vs. ventral and dorsal), and dorsal stripes number and width (vs. five dorsal stripes, three with one scale of width, two with half a scale of width). From the type series of *A. quinque linea*, *A. niceforoi* can be readily diagnosed based on higher segmental counts (vs. ventrals 213, subcaudals 28), larger size (vs. 165 mm total length), yellow parietal scales with brown edges (vs. uniform brown), and a large supralabial blotch (small supralabial blotch). From *A. pymi*, it can be diagnosed based on higher segmental counts (vs. ventrals 209, subcaudals 35), dorsal stripes (vs. three), and a small dorsal tail black blotch (vs. large, dorsal and ventral).

*Apostolepis niceforoi* can be readily distinguished from *Apostolepis adhara* França, Barbo, Silva-Jr., Silva & Zaher, 2018, *Apostolepis albicularis* (Lema, 2002), *Apostolepis ambiniger* (Peters, 1869), *Apostolepis ammodites* Ferrarezzi, Barbo & Albuquerque 2005, *Apostolepis arenaria* (Rodrigues, 1993), *Apostolepis assimilis* (Reinhardt, 1861), *Apostolepis breviceps* Harvey, Gonzales & Scrocchi, 2001, *Apostolepis cearensis* Gomes, 1915, *Apostolepis cerradoensis* (Lema, 2003), *Apostolepis christinae* (Lema, 2002), *Apostolepis dimidiata* (Jan, 1862), *Apostolepis dorbignyi* (Schlegel, 1837), *Apostolepis flavotorquata* Duméril, Bibron & Duméril, 1854, *Apostolepis goiasensis* (Prado, 1942), *Apostolepis intermedia* (Koslowsky, 1898), *Apostolepis kikoi* Santos, Entiauspe-Neto, Araújo, Souza, Lema, Strüssmann & Albuquerque, 2018, *Apostolepis lineata* Cope, 1887, *Apostolepis longicaudata* (Gomes, 1921), *Apostolepis multicincta* (Harvey, 1999), *Apostolepis nelsonjorgei* Lema & Renner, 2004, *Apostolepis phillippi* (Harvey, 1999), *Apostolepis polylepis* (Amaral, 1921), *Apostolepis quirogai* Giraldo & Scrocchi, 1998, *Apostolepis serrana* Lema & Renner, 2008, *Apostolepis striata* (Lema, 2004), *Apostolepis tenuis* (Ruthven, 1927), *Apostolepis thalesdelemai* Borges-Nojosa, Lima, Bezerra & James, 2016, *Apostolepis underwoodi* Lema & Campbell, 2017, and *Apostolepis vittata* (Cope, 1887) in its dorsal stripes number, width and coloration (vs. dorsal stripes absent, two, three, five, or eleven, over an unknown, red, brown, ochre yellow, or orange background in life).

The only congener to which *A. niceforoi* shares having seven dorsal stripes is *Apostolepis gaboi* Rodrigues, 1993, to which it can be promptly diagnosed based on the lower number of infralabials (vs. eight), nasal-preocular contact (vs. absent), higher number of ventrals (vs. 190–238), and background dorsal color (vs. orange).

