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A Key to Identify the Snakes of Rio de Janeiro State, Brazil, along with Notes on Geographical Records

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The unequivocal identification of species helps us understand and organize life and assess the human-mediated impacts on biodiversity, allowing for an easier way to communicate biological information. However, identifying vertebrates at the species level is sometimes tricky for several reasons; therefore, compiled information and illustrative tools may help tackle this challenge. Even with questionable records, amounting to about 89 species, the state of Rio de Janeiro boasts a rich ophidiofauna with similar species in external morphology, many of which are only known from a few specimens and bear lengthy and complicated taxonomic histories. Here, we present an identification key comprising the snakes in the Brazilian state of Rio de Janeiro and a photographic

catalogue for Colubridae and Dipsadidae, the most challenging families to identify due to their high richness and interspecific similarities. Due to the ongoing uncertainty about the richness and composition of snake in Rio de Janeiro, we are presenting an updated checklist of the species found in the state, along with notes on their geographical distributions. We found two species of Anomalepididae, one Typhlopidae, one Leptotyphlopidae, one Tropidophiidae, three Boidae, 15 Colubridae, 62 Dipsadidae, four Elapidae and eight Viperidae, adding up to 97 species. We then provide notable data for *Drymarchon corais*, *Erythrolamprus almadensis*, *Mesotes rutilus*, *Oxyrhopus rhombifer*, and *Tantilla* cf. *melanocephala*. This study makes distinguishing all species ascribed to Rio de Janeiro easier and offers summarized characteristics accessible to academic zoologists, wildlife managers, eco-tourists, and environmental consultants. As a result, our research adds to the efforts of numerous researchers who, in a pioneering and collaborative manner, work together to gather knowledge about this ophidiofauna.

Keywords: Species identification, Taxonomy, Ophidia, Squamata, Snakes family

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BACKGROUND

Rio de Janeiro is located within the Brazilian Atlantic Forest hotspot and is Brazil's second most populated state, with 16 million inhabitants (IBGE 2022), where habitat loss threatens the ecosystem (Bergallo et al. 2009; Fitzgerald et al. 2018). The region has been the subject of several faunistic inventory expeditions since the early 19th century carried out by renowned naturalists such as Georg Heinrich von Langsdorff, Maximilian Alexander Philipp zu Wied-Neuwied, Johann Baptist Ritter von Spix and Carl Friedrich Philipp von Martius who provided a broad notion of the living herpetofauna at the time (Rocha 2022). Notably, the herpetofauna from this area was later sampled and updated by the prominent naturalists Adolpho Lutz (Instituto Oswaldo Cruz), Bertha Maria Júlia Lutz, Alípio de Miranda-Ribeiro, Eugenio Izecksohn (Museu Nacional), Antenor Leitão de Carvalho and Vital Brazil Mineiro da Campanha (Instituto Butantan and Instituto Vital Brazil) (Izecksohn and de Carvalho 2001; Monteiro-Filho and Conte 2017).

Despite its high diversity, represented by more than 80 species, this richness has varied in recent species lists. For example, Oliveira et al. (2020) cite 89 species and nine families without

adding *Sordellina punctata*, *Mesotes rutilus* (both included as dubious records), *Leptophis liocercus* and *Leptophis marginatus* recorded by Guedes et al. (2023). *Leptohis* was recently revised, with *Leptohis ahaetulla* split into two new species in the state (Albuquerque and Fernandes 2022). On the other hand, the latest national list (Guedes et al. 2023) excluded *Drymarchon corais* from the state, which was already cited in the compiled list of the herpetofauna of Rio de Janeiro published by Rocha et al. (2004). Guedes et al. (2023) also drew attention to the dubious records of *Erythrolamprus almadensis* and *Adelphostigma occipitalis* for the State.

Overall, the snake species diagnosis is related to meristic (*e.g.*, number of scale rows), biometric proportions (*e.g.*, snout-vent length), skull (*e.g.*, Ferrarezzi and Monteiro 2001), and qualitative features (*e.g.*,dorsal colour patterns) (*e.g.*, Peters and Orejas-Miranda 1970; Dixon et al. 1993). Considering the high richness of snakes in the state, identifying the specimens at the species level is sometimes tricky, and keys for morphological identification may help to tackle this challenge (Watson and Miller 2009). The key guides the user to make decisions using a comparative couplet of morphological characters, leading to another couplet and so on until the organism is identified (Van Sinh et al. 2017; Papavero 1994). Proper taxa identification is the basis for any biological studies and a necessary step in curating biological collection, which ultimately helps us to understand life on the planet (Murguía-Romero et al. 2022).

The last comprehensive identification keys for Neotropical snakes at genus and species level was Peters and Orejas-Miranda's (1970), which was amended by Vanzolini (1986); they were followed by Ferrarezzi and Monteiro (2001), who addressed the family, genus and species levels. Since then, books (*e.g.*, Vanzolini et al. 1980; Campbell and Lamar 1989; Grantsau 1991; Dixon et al. 1993; Quintela and Loebmann 2009), as well as scientific papers (*e.g.*, Cei 1986; Dixon 1989; Zaher et al. 2008; Passos et al. 2009; Abegg et al. 2016; Waltrick et al. 2021) have been offering identification keys and specimen photos for Brazilian snakes species at regional scales, serving as complementary materials that aid in species identification. Currently, no regional species identification keys nor photo catalogues are available to assist in identifying snake species from Rio de Janeiro (see Pontes and Rocha 2008 for exception), despite several species records or morphological revisions (*e.g.*, Hamdan et al. 2015) and descriptions (*e.g.*, Zaher 1996; Franco and Ferreira 2002; Bernardo et al. 2012; Trevine et al. 2022; Abegg et al. 2022; Gonzalez et al., 2024). These changes, occurring long after the work by Peters and Orejas-Miranda (1970), highlight the need for up-to-date identification tools.

Considering the high richness, especially within Colubridae and Dipsadidae (see Guedes et al. 2023) and the presence of rare species (*e.g.*, Passos et al. 2010; Wettstein, 1930), we aimed to develop an updated key using morphological-based data illustrated by a photographic catalogue to assist identification of the most challenging taxa. Since there is a lack of consensus regarding the

snake richness and composition in Rio de Janeiro (see Rocha et al. 2004; Nogueira et al. 2020; Oliveira et al. 2020; Guedes et al. 2023), we also provide an updated list of the species occurring in the state, along with notes on geographical records for the territory. We hope this study contributes to the knowledge of alpha diversity in the Neotropical region and awakens students, researchers and enthusiasts to study taxonomy.

MATERIALS AND METHODS

Checklist of the ophidiofauna from Rio de Janeiro state. We followed Guedes et al. (2023) for species nomenclature. We compiled bibliographic references using occurrence records of snake species in the state (*e.g.*, Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023), supplemented by notes on geographic distribution (*e.g.*, Hamdan et al. 2015; de-Oliveira-Nogueira et al. 2024 We complemented the species list with confirmed voucher specimens from the Coleção Científica de Serpentes Instituto Vital Brazil (IVB), in Niterói, Rio de Janeiro, and the Coleção Herpetológica Alphonse Richard Hoge, Instituto Butanta, São Paulo (see Table 1). We also conducted interviews with specialists to gather specific information on certain taxa. (see Table 1).

For scales terminology, we followed Peters (1964), Peters and Orejas Miranda (1970) and Ferrarezzi and Monteiro (2001). Colour patterns were used only in cases where pholidosis values were similar between a pair of species. "Background colour" refers to the colour between other patterns, such as rings, blotches, and bands (see Di Nicola 2019).

The identification key preparation. The key presented here was based on morphometric, meristic and qualitative data from the literature (Table S1), supplemented by morphological observations of specimens housed in the IVB Collection. We followed Peters and Orejas-Miranda (1970), Silva Jr. et al. (1993), Ferrarezzi and Monteiro (2001), Argôlo (2004), Adalsteinsson et al. (2009), Hedges (2011), Hedges et al. (2014), Hamdan and Lira-da-Silva (2012), and Silva Jr. (2016) to build the identification key at the family and genus levels. See Supplementary Table 1 for species-level references.

The key proposed by Peters and Orejas-Miranda (1970) served as the basis for our identification key structure, which consisted of a key split of a core clade of snakes, followed by a family key, a genus key, and a species key. Due to poorly defined morphological characteristics, the keys for the Colubridae and Dipsadidae genera are combined in the same section.

We also provide images of live individuals of Colubridae and Dipsadidae specimens presented here, displaying different morphological patterns to illustrate intraspecific variation or

diagnostic characters. We preferably chose photos of native individuals; however, in some cases, we resorted to using specimens from other localities (indicated in the figure captions).

RESULTS

Our data shows the State of Rio de Janeiro is home to two species of Anomalepididae, one Typhlopidae, one Leptotyphlopidae, one Tropidophiidae, three Boidae, 15 Colubridae, 62 Dipsadidae, four Elapidae and eight Viperidae, adding up to 97 species (Table 1). We highlight that the genera *Erythrolamprus* (*n* = 8), *Dipsas* (*n* = 7), *Bothrops* (*n* = 6), *Chironius* (*n* = 6), and *Oxyrhopus* (*n* = 5) are represented by the most speciose genera. We emphasize the significant findings for the colubrids *Oxyrhopus rhombifer*, rediscovered after a 54–year absence, along with notable records of *Adelphostigma occipitalis*, *Drymarchon corais*, *Erythrolamprus almadensis*, *Mesotes rutilus Tantilla* cf. *melanocephala* and *Liotyphlops ternetzii*.

Identification key for sankes' from the Rio de Janeiro State

1. Ventral scales undifferentiated from dorsal scales; tail as thick as the head ..... Scolecophidia
- Ventral scales differentiated into plates, at least twice as wide as dorsal scales; tail slender than head ..... Alethinophidia

Key for Scolecophidia families

1. More than 14 rows of dorsal scales around the body; maxilla with teeth 2
- Dorsal scales in 14 rows around the body; maxilla devoid of teeth ..... Leptotyphlopidae
3. A pair of prefrontals distinct from the nasals or with a head covered with small scales; nasal not contacting frontal ..... Anomalepididae
- Prefrontals absent; nasal contacting the frontal ..... Typhlopidae

Key for Anomalepididae Taylor, 1939

1. Head covered by large plates; prefrontal and frontal distinct; rostral in contact with frontal, separating the prefrontals ..... *Liotyphlops*

Liotyphlops Peters, 1881

1. One scale contacting posterior edge of nasal between second supralabial and prefrontal ..... *Liotyphlops wilderi*

Two scales contacting posterior edge of nasal between second supralabial and prefrontal ..... *Liotyphlops ternetzii*

Key for Leptotyphlopidae Stejneger, 1892

1. Usually 10 midtail scales; three supralabials; brown or pale brown ventre ..... *Trilepida*

***Trilepida* Hedges, 2011**

1. Dorsal scales counted along dorsal midline between rostral and terminal tail scale 217–232; subcaudal scales 18–23; supralabials 2+1; uniformly dark brown colour pattern above and light brown with widely white bordered scales on belly ..... *Trilepida salgueroi*

Key for Typhlopidae (Merrem, 1820)

1. Preocular separated from anterior nasal; preocular contacts second and third supralabials; dorsal scales counted along dorsal midline between rostral and terminal tail scale never exceeding 441 ..... *Amerotyphlops*

***Amerotyphlops* Hedges et al., 2014**

1. Scale rows usually 20/20/20 or 20/20/18; dorsal scales counted along dorsal midline between rostral and terminal tail scale 195–287; nasal suture incomplete, not contacting rostral; dorsum generally yellowish brown ..... *Amerotyphlops brongersmianus*

Key for Alethinophidia families

1. Loreal pit absent; non-solenoglyphous dentition 2
- Loreal pit present; solenoglyphous dentition ..... Viperidae (Crotalinae)
2. Proteroglyphous dentition, absence of loreal scale, short maxila; coral-like colouration (dorsal colour pattern with black, red and white rings) ..... Elapidae
- Aglyphous or opisthoglyphous dentition, elongated maxilla; varied colouration (if coral-pattern, then usually with loreal and/or eye diameter greater than its distance from the mouth) 3
3. Internasals + prefrontals counting more than 6 scales ..... Boidae
- Internasals + prefrontals counting 6 or less 4
4. Four prefrontals ..... Tropidophiidae
- Prefrontals in 2 or less …..... Colubridae and Dipsadidae

Key for Boidae Gray, 1825

1. Labial pits present; top of the head with some plates in the anterior region, larger than the scales on the posterior region 2
- Labial pits absent; top of the head entirely covered with small scales ..... *Boa*
2. Shallow labial pits; supralabial in contact with the eye; a single plate between the posterior nasal and preocular; large supraocular present ..... *Epicrates*
- Deep labial pits; subocular pits present; more than one loreal between the posterior nasal and preocular pits; supraocular region covered by several small scales ..... *Corallus*

***Boa* Linnaeus, 1758**

1. Posterior dorsal spots not blotched; posterior dorsal saddle spots shape similar to the anterior spots; last lateral ocelli dark brown, black or dark red; tail spots black; tail interspots absent ..... *Boa atlantica*

***Epicrates* Wagler, 1830**

1. Lateral stripe absent; dorsal ground colour pale to yellow reddish ..... *Epicrates cenchria*

***Corallus* Daudin, 1803**

1. Dorsal scale in almost always over 50 rows; subcaudals 94–137; nasals in contact; supralabials touch the orbit ..... *Corallus hortulana*

