LOWLAND REPTILES OF YACOPÍ (CUNDINAMARCA, COLOMBIA)

by

Rafael Ángel Moreno-Arias[1], Guido Fabián Medina-Rangel[2] & Olga Victoria Castaño-Mora[3]

Abstract

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An inventory of reptiles that occur below 1000 m was conduced in Yacopí, Cundinamarca, Colombia. We recorded 47 species (26 lizards, 19 snakes, one amphisbaenian and one turtle). The richest family was Colubridae and the richest genus was *Norops*. Fauna was grouped according to its distribution as: trans-Andean species (those that occur the western side of the Cordillera Oriental) and widespread species (those that occur on both the western and eastern sides of the mountain range). Lizards dominate the first group and snakes the second. We found that 2000 m is the upper limit of distribution in Colombia for the reptiles reported herein.

Key words: Colombia, distribution, lowlands, reptiles, Yacopí.

Resumen

Se efectuó un inventario de reptiles registrados por debajo de 1000 m en el municipio de Yacopí, Cundinamarca, Colombia. Se encontraron 47 especies (26 saurios, 19 serpientes, un anfisbénido y una tortuga). La familia más rica en especies fue Colubridae y el género más rico *Norops.* La fauna se agrupó según su distribución en dos tipos: Trasandino (al oeste de la cordillera Oriental) y Amplio (al este y oeste de la misma cordillera). Los saurios predominaron en el primero y las serpientes en el segundo. Se encontró que el límite superior de distribución en Colombia de la mayoría de reptiles registrados llega a los 2000 m.

Palabras clave: Colombia, distribución, reptiles, tierras bajas, Yacopí.

1 Grupo Biodiversidad y Conservación. Instituto de Ciencias Naturales, Universidad Nacional de Colombia. Apartado Aéreo 55187. Correo electrónico: ramorenoa@unal.edu.co

2 Grupo Biodiversidad y Conservación. Instituto de Ciencias Naturales, Universidad Nacional de Colombia. Apartado Aéreo 55187. Correo electrónico: gfmedina@unal.edu.co

3 Grupo Biodiversidad y Conservación. Instituto de Ciencias Naturales, Universidad Nacional de Colombia. Apartado Aéreo 55187. Correo electrónico: olvicastano@yahoo.es

Introduction

Yacopí has the largest primary and secondary tropical humid forests associations of the lowlands and mid-elevational zones in Cundinamarca. These remnants of the Carare-Opón Region are important potential areas for the conservation of the country's biodiversity (**CAR,** 2003). Nearly all investigations and conservation efforts have been focused on forest vegetation, whereas the fauna has been studied less, regardless of its ecological role in forest maintenance (**Redford,** 1997). Reptiles are important links in the food chain and important group for investigations of biological diversity.

There are few studies about reptilian diversity in Colombia (**Pérez-Santos & Moreno,** 1988; **Sánchez *et al.*** 1995; **Campbell & Lamar,** 2004; **Ayala & Castro,** unpublished) and even less for Yacopí. Except for the work in Guadualito-Yacopí (**Castaño *et al.*** 1995) and others focused on the reproductive biology (**Ramírez,** 1999; **Galeano**, 2000; **Ramírez-Pinilla *et al.*** 2002) and diet (**Caicedo,** 2003) of the lizard *Mabuya mabouya*. We carried out an inventory of the reptiles in the lowlands of Yacopí based on our own fieldwork and review of material in collections.

Materials and methods

Yacopí is located in northwestern Cundinamarca Department in the Magdalena Valley and its municipal center is at 05º 27´ 58´´N and 74º 20´ 20´´W (**IGAC**, 1996) (Figure 1). The monthly mean temperature is 21.2º C, with a variation in monthly means of 20.1-22.8º C.. The annual total precipitation is 2680.7 mm with a monthly mean precipitation of 223.4 mm. The dominant vegetation in Yacopí is humid tropical forest.