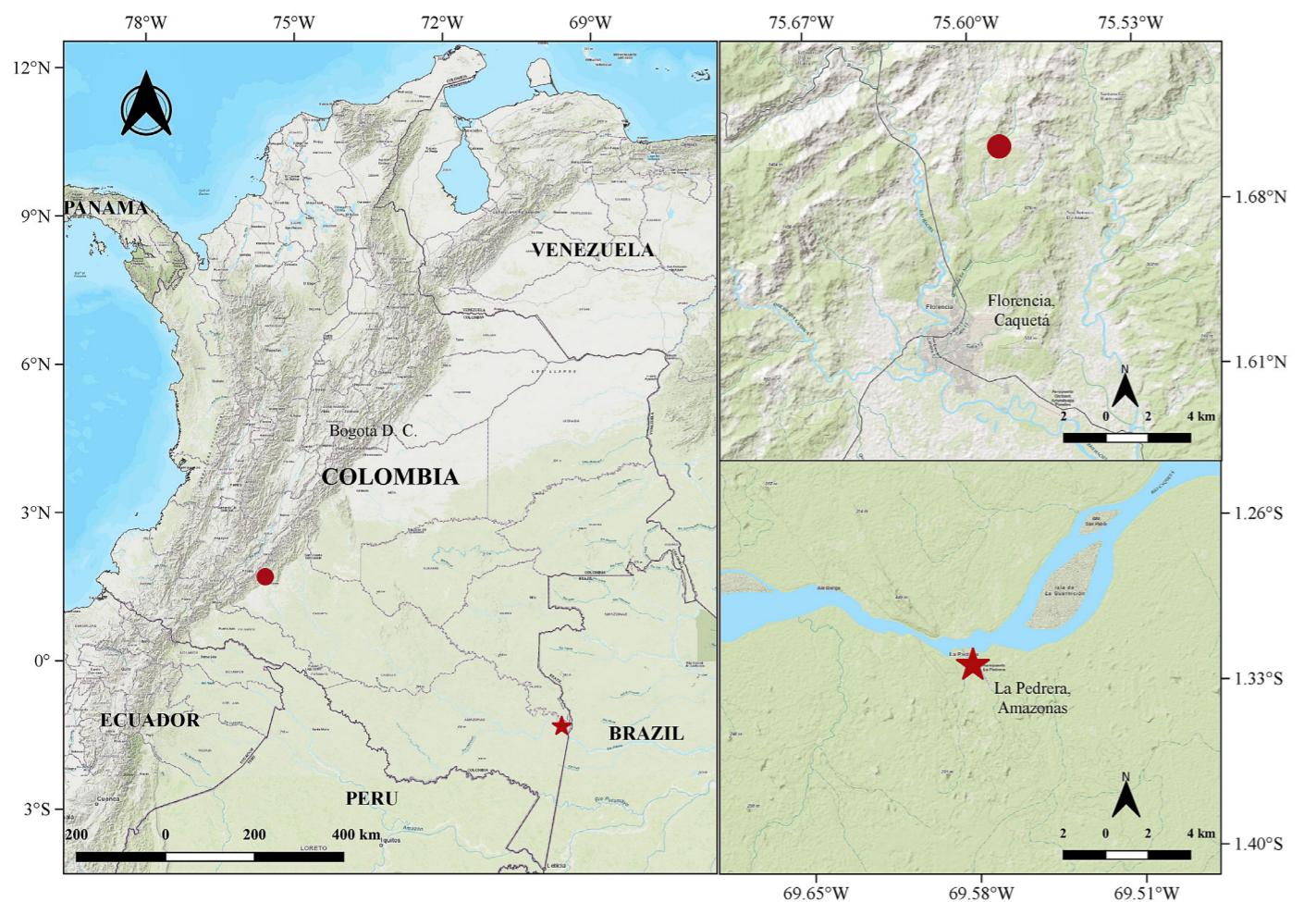


**Figure 2**  
Pattern of *Apostolepis niceforoi* (ICN 10422).



**Figure 3**

Head views of *Apostolepis niceforoi*  
(ICN 10422). Scale bar = 3 mm.

**Figure 4**

Geographic distribution of *Apostolepis niceforoi* (Circle: new record; Star: type locality).

