

CONTRIBUTION TO THE KNOWLEDGE OF HERPETOFAUNA IN AN AREA OF ECOLOGICAL IMPORTANCE: BOSQUE PROTECTOR CERRO BLANCO, GUAYAQUIL, ECUADOR

CONTRIBUCIÓN AL CONOCIMIENTO DE LA HERPETOFAUNA EN UN ÁREA DE IMPORTANCIA ECOLÓGICA: BOSQUE PROTECTOR CERRO BLANCO, GUAYAQUIL, ECUADOR

Keyko Cruz-García^{1,2,3*} & Natalia Zapata-Salvatierra^{3,4}

¹Universidad San Francisco de Quito USFQ, Instituto de Biodiversidad Tropical IBIOTROP, Laboratorio de Zoología Terrestre, Museo de Zoología, Quito, Ecuador.

²Museo de Zoología, Universidad Técnica Particular de Loja, San Cayetano Alto, calle París s/n, 110107, Loja, Ecuador.

³Universidad de Guayaquil, Facultad de Ciencias Naturales, Av. Raúl Gómez Lince s/n Av. Juan Tanca Marengo, Ecuador.

⁴Escuela Superior Politécnica del Litoral, ESPO, Campus Gustavo Galindo, Facultad de Ciencias de la Vida, Laboratorio de Zoología, Km. 30.5 Vía Perimetral, Guayaquil, 090902, Ecuador.

*Correspondence: pherkey@hotmail.com

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Resumen.— El Bosque Protector Cerro Blanco, uno de los últimos relictos de bosque seco tropical y el más extenso en la provincia del Guayas, Ecuador, presenta una biodiversidad que requiere una documentación continua y precisa para comprender su estado actual. Entre los estudios anteriores, el que informó el mayor número de especies identificó 22 especies en total, incluidos siete anfibios y 15 reptiles. Sin embargo, nuestro estudio entre octubre de 2014 y enero de 2024, utilizando tanto métodos de muestreo sistemáticos como no sistemáticos, ha identificado un total de 57 especies, incluyendo 20 especies de anfibios y 37 de reptiles. De estas, nueve especies son endémicas del Ecuador, cinco de las cuales son anfibios y cuatro reptiles. A diferencia de estudios anteriores que se centraron principalmente en áreas de fácil acceso y de alto tránsito turístico, nuestro muestreo abarcó tanto zonas frecuentemente visitadas como áreas menos exploradas y de difícil acceso. Esto permitió superar las limitaciones de investigaciones previas y proporcionó un panorama más completo de la herpetofauna en el BPCB, donde el amplio rango de hábitats presentes facilitó la observación de una notable riqueza de especies, contribuyendo significativamente a la actualización de los registros herpetológicos, que han sido escasos en los últimos 30 años.

Palabras clave.—Anfibios, bosque seco tropical, especies endémicas, Guayaquil, reptiles.

Abstract.— The Bosque Protector Cerro Blanco, one of the last relics of tropical dry forest and the largest in the province of Guayas, Ecuador, presents a biodiversity that requires continuous and precise documentation to understand its current state. Among the previous studies, the one that reported the largest number of species identified 22 species in total, including seven amphibians and 15 reptiles. However, our study between October 2014 and January 2024, using both systematic and non-systematic sampling methods, has identified a total of 57 species, including 20 species of amphibians and 37 reptiles. Of these, nine species are endemic to Ecuador, five amphibians and four reptiles. Unlike previous studies that focused mainly on easily accessible areas with high tourist traffic, our sampling covered both frequently visited areas and less explored and difficult-to-access areas. This allowed us to overcome the limitations of previous research and provided a more complete picture of the herpetofauna in the BPCB, where the wide range of habitats present facilitated the observation of a remarkable richness of species, contributing significantly to the updating of herpetological records, which have been scarce in the last 30 years.

Keywords.— Amphibians, endemic species, Guayaquil, reptiles, tropical dry forest.

INTRODUCTION

Ecuador, a small yet highly biodiverse country, is recognized as one of the world's richest in species diversity (Cuesta et al., 2017). Its continental territory includes a diverse range of ecosystems, from paramos and mangroves to cloud forests and tropical forests, spread across three primary regions: the Coast, the Andes, and the Amazon (Kleemann et al., 2022). However, this remarkable biodiversity is under significant threat, making Ecuador the second country globally with the highest number of threatened species (Mestanza-Ramón et al., 2023). Specifically, 60 reptile species are at risk, 41 of which are endemic (Torres-Carvajal et al., 2024), while 194 amphibians are endangered, including 111 species unique to the country (Ron et al., 2024). The situation is further exacerbated by a 12 % reduction in natural forest cover between 1990 and 2018, driven by land-use change, urbanization, and resource extraction (Guarderas et al., 2022; Kleemann et al., 2022). This loss is particularly severe in the coastal region, where deforestation poses a critical threat (González-Jaramillo et al., 2016; Sierra et al., 2022). In particular, the tropical dry forests of the coast have experienced alarming rates of degradation and deforestation (Rivas et al., 2020).

In terms of conservation, Ecuador categorizes its natural areas into protective forests (PFs) and protected areas (PAs). Covering 2,425,002 hectares or 9.72 % of the national territory, PFs are strategically located in areas difficult for agriculture or inappropriate for land use, protecting water resources, soil, and biodiversity (Ministerio del Ambiente del Ecuador, 2019). However, the protection of tropical dry forests may be inadequate to mitigate deforestation, as it persists within protected areas (Rivas et al., 2020).