Key for Colubridae Oppel, 1811 and Dipsadidae Bonaparte, 1838

1. Nostrils (and usually eyes) facing the top of the head, single internasal ..... *Helicops*

- Nostrils and eyes laterally set up; 2 internasals 2
2. The 2nd supralabials contacting eyes 3
- The 2nd supralabial not contacting eyes 4
3. Parietal scales without yellow ring; dorsum olive-brown or yellowish; body slender posteriorly ..... *Elapomorphus*
- Parietal scales with a yellow ring; dorsum pinkish red; body not slender posteriorly ..... *Coronelaps*
4. Dorsal scales rows in an even number; vertebral row absent 5
- Dorsal scale rows in an odd number; vertebral row present 6
5. Dorsal scales in 10 or 12 rows ..... *Chironius*
- Dorsal scales in 14 or 16 rows ..... *Spilotes*
6. Anterior dorsal scales oblique 7
- Not as above 8
7. Dorsal scales keeled; body laterally compressed ..... *Spilotes*
- Dorsal scales smooth; body dorsoventrally compressed ..... *Xenodon*
8. Dorsal scale rows are typically in different numbers of 21 or 23; but if 21 or 23, the pupil may be elliptical 9
- Dorsal scales in 21 rows; rounded pupil ..... *Tropidodryas*
9. Anal plate entire 10
- Anal plate divided 21
10. One only pair of chinshields ..... *Atractus*
- 2 or more pairs of chinshields 11
11. Rounded pupil 20
- Elliptical or subelliptical pupil 12
12. Dorsal scales in 17–19 rows 13
- Dorsal scales in 13–15 rows ..... *Dipsas*
13. Long and slender tail, with more than 100 subcaudal scales ..... *Siphlophis*
Medium tail, with less than 100 subcaudal scales 14
14. Banded or coral pattern (juveniles or adults), some adults may have gray-darkened dorsum ..... *Oxyrhopus*
- Dorsal lateral bands absent in adults, juveniles may have a white neck collar 15
15. Subcaudal scales entire; snout slim and moderately prominent ..... *Pseudoboa*
- Subcaudal scales divided; snout short and large 16

16. Rostral spatulate, with a sharp upward tip and a horizontal edge ..... *Phimophis*
- Not as above 17
17. Ventre blotched or darkened ..... *Paraphimophis*
- Ventre uniformly white and immaculate in juveniles and adults 18
18. Dorsum uniform or with vertebral black stripe from the neck until the tip of the tail; dorsal scales in 19 rows; prefrontal scales paired 19
- Dark transversal dorsum spots or blotches; dorsal scales in 17 rows; 1 only prefrontal scale ..... *Xenopholis*
19. Dorsum uniform in juveniles; generally 7 supralabial scales; adults usually have fully black-darkened dorsum ..... *Clelia*
- Dorsum with longitudinal black stripe from the neck until the tip of the tail in juveniles; generally 8 supralabial scales; dorsum not fully darkened in adults, longitudinal black stripe gets larger in shape ..... *Mussurana*
20. Number of subcaudal scales is not much smaller than ventral scales; anterior chinshields are shorter than posteriors ..... *Drymoluber*
- Number of subcaudal scales considerably smaller than ventral scales; anterior chinshields equal or longer than posteriors ..... *Drymarchon*
21. Nasal scale entire; loreal scale absent ..... *Tomodon*

- Nasal scale divided or semi-divided 22
22. Loreal scale absent 23
- Loreal scale present or if loreal is fused with prefrontals, there is preocular dark stripe 25
23. Eyes smaller than its distance to the mouth; head indistinct from the neck; small tail; apical pits absent ..... *Tantilla*
- Eyes larger than its distance to the mouth; head well distinct from the neck; tail extremely elongated; apical pits present 24
24. Snout slightly elongated and not acuminated; light oral lining; dorsum green to bluish or silver-grey, with a clear metallic shine, at least anteriorly; ventre pale green or whitish ..... *Leptophis*
- Snout extremely elongated and acuminated, dark oral lining; dorsum brownish or light brown, sometimes with a yellow predominance anteriorly; ventre white or yellowish …… *Oxybelis*
25. Rounded pupil 28
- Elliptical or subelliptical pupil 26
26. Eyes are not large and not round; tail not large; cylindrical body and slight cervical constriction; longitudinal stripes or blotches that extended the ventre, well defined or not ..... *Dryophylax/Mesotes*/*Thamnodynastes*
- Eyes large and round; large tail; slender neck with head strongly distinct; body slightly or strongly compressed laterally; ventre with no stripes or blotches ……..... 27
27. Body not elongated and slightly compressed laterally; dorsal scales in 19 to 23 rows; less than 100 subcaudal scales ..... *Leptodeira*
- Body extremely elongated and strongly compressed laterally; scales of vertebral rows can be highly different from paravertebral rows; dorsal scales in 15 or 17 rows; more than 100 subcaudal scales ..... *Imantodes*
28. Number of subcaudal scales equal to or larger than the number of ventral scales 29
- Number of subcaudal scales smaller than the number of ventral scales 30
29. Scales of vertebral row larger than paravertebrals; nasal scale entire; apical pits absent; dorsal scales smooth; 22–26 maxilary teeth ..... *Cercophis*
- Dorsal scales uniform; nasal scale divided; apical pits present; scales keeled; 33–36 maxilary teeth ..... *Leptophis*
30. Double anterior temporal scale 31
Single anterior temporal scale 32
31. Loreal scale separated from prefrontal; dorsal scales in 15 rows ..... *Palusophis*
- Loreal scale fused with prefrontals; dorsal scales in 17 rows ..... *Caaeteboia*
32. More than 85 subcaudal scales 33
- Less than 85 subcaudal scales 36
33. Immaculate ventre, without stripes or blotches 34
- Ventre with longitudinal black stripe usually present 35
34. Light oral lining ..... *Philodryas/Pseudablabes*
- Dark oral lining ..... *Chlorosoma*
35. Dorsal line absent or discreet ..... *Amnisiophis*
- Dorsal line present ..... *Echinanthera*
36. Pattern of midventral colouration without longitudinal stripe 37
- Midventral pattern of colouration with a black longitudinal continuous stripe ..... *Sordellina*
37. Belly with no continuous series of lateral black dots ..... *Erythrolamprus*
Two continuous series of lateral black dots on the belly 38
38. Dorsal scales in 15 rows ..... *Adelphostigma*
- Dorsal scales in 17 rows ..... *Dibernardia*

***Adelphostigma* Abegg, Santos, Costa, Battilana, Gragoski, Vianna, Azevedo, Fagundes, Castille, Prado, Bonatto, Zaher & Grazziotin, 2022**

1. 168–192 ventral scales; dorsum with rounded blotches in the anterior region, replaced by paired spots toward the tail ..... *Adelphostigma occipitalis* (Fig. 26b)

***Amnisiophis* Abegg, Santos, Costa, Battilana, Gragoski, Vianna, Azevedo, Fagundes, Castille, Prado, Bonatto, Zaher & Grazziotin, 2022**

1. Medium-dorsal line is absent or discreet at the first third of the body but may be present at the end of the trunk and on the tail; at least some scales of the 3rd row of the paravertebrals (or adjacents rows) with 2 tiny light spots, placed one above the other on the base of each scale ..... *Amnisiophis amoenus* (Fig. 20g)

***Atractus* Wagler, 1828**

1. Ventre beige anteriorly and dark brown to black posteriorly; dorsum reddish brown with black transverse blotches or small dots in juveniles and uniformly beige to black in adults ..... *Atractus francoi* (Fig. 19a)
- Ventre uniformly cream; dorsum reddish, red or brown with black transverse blotches or crossbands white bordered in adults ..... *Atractus zebrinus* (Fig. 19b)

***Caaeteboia* Zaher, Grazziotin, Cadle, Murphy, Moura-Leite & Bonatto, 2009**

1. Upper side of head primarily brown, with the snout region (rostral scale, internasal scales, and anterior portion of prefrontal scales) being lighter brown; dark ocular stripe separate or poorly connected to the first of nearly 10 dark blotches that occupies 4th, 5th and 6th rows ..... *Caaeteboia amarali* (Fig. 19c)

***Cercophis* Fitzinger, 1843**

1. Body tan, brown, grey, or grey-brown, with or without 2 longitudinal series of irregular, triangular black spots alternating on both sides of body and tail; belly yellowish or milky white with black dots, more or less forming 2 indistinct longitudinal stripes; upper labials with light and dark spots, a larger white area below the eye with a dark, with inverted triangular spot at the border of 4th and 5th supralabial scale ..... *Cercophis auratus* (Fig. 19d)

***Chironius* Fitzinger, 1826**

1. Dorsal scale in 10 rows 2
- Dorsal scales in 12 rows 3
2. At least the lower portion of supralabial scales is light-coloured; with or without a darkened postocular stripe; dorsum pattern brownish in juveniles and adults, with conspicuous light lateral stripes (Fig. 1b) ..... *Chironius fuscus* (Fig. 16d)
- All supralabial scales black or green coloured; dorsum pattern greenish coloured in juveniles and almost entirely darkened in adults (Fig. 1a) ..... *Chironius laevicollis* (Fig. 16e–f)
3. All supralabial scales black or green coloured; dorsum pattern greenish coloured in juveniles, and almost entirely darkened in adults (Fig. 1a) ..... *Chironius laevicollis* (Fig. 16e–f)
- At least the lower portion of supralabial scales light coloured (Fig. 1b) 4
4. Subcaudal scales with black outer tips; bold postocular stripe strongly or weekly present; dorsum pattern green or light brown, but never with head reddish or brownish 5
- Subcaudal scales without black outer tips; uniform yellow ventral and subcaudal scales; bold postocular stripe absent; dorsum pattern light brown with head reddish or brownish ..... *Chironius quadricarinatus* (Fig. 16g)
5. Dorsum with visible vertebral stripe in adults and lateral stripes in juveniles (Fig. 2b) 6
- Dorsum without vertebral stripe, distinct spots or lateral stripes (Fig. 2a) ..... *Chironius exoletus* (Fig. 16b)
6. Vertebral stripe generally soft, entirely black, or has outer black margins on both sides; 161–196 ventral scales and 156–208 subcaudal scales ..... *Chironius foveatus* (Fig. 16c)

- Vertebral stripe generally bright yellow with outer black margins on both sides; 149–169 ventral scales and 121–157 subcaudal scales..... *Chironius bicarinatus* (Fig. 16a)

***Chlorosoma* Wagler, 1830**

1. Ventral scales strongly angulate in more than 205; ventral ground colour uniform, with scales not edged in black ..... *Chlorosoma laticeps* (Fig. 19e)

***Clelia* Fitzinger, 1826**

1. Dorsal scales in 19 rows; generally 7 supralabial scales; 70 or more pairs of subcaudal scales; anal plate entire; spineless hemipenis; lack of the left lung; dorsum fully darkened in adults; dorsum red, black head with white neck ring present in juveniles, ventre evenly white in juveniles and adults ..... *Clelia plumbea* (Fig. 19f)

***Coronelaps* Lema & Deiques, 2010**

1. 190–234 ventral scales; yellowish or whitish rings in parietals and a blackish nape-cervical collars; parietal scales not longer than larger; dorsum pinkish or reddish without rings and black bands; dorsum with three longitudinal stripes ..... *Coronelaps lepidus* (Fig. 19h)

***Dibernardia* Myers, 1974**

1. Ventral scales 140 or more; light occipital collar present 2
- Less than 140 ventral scales; no light occipital collar; supralabials white edged above ..... *Dibernardia persimilis* (Fig. 26c)
2. 140–157 ventral scales; a well-defined line along the canthus rostralis, ranging from the snout to the postoculars ..... *Dibernardia bilineata* (Fig. 26a)
- 156–181 ventral scales; triangular light spot behind eye and two roundish spots on parietals immediately behind frontal ..... *Dibernardia affinis* (Fig. 25h)

***Dipsas* Laurenti, 1768**

1. Dorsal scales in 15 rows 2
- Dorsal scale in 13 rows ..... *Dipsas indica* (Fig. 20c)
2. Prefrontal scales contacting eyes 3
- Prefrontal scales not contacting eyes 5
3. Less than 100 subcaudal scales; dorsal blotches do not lose intensity or fade away posteriorly 4
- 107–129 subcaudal scales; dorsal blotches lose intensity or fade, disappearing posteriorly ..... *Dipsas sazimai* (Fig. 20e)
4. Generally 12–11 infralabial scales; 66–90 subcaudal scales; dorsal rounded bands along all body ..... *Dipsas variegata* (Fig. 20f)
- Generally 8–9 infralabial scales; 43–68 subcaudal scales; straight bands are often arranged uniformly around the body and may or may not unite at the vertebral line ..... *Dipsas ventrimaculata*
5. Eyes are not visible from ventral view (Fig. 3b); body is slightly compressed laterally; spaces between bands are smaller than the bands ..... *Dipsas neuwiedi* (Fig. 20d)
- Large eyes, visible from ventral view (Fig. 3a); body strongly compressed laterally; spaces between dorsum bands larger than the bands 6
6. Dorsal bands with thin regular margins, first band similar or longer than the others; 18-31 dorsal bands ..... *Dipsas alternans* (Fig. 20b)
- Dorsal bands with thin serrated margins, first band much longer than the others; 17-29 dorsal bands ..... *Dipsas albifrons* (Fig 20a)

***Drymarchon* Fitzinger, 1843**

1. Dorsal scales in 17 rows, sometimes 19; 188–218 ventral and 66–83 subcaudal scales ..... *Drymarchon corais* (Fig. 16h)