#### Redescription (based on 1 new specimen):

Adult male; total length 363.3 mm; SVL 341.8 mm; tail length 21.5 mm (15.8% of SVL, 16.8% of total length); head length 5.82 mm (1.7% of SVL, 1.6% of total length); head width 4.15 mm (71.3% of head length); interorbital distance 3.1 mm; rostro-orbital distance 2.32 mm; naso-orbital distance 1.16 mm; cervical constriction indistinct; head indistinct from neck, slightly narrow posteriorly, rounded in dorsal view, arched in lateral view, widest at parietal region; snout short, slightly projected beyond lower jaw, convex shaped on lateral view, round in dorsal view; rostral broader than long, 1.66 mm wide, visible from above; internasals absent; prefrontals large, wide and pentagonal, 1.91 mm long, 1.54 mm wide, separated from eye by supraocular and preocular; supraocular rectangular trapezoid shaped, 1.62 mm long, 1.05 mm wide; frontal hexagonal, chevron shaped, 2.07 mm long, 1.42 mm wide; nasal undivided, in contact with first three supralabials and preocular; loreal absent; eye small, diameter 0.85 mm long; round pupil; parietal 3.43 mm long, 2.2 mm wide; preocular single, pentagonal, in contact with second supralabial, nasal, and prefrontal, 0.62 mm high, 0.6 mm large; postocular single, in contact with parietal, supraocular, third and fourth supralabials, 0.54 mm large, 1.04 mm high; temporal scales 0+1, posterior temporal 1.49 mm long, 0.85 mm wide; six supralabial scales, with second to third in contact with orbit; fifth largest, first contacting nasal, second contacting preocular and nasal, third contacting postocular, second and third in contact with eye orbit, fifth and sixth in contact with anterior temporal; infralabials 6/7, with first to third in contact with chinshields on right side, and first to fourth in contact with chinshields on the left side; anterior chinshield 1.62 mm large, 1.9 mm wide; posterior chin shield 2.48 mm large, 1.96 mm wide; preventrals two; smooth dorsal scale rows 15/15/15; ventral scales 246; subcaudal scales 21; short tail.

**Coloration in preservative:** Dorsum of head light yellow, with thin dark brown edges on parietals, supraoculars, and frontals; large black blotch on rostral, with a snout white blotch that reaches nasals, prefrontals and anterior margin of frontal; white supralabial blotch large, from the outer margin of 2nd to the outer margin of 4th supralabial; diffuse dark brown pigmentation on 5th and 6th supralabials; a thin black stripe extends from the nasal to the prefrontals; a large black stripe extends

from the lower margin of 1st supralabial to the eye orbit; ventral head surface immaculate yellow, with indistinct and disperse black pigmentation on the outer edge of infralabials and mental scale; venter uniform light yellow; background dorsal coloration light yellow, with five dark brown longitudinal stripes; at the 10th ventral scale, two additional thin light brown stripes coalesce from the outer dark brown stripes, in the dorsolateral region; the dark tail blotch is dorsal, black, and six scales wide; terminal spine light yellow.

**Coloration in life:** Dorsum of head and background body yellow ocher, the dark pattern on the head and body are similar to those described for the specimen preserved in alcohol, although colors are more intense. Ventral head and body surface straw yellow, chin and throat with black pigmentation on edge of infralabials and mental scale. Dorsal black tail blotch with terminal spine straw yellow.

**Geographic Distribution:** *Apostolepis niceforoi* is known from two localities for the Amazonia region of Colombia in the departments of Amazonas and Caquetá (79–593 m a.s.l.; Fig. 4). The locality to the west, is in the department of Caquetá, which belongs to the ecoregion corresponding to the Amazonian foothills, the ecosystem between the Andes and the Amazon basin, where the premontane rainforest predominates (Olson *et al.* 2001). The record to the east, in the department of Amazonas, is part of the Amazon basin composed of dense tropical rainforest.

**Natural History:** The specimen ICN-R 10422 was collected on January 5, 2005. The canopy was dense comprised of Amazonian Andean foothill tropical rainforest. The snake was collected on the forest leaf litter, actively foraging at 11:48 am on a sunny day, but little sunlight filtered down to the ground. The climate corresponds to the first dry season of the year, but with the highest average daily temperatures and lowest rainfall of the year. In the forest where the species was registered, arboreal flora were observed including: *Pourouma* sp. known as "Caimaron de montaña", *Socratea exorrhiza* (Mart.) H.Wendl., known as "Zancona", *Otoba parvifolia* (Markgr.), known as "Sangretoro", and *Clusia equinoglossa* Cuatrec., known as "Lengua de potro" or "Bizcocho colorado", as well as low vegetation such as *Anthurium obtusum* (Engl.), *Miconia* spp., *Mezobromelia capituligera* (Griseb.) and *Piper* spp.