The "Bosque Protector Cerro Blanco" (BPCB), one of the main protected tropical dry forests in western Ecuador due to its size and biological diversity, is located in Guayaquil, the largest city in the country. Guayaquil exemplifies the loss of primary forests (Horstman et al., 2017) caused by urban sprawl, agriculture, and mining activities (Murillo et al., 2020). Despite hosting a notable diversity of amphibians and reptiles, awareness of these species remains limited, even among professionals in environmental, biological, or ecological fields (Amador, 2015). Decades of neglect by local administrations have allowed urban expansion to extend beyond set boundaries, notably in 2016 when Guayaquil's growth continued along the South American Pacific coast in the Gulf of Guayaquil, leading to severe environmental and social impacts (Palme et al., 2016; Pérez de Murzi & Orejuela, 2023). Over time, the city has experienced significant environmental degradation (Murillo et al., 2020).

The BPCB encompasses 6,078 hectares and represents one of the best-preserved remnants of the tropical dry forest ecosystem typical of Ecuador's coast (Parker & Carr, 1992). Although this ecosystem is not known for its species richness, it stands out for its high endemism, hosting 54 mammal species, 221 bird species, 8 amphibian species, and 12 reptile species, along with over 700 vascular plant species, 20% of which are endemic to southwestern Ecuador (Cun, 2012). Research on BPCB's herpetofauna is scarce, with only a few focused studies, such as those by Parker & Carr (1992), Salvatierra et al. (2010), Amador & Martínez (2011), and Almendáriz & Carr (2012), which provide valuable insights but also highlight the need for further investigation. Expanding existing knowledge would allow for a more comprehensive understanding of BPCB's herpetofaunal diversity.

The objective of this research is to provide a detailed view of the diversity of amphibians and reptiles in BPCB, Guayaquil, Ecuador. Given the paucity of complete and up-to-date information on this topic, our study seeks to address this gap with the results of our own research. In this way, we aim to offer a vision of the distribution and occurrences of amphibians and reptiles throughout the BPCB area.

MATERIALS AND METHODS

Herpetological sampling was carried out in the Bosque Protector Cerro Blanco. This forest is located in the southwestern extension of the Chongón-Colonche Mountain range. This protective forest contains five types of ecosystems, the most significant being the seasonal evergreen forest of the foothills of the equatorial Pacific coastal mountain range and the semi-deciduous forest of the Jama-Zapotillo plain (Ministerio del Ambiente del Ecuador, 2012). In addition, it has a series of hills with slopes and streams that range from 50 to 507 m a.s.l. (Cun, 2012; Fig. 1). It is one of the few relicts of tropical dry forest and the largest remaining in Guayas and is currently threatened by non-metallic mining, logging, urban expansion, illegal hunting and intentional fires.

The field work was a compilation of non-systematic sampling throughout the BPCB area, carried out between October 2014 and December 2019, and complemented by additional observation walks in December 2023 and January 2024. Non-systematic sampling included unrestricted free searching, acoustic and visual recordings, as well as manual capture, according to Rödel and Ernst (2004). These samplings were complemented by a series of systematic samplings carried out between October and November 2021, and from April to May 2022. In this case,