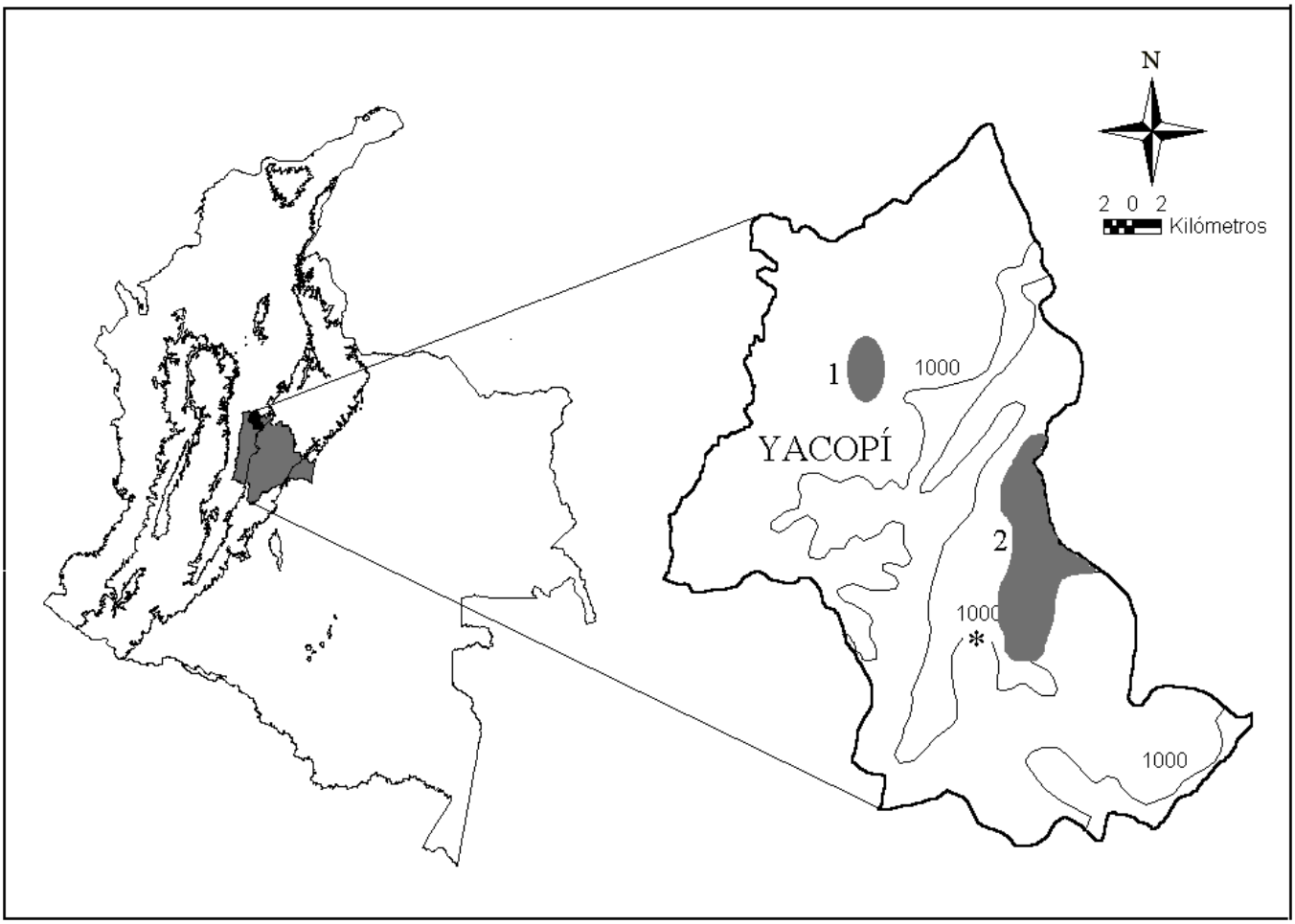

Figure 1. Map of study area ▪. **1.** Terán **2.** Guadualito * Municipality.

We obtained the information from the following sources: 1) field work in rural areas of Terán-Yacopí (05º 41´ 55´´N 74º 24´ 08´´W elevation 190-550 m. Figure 1) during December 2003 and January 2004 and adjacent areas of Guadualito-Yacopí (between 5° 33´ 22.4´´N to 5° 38´00.1´´N and 74° 17´ 38.7´´W to 74° 20´ 2.9´´W elevation 800-1500 m) october and November 1995. 2) Inspection of the reptile collections of the Instituto de Ciencias Naturales (**ICN)** and Museo de Historia Natural de la Universidad Industrial de Santander (**UIS-R)**. We include species with at least one record (literature and/or collection) below 1000.

The key (Appendix 1) is based on diagnostic characteristics of mature specimens and previous keys (**Peters & Orejas-Miranda,** 1970; **Peters & Barros-Donoso,** 1970; **Savage & Villa** 1986; **Pérez-Santos & Moreno**, 1988; **Avila-Pires,** 1995; **Roze**, 1996; **Campbell & Lamar,** 2004; **Ayala & Castro,** unpublished).