## Discussion

Since its original description, *Apostolepis niceforoi* remained known based on a single specimen collected on an unknown date previous to 1935; this specimen would be later destroyed in the Butantan Institute fire of May 2010. Our additional record comes after a 70-year hiatus since its original report, more than 748 km west from its type locality, between the Colombian Amazonia and Andes Mountains (eastern flank of the Cordillera Oriental), and likely represents the northernmost record of any *Apostolepis* species. This could indicate that *A. niceforoi* is distributed in more places within the Amazon basin of Colombia; considering other *Apostolepis* species have cryptic and semi-fossorial habits, it is possible that *A. niceforoi* is either rare or might be difficult to sample. Nevertheless, the lowland Amazon rainforest from Caquetá has been extensively sampled for reptiles (e.g. Pérez-Sandoval *et al.* 2012; Cortes-Ávila & Toledo, 2013; Medina-Rangel *et al.* 2019; Muñoz *et al.* 2019), and authors have recovered other similarly small-sized, cryptozoic snakes (e.g. *Atractus crassicaudatus* Duméril, Bibron & Duméril, 1854; *Atractus major* Boulenger, 1894; *Atractus punctiventris* Amaral, 1933; *Amerotyphlops reticulatus* Linnaeus, 1758), which provides support for the hypothesis that *A. niceforoi* might be a rare species.

We also choose not to designate a neotype, as our new specimen does not meet all the qualifying conditions of Article 75 of the Code (ICZN, 1999). According to the Code, a neotype should only be designated considering an “exceptional need” (75.3); we should highlight that, although poorly known, *A. niceforoi* is by no means an “unstable” species, and has not been formally synonymized in the past. The new specimen was also collected far from its type locality (748 km west).

The identity of *Apostolepis niceforoi* was subject to some discussion. Lema (2001:37) stated that *A. niceforoi* was “poor known” and “close to *Apostolepis quinquelineata*”. Lema *et al.* (2017) would later reproduce data from Amaral (1935), and present incoherent remarks on its taxonomic status, recalling that it was “invalid” (Lema *et al.* 2017:96), “may be a synonym of *A. nigrolineata*” (Lema *et al.* 2017:97), but that “other specimens were found at Universidade Federal do Acre” (Lema *et al.* 2017:97). It is not clear nor explicit if the authors intended on synonymizing *A. niceforoi* with *A. nigrolineata*, and we choose to follow Entiauspe-Neto *et al.* (2019) in considering *A. niceforoi* as a valid species. Entiauspe-Neto *et al.*

(2020) report an individual from Roraima, northern Brazil, as *Apostolepis cf. niceforoi*; this individual (MZUSP 19625, adult male, Fig. 5) presents a brown background coloration, three black dorsal stripes, 235 ventrals and 35 subcaudals. These characteristics differ greatly from the ones reported for the holotype and our new material, and therefore, its taxonomic status will be approached by the authors in detail elsewhere. Further studies and inventories should be taken in southern Colombia and northern Brazil, in order to find additional specimens of *A. niceforoi* and further clarify its taxonomic and phylogenetic relationships. We also highlight the need for an integrative revision of the taxonomic status of *A. nigrolineata*, *A. pymi*, and *A. quinquelineata*, in order to clarify the validity and species limits between these taxa.

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**Figure 5**

Overview of *Apostolepis* aff. *niceforoi* (MZUSP 19625) from Caracara, Roraima, northern Brazil. Scale bar = 12 mm.



**Table 1.**  
Selected characters for *Apostolepis niceforoi* and other type specimens of *Apostolepis*.

Measurements are given in mm.

\*Currently a synonym of *Apostolepis nigrolineata*.