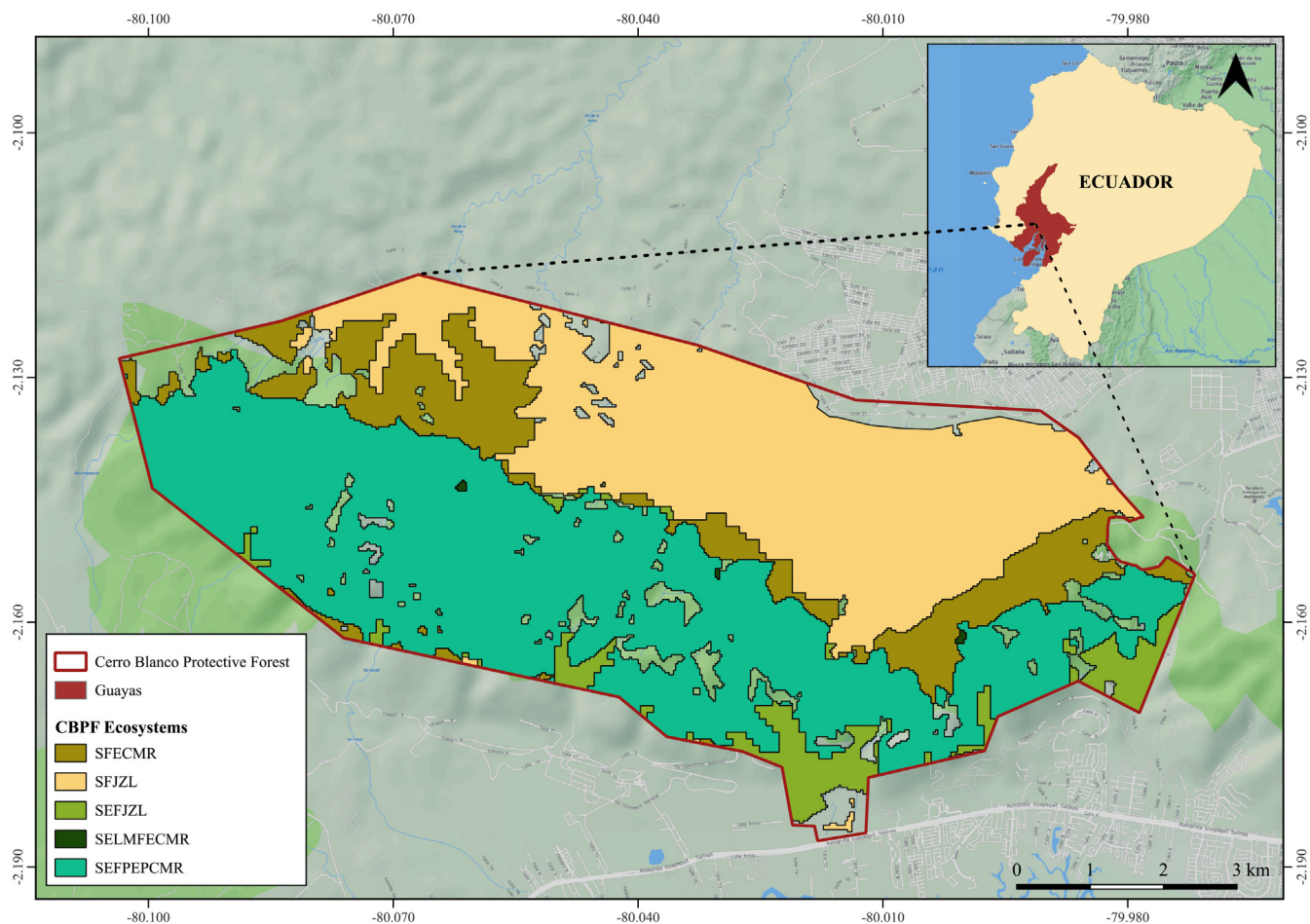


Figura 1. Mapa de ubicación geográfica del Bosque Protector Cerro Blanco (BPCB), Guayaquil, Ecuador, y los ecosistemas presentes en el área. SFECMR = Bosque Semidecuido de la Cordillera Costera del Pacífico Ecuatorial. SFJZL = Bosque Semidecuido de tierras bajas de Jama-Zapotillo. SEFJZL = Bosque Siempreverde Estacional de las tierras bajas de Jama-Zapotillo. SELMFECMR = Bosque Siempreverde Estacional Montano Bajo de la Cordillera Costera del Pacífico Ecuatorial. SEFPEPCMR = Bosque Siempreverde Estacional Piemontano de la Cordillera Costera del Pacífico Ecuatorial.

Figure 1. Geographic location map of the Bosque Protector Cerro Blanco (BPCB), Guayaquil, Ecuador, and the ecosystems present in the area. SFECMR = Semi-deciduous Forest of the Equatorial Pacific Coastal Mountain Range. SFJZL = Semi-deciduous Forest of Jama-Zapotillo Lowland. SEFJZL = Seasonal Evergreen Forest of the Jama-Zapotillo Lowlands. SELMFECMR = Seasonal Evergreen Low Montane Forest of the Equatorial Pacific Coastal Mountain Range. SEFPEPCMR = Seasonal Evergreen Forest of the Piemontane of the Equatorial Pacific Coastal Mountain Range

the BPCB was divided into 4 zones: Caseta Jaguar, Caseta Pigio, Tourist Zone and Zone 507 (Fig. 2).

The “Caseta Jaguar” (CJ) presents secondary forests on the mountain slopes, with a landscape characterized by a varied vegetation of shrubs and trees along its seasonal and temporary streams. The streams have steep rocky slopes and bodies of water, with a medium forest density and medium-thickness trees. At the top of the mountains, a secondary road is bordered by shrub vegetation and forest with medium to large-thickness trees, presenting a high canopy. Similarly, the “Caseta Pigio” (CP

is characterized by extensive secondary forests on the tops and slopes of the mountains, with some patches of primary forest in areas of difficult access. The temporary streams are mostly dry with stagnant bodies of water and present patches of intervened natural forest, with soils covered with leaf litter. There is secondary tropical forest with dry seasonal streams. At the top of the mountains, a secondary road is bordered by shrub vegetation and secondary forest with medium to large trees, presenting a high canopy. In addition, in the lower northern part of the mountainous area, there are two artificial lagoons surrounded by riparian vegetation. The “Tourist Zone” (TZ) is distinguished

by its secondary forest on the peaks and slopes, which includes trails intended for tourism and ground covered with leaf litter. A stream with constant water, surrounded by secondary forest with medium and large trees and a prominent canopy, evidences a notable tourist activity. In addition, it presents secondary forest with dry seasonal streams. In the lower areas of the mountains, there are recreational areas and secondary roads, with tourist infrastructure adjacent to the forest. Finally, "Zone 507" (507) is located in a mountainous area with steep slopes. At the top there are communication antennas, and on the slopes, there is a secondary road that leads to the antennas, as well as several routes for cyclists. The area has a secondary forest with medium and large trees, and a prominent canopy, affected by the cycling routes. It also includes a temporary stream, mostly dry, with shrub vegetation on its banks.