The comparison between the fauna of Yacopi and those of other lowlands in Colombia (Perijá (**Hernández-Ruz**, 2001), Chocó biogeográfico (**Castaño *et al.*** 2004), Guainía (**Vargas**, 2000), Sierra Nevada of Santa Marta SNSM (**Bernal-Carlo,** 1991) and Meta (**Lamar,** 1987)) was made with: 1) Coefficient of Biogeographic Resemblance **CBR** (**Duellman**, 1990), 2) Shared Species between areas and 3) General species distribution in Colombia, inferred from collections and literature.

Results

At Yacopí we identified 47 species of reptiles: 26 lizards, 19 snakes, one amphisbaena and one turtle. Lizards are the richest with 55.3% of the species followed by snakes with 40.4%. (Figure 2). The families with the most species are Colubridae (Snakes) with 31.9% and Iguanidae (Lizards) with 21.3%. Gekkonidae (Lizards) has 14.9% and Gymnophthalmidae (Lizards) 12.8%. Five remaining families, with one species each one, represent in total 10.6% of the species in Yacopí (Figure 3).

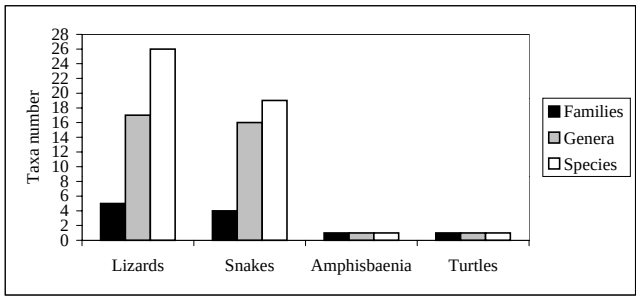

Figure 2. Richness of families, genera and species reported in Yacopí.

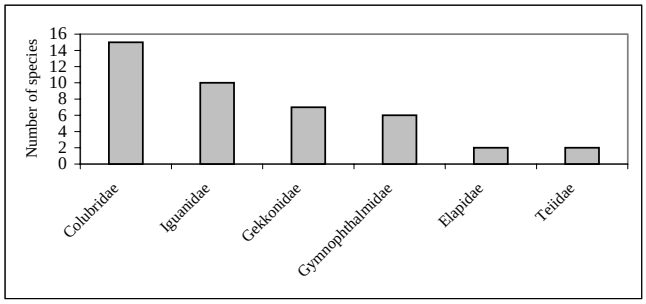

Figure 3. Richness of species by family reported in Yacopí.

The richest lizard genus is *Norops* with six species. *Lepidoblepharis*, *Leposoma* and *Sphaerodactylus* each have two species. For snakes *Dendrophidion*, *Liophis* and *Micrurus* each one with two species; the 27 remaining genera are each represented by one species.

According to the CBR, the areas most similar to Yacopí are SNSM (0.44), Perijá (0.42) and Chocó (0.36) and the least similar are Meta (0.24), La Ceiba, and Guainía (0.12). Yacopí shares the most species with Chocó (39), SNSM (27) and Meta (19) and the least number with Perijá (15) and Guainía (5).

According to the general distributions of species, the fauna at Yacopí includes species with two distributional patterns: species with a trans-Andean distribution and species with broad distributions. The first type includes 55.3% of the fauna found in Yacopí and the second includes the remaining fauna: 44.7 % (Tables 1 and 2). Among trans-Andean species the richest are lizards with 72.0%; for widespread species the richest are snakes 57.1% (Table 1).

Table 1. Number of species by distributional pattern of Yacopí.

Fauna type	Amphisbaenia	Turtles	Lizards	Snakes	Total
Trans-Andean	0	1	18	6	25
Broad	1	0	8	12	21
Total	**1**	**1**	**26**	**18**	**46**

With regard to the altitudinal distribution we found that 72.3% of the species occur from 0 to 2000 m, 17.1% below 1000 m and only the 10.6% reached an elevation of 2700 m (Table 3).

Table 2. Faunal types based in the species distribution.