	<i>Apostolepis niceforoi</i> (IB 9196, holotype)	<i>Apostolepis niceforoi</i> (ICN 10422)	<i>Apostolepis quinquefasciata</i> (BMNH 1946.1.9.59)	<i>Apostolepis pymi</i> * (BMNH 1946.1.9.82)	<i>Apostolepis nigrolineata</i> (ZMB 10737)
Sex	Female	Male	Male	Male	Female
Ventral scales	248	246	213	209	257
Subcaudal scales	23	21	28	35	27
Supralabial scales	6, with 2–3 in contact with orbit	6, with 2–3 in contact with orbit	6, with 2–3 in contact with orbit	6, with 2–3 in contact with orbit	6, with 2–3 in contact with orbit
Infralabial scales	5, with 1–3 in contact with anterior chinshield	6, with 1–3 in contact with anterior chinshield; 7, with 1–4 in contact with anterior chinshield	6, with 1–3 in contact with anterior chinshield	6, with 1–3 in contact with anterior chinshield	6, with 1–3 in contact with anterior chinshield
Postocular scale	Single	Single	Single	Single	Single
Temporal scales	0+1	0+1	0+0	0+1	0+1
Total length	365	363.3	165	520	375
Caudal length	26	21.52	13	43	28

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## APPENDIX I.

### Material examined

Countries are given in bold capitals, states in upper capitals, municipalities and localities in plain text.

***Apostolepis* aff. *niceforoi* (n=1). BRAZIL:**  
RORAIMA: Caracara, Vila de Caicubi, Rio Jufari (MZUSP 19625).

***Apostolepis arenaria* (n=5). BRAZIL:** BAHIA: Alagoado (MZUSP 10027, 10028, 10029, 10030, 10289).

***Apostolepis assimilis* (n=144). BRAZIL:**  
BAHIA: Barreiras (UMMZ 20411), Tanque do Aragão, Central (MNRJ 6523); DISTRITO FEDERAL: Brasília (CHUNB 24456, 24474, IBSP 20566, 28734, USNM 148790); GOIÁS: Ilha do Bananal, Santa Isabel (IBSP 12324); Jataí (MZUSP 3783); Mineiros (IBSP 55495); Rio Verde (IBSP 10326, 12945, MZUSP 3194), Urucuá, Cana Brava (IBSP 9154); MINAS GERAIS: Cabo Verde (IBSP 29448); Cambuí (IBSP 44222), Capão dos Porcos, Mariana (ZMUC 63806, holotype of *Apostolepis assimilis*), Caxambu (IBSP 816), Conceição dos Ouros (IBSP 33206), Entre Rios de Minas (FUNED 691), Gonçalves (IBSP 49666), Ibirité (FUNED 603), Itajubá (IBSP 9115, 9407, 9592), Itamonte (IBSP 22405), Itatiaiaçu (FUNED 510), Jaíba (FUNED 1465), Maria da Fé (IBSP 5597), Moeda (FUNED 02), Nova Lima (FUNED 550), Ouro Fino (IBSP 34306), Munhoz (IBSP 66376), Passa Quatro (IBSP 3264, 3274, 34306), Poços de Caldas (IBSP 45737, 23985, 14256), Pouso Alegre (IBSP 42162, 44597, 49942), Santa Rosa da Serra (IBSP 46088), Serra do Cipó (MZUSP 7595), Uberabinha (IBSP 888) Uberlândia (IBSP 3841, 3845, 6388, 3841), Vespasiano (FUNED 04); MATO GROSSO DO SUL: Amambá (IBSP 41163), Campo Grande (IBSP 41163, 42978, 57222, MHNCI 6719, MZUSP 10155) Nova Andradina (IBSP 27489, 27489), Paranaíba (IBSP 45615), Ponta Porã (IBSP 44065); MATO GROSSO: Buriti (IBSP 5346), Cuiabá (MNRJ 2031); PARANÁ: Londrina (IBSP 37462, 40008); SANTA CATARINA: Florianópolis (BGSS5344); SÃO PAULO: Araçariguama (IBSP 83132), Barueri (IBSP 23206), Bauru (MHNCI 4790), Cabreúva (IBSP 26565), Caiéiras (IBSP 40320), Caixa d'Água (IBSP 6659), Carapicuíba (IBSP 87769, 82260), Cajamar (IBSP 30408, 87083, 3186), Campo Largo (IBSP 4498), Campo Limpo (IBSP 6532), Campos do Jordão (IBSP 26796, UMMZ 204112), Carapicuíba (IBSP 72970), Cotia (IBSP 24588), Ibiúna (IBSP 32672, 79312, 78900), Itapevi (IBSP 30436, 86908, 79489), Itatiba (IBSP 5703), Itu (IBSP 4180, 6606, 82230, , MHNCI 6969, MZUSP 4180, 6606), Jaguara (IBSP 70356), Jandira (IBSP 31694, 40493), Jarinu (IBSP 30019), Jundiaí (IBSP 16688), Mairinque (IBSP 41065, 89049), Osasco (IBSP 23889, 40480,