Throughout the BPCB, 32 quantitative transects measuring 150 m x 2 m and 20 qualitative transects measuring 300 m x 2 m were established. Each area was sampled for six days, with eight quantitative transects distributed in each one, which were evaluated for five consecutive days. In addition, five qualitative transects were designated per area, which were sampled on the sixth day of field work in each of the areas. All transects

were separated by 500 meters. Each quantitative transect was surveyed by two researchers, while the qualitative transects were surveyed by four researchers. All sampling, both systematic and non-systematic, was carried out during the rainy and dry seasons. As described by Zambrano & Hernández (2007), historically, the rainy season in the city of Guayaquil begins in December and ends in April, while the dry season begins from May to November.

A total of 68 specimens were collected to document and confirm the presence of species in Cerro Blanco and to establish a reference collection, as no comprehensive collection currently exists in museums for this forest. The specimens were hand-captured, photographed, euthanized with a 2% anesthetic solution of roxicaine, fixed in 10% formalin, and preserved in 70% ethanol. Before fixation, tissue samples were taken from the collected individuals and preserved in 96% ethanol, following the method described by Székely et al. (2016). Measurements of snout-vent length (SVL) were taken with digital calipers and rounded to the nearest 0.1 mm for small specimens, and with a tape measure for longer specimens (Appendix 1). The list of species was standardized using the taxonomy of Amphibian Species of the World (Frost, 2024) and The Reptile Database (Uetz et al.,

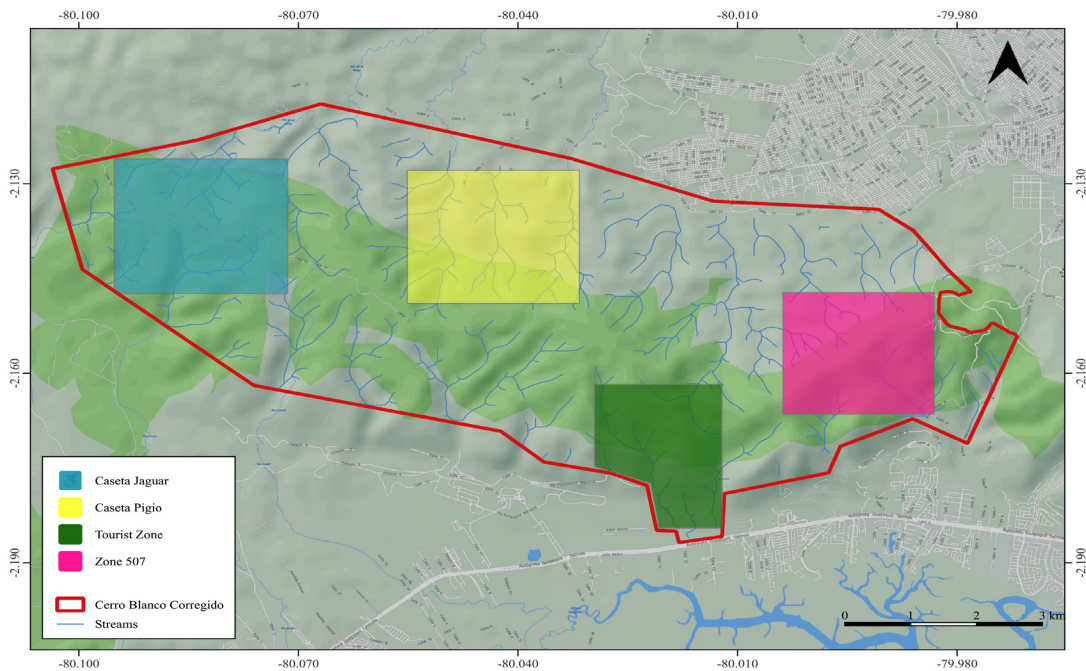


Figura 2. Mapa de las zonas de muestreo sistemáticos en el Bosque Protector Cerro Blanco (BPCB), Guayaquil, Ecuador. Se muestran las áreas designadas como Caseta Jaguar, Caseta Pigio, Zona Turística y Zona 507, delimitadas por una línea roja que marca los límites del BPCB, junto con las quebradas permanentes y estacionales representadas con una delgada línea azul.

Figure 2. Map of systematic sampling areas in the Bosque Protector Cerro Blanco (BPCB), Guayaquil, Ecuador. The areas designated as Caseta Jaguar, Caseta Pigio, Tourist Zone and Zone 507 are shown, delimited by a red line marking the BPCB boundaries, along with permanent and seasonal streams represented by a thin blue line.

2023). Species with taxonomic uncertainties, either because they are in the process of description, taxonomic updating or because their identification at the species level has not been achieved, were excluded from the present inventory due to the potential generation of uncertainty when including them, which could cause confusion. However, the individuals identified in this study that could not be collected and deposited in museums were photographed, focusing on the specific characters of each genus for subsequent identification according to the original descriptions of the species. The specimens are deposited in three zoological museums in Ecuador: Museo de Zoología de la Universidad San Francisco de Quito (ZSFQ), Quito, Ecuador; and Museo de Zoología de la Universidad Técnica Particular de Loja (MUTPL), Loja, Ecuador. The specimens were collected under permit No. MAAE-ARSFC-2022-2058; No. MAAE-DBI-DBI-CM-2022-0222 and No. MAATE-ARSFC-2023-0063 approved by the Ministerio del Medio Ambiente, Agua y Transición Ecológica del Ecuador.