		Distribution	Species
Trans-Andean	1	Cauca and Magdalena valleys and Chocó.	*Chironius grandisquamis, Echinosaura horrida, Lepidoblepharis intermedius, Leposoma southi, Polychrus gutturossus, Pseustes schropshirei*
	2	Cauca and Magdalena valleys, Northern Chocó.	*Anolis frenatus, Norops vittigerus, Lepidoblepharis xanthostigma, Ptychoglossus festae, Sphaerodactylus lineolatus*
	3	Interandean valleys, Chocó and Caribe region.	*Ameiva festiva, Dendrophidion percarinatus, Micrurus dumerilli, Stenorrhina degenhardtii*
	4	Cauca and Magdalena valleys and Caribe region without arid zone of La Guajira.	*Basiliscus galeritus, Dendrophidion bivittatus Kinosternon leucostomum*
	5	Interandean valleys y Caribe region.	*Norops tropidogaster, Bachia bicolor, Tretioscincus bifasciatus*
	6	Cauca and Magdalena valleys.	*Norops mariarum, Anolis tolimensis*
	7	Magdalena valley.	*Norops sulcifrons*
	8	Magdalena valley and north of Department of Magdalena.	*Sphaerodactylus heliconiae*
Broad	1	Colombian lowlands.	*Amphisbaena fuliginosa. Boa constrictor, Cnemidophorus lemniscatus, Iguana iguana, Imantodes cenchoa, Leptophis ahaetulla, Mabuya sp, Mastigodryas boddaerti, Oxybelis aeneus, Spilotes pullatus, Tantilla melanocephala, Thecadactylus rapicauda*
	2	Interandean valleys, Caribe region, "piedemonte llanero" and adjacent lowlands.	*Gonatodes albogularis, Hemidactylus brookii, Leposoma rugiceps, Liophis epinephelus Micrurus mipartitus*
	3	Interandean valleys, Caribe region and north of "piedemonte llanero".	*Bothrops aper, Leptodeira septentrionalis*
	4	Interandean valleys, Caribe region and Orinoquia.	*Norops auratus, Liophis melanotus*

Discussion

The reptiles reported represent 9.4% of Colombian species, 23.8% of the genera and 46.4% of the families. Snakes are the richest in Colombia in contrast with Yacopí where lizards are the richest. In Yacopí, Colubridae and Iguanidae are the richest families and *Norops* the richest genus, which is similar to that reported for all of Colombia (**Sánchez *et al.*** 1995, **Castaño *et al.*** 2004) (Figure 2 and 3). We found new distributional data in Magdalena valley for *Sphaerodactylus heliconiae* and *S. lineolatus* known only in northern Caribbean region and *Lepidoblepharis intermedius* and *Leposoma southi* registered for western Colombia in Cauca, Chocó and Valle del Cauca.

The chocoan fauna most resembles that in Yacopí because eleven species are distributed in the Chocó and in the Cauca and Magdalena valleys (Table 3). This tendency also is evident in the 39 shared species and 16 exclusive ones between Yacopí and Chocó. However the CBR value between these areas is affected by the greater number of species in the Chocó that increases the denominator of the factor and diminishes the similarity with Yacopí. The value of the CBR obtained between Yacopí and SNSM is significant but it doesn't represent a true faunistic similarity, because many of the shared species of these two regions also are shared with Chocó and because they only include one exclusive species. The CBR value represents the similarity given by the relatively similar total richness between the areas.

Table 3. Altitudinal distribution and species number of reported reptiles.

Altitudinal distribution	Amphisbaenia	Testudinata	Sauria	Serpentes	Total
0-1000 meters	0	0	6	2	8
0-2000 meters	1	1	18	14	34
0-2700 meters	0	0	2	3	5

Lizards are the dominant reptiles in the trans-Andean distribution pattern and they are twice the number of snake species (Tables 1 and 2). This result is because of *Norops*, Sphaerodactylinae and Gymnophthalmidae which have a high diversity and broad distribution in Central America and northern of South America. These taxa constitute 72.0% of the trans-Andean species and 83.3% of the trans-Andean lizards, which shows a high influence of the autochthonous fauna of Central America and northern South America that was possibly generated by Pliocene events that united and separated these continents allowing the exchange (**Duellman,** 1979; **Estes & Báez,** 1985) and faunal diversification among them (**Cadle**, 1985).

Snakes are most numerous in the broad distribution pattern (Tables 1 and 2). Fifteen of 18 species are part of the Colubridae family (including *Atractus* sp.) (Figure 3). This result is coherent with the Colubridae richness in the Neotropical snakes assemblages (**Cadle,** 1984a, b, c, 1985). In the study area, this family is composed of ten Colubrines of broad distribution, three Central American Xenodontines and two South American Xenodontines reflecting a tendency in the richness of these three lineages that agree with that suggested by **Cadle** (1985) and **Cadle & Greene** (1993) for the Chocó and inter-Andean valleys region in Colombia. The above-mentioned trend contrasts with the lizards.