6141, 62362, 78442, MCP 64), Pirituba (IBSP 70351, 78948,), Rio Grande (IBSP 40008), Santana de Parnaíba (IBSP 61761, 81066,), São Caetano do Sul (IBSP 81238), São Paulo (IBSP 318, 348, 6401, 6558, 8040, 8945, 21993, 22221, 24180, 24548, 24873, 27598, 30153, 30586, 31716, 32441, 33316, 84949, 78948), São Roque (IBSP 23548, 78641, , 79658, MHNCI 4495, 6970), Sorocaba (IBSP 15760, 40008); PARAGUAY: TRINIDAD (MZUM 108810).

***Apostolepis cearensis* (n=140). BRAZIL:** ALAGOAS: Piranhas (CHUFS 3217, 3365, MUFLAL 1315); BAHIA: Brumado (IBSP 33651, 33685), Camaçari (MZUEFS 371), Capim Grosso (MZUEFS 294), Feira de Santana (MZUEFS 12, 19, 70, 71, 74, 86, 130, 162, 166, 203, 277, 310, 315, 429, 434, 463, 464, 505, 515, 615, 624, 637, 669, 672, 689, 771, 804, 836, 841, 895, 927, 1007, 1040, 1053, 1067, 1069, 1070, 1071, 1077, 1080, 1110, 1146, 1157, 1158, 1195, 1196, 1208, 1209, 1210, 1236, 1240, 1241, 1244, 1260, 1302, 1310, 1313, 1369, 1377, 1405, 1445, 1446, 1477, 1478, 1479, 1499, 1539, 1559, 1570, 1587, 1604, 1611, 1622, 1629, 1645, 1673, 1674), Poções (MZUFBA 1595, 1796, 1805, 1813, 1826, 1827), São Gonçalo dos Campos (MZUEFS 73, 825), Jaguari (IBSP 26203); CEARÁ: Aquifaz (CHUFC 1185), Beberibe (CHUFC 1628), Cratéus (CHUFC 2238), Crato (IBSP 20385), Fortaleza (CHUFC 208, 826, 1240, 1242, 1243, 1524, 1525, 1526, 1527, 1528, 1529, 1531, 1539, 1620, 1621, 1622, 1623, 1623, 1624, 1625, 1626, 1627, 1629, 2001, 2236, 2287, 2243, 2633, IBSP 20020, 40262, 55318, 18219, 18220), Icó (IBSP 12106), Juazeiro do Norte (IBSP 20164), Limoeiro do Norte (IBSP 12775), Maranguape (CHUFC 2235), Quixadá (CHUFC 1221), São Benedito (CHUFC 2114, 2147), Tianguá (IBSP 77109), Ubajara (IBSP 75855, 77101), Viçosa do Ceará (IBSP 77509); PARAÍBA: Cabaceiras (MZUSP 9013), Campina Grande (IBSP 9050), Lagoa de Dentro (MNRJ 17055); PIAUÍ: Teresina (IBSP 49743), Redenção do Gurgeia (IBSP 80942).