Geographic coordinates and elevation data were obtained using a Garmin GPSMAP 62st GPS device. Three types of maps were created using QGIS version 3 software. The first type of map is designed to visualize the location of the BPCB and the ecosystems present there, while the second type is used for the delimitation of systematic sampling areas. This last type of map presents a summary of the distribution of each species recorded with less than 10 individuals throughout the BPCB, grouping them by classes and suborders for their representation.

RESULTS

Herpetofauna Diversity in the Bosque Protector Cerro Blanco (BPCB)

Between 2014 and 2024, recording of a total of 6,534 herpetofauna sightings. During this period, a total of 57 species were recorded (Tables 1, 2). In the class Amphibia, a total of 20 species distributed in two orders were recorded: Anura and Gymnophiona (Figs. 3, 4). The order Anura was composed of six families and 19 species, while the order Gymnophiona included one family and species. For the class Reptilia, 37 species were identified in two orders: Squamata (which includes amphisbaenids, lizards and snakes) and Testudines (turtles) (Figs. 5, 6, 7, 8). The order Squamata was subdivided into three suborders: Amphisbaenia, with one family and one species; Sauria (lizards), with nine families and 13 species; and Serpentes (snakes), with five families and 20 species. The order Testudines was composed of three families and three species. Nine species were found that are endemic to Ecuador. Several amphibian species were observed, each with fewer than ten records, including elusive, seasonal, and fossorial species

such as *Barycholos pulcher*, *Boana rosenbergi*, *Caecilia tenuissima*, *Craugastor longirostris*, *Engystomops guayaco*, *Engystomops randi*, *Leptodactylus ventrimaculatus*, and *Smilisca phaeota* (Fig. 9). On the other hand, 27 reptile species were recorded, also with fewer than ten sightings each. This group comprised five species of lizards, three species of turtles, one species of amphisbaenia, and 18 species of snakes (Figs. 10, 11).

Detailed analysis of BPCB herpetofauna species

Class Amphibia

Order Anura

Family Bufonidae

Rhinella bella (Menéndez-Guerrero et al., 2024) Fig. 3a

Rhinella bella is a recently reclassified species that was previously confused with *R. horribilis* due to their close morphological similarities. However, *R. bella* can be distinguished by its significantly smaller body size (Menéndez-Guerrero et al., 2024). Additionally, *R. bella* has low and thick cephalic crests with borders with keratinized spicules (Menéndez-Guerrero et al., 2024). Also, the lack of expanded discs and the large and prominent parotoid glands are also characteristics that set *R. bella* (Páez-Rosales & Ron, 2024) apart from any other toad in the study area. One specimen was collected and deposited in the ZSFQ museum under the code ZSFQ4875. During fieldwork, 188 individuals were observed, mainly in areas impacted by human activities such as tourism and cycling. As a recently described species, it has not yet been evaluated by the IUCN (2024) or included in the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Ceratophryidae

Ceratophrys stolzmanni (Steindachner, 1882) Fig. 3b

Ceratophrys stolzmanni is a small-sized toad with very distinctive features: its skull and mouth, which are very wide compared to its body, allowing them to be voracious predators that feed on a variety of animals, including invertebrates and vertebrates such as frogs and snakes, without a correlation between the size of the prey and the toad (Székely et al., 2019). Due to their fossorial habits, during the dry season, they have spades on the soles of their feet which facilitate burrowing (Ortiz, 2024). During fieldwork, 10 individuals were found, of which one was collected while foraging near seasonal puddles and deposited in the ZSFQ

museum under the code ZSFQ4925. This species is classified as Vulnerable (VU) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Craugastoridae

Craugastor longirostris (Boulenger, 1898) Fig. 3c

It is a small frog with an average SVL of 40 mm, and it is distinguished by being the only member of its genus in the lowlands of western Ecuador (Boulenger, 1898; Lynch & Myers, 1983; Lynch & Duellman, 1997). The specimens observed in the study area were identified by their characteristic moderate interdigital membranes, which differentiate it from the most similar species, *P. achatinus*. This species also exhibits variable dorsal coloration, ranging from pale gray to reddish brown, with a prominent black hourglass-shaped mark and small round marks on the back and near the tympanum that are reddish brown or black (Read et al., 2022a). In the BPCB, two individuals were recorded: one was observed near a bushy area alongside a path, while the other was found in leaf litter adjacent to a trail. *C. longirostris* is classified as Least Concern (LC) by the IUCN (2024) and is similarly assessed by the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Dendrobatidae

Epipedobates machalilla (Coloma, 1995) Fig. 3d

This is a very small frog that is mainly distinguished by its "X"-shaped markings in the dark brown scapular region, a cream-colored abdomen, and diffuse orange markings in the armpits and groin. It is a diurnal and terrestrial species that lives in leaf litter, among stones, and in the mud on riverbanks, estuaries, waterfalls, and streams (Coloma, 1995; del Pino et al., 2004; Pyron & Wiens, 2011; Coloma et al., 2022a). During the field work, 1,148 individuals were found, of which six were collected and deposited in the ZSFQ museum with the codes ZSFQ4892, ZSFQ4893, ZSFQ4894, ZSFQ4895, ZSFQ4896, and ZSFQ4897. In the BPCB, it was observed in these same habitats, coexisting with *Hyloxalus infraguttatus*, with both species being very similar. This species is classified as Least Concern (LC) in the IUCN (2024) and in the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Hyloxalus infraguttatus (Boulenger, 1898) Fig. 3e

Hyloxalus infraguttatus is also a very small frog with a distinctive oblique cream line on the sides and interdigital membranes, and both, males and females, have white spots on the throat and

abdomen (Boulenger, 1898; Coloma, 1995; Coloma et al., 2022b). They are very territorial, and the males exhibit parental care (Pazmiño-Otamendi, 2010; Coloma et al., 2022b).