***Drymoluber* Amaral, 1930**

1. Dorsal scale in 15 rows; 157–173 ventral scales in males, 160–180 in females; 87–110 subcaudal scales in males, 86–109 in females; small specimens have dark crossbands 1.5–7 scales wide and light interspaces 0.5–2.5 scales wide; uniform dorsum colour in adults; in some individuals, the dorsal colour changes posterior to the first third or the half of the body; the dorsum of head is sometimes paler than the body ..... *Drymoluber dichrous* (Fig. 17a)

***Dryophylax* Wagler, 1830, *Mesotes* Jan, 1862 and *Thamnodynastes* Wagler, 1830**

1. Dorsal scales smooth 2
- Dorsal scales keeled 4
2. Dorsal scales reduce to 13 rows posteriorly; more than 100 subcaudal scales ..... *Thamnodynastes longicaudus* (Fig. 26e)
- Dorsal scales reduce to 15 rows posteriorly; less than 100 subcaudal scales 3
3. Subcaudal scales 52–68 in males and 47–58 in females; 133–149 ventral scales in males and 130–143 in females; ventre posteriorly darkened; dark tooth-like blotches on supralabials, no red spot in infralabial scales ..... *Mesotes strigatus* (Fig. 26h)
- Subcaudal scales 66–79 in males and 57–72 in females; 123–134 ventral scales in males and 118–136 in females; ventre homogeneously light; no conspicuous dark blotches on supralabial scales, red spot in 6th infralabial scale ..... *Mesotes rutilus* (Fig. 26g)
4. 2–6 conspicuous ventral lines; head ventre spotted (Fig. 15a) ..... *Dryophylax hypoconia* (Fig. 26d)
- 2–4 lighter ventral lines; head ventre immaculate (Fig. 15b) ..... *Dryophylax nattereri* (Fig. 26f)

***Echinanthera* (Cope, 1894)**

1. Live specimens with medium-dorsal line degraded to points on the rear portion of the body; preserved specimens with sequence of dark spots along the paravertebral and vertebral surfaces 2
- Live specimens with medium-dorsal line wavy; preserved specimens with dorsum usually darkened without spots along the paravertebral and vertebral surfaces 3
2. The nuchal lateral stripe gathers to the lateral body's stripe, making a strong and continuous stripe from the lateral of the head until the tail tip, decreasing in intensity backwards (Fig 4a) ..... *Echinanthera cephalostriata* (Fig. 20h)
- The nuchal lateral stripe does not gather to the lateral body's stripe, giving origin to dark marks isolated one from another by groups of light scales, making a discontinuous stripe from the lateral of the head until the tail tip ..... *Echinanthera melanostigma* (Fig. 21b)
3. Pair of light spots on the occipital region absent; supracephalic colouration is darker than the body, extending to the middle of the dorsum; dark dorsal band that contrasts with the paravertebral ground colour, at least on the neck; dorsum with light dots, forming an interrupted line along the trunk; anterior part of the dark pleural band usually regularly edged; pair of light spots on the occipital region absent ..... *Echinanthera cyanopleura* (Fig. 21a)
- Pair of light spots on the occipital region present; supracephalic colouration the same as the ground dorsal colour; dorsum without dark vertebral line and pair of small and light dots on the basal portion of the scales, with dark middorsal band on the neck, usually with irregular borders (Fig. 4b) ..... *Echinanthera undulata* (Fig. 21c)

***Elapomorphus* Wiegmann in Fitzinger, 1843**

1. 167–191 ventral scales; 27–46 subcaudal scales; 6 supralabial scales; head in dark colour without yellowish parietal rings; white nape collar present, sometimes faded, with a narrow black cervical collar present, occasionally irregular; ventral side of head dotted on a white background; dorsum olive-brown to yellow with 5 longitudinal stripes reducing to 3; terminal tail tip not black ..... *Elapomorphus quinquelineatus* (Fig. 21d)

***Erythrolamprus* Boie, 1826**

1. Coral pattern, with red, white and black rings organized in triads or diads ..... *Erythrolamprus aesculapii* (Fig. 21e–f)
- Not as above, sometimes with red irregular bands but never in ring shape 2
2. Dorsal scale rows reduce posteriorly 3
- Dorsal scales in 17 rows; dorsum olive green with or without brownish vertebral stripe and/or small dorsolateral black spots ..... *Erythrolamprus jaegeri* (Fig. 22g)
3. Dorsal scales in 17 rows 4
- Dorsal scale in 19 rows 6
4. Ventral scales with unmarked dark edges 5
- Ventral scales light with some dark edging (Fig. 5b); dorsum with the tip of the scales lighter, yellow/olive green dorsal scales with black outer margins; with or without light neck ring in juveniles ..... *Erythrolamprus miliaris* (Fig. 22b, c)
5. Posterior lateral black stripe present on body and tail; ventre never checkered with black and red or yellow, but occasionally with black marks on lateral edges of ventral scales; dorsum dark green or brownish (Fig. 6a) ..... *Erythrolamprus reginae* (Fig. 22h)
- Posterior lateral black stripe absent; ventre usually red or green without black marks on lateral edges of ventral scales; dorsum olive green or green, with or without reddish dorsal stripe and small dorsolateral black spots (Fig. 6b) ..... *Erythrolamprus jaegeri* (Fig. 22g)
6. Ventre black coloured; dorsal scales in 19/19/17 rows; dorsum uniform green or olive green, occasionally with an ill-defined brownish mid-dorsal stripe ..... *Erythrolamprus atraventer* (Fig. 22a)
- Ventre not as above; dorsal scales in 19/19/17, 19/19/15 or 19/19/13 rows 7
7. Dorsum variable, but never green 8

Dorsum green, with or without dark lateral small spots and dorsal scales with a red tip; head occasionally brown in juveniles ..... *Erythrolamprus typhlus* (Fig. 23a–b)

8. Dorsal scale reduces to 17 posteriorly; dorsum grey or tan with darker blotches; no black dorsolateral line posteriorly; dorsal surface of head grey, tan or brown with or without a whitish U, V, X, or Y mark on the parietals with exterior black edging, the mark may extend anteriorly to the internasals; ventre usually reddish with dark blotches ..... *Erythrolamprus almadensis* (Fig. 21g–h)
- Dorsal scales reduce to 15 or 13 posteriorly; dorsum with ground colour usually brown, red or white, with blotches, bands, reticulations or combinations of the above; ventre from immaculate white to reddish or almost black, with or without dark blotches; youngs may have darker transversal stripes; ventre checkered with black, sometimes half ventre blackish (Fig. 5a) ..... *Erythrolamprus poecilogyrus* (Fig. 22d–f)

***Helicops* Wagler, 1828**

1. 130–140 ventral scales in males and 135–144 in females; 48–67 subcaudal scales in males and 48–55 in females; subcaudal keels absent; neck scales smooth or weakly keeled, and posterior scales strongly keeled; yellow or cream ventre with 2 series of black marks, occasionally with single series of small black spots forming a finer midventral row ..... *Helicops carinicaudus* (Fig. 23c)

***Imantodes* Duméril, 1853**

1. 228–288 ventrals scales; 147–195 subcaudal scales; 8–11 infralabial scales; body extremely elongated and laterally compressed; brownish background colour; well-defined body blotches with shape of wide saddles; blotches large extending into lateral tips of ventral scales ..... *Imantodes cenchoa* (Fig. 23d)

***Leptodeira* Fitzinger, 1843**

1. Less than 186 ventral scales; body strongly elongated and slightly laterally compressed; vertebral and paravertebral scale rows noticeably enlarged; a short postocular stripe, generally not connecting with the dorsal region; dorsum uniform brownish or orange with dark round spots all over, fused in some cases ..... *Leptodeira annulata* (Fig. 23e)

***Leptophis* Bell, 1825**

1. Dorsum with 2 dorsolateral green stripes in adults, separated from each other by a pale vertebral stripe, which always continues onto the tail; head without spots on parietal scales; head and dorsum are metallic green anteriorly in adults, with colouration changing gradually to metallic chestnut toward tail ..... *Leptophis liocercus* (Fig. 17d)

Dorsum without dorsolateral stripes in adults, with black keels on all but outermost dorsal scales; dorsal and head scales with only a narrow black slight margin, with a small black spot on the centre of each parietal scale; dorsal colouration of the head and anterior body is bluish green, different from that of the posterior half of body ..... *Leptophis marginatus* (Fig. 17c)

***Mussurana* Zaher et al., 2009**

1. Dorsal scales in 19 rows; 201–211 ventral scales in males and 209–218 in females; generally 8 supralabial scales; subcaudal scales divided; anal plate entire; dorsum entirely black or slightly darkened in adults, and red with large dark vertebral stripe and white neck ring in juveniles ..... *Mussurana montana* (Fig. 23f)

***Oxybelis* Wagler, 1830**

1. 173–205 ventral and 137–189 subcaudal scales; anal plate divided; supralabial scales usually 8 or more; paired white or yellow ventral stripes absent, or if present, weak and restricted to extreme lateral edges of ventrals on anterior half of body; snout extremely long and acuminate; dark oral lining ..... *Oxybelis aeneus* (Fig. 17e)

***Oxyrhopus* Wagler, 1830**

1. Preocular scales contacting frontal scale 2
- Preocular scale does not contact frontal scale; non-melanic specimens possess a banded dorsal pattern of colouration with black and white/red/brown bands uniformly distributed throughout the dorsum; in melanic individuals, dorsum is uniformly black, while the belly is white with scattered black spots that increase in number front to rear (Fig. 7a) ..... *Oxyrhopus clathratus* (Fig. 23g)
2. Black bands never invade ventral scales, although they may reach the edge of ventral scales 3
- Black dorsal bands invade the ventral scales in adults; supralabial scales generally dark; black bands of triads similar size along the body and tail, sometimes with a reduced central black band on the anterior portion of the body (Fig. 8a, 9a, 10a) ..... *Oxyrhopus guibei* (Fig. 23h)
3. Black bands not disposed of in triads 4
- Black bands disposed in wide triads, with black bands in the centre of the triad, larger than the neighbouring ones in the anterior region of the body, and the size of the interspaces is half the size of the entire triad; the belly may have black spots on the ventral scales; supralabial scales are generally white or slightly edged in black (Fig. 7b 8b, 9b, 10b) ..... *Oxyrhopus trigeminus* (Fig. 24c)

4. 100–126 subcaudal scales in males and 86–110 in females; lateral irregular dark bands may reach the edge of ventral scales, whereas adults may have grey-darkened dorsum with or without reddish bands (Fig. 11a) ..... *Oxyrhopus petolarius* (Fig. 24a–b)
- 58–71 subcaudals in males and 50–63 in females; diamond-shaped dark bands getting thinner towards the belly, not touching ventral scales, over red and/or white ground, with or without small black spots (Fig. 11b) ..... *Oxyrhopus rhombifer* (Fig. 24d–e)

***Palusophis* Montingelli et al. 2019**

1. 163–206 ventral and 72–106 subcaudal scales; dorsum cream or brownish with darker, large rounded crossbands in the top and lateral sides without an ontogenetic shift; dorsal crossbands aligned with laterals ..... *Palusophis bifossatus* (Fig. 17f)

***Phimophis* Cope, 1860**

1. 185–214 ventral scales in males and 190–220 in females; between one and three rows of paraventral dorsal scales (usually the 1st and 2nd) with light colour, with or without pigmented edges; some individuals have a tendency towards melanism in the lateral region ..... *Phimophis guerini*

***Philodryas* Wagler, 1830 and *Pseudablabes* Melo-Sampaio et al. 2020**

1. Ventral ground colour uniform green, with scales not edged in black, dorsum uniform green; top of the head brown, midline in dorsum brown; black postocular stripe in live specimens ..... *Philodryas olfersii* (Fig. 12b, 13b, 24g)

Ventral ground colour gradually darkens towards cloaca, with scales edged in black; dorsum brownish or greenish with scales frequently edged in black ..... *Pseudablabes patagoniensis* (Fig. 12b, 13b, 24h)

***Pseudoboa* Schneider, 1801**

1. Dorsal scales in 19 rows; generally 8 supralabial scales; dorsum uniform red with a dark head and white neck ring in juveniles; adult specimens are usually entirely black or can also be black with large white spots all over the body, or even entirely white in adults and juveniles (Fig. 14a) ..... *Pseudoboa nigra* (Fig. 25a–b)

Dorsal scales in 17 rows; generally 7 supralabial scales; dorsum red with large vertebral stripe; black head and white neck ring in juveniles; dorsum entirely black or slightly dark coloured in adults (Fig. 14b) ..... *Pseudoboa serrana* (Fig. 25c)

***Siphlophis* Fitzinger, 1843**

1. Vertebral scales about as wide as paravertebrals 2
- Vertebral scales notably wider than paravertebrals ..... *Siphlophis compressus* (Fig. 25d)
2. At least some red or orange vertebral scales or head ornamentation; dorsal pattern consisting of 60–72 middorsal red diamond-shaped markings narrowly separated by black dumbbell-shaped spots occupying 4–7 dorsal scale rows; red head dorsum with black markings; ventre with black spots, red colour restricted to the top of the dorsum ..... *Siphlophis pulcher* (Fig. 25f)
- No red or orange on head or vertebral region; head reticulated or peppered with black, sometimes coinciding on medium line; dorsal pattern of 40–62 brown spots, variably offset at midline, distributed over a light brown to cream background; head pattern consisting of scattered brown spots ..... *Siphlophis longicaudatus* (Fig. 25e)

***Sordellina* Procter, 1923**

1. 137–174 ventral scales in females and 135–161 in males; 36–56 subcaudal scales in females and 40–57 in males; usually 8 supralabial; 7 to 9 infralabial scales; head dark brown in dorsal view with supralabials mottled with white or yellow, sometimes fused and forming a line; dorsum uniformly dark brown to black ..... *Sordellina punctata* (Fig. 25g)