***Apostolepis cerradoensis* (n=1). BRAZIL:**  
Goiás: Minaçu (MCP 15219, holotype of *Apostolepis cerradoensis*).

***Apostolepis christineae* (n=2). BOLIVIA:**  
SANTA CRUZ: Puerto Suarez, German Busch (BMNH 1907.10.31.62). BRAZIL: MATO GROSSO: Cáceres (MCP 12515, holotype of *Apostolepis christineae*).

***Apostolepis dorbignyi* (n=1). "AMÉRIQUE MÉRIDIONALE":** Unknown locality (MNHN 3664, holotype of *Apostolepis dorbignyi*).

### *Apostolepis gaboi* (n=34). BRAZIL:

BAHIA: Ibiraba-Barra (MZUFBA 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1702, 1704), Icatú-Barra (MZUEFS 981), Queimadas (MZUSP 10290).

***Apostolepis goiasensis* (n=1). BRAZIL:**  
MINAS GERAIS: Três Lagoas (CHFURG 1344).

***Apostolepis intermedia* (n=2). PARAGUAY:**  
San Pedro: Laguna Blanca (MHNTP 11533, 11636).

***Apostolepis kikoi* (n=5). BRAZIL:**  
MATO GROSSO: APM Manso, Chapada dos Guimarães (MCP 12096, 14524, 14525, 11372, UFMT-R 1933).

***Apostolepis longicaudata* (n=1). BRAZIL:**  
TOCANTINS: Estação Ecológica Serra Geral (MZUSP 14122).

***Apostolepis multicincta* (n=3). BOLIVIA:**  
SANTA CRUZ: San Juan (ZFMK 66375, paratype of *Apostolepis multicincta*), Florida (ZFMK 75025, 75026).

***Apostolepis nelsonjorgei* (n=2). BRAZIL:**  
GOIÁS: Campinaçu (MZUSP 20636). TOCANTINS: Estação Ecológica Serra Geral (MZUSP 17615).

***Apostolepis nigrolineata* (n=217). SOUTH AMERICA** (ZMB 6447, holotype of *Apostolepis nigrolineata*).  
**BRAZIL** (BMNH 1946.1.9.82, holotype of *Apostolepis pymi*). MARANHÃO: Paruá, BR 316 (MPEG 10835, 13641, 14352). MARANHÃO/PARÁ: BR 316, km 74 (MPEG.1064, 1084, 3581, 8192, 10851). MATO GROSSO: Paranaita (MZUSP 22344). PARÁ: Acará (MPEG 10939). Ananindeua (MPEG 6943, 9459). Apeú (MPEG 586, 587, 696, 1174, 1476, 1479, 2657, 2666, 3331, 3332, 3334, 3335, 5718, 6916, 6919, MCP 11317). Augusto Correa (MPEG 3905, 3954, 5399, 6712, 6713, 6721, 6724, 6737, 8999, 9937, 10764, 12450, 13074). Baião (MPEG 1596, 1600-1605, 1891-1897, 2101, 2422, 2423, 2560, 2822, 2826, 2864-2866, 3386, 3387, 3389, 3390, 3448, 3949, 3950, 3951, 4086, 4094, 4801, 4802, 4807, 4808, 4811, 4813-4817, 4828, 4858, 8187). Belém (IBSP 3033, 3034, 54152; KU 127256, 127257, 140153, 140154, MPEG 12769, 12770, 12771). Benevides: Genipaula Road, Pratinha (MPEG 7570, 8399, 8615, 8631, 12575, 14285, 15476); Cachoeira do Piriá (MPEG 2174, 2970, 5160, 7821, 7827, 9546, 9558, 9818, 9829, 11486, 11488, 11933, 11937, 12882, 12883, 15060, 15063, 15863). Castanhal (MPEG 5878, 7163, 7173, 10912, 10913, 11794, 12693). Gurupá (MPEG 16324). Igarapé-Açu (MPEG 868, 869, 870, 871, 910, 912, 913, 924, 925). Inhangabi (MPEG 1464, 1568, 1571). Marabá (MPEG 17304). Ilha de Outeiro (MCP 10718). Ourém (MPEG 4224, 5004, 5005, 5012, 7016, 7019). Santa Bárbara do Pará (MPEG 1855, 2608, 3952). Santarém (MPEG 8011). Santarém Novo (MPEG 1841, 1977, 3251,