During fieldwork, 2,507 individuals were encountered, and six were collected and deposited in the ZSFQ museum with the codes ZSFQ4878, ZSFQ4879, ZSFQ4880, ZSFQ4881, ZSFQ4882, and ZSFQ4883. All the specimens collected, along with others observed in the field, were found foraging near streams. It is classified as Vulnerable (VU) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Hylidae

Boana rosenbergi (Boulenger, 1898) Fig. 3f

Boana rosenbergi is a large tree frog. It can be differentiated from other large frogs like *B. boans* by its tuberculated skin, as *B. boans* has smooth skin and is not found in the study area. It also differs from *Trachycephalus jordani* by the absence of ossification on the head, as mentioned by MECN (2010). Furthermore, *B. rosenbergi* is recognized by its expanded toe discs and well-developed webbing between the toes (Duellman, 1970).

This species may exhibit aggressive behavior, especially among males, who use their prepolical spines as weapons in territorial disputes (Kluge, 1979). In the BPCB, a single specimen was observed perched on a trunk 160 cm high in a dense forest area at night. It is listed as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Scinax quinquifasciatus (Fowler, 1913) Fig. 3g

Scinax quinquifasciatus is a medium-sized frog that are distinguished by a triangle-shaped marking on their heads, and their bellies tend to be white in males and pale yellow in females (Duellman, 1971; MECN, 2010; Ron et al., 2018). During fieldwork, 30 individuals were encountered, and three were collected and deposited in the MUTPL museum with the codes MUTPL-A-1831, MUTPL-A-1832, and MUTPL-A-1833. They were found on logs near trails and buildings within reserves, and their presence is uncommon in undisturbed forested areas. This species is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Scinax tsachila (Ron et al., 2018) Fig. 3h

Scinax tsachila is a medium-sized arboreal frog that is distinguished by the characteristic green color of its leg bones

and the absence of small tubercles scattered on its back, which are the main features that differentiate it from *S. quinquefasciatus*. Additionally, it has brown irises with orange spots or yellow-orange reticulations, no tubercles on the heel, and a clearly visible tympanum (Ron et al., 2018; Varela-Jaramillo & Paucar, 2022). In the BPCB, this species was observed on trunks and branches up to a height of 180 cm, with a total of 19 individuals recorded exclusively in secondary forest areas. The IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021) classify it as Least Concern (LC).

Smilisca phaeota (Cope, 1862) Fig. 3i

Smilisca phaeota is a large frog characterized by a dark band that extends from the posterior edge of the eye to the insertion of the arms. It also exhibits many color variations, ranging from bright green, pale green, light brown and bronze, with the back adorned with green or brown spots and a copper-colored iris (Duellman, 1970; Leenders, 2001; Ron et al., 2022a). Males have double vocal sacs and are active during the rainy season, singing from the water's surface in isolated places next to temporary pools or streams (Duellman, 1970; Savage, 2002; Solís et al., 2008). This species is rare in the BPCB, with only one individual observed during all field sampling. This individual was found in the northern part of the BPCB area, among low bushes near small ponds, which underlines its association with this type of ecosystem. It is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Trachycephalus jordani (Stejneger & Test, 1891) Fig. 3j

T. jordani is a large frog that is distinguished from any other by the high ossification of its head, giving it a helmet-like shape, from which its common name is derived (Stejneger & Test, 1891; MECN, 2010; Read et al., 2022b). This hard head is used to seal bromeliads and holes in tree trunks where it lives (Lutz, 1954; Bokermann, 1966). Reproduction is triggered by heavy rains and occurs in slow bodies of water where they lay their eggs (MECN, 2010; Icochea et al., 2004). In the fieldwork, 34 individuals were observed, and two specimens were collected and deposited in the ZSFQ museum under codes ZSFQ4870 and ZSFQ4871. The collected specimens were found perched on branches at heights of 120 cm and 200 cm. The remaining individuals were observed perched on branches, trunks, and artificial structures such as pipes and walls. It is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Trachycephalus quadrangulum (Boulenger, 1882) Fig. 3k

It is a medium-sized, endemic frog with brown coloring and dark spots on its back (Boulenger, 1882). *T. quadrangulum* is distinguished by having expanded discs on the fingers and a head that is wider than it is long (Boulenger, 1882; Varela-Jaramillo, 2022). Additionally, it secretes a sticky white substance when handled, which causes severe irritation to mucous membranes. During the fieldwork, 33 individuals were observed, and three were collected and deposited in the ZSFQ museum with the codes ZSFQ4872, ZSFQ4873, and ZSFQ4874. It was relatively common in BPCB, like its congener *T. jordani*, often found perched on trees or shrubs near buildings within the reserve, especially during the rainy season. It is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Leptodactylidae