***Spilotes* Wagler, 1830**

1. Dorsal scales in generally 21 rows; adults with dorsum pattern reddish or orange with oblique black stripes ..... *Spilotes sulphureus* (Fig. 17h, 18a)
- Dorsal scales in generally 14 or 16 rows (eventually 17); adults with a dorsum pattern yellow with oblique black stripes ..... *Spilotes pullatus* (Fig. 17g)

***Tantilla* Baird & Girard, 1853**

1. 133–168 ventral scales; 41–85 subcaudal scales; 1st pair of infralabials contact midline; light dorsum bands absent; nuchal collar across dorsum of head ..... *Tantilla* cf. *melanocephala* (Fig. 18b)

***Tomodon* Duméril, 1853**

1. 134–143 ventral and 31–38 subcaudal scales; 7 supralabial scales; dark oral lining; vertebral line absent except on neck ..... *Tomodon dorsatus* (Fig. 27a)

***Tropidodryas* Fitzinger, 1843**

1. 218–240 ventral scales; adults with scale rows strongly keeled; caudal scales hispid in only juveniles ..... *Tropidodryas serra* (Fig. 27b)
- 180–210 ventral scales; adults with scale rows smooth or weakly keeled; caudal scales always hispid ..... *Tropidodryas striaticeps* (Fig. 27c)

***Xenodon* Boie, 1826**

1. Dorsal scales in 21 rows; often 8 supralabial scales ..... *Xenodon neuwiedii* (Fig. 27f-g)
- Dorsal scales in 19 rows; often 7 supralabial scales (sometimes eight) ..... *Xenodon merremi* (Fig. 27d-e)

***Xenopholis* Peters, 1869**

1. 126–169 ventral scales in males and 128–175 in females; 28–45 subcaudal scales in males and 27–42 females; top of the head from red to reddish-brown in life, and light brown or pale brown after preservation; dorsal ground colour of body red, reddish-brown to orange in life and light or pale brown after preservation, with black alternated paravertebral blotches, sometimes connected forming conspicuous cross-bands ..... *Xenopholis scalaris* (Fig. 27h)

Key for Elapidae Boie, 1827

1. Dorsal colour pattern with black, red and white rings, mental separated from the first pair of chin shields by the first infralabial ..... *Micrurus*

***Micrurus* Wagler, 1824**

1. Triad sequence of three black rings separated by two white rings and interspaced by two red rings in the midbody 2

Black rings are arranged in monads, with wide red rings separated by black rings with white borders; blackhead caps do not cover parietal tips ..... *Micrurus corallinus*

2. Third black band present in the first sequence of rings of the body 3

Third black band absent in the first sequence of rings of the body ..... *Micrurus decoratus*

3. White triad rings marked in the posterior third, hemipenis with capitular sulcus in the proximal region and capitulum longer than the body ..... *Micrurus anibal*

White triad rings heavily marked with black, capitular sulcus in the middle third and capitulum length similar to the body ..... *Micrurus carvalhoi*

Key for Tropidophiidae Brongersma, 1951

1. Dorsal scales smooth or weakly keeled; large parietals distinct; internodes and prefrontals separate and in pairs; loreal usually absent; nasal divided; dorsals in 21–29 rows ..... *Tropidophis*

***Tropidophis* Müller, 1901**

1. Scales rows in 21 or 23, rarely 25; 164–183 ventrals; vertebral scale row usually enlarged, wider than longer; interparietals typically absent, but small when present; parietals in broad contact along mid-dorsal line of head, even when interparietals are present; dorsum with small irregular spots, with diameter of at least two scales; eight spot rows around body, six on dorsum and two in the belly ..... *Tropidophis paucisquamis*

Key for Viperidae Oppel, 1811

1. Tail with no rattle 2
- Tail with rattle ..... *Crotalus*
2. Distal subcaudals finely divided; keels on middorsal tubercular ..... *Lachesis*
- Distal subcaudals single or paired; keels on middorsal not tubercular ..... *Bothrops*

***Bothrops* Wagler, 1824**

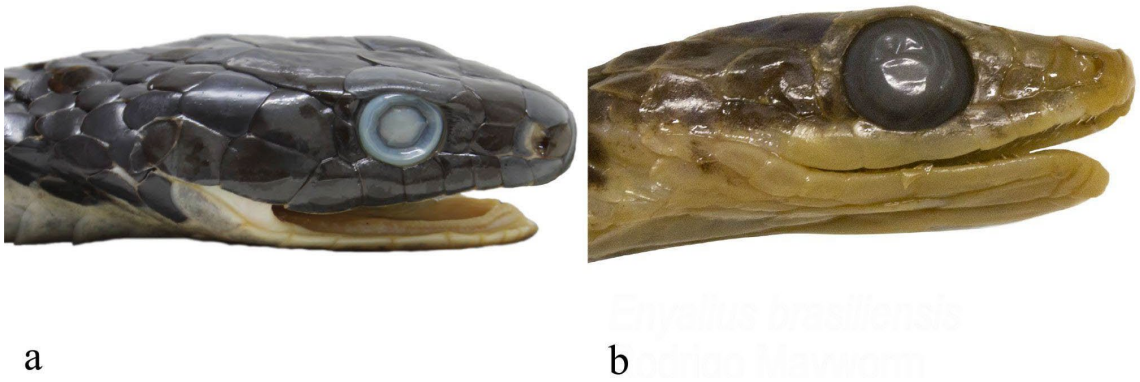
1. Dorsum not green 2
- Dorsum green ..... *Bothrops bilineatus*
2. Prelacunal and second supralabial separate 3
- Prelacunal in contact with second supralabial forming the lacunolabial 5
3. Postorbital stripe hook-shaped posteriorly; top of the head with spear-shaped marking ..... .*Bothrops fonsecai*
-v Postorbital stripe not hook-shaped posteriorly; top of the head not spear-shaped marked 4
4. Ornate head pattern consisting of a large dark brown blotch on snout and pair of elongated blotches extending from frontal region to behind angle of jaw ..... *Bothrops alternatus*
- Top of head not as above ..... *Bothrops neuwiedi*
5. 166–182 ventral scales in males and 170–186 in females; more than five scales reaching the internasal scales; top of the head generally uniform dark brown; labial colour generally uniform; small circles on the basal part of the lateral triangles; triangle blotches with a lighter border around them connecting with the surrounding borders ..... *Bothrops jararacussu*
- 184–219 ventral scales in males and 184–220 in females; four or fewer scales reaching the internasal scales; head generally stained dorsally with diffuse dark markings; labial colour generally stained; only well-designed triangle blotches; triangle blotches with a lighter border not contacting other triangle blotches ..... *Bothrops jararaca*

***Crotalus* Linnaeus, 1758**

1. Clearly evident pattern comprising paravertebral stripes on the neck, followed by dorsal diamonds ..... *Crotalus durissus*

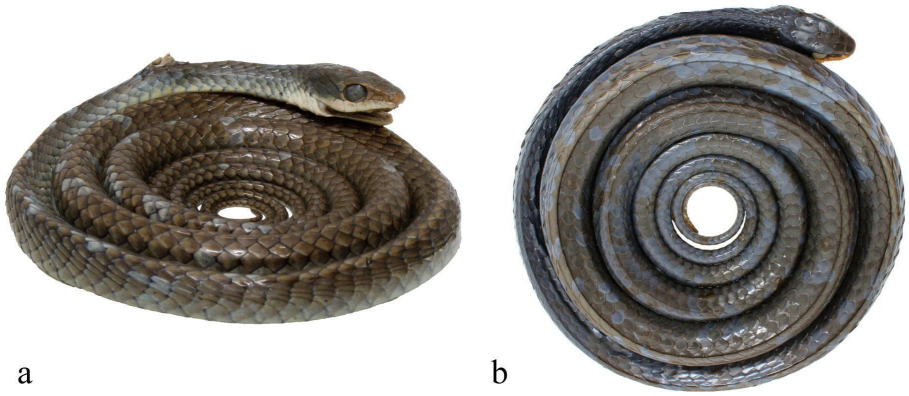
***Lachesis* Daudin, 1803**

1. 213–231 ventrals; postocular stripe thicker ..... *Lachesis rhombeata*



a b

Fig. 1. Lateral view of the head of preserved adult specimens of *Chironius laevicollis* (a), showing all supralabial scales almost entirely darkened in adults and *Chironius fuscus* (b) showing the lower portion of supralabial scales light-coloured.



a b

Fig. 2. Dorsal view of the body of preserved specimens of *Chironius exoletus* (a) showing dorsum with uniform colour, and *Chironius bicarinatus* (b) showing dorsum with vertebral stripe.

a b

Fig. 3. Ventral view of the head of preserved specimens of *Dipsas albifrons* (a) showing eyes visible from ventral view, and *Dipsas neuwiedi* (b) showing eyes not visible from ventral view.

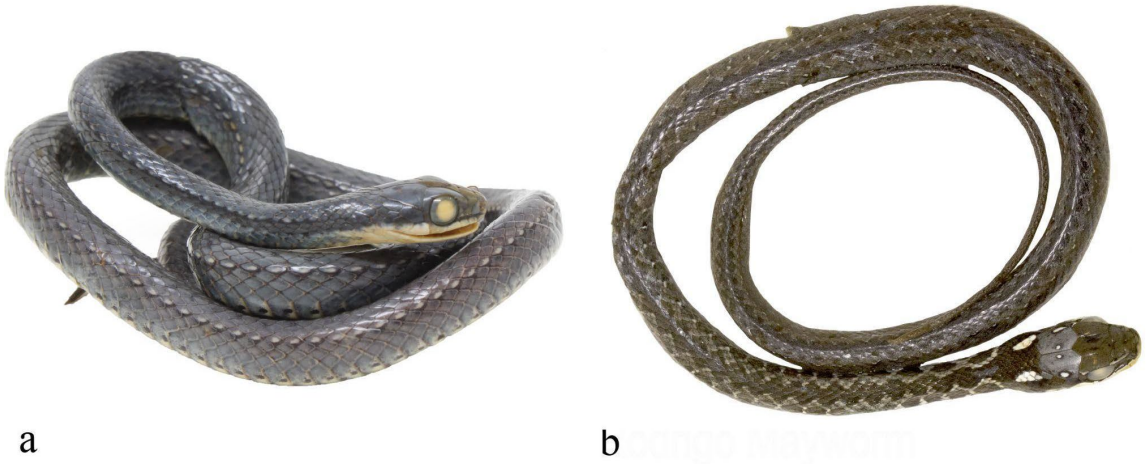


Fig. 4. Lateral view of the body of preserved specimen of *Echinanthera cephalostriata* (a) showing straight stripe pattern, and dorsal view of the body of preserved specimen of *Echinanthera undulata* (b) showing wavy stripe pattern and ocelli in the head.

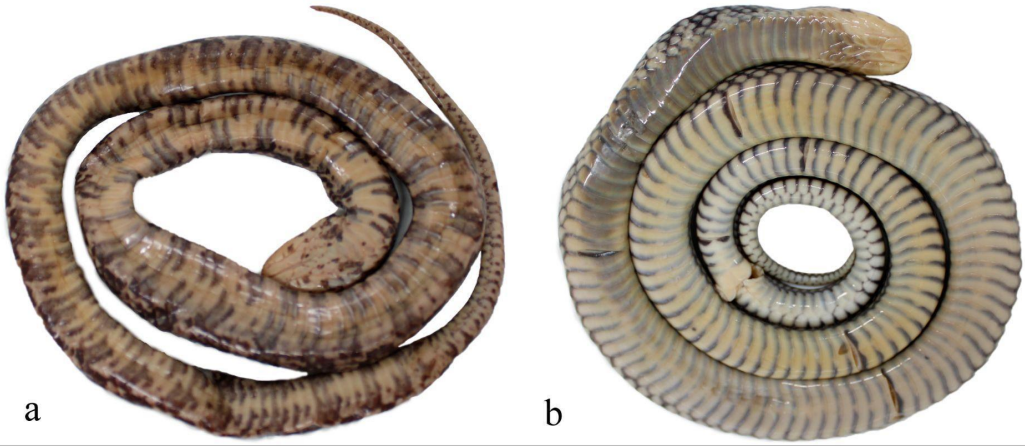


Fig. 5. Ventral view of the body of preserved specimens of *Erythrolamprus poecilogyrus* (a) showing ventre colour with blotches, and *Erythrolamprus miliaris* (b) showing ventral scales light with some dark edging