The higher number of species between 0-2000 m (Table 3) could be an example of the proposal by **Heatwole & Sexton** (1966) and **Scott** (1976) that the highest species diversity exist in intermediate elevations (500-1800 m) because the high primary production allows major vegetation structural complexity to support more species than other altitudinal ranges with less complex structures. Another factor that might explain the differences in richness between altitudinal ranges is thermoregulation because it prevents reptiles to extend to higher altitudes where solar radiation is less available (**Navas,** 1999).

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Appendix 1. Identification key of lowlands reptiles of Yacopí

1. Body with shell ..... *Kinosternon leucostomum*

1' Body without shell 2

2. Limbs present 3

2' Limbs absent 28

3. Posterior limbs rudimentary, anterior limbs small with four digits; without ear opening ..... *Bachia bicolor*

3' Well developed limbs and digits, with ear opening ... 4

4. Dorsals and head scales granular, equal in size; mobile eyelid absent 5

4' Dorsals and head scales not granular of different sizes, eyelid present 11

5. Enlarged subdigital lamellae; vertically elliptic pupil .. 6

5' No enlarged subdigital lamellae; round pupil 7

6. Claws within dermal sheath; subdigital lamellae extend to distal part of the finger ..... *Thecadactylus rapicauda*

6' Claws not with dermal sheath, subdigital lamellae extend only to penultimate phalange ..... *Hemidactylus brookii*

7. Supraocular spine or at least an enlarged superciliary scale present 8

7' Neither supraocular spine or enlarged superciliary scale present ..... *Gonatodes albogularis*

8. Asymmetric fingers termination with a subdigital round and extensive scale distally; claws covered by a series of asymmetric scales 9

8' Symmetric fingers termination without a subdigital round and extensive scale distally, claws covered by a series of symmetric scales 10

9. Two supranasals; subcaudals enlarged; males with orange head (**Harris,** 1982) ..... *Sphaerodactylus heliconiae*

9' One supranasal;subcaudals not enlarged; adults with a vermiculated pattern (**Harris**, 1982) ..... *Sphaerodactylus lineolatus*

10. With 11-13 subdigital lamellae on fourth toe ..... *Lepidoblepharis xanthostigma*

10' with 17 subdigital lamellae on fourth toe ..... *Lepidoblepharis intermedius*

11. Dorsal and ventral scales cicloidal 12

11' Dorsal and ventral scales not cicloidal 13

12. Cicloidal mental shields; first finger not reduced ..... *Mabuya sp*

12' Non-cicloidal mental shields; first finger reduced .... *Tretioscincus bifasciatus*

13. Tongue bifid; cephalic scales large, polygonal, arranged symmetrically 14

13' Tongue not bifid; cephalic scales small or medium, irregular, arranged asymmetrically 19

14. Granular dorsal scales 15

14' Non-granular dorsal scales or if granular mixed with tubercles 16

15. Basal tongue fold present, males without spurs laterally on the base of tail; 142-149 scales around middle of body ..... *Ameiva festiva*

15' Without tongue fold; males with spurs laterally at base of tail; 112-119 scales around middle of body ..... *Cnemidophorus lemniscatus*

16. Dorsal scales polygonal and homogeneous 17

16' Dorsal scales mixed with tubercles ..... *Echinosaura horrida*

17. Scales on forearms smooth ..... *Ptychoglossus festae*

17' Scales on forearms keeled 18

18. Two frontonasals, scales of the sides of neck granular and juxtaposed, dorsal scales oval acute or mucronate ..... *Leposoma southi*

18' One frontonasal, scales of the sides of the neck keeled and overlapping; dorsal scales rectangulars acute or mucronate ..... *Leposoma rugiceps*

19. Subdigital lamellae enlarged; fingers not cylindrical or laterally compressed 23

19' Subdigital lamellae not enlarged; fingers cylindrical or laterally compressed 20

20. Rounded occipital crest (small in juvenile and females) ..... *Basilicus galeritus*

20' Without occipital crest as rounded fin 21

21. Large rounded scale below ear opening .... *Iguana iguana*

21´ Without large rounded scale below ear opening 22

22. Tail prehensil; 40 subdigital lamellae on second and in third phalange of fourth toe; males with inconspicuous dewlap; ventral scales three times keeled; femoral pores present ..... *Polychrus gutturossus*