4154, 4796, 7081). Santo Antônio do Tauá (MPEG 1000, 1453, 1872, 1873, 1879, 2375, 2376, 2643, 3306, 3940, 3940, 4718, 4720, 4721, 4723, 4730, 6958, 7557). Serra dos Carajás (MZUFV 1071). Serra de Kukinhokren (MZUSP 10684-85). Uruá (IBSP 7285, MZUSP 7287). Utinga (KU 128094). Viseu (MPEG 1735, 1787, 2292, 2293, 2323, 2349, 3142-43 3714, 3953, 4458, 5239, 5249, 5320, 5321, 5324, 5325, 5327, 5329, 6633, 7291, 7325, 7338, 7701, 8959, 10010, 10884, 10886, 10887, 11267, 11268, 13260, 15126, 15127, 17279). RONDÔNIA: Machadinho do Oeste (MZUSP 21888). Pontes e Lacerda (MPEG 2500).

***Apostolepis quinquelineata* (n=4). GUYANA:**  
Georgetown (BMNH 89.9.30.12, holotype of *Apostolepis quinquelineata*). BRAZIL: AMAZONAS: Presidente Figueiredo (INPA-H 31440); RONDÔNIA: Porto Velho (UFRO-H 228, 229).

***Apostolepis nigroterminata* (n=3). BRAZIL:**  
MATO GROSSO: Comodoro (MPEG 26500). Vila Bela da Santíssima Trindade (MZUSP 6408). PERU: Cayaria (BMNH 1946.1.9.77, holotype).

***Apostolepis quirogai* (n=1). BRAZIL:**  
RIO GRANDE DO SUL: Santo Ângelo, Campus URI (MCP 12185).

***Apostolepis ammodites* (n=10). BRAZIL:**  
BAHIA: Unknown locality (MCP 8442), Cocos (IBSP 61525, CHUNB 51360, CHUNB 23715), Correntina (CHUNB 39079), Santa Rita, Ibiapetuba (MZUFBA 728, topotype); MATO GROSSO: Nova Xavantina (MCP 8002), Ribeirão Cascalheira (MCP 19481); MINAS GERAIS: Pirapora (MPEG 18347). TOCANTINS: Palmas (IBSP 65267, holotype of *Apostolepis ammodites*).

***Apostolepis tenuis* (n=1). BOLIVIA:**  
SANTA CRUZ: Buena Vista (UMMZ 64436, holotype of *Apostolepis tenuis*).

***Apostolepis thalesdelemai* (n=39). BRAZIL:**  
CEARÁ: Guaramiranga (CHUFC 1950, 2067, 2353, 2371); Ibiapina (CHUFC 2337, 2340, 2342, 2343, 2351, 2437); Maranguape (CHUFC 2102, 2208, 2212, 2213, 2218, 2339, 2347, IBSP 80734); Pacoti (CHUFC 2344, 2346, 2463, 2731, 2841); São Benedito (CHUFC 2338); Ubajara (CHUFC 1349, 2085, 2110, 2137, 2154, 2341, 2350, 2769, 2954, IBSP 80735, ZUEC 3384).

***Apostolepis vittata* (n=4). BRAZIL:**  
MATO GROSSO: Chapada dos Guimarães (ANSP 11293, holotype of *Rhynchonyx ambiniger vittatus*; CHUNB 30656), Parque Nacional Chapada dos Guimarães (UFMT-R 12259), Rio da Casca (MCP 13283).