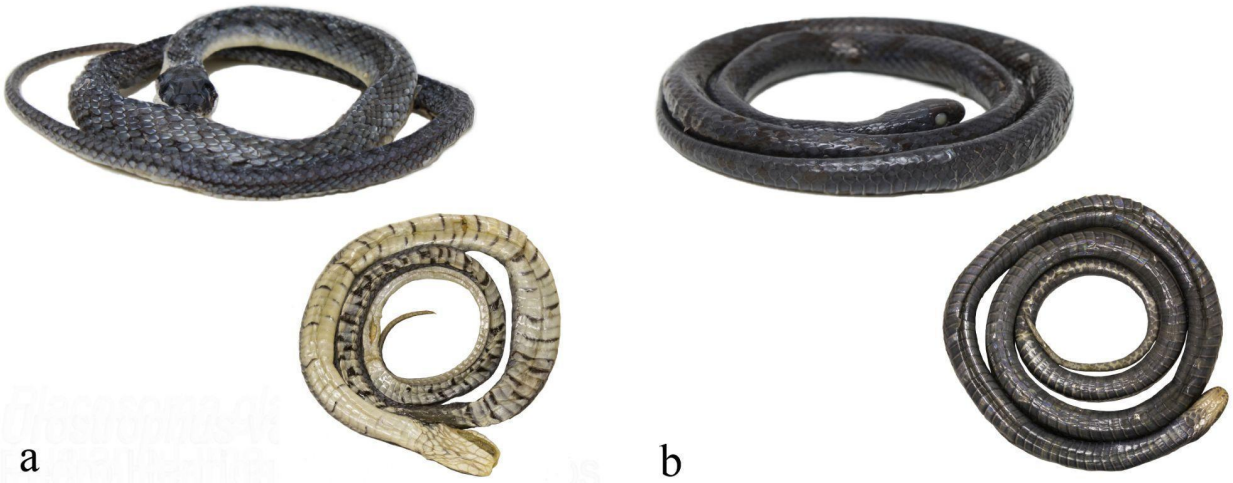
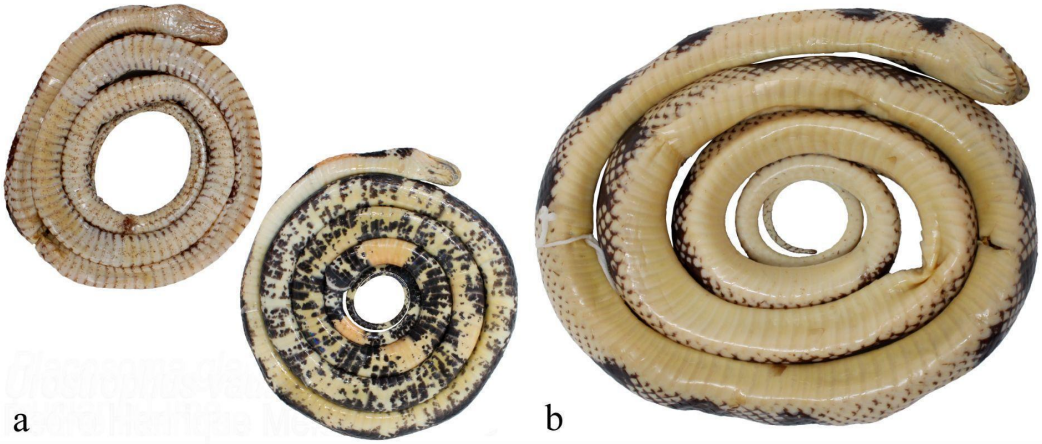


Fig. 6. Lateral and ventral view of the body of preserved specimens of *Erythrolamprus reginae* (a) showing posterior lateral black stripe along the body and tail and ventre with black marks on lateral edges of ventral scales, and *Erythrolamprus jaegeri* (b) showing posterior lateral black stripe absent and ventre without black marks on lateral edges of ventral scales.

a b

Fig. 7. Lateral view of the body of preserved specimens of *Oxyrhopus clathratus* (a) showing banded pattern, and *Oxyrhopus trigeminus* (b) showing triads pattern.



a b

Fig. 8. Ventral view of the body of preserved specimens of *Oxyrhopus guibei* (a) showing black dorsal bands invading the ventral scales on the upper left and the dorsal bands invading the ventral scales on a melanic individual on the right, and *Oxyrhopus trigeminus* (b) showing black dorsal bands not invading the ventral scales.

a b

Fig. 9. Dorsal view of the head of preserved specimens of *Oxyrhopus guibei* (a) showing parietal scales predominantly black, and *Oxyrhopus trigeminus* (b) showing parietal scales predominantly red.

a b

Fig. 10. Lateral view of the head of preserved specimens of *Oxyrhopus guibei* (a) supralabial scales dark, and *Oxyrhopus trigeminus* (b) showing supralabial scales white and slightly edged in black.

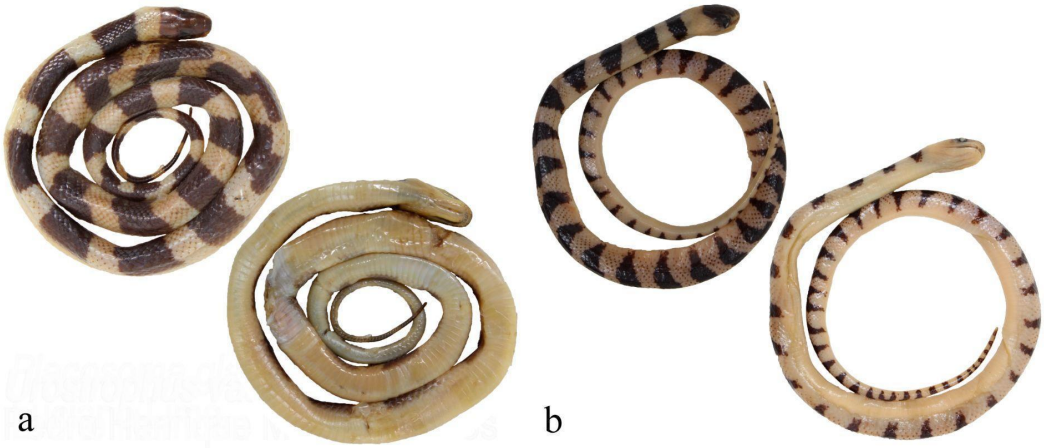


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Fig. 11. Dorsal and ventral views of the body of preserved specimens of *Oxyrhopus petolarius* (a) showing lateral irregular dark bands may reach the edge of ventral scales, and *Oxyrhopus rhombifer* (b) showing diamond-shaped dark bands getting thinner towards the belly, not touching ventral scales.

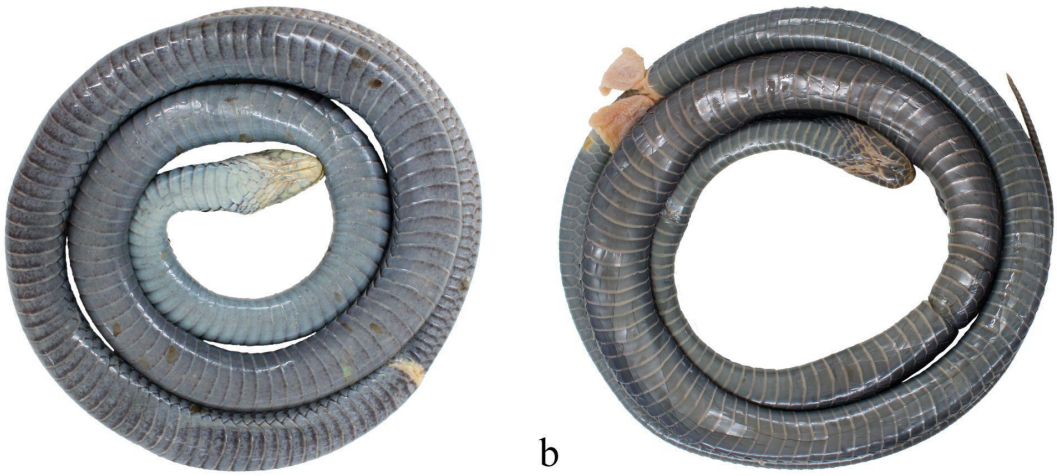

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Fig. 12. Ventral view of the body of preserved specimens of *Pseudablabes patagoniensis* (a) showing ventral ground colour gradually darkening towards cloaca, and *Philodryas olfersii* (b) showing ventral ground colour uniform.

a b

Fig. 13. Dorsal view of the body of preserved specimens of *Pseudablabes patagoniensis* (a) showing scales edged in black, and *Philodryas olfersii* (b) showing scales not edged in black.

a b

Fig. 14. Dorsal view of the body of preserved specimens of *Pseudoboa nigra* (a) showing dorsum colour uniform, and *Pseudoboa serrana* (b) showing dorsum with wide vertebral stripe.

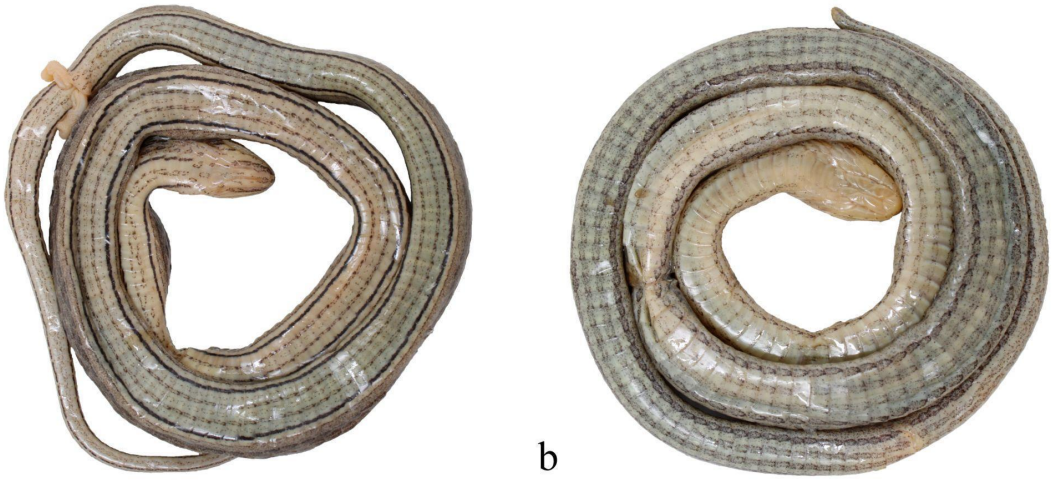

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Fig. 15. Ventral view of the body of preserved specimens of *Dryophylax hypoconia* (a) showing conspicuous ventral lines and spotted head ventre, and *Dryophylax nattereri* (b) showing lighter ventral lines and head belly immaculate.

Fig. 16. Representative Colubridae Snakes of Rio de Janeiro. a. *Chironius bicarinatus* from Guapimirim/RJ; b. *Chironius exoletus* from Rio de Janeiro state; c. *Chironius foveatus* from Guapimirim/RJ; d. *Chironius fuscus* from Mangaratiba/RJ; e. *Chironius laevicollis* adult from Saquarema/RJ; f. *Chironius laevicollis* juvenile from Mangaratiba/RJ; g. *Chironius quadricarinatus* from Rio das Ostras/RJ; h. *Drymarchon corais* from Natal/RN. RJ = Rio de Janeiro, RN = Rio Grande do Norte. Photos by Breno Hamdan (a, c); Carlos Henrique de Oliveira Nogueira (b, g); Igor Veronese de Luna (d, e, f); Ricardo Marques (h).

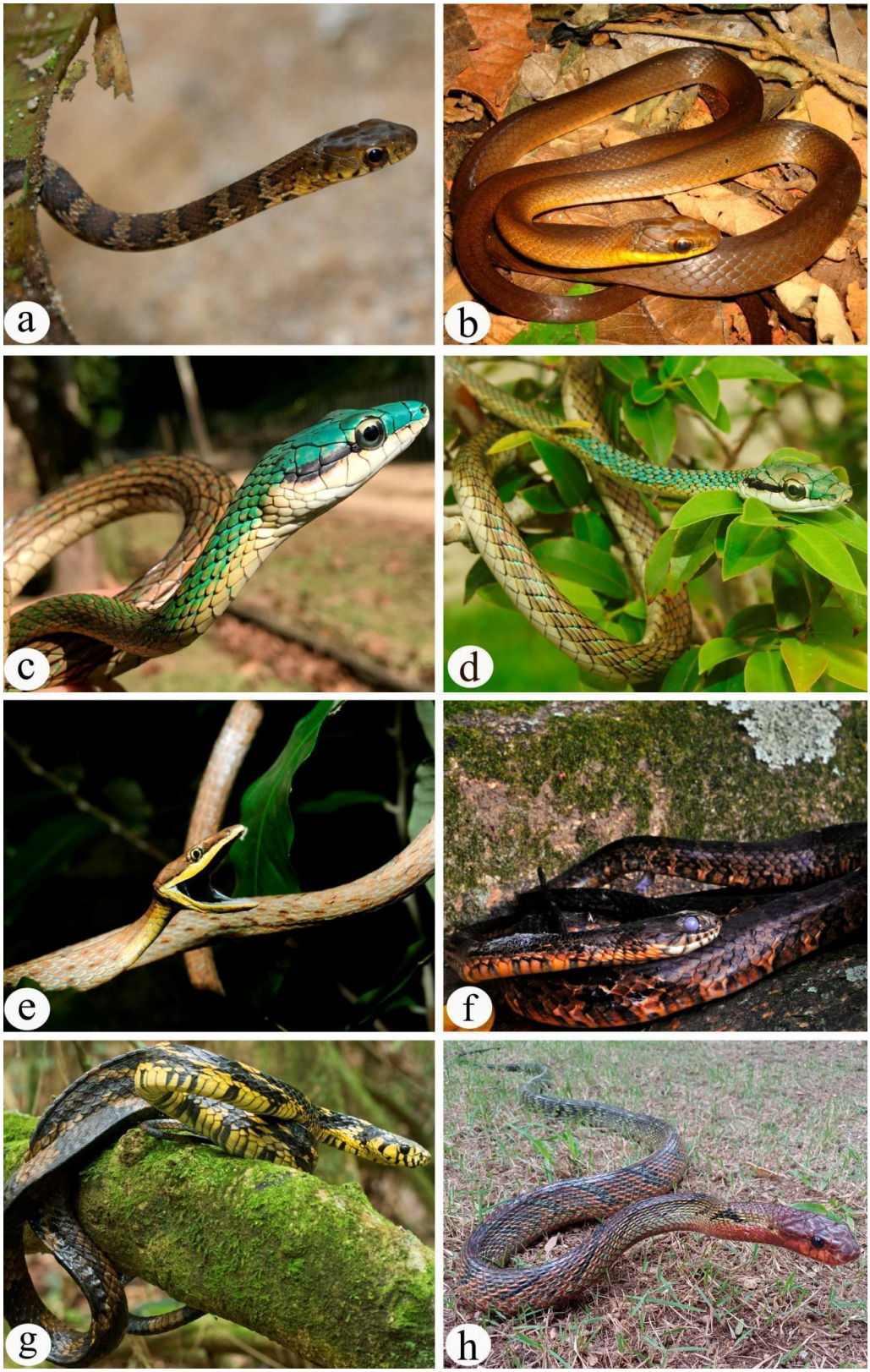

Fig. 17. Representative Colubridae Snakes of Rio de Janeiro. a. *Drymoluber dichrous* juvenile from Campos dos Goytacazes/RJ; b. *Drymoluber dichrous* adult from Barra da Choça/BA; c. *Leptophis marginatus* from Cachoeiras de Macacú/RJ; d. *Leptophis liocercus* from Mangaratiba/RJ; e. *Oxybelis aeneus* from Niterói/RJ; f. *Palusophis bifossatus* from Três Rios/RJ; g. *Spilotes pullatus* from Guapimirim/RJ; h. *Spilotes sulphureus* dark pattern from Saquarema/RJ. BA = Bahia, PE = Pernambuco, RJ = Rio de Janeiro. Photos by Breno Hamdan (e, f, g); Carlos Henrique de Oliveira Nogueira (a); Guilherme Jones Souza (c); Igor Veronese de Luna (h); Marco Antônio de Freitas (b); Miguel Relvas Ugalde (d).