22' Tail not prehensile; 14 subdigital lamellae on second and in third phalange of fourth toe; males with conspicuous dewlap (dark blue with cream scales); ventral scales keeled unicarinate; femoral pores absent ..... *Norops auratus*

23. Paravertebral scales keeled and larger than granular scales laterally; ventrals keeled; male dewlap red blackish scales ..... *Norops tropidogaster*

23' Dorsal scales approximately same form and size flat or keeled; ventral flat or keeled. Male dewlap with another color and pattern 24

24. With 19 or more enlarged subdigital lamellae in the fourth toe between the second and third phalange 25

24' Less than 19 enlarged subdigital lamellae in the fourth toe between the second and third phalange 26

25. Caudal crest present; 19 at 21 enlarged subdigital lamellae in the fourth toe between the second and third phalange, male dewlap red with six to nine arrays cream color and four black points among each array .... *Norops sulcifrons*

25' Caudal crest absent; 26 at 28 enlarged subdigital lamellae in the fourth toe between the second and third phalange; Dewlap cream with arrays of white scales .... *Anolis frenatus*

26. Suboculars separated from labials superiors for two scales rows, 11 scales among second canthals, six supralabials; seven loreals; supraorbital semicircles separated by one scale, ventral scales keeled and romboids; 18 enlarged subdigital lamellae in fourth finger toe between the second and third phalange. Dewlap red in females cream, with white scales and a dark big rounded stain in the center .... *Norops vittigerus*

26' Suboculars separated from labials superiors for one scale row; 10 intercanthales. More than six supralabials; five to six loreals; supraorbitals semicircles separated by two or more scales; less than 18 enlarged subdigital lamellae in the fourth finger toe between the second and third phalange. Dewlap without dark big stain in the center 27

27. With 17 enlarged subdigital lamellae in the fourth toe between the second and third phalange; 8 to 9 supralabials; semicircles separate supraorbitals among them for three scales and of the parietal ones for three to four scales; hemipenis without distal bifurcation. Dewlap red-orange anterior and gray to pink in the two later thirds ..... *Norops tolimensis*

27' With 15 enlarged subdigital lamellae in the fourth toe among the second and third phalange, 7 supralabials; semicircles separate supraorbitals among them for two scales and of the parietal ones for two to three scales; hemipenis with distal bifurcation; Dewlap red-orange with eight arrays of lengthened scales of cream color, with numerous granular scales cream densely agrupped. ..... *Norops mariarum*

28. (2´) Rectangular scales forming traverse rings; eye under an opaque scale. Ventral scales of same size as dorsals and separated of them by a lateral row; head doesn't differ almost of the tail ..... *Amphisbaena fuliginosa*

28' Rectangular scales without forming traverse rings; eye under a transparent scale; Ventral scales clearly different from the dorsals; Tail clearly different from the head 29

29. Loreal pit present; solenoglyphus; head scales head and dorsum strongly keeled ..... *Bothrops asper*

29' Loreal pit absent; aglyphus, proteroglyphus or opistoglyphus; head scales smooth and of the dorsum smooth or keeled 30

30. Head scales small; more of 30 dorsal rows; rams pelvic present in male and little developed in females .... *Boa constrictor*

30' Head scales as plates; less than 30 dorsal rows; pelvic rams absent in both sexes 31

31. Body design in complete rings; proteroglyphus; eye little as a point; loreal scale absent 32

31' Body design different to the previous one; aglyphus or opistoglyphus; medium eye to big; loreal scale present or absent 33

32. Body and tail desing in three colors (red, black and yellow or white); black and white head; preanals tubercles present in males ..... *Micrurus dumerilli*

32' Body design in two colors (black and white); black head with a red ring; without tubers preanales .... *Micrurus mipartitus*

33. With 10 dorsal rowswith reduction to 8 toward the later part; paravertebrales scales with prominent keel ..... *Chironius grandisquamis*

33' More than 10 dorsal rows with or without reduction; paravertebrales scales without prominent keel 34

34. Dorsal rows without reduction 35

34' Dorsal rows with reduction 38

35. Nasal scale fused with the internasal .... *Stenorrhina degenhardtii*

35' Nasal scale not fused with the internasal 36

36. Vertical elliptic pupil; enlarged vertebral row; head and eyes very prominent ..... *Imantodes cenchoa*

36' Round pupil; vertebral row not enlarged; head and eyes non prominent 37

37. With dorsal arrangement 17-17-17 ; anal whole; 130 ventrals ..... *Atractus* sp

37' With dorsal arrangement 15-15-15 ; anal divided; more than 154 ventrals ..... *Tantilla melanocephala*