Engystomops guayaco (Ron et al., 2005) Fig. 4l

This small frog endemic to Ecuador, with an average SVL of 17 mm, is primarily distinguished by having scattered tubercles on its back skin, a truncated snout in dorsal view and rounded in lateral view, present parotoid glands, absence of a tarsal tubercle, and the first finger of the hand shorter than the second finger (Ron et al., 2005; Read et al., 2022c). During the fieldwork at the BPCB, only four individuals were observed foraging near tourist trails and secondary roads. Males are known to sing while floating in shallow water, from ditches to flooded fields, especially at night (Ron et al., 2005). Classified as Vulnerable (VU) in both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Engystomops pustulatus (Shreve, 1941) Fig. 4m

Engystomops pustulatus is a small to medium-sized frog, with males averaging 27.1 mm SVL and females 31 mm SVL, a key characteristic distinguishing it from *E. guayaco* and *E. randi* (Ron et al., 2022b). This species exhibits darker bars on its extremities, a white belly with black and dark brown spots extending towards the chest, a dark throat, and brown irises (Shreve, 1941; Ron, 2018). It predominantly inhabits dry coastal scrublands, becoming more abundant during the rainy season in areas influenced by human activities (Ron et al., 2004). During fieldwork, 209 individuals were observed, but only two were collected. These were deposited in the ZSFQ museum with the codes ZSFQ4888 and ZSFQ4889. At the BPCB, individuals are primarily found in leaf litter within open areas near trails or

secondary roads with sparse shrub vegetation. Classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Engystomops randi (Ron et al., 2004) Fig. 4n

Engystomops randi, a very small endemic frog distinguished by numerous tubercles on its back, as well as parotoid and flank glands, and the absence of a tarsal tubercle (Ron et al., 2004; Read et al., 2022d). During fieldwork, five individuals were observed, and two were collected and deposited in the ZSFQ museum under codes ZSFQ4890 and ZSFQ4891. In the BPCB, it has been mainly recorded in leaf litter of open areas near trails or secondary roads with sparse bushy vegetation, and it is commonly observed during the rainy season near temporary streams or small artificial pools of water, although it is less common than *E. pustulatus*. Classified as Least Concern (LC) in both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Leptodactylus labrosus (Jiménez de la Espada, 1875) Fig. 4o

Leptodactylus labrosus is a medium-sized toad with an SVL of approximately 57 mm. This species is characterized by the absence of webbing between the toes and the lack of expanded discs on the toes, along with large, protruding eyes; round pupils; extensive and transparent lower eyelids; and a circular tympanum (Heyer, 1978; Ron et al., 2022c). It exhibits sexual dimorphism in coloration; males have a cream-chocolate dorsal surface with dark brown spots, while females have a reddish-copper dorsal surface with light brown spots (Heyer, 1978; MECN, 2010; Ron et al., 2022c). During the fieldwork, 251 individuals were observed, and two were collected and deposited in the ZSFQ museum with codes ZSFQ4876 and ZSFQ4877. In the BPCB, it has been most frequently recorded in leaf litter of open areas near trails with sparse shrub vegetation. Classified as Least Concern (LC) in both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Leptodactylus melanonotus (Hallowell, 1861) Fig. 4p

Leptodactylus melanonotus is a medium-sized toad with an SVL of around 50 mm, where males have spines on their thumbs but not on their chest, distinguishing them from *L. labrosus* and *L. ventrimaculatus*, the most similar species west of the Ecuadorian Andes (Read et al., 2022e). It also features cutaneous ridges on the fingers and well-developed subarticular tubercles (Hallowell, 1861; Heyer, 1970).

Its diet is primarily insectivorous, but adults can also prey on small frogs (Hoffman, 2006). In the BPCB, a total of 88 individuals were recorded in leaf litter found in open areas near trails, secondary roads, and spaces with sparse vegetation and pools of water. Males sing throughout the year, preferring small water-filled cavities in fields with wet grass, though their activity may decrease during the semi-dry season (Hoffman, 2006). Classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Leptodactylus ventrimaculatus (Boulenger, 1902) Fig. 4q

This medium-sized toad reaches a SVL of up to 58.35 mm in adulthood (MECN, 2010). This species is identified in situ by the presence of tubercles on the posterior surface of the tarsus, a characteristic that similar species *L. labrosus* and *L. melanonotus*, which coexist in the same locality, do not possess. Additionally, it lacks skin ridges and horny spines on the thumb, as well as folds on the flanks (Heyer, 1978; de Sá et al., 2014).

It has been reported that when living in sympatry with *L. labrosus*, it tends to move towards forests while *L. labrosus* inhabits open areas (Heyer & Maxson, 1982; MECN, 2010). In the BPCB, only eight individuals of this species were recorded and they were observed in leaf litter within primary and secondary forests, as well as near secondary roads and tourist trails. This species is listed as Least Concern (LC) in both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Family Strabomantidae

Barycholos pulcher (Boulenger, 1898) Fig. 4r

Barycholos pulcher is a small endemic species, with an SVL of approximately 25 mm. It has a light brown to grayish back with dark hourglass-shaped markings and a cream-colored belly (Heyer, 1969; Boulenger, 1898; Yáñez-Muñoz et al., 2022). Its fingers have particular proportions, such as the third toe being longer than the fifth and the first finger being longer than the second (Heyer, 1969; Boulenger, 1898). These characteristics distinguish it from *Pristimantis achatinus*, the most similar species in the area. In the BPCB, this species has been primarily recorded in leaf litter in open areas near trails or secondary roads, with only two individuals observed. This species is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Pristimantis achatinus (Boulenger, 1898) Fig. 4s