Fig. 18. Representative Colubridae Snakes of Rio de Janeiro. a. *Spilotes sulphureus* juvenile from Niterói/RJ; b. *Tantilla* cf. *melanocephala* from Armação de Búzios/RJ. RJ = Rio de Janeiro. Photos by: Igor Veronese de Luna (a); Carlos Henrique de Oliveira Nogueira (b).

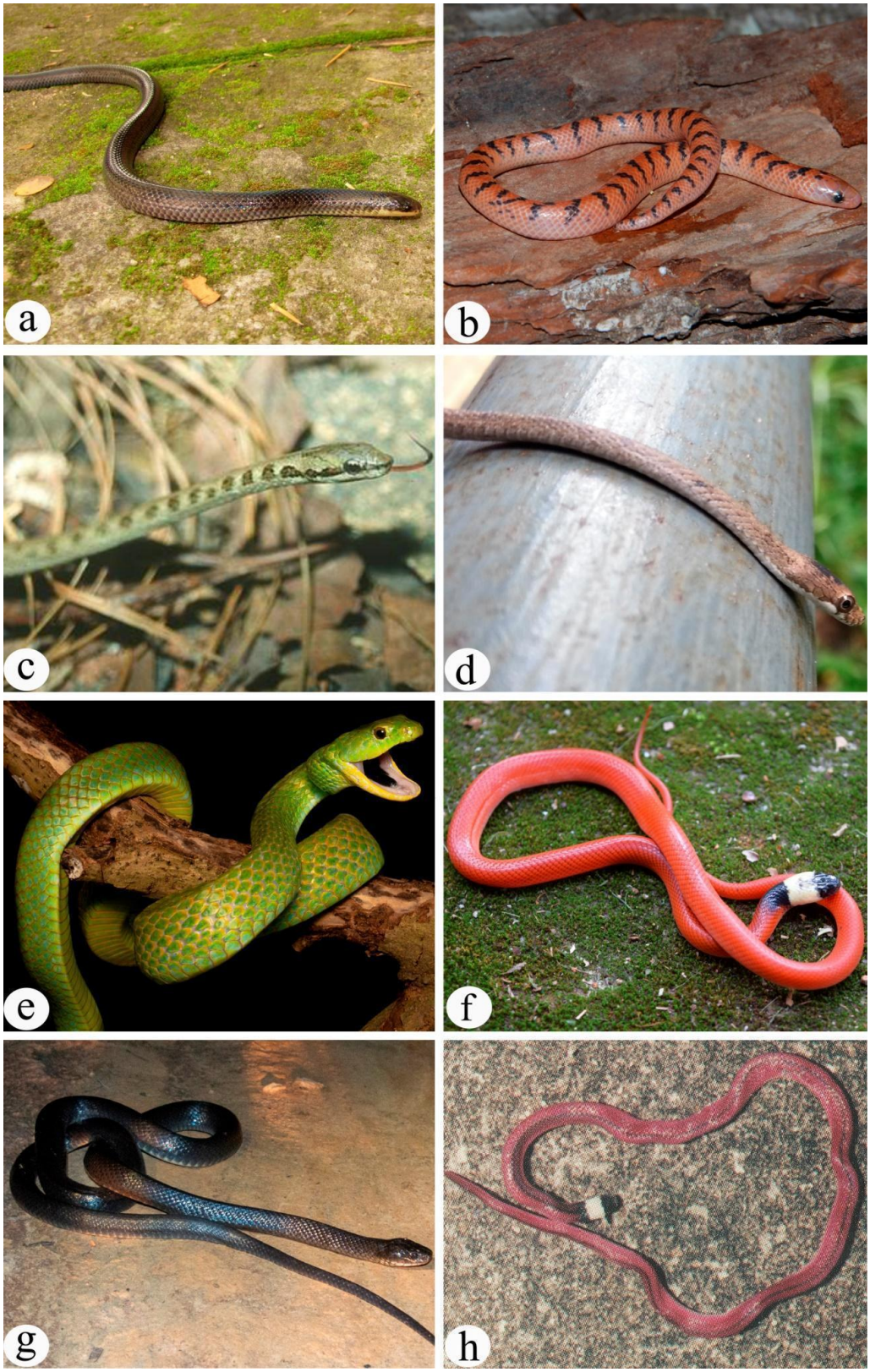

Fig. 19. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Atractus francoi* from Paraty/RJ; b. *Atractus zebrinus* from Sapucaí–Mirim/SP; c. *Caaeteboia amarali* from Jacupiranga/SP; d. *Cercophis auratus* from Rio de Janeiro/RJ; e. *Chlorosoma laticeps* from São João da Barra/RJ; f. *Clelia plumbea* juvenile from Brazil; g. *Clelia plumbea* adult from Prado/BA; h. *Coronelaps lepidus* from Brasil. RJ = Rio de Janeiro, SP = São Paulo, BA= Bahia. Photos by Antônio Jorge Suzart Argôlo (h); Carlos Henrique de Oliveira Nogueira (e); Hugo Cabral (f); Jorge Antônio Lourenço Pontes (a); Luiz Eduardo Mendonça Regio (d); Marcelo Ribeiro Duarte (b, c); Thiago Silva-Soares (g).

Fig. 20. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Dipsas albifrons* from Ubatuba/SP; b. *Dipsas alternans* from Ubatuba/SP; c. *Dipsas indica* from Rio de Janeiro/RJ; d. *Dipsas neuwiedi* from Rio de Janeiro/RJ; e. *Dipsas sazimai* from Rio Janeiro State; f. *Dipsas variegata* from Brasil; g. *Amnisiophis amoenus* from Rio de Janeiro State; h. *Echinanthera cephalostriata* from Nova Friburgo/RJ. RJ = Rio de Janeiro, SP = São Paulo. Photos by Breno Hamdan (d, e, h), Davor Vrcibradic (f), Marcelo Ribeiro Duarte (a, b), Marco Antônio de Freitas (e), Rodrigo Castellari Gonzalez (c).

Fig. 21. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Echinanthera cyanopleura* from Santa Cruz da Serra/SC; b. *Echinanthera melanostigma* from Mangaratiba/RJ; c. *Echinanthera undulata* from Mangaratiba/RJ; d. *Elapomorphus quinquelineatus* from Mangaratiba/RJ; e. *Erythrolamprus aesculapii* dyad pattern from Três Rios/RJ; f. *Erythrolamprus aesculapii* monad pattern from Juiz de Fora/MG; g. *Erythrolamprus almadensis* juvenile from Salvador/BA; h. *Erythrolamprus almadensis* adult from Salvador/BA. BA = Bahia, RJ = Rio de Janeiro, MG = Minas Gerais, SC = Santa Catarina. Photos by Breno Hamdan (e, f), Igor Veronese de Luna (c), Marco Antônio de Freitas (g, h), Miguel Relvas Ugalde (b, d), Pedro Henrique Bernardo (a).

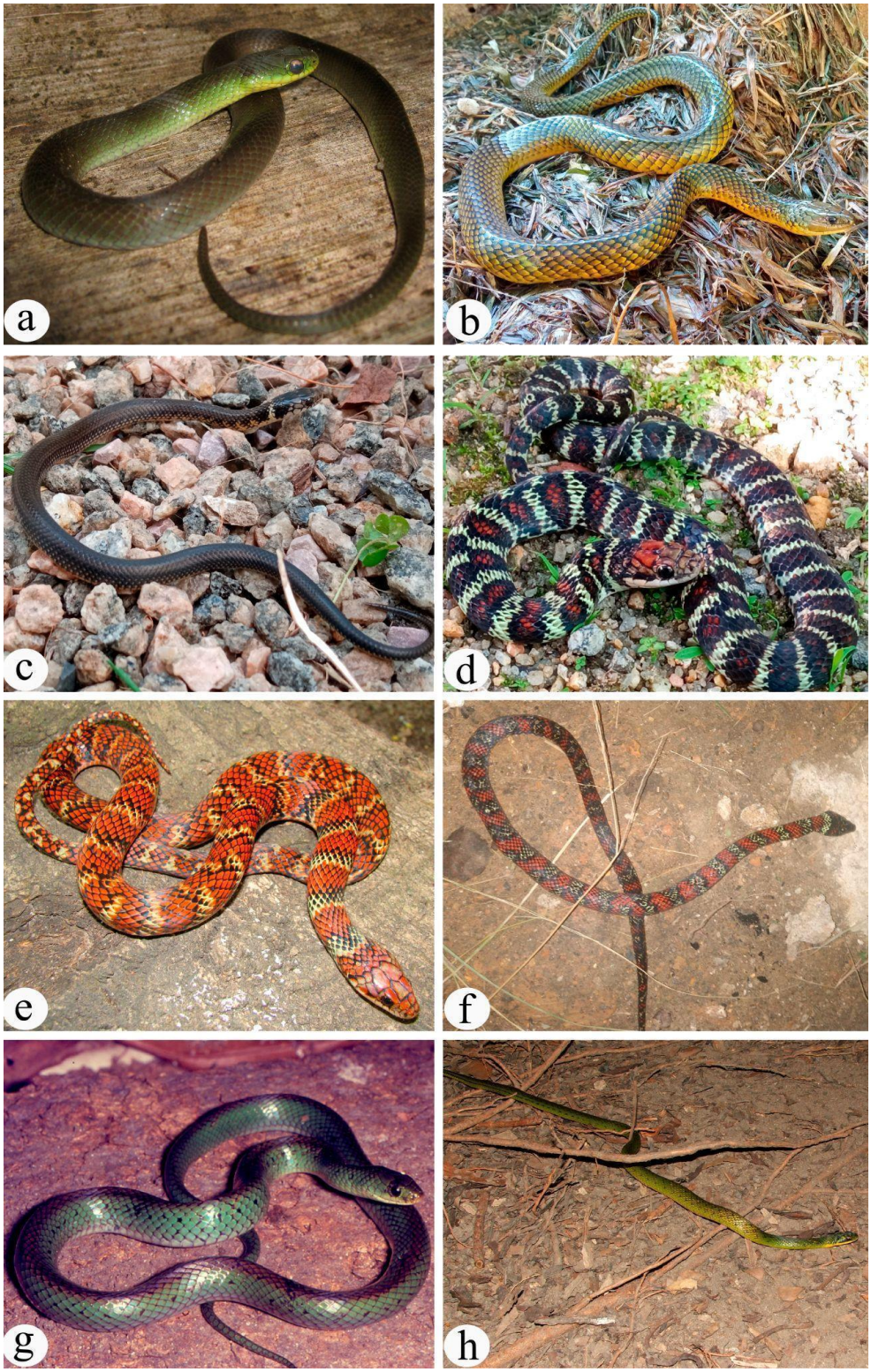

Fig. 22. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Erythrolamprus atraventer* from Salesópolis/SP; b. *Erythrolamprus miliaris* adult from Mangaratiba/RJ; c. *Erythrolamprus miliaris* juvenile from Niterói/RJ; d. *Erythrolamprus poecilogyrus* juvenile from Niterói/RJ; e. *Erythrolamprus poecilogyrus* red pattern from Niterói/RJ; f. *Erythrolamprus poecilogyrus* coral pattern from Rio de Janeiro/RJ; g. *Erythrolamprus jaegeri* from São Paulo State; h. *Erythrolamprus reginae* from Rio de Janeiro State. RJ = Rio de Janeiro, SP = São Paulo. Photos by Arilson Barcelos (f), Davor Vrcibradic (h), Giuseppe Puorto (g), Igor Veronese de Luna (b, c,d), Marco Antônio de Freitas (e), Marco Antônio de Sena (a).

Fig. 23. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Erythrolamprus typhlus* juvenile from Amazonas State; b. *Erythrolamprus typhlus* adult from Amazonas State; c. *Helicops carinicaudus* from Niterói/RJ; d. *Imantodes cenchoa* from Amargosa/BA; e. *Leptodeira annulata* from Rio de Janeiro/RJ; f. *Mussurana montana* from Petrópolis/RJ; g. *Oxyrhopus clathratus* from Nova Friburgo/RJ; h. *Oxyrhopus guibei* from Volta Redonda/RJ. AM = Amazônia, BA = Bahia, RJ = Rio de Janeiro. Photos by Breno Hamdan (c, e, g), Gustavo Pedro L. de Paula (f), Igor Veronese de Luna (h), Laurie Joseph Vitt (b), Marco Antônio de Freitas (a, d).