38. Dorsal scales smooth 39

38' Dorsal scales keeled 43

39. Loreal absent; lengthened snout; with dorsal arrangement in 17-17-13 rows ..... *Oxybelis aeneus*

39' Loreal present; normal snout; dorsal arrangement different to 17-17-13 40

40. Dorsals in 21-21-16 rows, supralabials nine .... *Leptodeira septentrionalis*

40' Dorsals in 17-17-15 row, supralabials nine or less 41

41. Two previous temporals; one postnasal; first infralabials in contact behind the mental one. Dorsum blue-grayish with a pale longitudinal line each side fourth and fifth scale (**Pérez-Santos and Moreno,** 1988) .... *Mastigodryas boddaertti*

41' One previous temporal; without postnasal; first infralabials not in contact behind the mental one 42

42. Two apical pit; 132 ventrals; alone lateral dark band from the later half of the body and tail .... *Liophis epinephelus*

42' Without apical pits; 151 ventrals; lateral dark band after the head and along the whole body and tail .... *Liophis melanotus*

43. Loreal absent; dorsals in 15-11 rows .... *Leptophis ahaetulla*

43' Loreal present; dorsals rows different to 15-11 44

44. First infralabials separated behind the mental one 45

44' First infralabials in contact behind the mental one 46

45. Fifth supralabial in triangular form; 18-10 dorsals rows. Dorsum with yellow-black oblique bandes, venter yellow with black spots (**Pérez-Santos and Moreno,** 1988) ..... *Spilotes pullatus*

45' Fifth non triangular supralabial; 21-15 dorsal rows. Dorsum brown with yellow oblique bands, dorsal scales around blacks, Venter anteriorly pale and posteriorly black (**Pérez-Santos and Moreno,** 1988) ..... *Pseustes shropshirei*

46. Dorsal pattern with longitudinal black bands; 147-148 ventrals; 125-126 subcaudals .... *Dendrophidion bivittatus*

46' Dorsal pattern with traverse black bands; 162 ventral; 117 subcaudals ..... *Dendrophidion percarinatus*

Appendix 2. Species list and registers sites.

Family	Species	Terán	Guadualito (ICN)	Guadualito (UIS-R)
Amphisbaenidae	*Amphisbaena fuliginosa*		*X*	
Boidae	*Boa constrictor*	*X*	*X*	
Colubridae	*Atractus* sp.	*X*		
	Chironius grandisquamis		*X*	
	Dendrophidion bivittatus		*X*	*X*
	D. percarinatus		*X*	
	Imantodes cenchoa	*X*	*X*	
	Leptodeira septentrionalis	*X*		
	Leptophis ahaetulla		*X*	
	Liophis epinephelus		*X*	
	L. melanotus	*X*		
	Mastigodryas boddaerti		*X*	
	Oxybelis aeneus			*X*
	Pseustes schropshirei		*X*	
	Spilotes pullatus		*X*	
	Stenorrhina degenhardtii			*X*
	Tantilla melanocephala	*X*	*X*	
Crotalidae	*Bothrops asper*	*X*	*X*	
Elapidae	*Micrurus dumerilli*		*X*	
	M. mipartitus			*X*
Gekkonidae	*Gonatodes albogularis*	*X*		
	Hemidactylus brookii	*X*		
	Lepidoblepharis intermedius		*X*	
	L. xanthostigma	*X*		
	Sphaerodactylus heliconiae	*X*		*X*
	S. lineolatus	*X*		
	Thecadactylus rapicauda	*X*		*X*
Gymnophthalmidae	*Bachia bicolor*	*X*		
	Echinosaura horrida			*X*
	Leposoma rugiceps	*X*		
	L.southi	*X*		
	Ptychoglossus festae	*X*	*X*	
	Tretioscincus bifasciatus	*X*	*X*	*X*
Iguanidae	*Norops auratus*	*X*		
	A. frenatus		*X*	
	N. mariarum			*X*
	N. sulcifrons	*X*	*X*	
	N. tolimensis		*X*	
	N. tropidogaster	*X*	*X*	*X*
	N. vittigerus		*X*	
	Basiliscus galeritus		*X*	
	Iguana iguana	*X*		
	Polychrus gutturossus		*X*	
Kinosternidae	*Kinosternon leucostomum*		*X*	
Scincidae	*Mabuya mabouya*		*X*	*X*
Teiidae	*Ameiva festiva*			*X*
	Cnemidophorus lemniscatus	*X*		