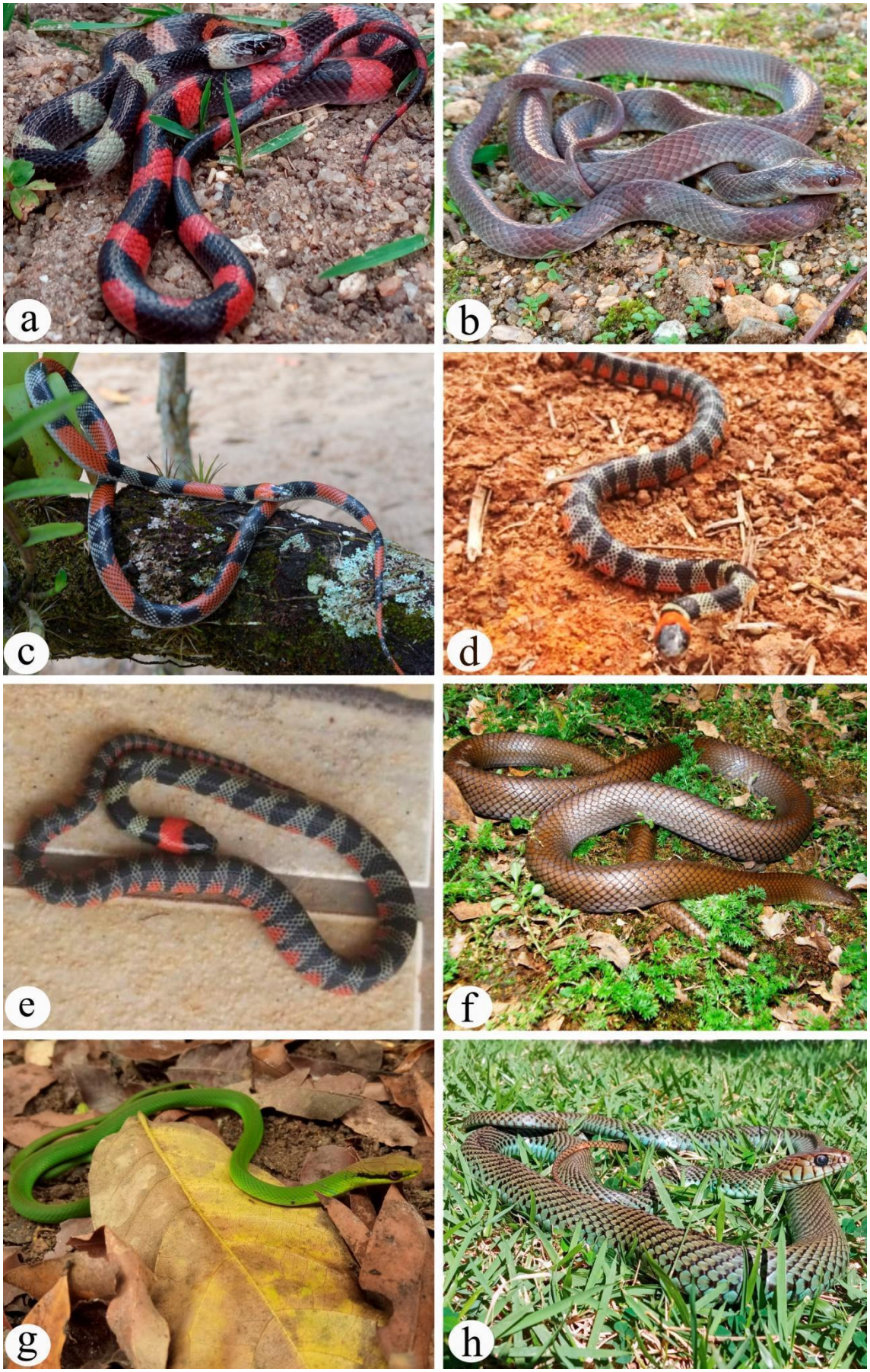

Fig. 24. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Oxyrhopus petolarius* juvenile from Niterói/RJ; b. *Oxyrhopus petolarius* adult from Niterói/RJ; c. *Oxyrhopus trigeminus* from Saubara/BA; d. *Oxyrhopus rhombifer* from Valença/RJ; e. *Oxyrhopus rhombifer* from Valença /RJ; f. *Paraphimophis rusticus* from Brasil; g. *Philodryas*

olfersii from Niterói/RJ; h. *Pseudablabes patagoniensis* from Maricá/RJ. BA = Bahia, RJ = Rio de Janeiro. Photos by Breno Hamdan (c), Igor Veronese de Luna (a, b, g, h), Ivo Rohling Ghizoni–Jr (f), Rodrigo Pereira (d, e).

Fig. 25. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Pseudoboa nigra* black and white morph from Rio de Janeiro/RJ; b. *Pseudoboa nigra* black morph from Sooretama/ES; c. *Pseudoboa serrana* from São Paulo State; d. *Siphlophis compressus* from Guapimirim/RJ; e. *Siphlophis longicaudatus* from Petrópolis/RJ; f. *Siphlophis pulcher* from Rio de Janeiro/RJ; g. *Sordellina punctata* from Brazil; h. *Dibernardia affinis* from Petrópolis/RJ.ES = Espírito Santo, RJ = Rio de Janeiro, SP = São Paulo. Photos by Breno Hamdan (a, d, e, f, h), Ivo Rohling Ghizoni–Jr (g), Marcelo Ribeiro Duarte (c), Miguel Relvas Ugalde (b).

Fig. 26. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Dibernardia bilineata* from Ilha do Cardoso/SP; b. *Adelphostigma occipitalis* from Salvador/BA; c. *Dibernardia persimilis* from Nova Friburgo/RJ; d. *Dryophylax hypoconia* from Bananal/SP; e. *Thamnodynastes longicaudus* from São Lourenço da Serra/SP; f. *Dryophylax nattereri* from Niterói/RJ; g. *Mesotes rutilus* from Brasil; h. *Mesotes strigatus*, Ibitirama/ES. BA = Bahia, ES = Espírito Santo, RJ = Rio de Janeiro, SP = São Paulo. Photos by Breno Hamdan (c, f), Hugo Cabral (g), Marcelo Ribeiro Duarte (a), Marco Antônio de Freitas (b), Miguel Relvas Ugalde (h), Pedro Henrique Bernardes (d), Otávio Augusto Vuolo Marques (e).

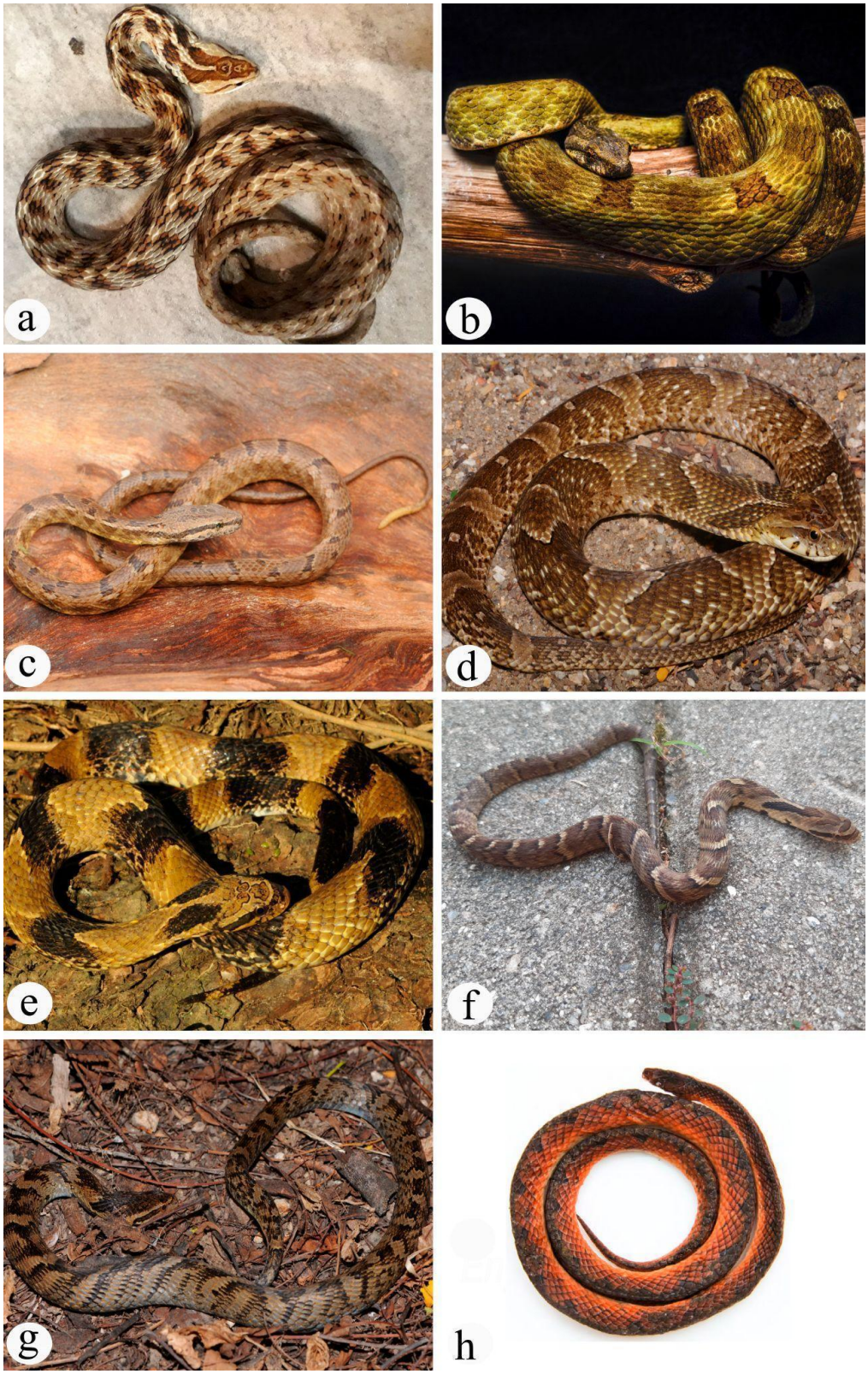

Fig. 27. Representative Dipsadidae Snakes of Rio de Janeiro: a. *Tomodon dorsatus* from São Paulo/SP; b. *Tropidodryas serra* from Barra do Piraí/RJ; c. *Tropidodryas striaticeps* from Rio de Janeiro State; d. *Xenodon merremii* with brown blotches from Rio de Janeiro State; e. *Xenodon merremii* with black blotches from Três Rios/RJ; f. *Xenodon neuwiedii* juvenile from Mangaratiba/RJ; g. *Xenodon neuwiedii* adult from Nova Friburgo/RJ; h. *Xenopholis scalaris* from Magé/RJ. RJ = Rio de Janeiro, SP = São Paulo. Photos by Breno Hamdan (c, d, e, g, h), Edson Taciano (b), Igor Veronese de Luna (a, f)

DISCUSSION

Peters and Orejas-Miranda (1970) published the first comprehensive identification key for Neotropical snakes, covering classifications from family and genus to species. After fifty-four years, species that have not experienced taxonomic changes are still identifiable using the cited key, including *Drymarchon corais*, *Erythrolamprus aesculapii*, *Oxyrhopus clathratus*, *Philodryas olfersii*, and *Spilotes pullatus.*Nevertheless, some species underwent taxonomic rearrangement after 1970, including *Dibernardia affinis* (Abegg et al. 2022) and *Lachesis rhombeata* (Hamdan et al. 2024) or were described, such as *Atractus francoi* (Passos et al. 2010), *Boa atlantica* (Gonzalez et al. 2024), *Dipsas sazimai* (Fernandes et al. 2010), *Echinanthera cephalostriata* (Di Bernardo 1996), *Micrurus anibal* (Nascimento et al. 2024), *Mussurana montana* (Franco et al. 1997), and *Pseudoboa serrana* (Morato et al. 1995). These changes have made the Peters and Orejas-Miranda (1970) key inadequate for identification. No updates or similarly comprehensive identification keys have been published for the Neotropical region since the significant work by Peter and Orejas-Miranda. Instead, research efforts have shifted towards more localized study areas, typically focusing on municipalities or states (*e.g.*, Hamdan and Lira-da-Silva, 2012). Our state key includes 97 species across seven families comprising 22% of the country's ophidiofauna with 22% of the Anomalepididae, 23% of the Boidae, 24% of the Colubridae and Dipsadidae, 11% of the Elapidae, 33% of Tropidophiidae, 23% of the Viperidae species occurring in Brazil (Guedes et al. 2023) and serving as a valuable tool for species identification.

While preparing our snake list, we observed species richness and composition differences among the primary reference sources (Table 1). These differences typically arise over time due to inevitable synonymies, taxonomic rearrangements, the description of new species, and varying levels of access to data from biological collections regarding snake vouchers for species confirmation origin. As a result, our research adds to the efforts of numerous researchers who, in a pioneering and collaborative manner, work together to gather knowledge about this ophidiofauna (*e.g.*, Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023).