Appendix 3. Examined specimens

Amphisbaena fuliginosa ICN 7247. ***Ameiva festiva*** UIS-R-0385, 0387, 0386. ***Norops auratus*** ICN 8946. ***Anolis frenatus*** ICN 7237. ***N. mariarum*** UIS-R-278. ***N. sulcifrons*** ICN 7217, 7221, 8947, 8958, 8959. ***N. tolimensis*** ICN 7229. ***N. tropidogaster*** ICN 7218, 7219, 7222, 7223, 7224, 7225, 7226, 7227, 7228, 7231, 7232, 7237, 8942, 8957, 8960, 8978, UIS-R-0254, 0255, 0299, 0456. ***Anolis vittigerus*** ICN 7215. ***Atractus* sp.** ICN 8964. ***Bachia bicolor*** ICN 8969, 8972. ***Basiliscus galeritus*** ICN 7240, OVC 847, OVC 869. ***Bothrops asper*** ICN 8953. ***Chironius grandisquamis*** OVC 846. ***Cnemidophorus lemniscatus*** ICN 8943, 8945. ***Dendrophidion bivittatus*** ICN 7244, UIS-R-0277. ***Dendrophidion percarinatus*** ICN 7243. ***Echinosaura horrida*** UIS-R-0457. ***Hemidactylus brookii*** ICN 8956. ***Imantodes cenchoa*** ICN 7245, 7250, 8941, 8942. ***Kinosternon leucostomum*** ICN 7671, 7672, 7673. ***Lepidoblebharis intermedius*** ICN 7233. ***Lepidoblepharis xanthostigma*** ICN 8966, 8983, 8987, 8990. ***Leposoma rugiceps*** ICN 8965, 8970, 8973, 8974, 8976, 8979, 8982, 8989. ***Leposoma southi*** ICN 8962, 8977, 8981, 8984, 8985, 8986, 8988. ***Leptodeira septentrionalis*** ICN 8948. ***Leptophis ahaetulla*** ICN 7249, OVC 882. ***Liophis epinephelus*** ICN 7246. ***Liophis melanotus*** ICN 8963. ***Mabuya sp*** OVC 891, OVC 892, OVC 880, UIS-R-0264, 0265, 0268, 0269, 0270, 0271, 0272, 0273, 0286, 0288, 0291, 0294, 0310, 0311, 0312, 0314, 0315, 0316, 0320, 0323, 0322, 0324, 0325, 0326, 0335, 0336, 0337, 0339, 0340, 0341, 0343, 0344, 0345, 0346, 0347, 0350, 0351, 0352, 0353, 0354, 0355, 0364, 0367, 0368, 0369, 0370, 0372, 0373, 0374, 0375, 0376, 0377, 0378, 0379, 0381, 0382, 0383, 0384, 0396, 0397, 0398, 0399, 0400, 0401, 0402, 0403, 0404, 0405, 0406, 0407, 0408, 0409, 0410, 0411, 0412, 0413, 0415, 0428, 0429, 0430, 0431, 0432, 0433, 0434, 0435, 0436, 0437, 0438, 0439, 0440, 0441,0442, 0443, 0444, 0445, 0446, 0447, 0448. ***Mastigodryas boddaerti*** ICN 7248. ***Micrurus dumerilli*** ICN 7213. ***Micrurus mipartitus*** UIS-R-0275. ***Oxybelis aeneus*** UIS-R-0303. ***Polychrus gutturosus*** ICN 7238, UIS-R-0252. ***Pseustes shropshirei*** OVC 851. ***Ptychoglossus festae*** ICN 7230, 8961, 8967. ***Sphaerodactylus heliconiae*** ICN 8975, UIS-R 0475, 0913, 0920. ***Sphaerodactylus lineolatus*** ICN 8971. ***Spilotes pullatus*** OVC 881. ***Stenorrhina degenhardtii*** UIS-R-276. ***Tantilla melanocephala*** ICN 7251, 8944. ***Thecadactylus rapicauda*** ICN 8951, 8954, UIS-R 0253, 0279, 0304. ***Tretioscincus bifasciatus*** ICN 7216, 7236, 7242, 8949, 8950, 8968, OVC 874, 877, UIS-R 0256, 0257, 0258, 0295, 0300, 0327, 0455, 0460, 0462, 0463, 0464, 0465, 0467, 0468, 0471, 0472, 0473, 0474.