Table 1. Ophidiofauna recorded in the Rio de Janeiro State, southeastern Brazil

Taxa	Primary source	Complementary source of records
Scolecophidia Cope, 1864		
Anomalepididae Taylor, 1939		
Liotyphlops ternetzii (Boulenger, 1896)*	Centeno et al. 2010	Costa et al. 2015
Liotyphlops wilderi (Garman, 1883)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023
Leptotyphlopidae Stejneger, 1892 "1891"		
Trilepida salgueiroi (Amaral, 1955 "1954")	Passos et al. 2005	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023
Typhlopidae Gray, 1825		
Amerotyphlops brongersmianus (Vanzolini, 1976)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020
Alethinophidia Hoffstetter, 1955		
Boidae Gray, 1825		
Boa atlantica Gonzalez, Lima, Passos & Silva, 2024	Gonzalez et al. 2024	
Corallus hortulana (Linnaeus, 1758)	Henderson 1997	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023
Epicrates cenchria (Linnaeus, 1758)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023
Colubridae Oppel, 1811		
Chironius bicarinatus (Wied, 1820)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chironius exoletus (Linnaeus, 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chironius foveatus Bailey, 1955	Bailey 1955	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chironius fuscus (Linnaeus, 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chironius laevicollis (Wied, 1824)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chironius quadricarinatus (Boie, 1827)	Dixon et al. 1993	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Drymarchon corais (Boie, 1827)	Rocha et al. 2004	Oliveira et al. 2020
Drymoluber dichrous (Peters, 1863)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Leptophis liocercus (Wied, 1824)	Wied–Neuwiedi 1824	Oliveira et al. 2020; Guedes et al. 2023
Leptophis marginatus (Cope, 1862)	Albuquerque and Fernandes 2022	Guedes et al. 2023
Oxybelis aeneus (Wagler in Spix, 1824)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Palusophis bifossatus (Raddi, 1820)	Raddi 1820	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Spilotes pullatus (Linnaeus 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Spilotes sulphureus (Wied, 1825)	Wied–Neuwiedi 1824	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Tantilla cf. *melanocephala*	Costa and Bérnils 2018; Oliveira et al., 2020; Present study (IVB3541)	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsadidae Bonaparte, 1838		
Adelphostigma occipitalis (Jan, 1863)	Rocha et al. 2004	Oliveira et al. 2020
Amnisiophis amoenus (Jan, 1863)	Peters & Orejas–-Miranda 1970	Marques et al. 2001; Rocha et al. 2004 Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Atractus francoi Passos, Fernandes, Bérnils & Moura-Leite, 2010	Passos et al. 2010	Nogueira et al. 2019; Oliveira et al. 2020
Atractus zebrinus (Jan, 1862)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Caaeteboia amarali (Wettstein, 1930)	Passos et al. 2012	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Cercophis auratus (Schlegel 1837)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Chlorosoma laticeps (Werner, 1900)	de-Oliveira–Nogueira et al. 2024	
Clelia plumbea (Wied, 1820)	Peters and Orejas-Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Coronelaps lepidus (Reinhardt, 1861)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dibernardia affinis (Günther, 1858)	Gunther 1858	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dibernardia bilineata (Fischer, 1885)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023

Dibernardia persimilis (Cope, 1869)	Cope 1868	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas albifrons (Sauvage, 1884)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas alternans (Fischer, 1885)	Passos et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas indica (Fischer, 1885)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas neuwiedi (Ihering, 1911)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas sazimai Fernandes, Marques & Argôlo, 2010	Fernandes et al. 2010	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dipsas variegata (Duméril, Bibron & Duméril, 1854)	Regio and Pontes 2020	Oliveira et al. 2020; and Guedes et al. 2023
Dipsas ventrimaculata (Boulenger, 1885)	Bérnils 2009	Nogueira et al. 2019
Dryophylax hypoconia (Cope, 1860)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Dryophylax nattereri (Mikan, 1828)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Echinanthera cephalostriata Di–Bernardo, 1996	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Echinanthera cyanopleura (Cope, 1885)	Di Bernardo 1992	Marques et al. 2001; Oliveira et al. 2020; and Guedes et al. 2023
Echinanthera melanostigma (Wagler in Spix, 1824)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Echinanthera undulata (Wied, 1824)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Elapomorphus quinquelineatus (Raddi, 1820)	Raddi 1820	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus aesculapii (Linnaeus, 1758)	Cope 1860	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus almadensis (Wagler in Spix, 1824)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020;
Erythrolamprus atraventer (Dixon & Thomas, 1985)	Passos and Fernandes 2001	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus jaegeri (Günther, 1858)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus miliaris (Linnaeus, 1758)	Wied–Neuwiedi 1821	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus poecilogyrus (Wied, 1824)	Raddi 1820	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus reginae (Linnaeus, 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Erythrolamprus typhlus (Linnaeus, 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Helicops carinicaudus (Wied, 1824)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Imantodes cenchoa (Linnaeus, 1758)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Leptodeira annulata (Linnaeus, 1758)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Mesotes rutilus (Prado, 1942)	Freitas 2003	Gonçalves et al. 2007
Mesotes strigatus (Günther, 1858)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Mussurana montana (Franco, Marques & Puorto, 1997)	Costa et al. 2015	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Oxyrhopus clathratus Duméril, Bibron & Duméril, 1854	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Oxyrhopus guibei Hoge & Romano, 1977	Silveira 2008	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Oxyrhopus petolarius (Linnaeus, 1758)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Oxyrhopus rhombifer Duméril, Bibron & Duméril, 1854	Peters and Orejas–-Miranda 1970; Rediscovered in the present study (IVB4653–-56)	Rocha et al. 2004; Guedes et al. 2023
Oxyrhopus trigeminus Duméril, Bibron & Duméril, 1854	Peters and Orejas-Miranda 1970	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023 Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Paraphimophis rusticus (Cope, 1878)	Peter and Orejas-Mirandas 1970	Rocha et al. 2004; Silveira 2014; Oliveira et al. 2020; and Guedes et al. 2023
Philodryas olfersii (Liechtenstein, 1823)	Thomas 1976	Marques et al. 2001; Rocha et al. 2004; Nogueira

		et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Pseudablabes patagoniensis (Girard, 1858)	Thomas 1976	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Phimophis guerini (Duméril, Bibron & Duméril, 1854)	Nogueira et al. 2019	Guedes et al. 2023
Pseudoboa nigra (Duméril, Bibron & Duméril, 1854)	Peters and Orejas–Miranda 1970	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Pseudoboa serrana (Morato, Moura–Leite, Prudente & Bérnils, 1995)	Marques et al. 2001	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Siphlophis compressus (Daudin, 1803)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Siphlophis longicaudatus (Andersson, 1901)	Rocha et al. 2004	Marques et al. 2001; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Siphlophis pulcher (Raddi, 1820)	Raddi 1820	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Sordellina punctata (Peters, 1880)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Guedes et al. 2023
Thamnodynastes longicaudus Franco, Ferreira, Marques & Sazima, 2003	Franco et al. 2003	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Tomodon dorsatus Duméril, Bibron & Duméril, 1854	Marques et al. 2001;	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Tropidodryas serra (Schlegel, 1837)	Marques et al. 2001	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Tropidodryas striaticeps (Cope, 1870)	Peters and Orejas–Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Xenodon merremii (Wagler in Spix, 1824)	Rocha et al. 2004	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Xenodon neuwiedii Günther, 1863	Gunther 1863	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Xenopholis scalaris (Wucherer, 1861)	Hamdan et al. 2015	Nogueira et al. 2019; Oliveira et al. 2020; and Guedes et al. 2023
Elapidae Boie, 1827		
Micrurus anibal Nascimento, Graboski, Silva Jr & Prudente, 2024	Nascimento et al. 2024	
Micrurus carvalhoi Roze, 1967		Nogueira et al. 2019; Oliveira et al. 2020
Micrurus corallinus (Merrem, 1820)	Roze 1967	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Micrurus decoratus (Jan, 1858)	Roze 1967	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Tropidophiidae Brongersma, 1951		
Tropidophis paucisquamis (Müller, 1901)	Peters and Orejas-Miranda 1970	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Guedes et al. 2023
Viperidae Oppel, 1811		
Bothrops alternatus Duméril, Bibron & Duméril, 1854	Silveira and Evers-Junior 2007	Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Bothrops bilineatus (Wied-Neuwied, 1821)	Machado 1944	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Bothrops fonsecai Hoge & Belluomini, 1959	Hoge and Belluomini, 1959	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Bothrops jararaca (Wied-Neuwied, 1824)	Machado 1944	Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Bothrops jararacussu Lacerda, 1884	Lacerda 1884	Peters and Orejas-Miranda 1970; Marques et al. 2001; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Bothrops neuwiedi (Wagler, 1824)	Machado 1944	Peters and Orejas-Miranda 1970; Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Crotalus durissus (Laurenti, 1768)	Barth 1957	Rocha et al. 2004; Nogueira et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023
Lachesis rhombeata (Wied-Neuwied, 1824)	Machado 1956	Marques et al. 2001; Rocha et al. 2004; Nogueira

et al. 2019; Oliveira et al. 2020; Duque et al. 2023; Guedes et al. 2023

Without a voucher specimen, Peters and Orejas-Miranda (1970) made the first report of the *O. rhombifer* for the state. Subsequent publications overlooked this early record (*e.g.*, Oliveira et al. 2020). Nevertheless, in 2022 we received photographic documentation of four specimens of *O. rhombifer* from public servants in the fire department and the zoonosis control centre of the municipality of Valença,. We sent photos to Dr Henrique Costa (UFJF) for identification verification and housed the images in the register book of specimens of the Coleção Científica de Serpentes Instituto Vital Brazil (IVB4653, IVB4654, IVB4655, and IVB4656) scientific collection. The specimens were identified by combining the following characteristics: contact between the preocular scale and the frontal, 30–60 irregular triangular or semicircular black bands with a tapered black colour close to the belly, accompanied by red and white in the interspaces of the dorsum. Thus, we have confirmed the occurrence of *O. rhombifer* in Rio de Janeiro state.

Drymarchon corais is not mentioned in Guedes et al. (2023) despite being presented in Oliveira et al. (2020). The voucher specimen MNRJ 9739 was determined by Dr Paulo Passos (MNRJ) as *D. corais,* and the information provided to us by Dr Ronaldo Fernandes (MNRJ) confirmed the presence of the species in the state of Rio de Janeiro. The MNRJ 9739 specimen indicated the species occurrence in the municipality of Nova Friburgo, situated in a mountainous region at an average altitude of 985 m. Thus, we support the species presence in the state list following Oliveira et al. (2020).

The occurrence of M. rutilus has been questioned by Costa et al. (2022) and Guedes et al. (2023) due to the absence of voucher specimens. However, earlier research confirmed the presence of *M. rutilus* in the state of Rio de Janeiro (Gonçalves et al., 2007). This information can also be found on page 146, image 187 of Freitas's book “Serpentes Brasileiras” (2003). According to Dr. Freitas (ICMBIO), the specimen in question was photographed in 1994 inside the Serpentarium of the Instituto Vital Brazil by biologist Angelo Brasileiro and himself. The image shows the *M. rutilus* specimen resting on one of the snake handling boxes commonly used by the institute during the 1990s. Although no voucher specimens have been located, we believe both records provide sufficient evidence for the occurrence of *M. rutilus* within the state's boundaries.

We also support the presence of *Tantilla* cf. *melanocephala* (sensu Azevedo et al. 2024) in Rio de Janeiro, which was initially reported by Costa and Bérnils (2018) and is currently registered here through voucher IVB3541 from the municipality of Araruama/RJ, situated in the Atlantic rainforest domain with sandy coastal plains (restinga vegetation) (Scarano 2002).

Erythrolamprus almadensis, *Adelphostigma occipitalis*, and *S. punctata* are not listed in Guedes et al. (2023), as they classified these records as dubious due to the lack of vouchers.

However, a voucher for *E. almadensis* is available in the Reptile Collection of the Amphibian and Reptiles Laboratory at the Zoology Department of the Biology Institute, Federal University of Rio de Janeiro (ZUFRJ 1607), collected from Barra Mansa, RJ. Although no vouchers have been found for *A. occipitalis* or *S. punctata*, we have decided to include both species in our list based on the expertise of the authors in Rocha et al. (2004) and their extensive background in herpetological studies. *S. punctata* is also mentioned for Rio de Janeiro in Peters and Orejas-Miranda (1970).

Marques et al. (2001) recorded *A. trihedrurus*, but there is neither a voucher nor any other mention in the literature. Costa et al. (2022) and Guedes et al. (2023) mention the species as a dubious record for Rio de Janeiro. Costa et al. (2022) argue that the specimen labelled as *A. trihedrurus* may actually be *A. zebrinus* or *A. francoi,* which has an even more similar colour pattern and had not yet been described in 2001. We support the explanation above and decided not to assign the species to the state.

Nogueira et al. (2019) mention *L. ternetzii* from Bananal, Angra dos Reis. However, Costa et al. (2022) argue that this locality is incorrect and assert that the specimen actually is from the municipality of Bananal in São Paulo. Oliveira et al. (2020) and Guedes et al. (2023) do not include this species in their lists nor mention *Liotyphlops beui*, which has not been reported for Rio de Janeiro in any previously referenced lists. Nonetheless, *L. beui* was documented for Rio de Janeiro by Centeno et al. (2010) (voucher IBSP 73913) and Costa et al. (2015). A later taxonomic review classified it as a junior synonym of *L. ternetzii* (see Marra-Santos 2023). Therefore, we have decided to include *L. ternetzii* in our list.

CONCLUSIONS

As a result of updating the richness and composition of snake species found in the Atlantic Forest biome within the state, our work contributes to biogeography, ecology, and biological conservation in the Neotropics. Our identification keys simplify recognizing snakes in the field and scientific collections by incorporating photographs and easy-to-follow instructions, providing an effective tool for researchers and students in related disciplines.

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Supplementary materials

Table S1. Families and character sources used to build the species keys