Pristimantis achatinus is one of the most common species on the Ecuadorian coast. It is a medium-sized frog (Camacho-Badani et al., 2022). This species exhibits a wide range of dorsal coloration, from pale yellow to dark brown. It has dorsolateral folds and finger I is longer than finger II, without a membrane between the fingers, but with skin ridges on the feet, and Finger V is somewhat longer than finger III (Boulenger, 1898; Lynch & Myers, 1983; Lynch & Duellman, 1997). Considered a colonizing and generalist species, *P. achatinus* has a peculiar biology, as its eggs produce fully developed small frogs without undergoing metamorphosis (MECN, 2010). During fieldwork, 556 individuals were observed, but only four were collected and deposited in the ZSFQ museum under the codes ZSFQ4884, ZSFQ4885, ZSFQ4886, and ZSFQ4887. In the BPCB, it has been recorded mainly in the leaf litter of open areas near trails, secondary roads, or open spaces, and individuals have also been found perched on walls or posts at a height of no more than 180 cm. It is classified as Least Concern (LC) in both the IUCN (2024) and the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Order Gymnophiona

Family Caeciliidae

Caecilia tenuissima (Taylor, 1973) Fig. 4t

Caecilia tenuissima is a small and elongated endemic caecilian, with between 174 and 190 incomplete primary grooves on its back, except in the area before the cloaca (Taylor, 1973). It lacks a terminal shield, and its semi-ovate head has a rounded snout that protrudes beyond the edge of the mouth when viewed from the side (Taylor, 1973; Lynch, 1999; Fletcher-Laso, 2002). It is a subterranean species and there is no information about its reproduction and ability to adapt to secondary habitats (IUCN SSC Amphibian Specialist Group, 2019). This species is rare, with only one individual observed along a secondary road during heavy rainfall. This specimen was collected and deposited in the ZSFQ museum under the code ZSFQ4898. It is classified as Data Deficient (DD) in the IUCN (2024), while it has the category of Endangered (EN) in the Red List of Amphibians of Ecuador (Ortega-Andrade et al., 2021).

Class Reptilia

Order Squamata: Amphisbaenida

Family Amphisbaenidae

Amphisbaena fuliginosa varia (Laurenti, 1768) Fig. 5a

This species, due to its fossorial lifestyle, is difficult to observe (Ribeiro et al., 2008; Ray et al., 2015). It is characterized by having a body with 190-205 rings, a tail with 23-27 rings, and approximately 40-50 segments in a ring in the middle of the body, in addition to 6-8 preanal pores (Peters & Donoso-Barros, 1970). They are presumed to spend most of their time underground in burrows that they build themselves, although they have also been collected in underground colonies of cutter ants (Gans, 1969; Riley et al., 1986; Ray et al., 2015). In the BPCB, this species was recorded only twice; the individuals were both sighted on a trail in the middle of a secondary forest. It is non-venomous and therefore completely harmless to humans (MECN, 2009). It is classified as Least Concern (LC) by the IUCN (2024), while it has the category of Near Threatened (NT) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Order Squamata: Sauria

Family Alopoglossidae

Alopoglossus festae (Peracca, 1904) Fig. 5b

Alopoglossus festae is a medium-sized lizard that has keeled scales, mostly granular, small on the sides of the neck, and gular scales arranged in four longitudinal rows, with the middle pair clearly widened (Köhler et al., 2012). This diurnal species is associated with leaf litter in primary and secondary forests, in humid environments near bodies of water (Ortega-Andrade et al., 2010), precisely the type of ecosystem where it was found in BPCB. During fieldwork, 40 specimens were observed but only two were collected and deposited in the ZSFQ and MUTPL museums under the codes ZSFQ4916 and MUTPL-R-596. It is classified as Least Concern (LC) by the IUCN (2024); however, it is found in the Vulnerable (VU) category on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Anolidae

Anolis binotatus (Peters, 1863) Fig. 5c

Anolis binotatus is a lizard distinguished by having a brown back, an interorbital bar on the head, a longitudinal lateral stripe on the sides of the body, and a banded tail, with brown irises (Poe, 2019). It also has scales between the second canthals, supraorbital semicircles separated by a scale, and a supraocular

disc with 7-8 enlarged scales (Williams et al., 1995). This species is differentiated from similar species, such as *A. gracilipes*, by having white ventrolateral stripes.

It can inhabit mature forests, intervened forests, open areas, crops, or estuaries, where it moves on the ground, bushes, and trees, often no more than 2 meters above the ground (Cruz-García, 2017; Ayala-Varela et al., 2020). During fieldwork, only three specimens were reported, and none were collected. In the BPCB, it can be observed in secondary forests and near secondary roads or trails. It is classified as Least Concern (LC) by the IUCN (2024); however, in the Red List of Reptiles of Ecuador (Carrillo et al., 2005) it is listed as Data Deficient (DD).

Anolis festae (Peracca, 1904) Fig. 5d

Anolis festae is a small lizard, with a thin and elongated body, olive green back, and an immaculate belly. Males have a large, white gular sac with a black base and blue irises (Williams et al., 1995; MECN, 2010). *A. festae* is associated with human-modified habitats such as teak and cocoa plantations, roadside vegetation, and grasslands (Miyata, 2013).

During fieldwork, seven specimens were reported, but just two were collected deposited in the ZSFQ museum with the code ZSFQ4918 and in the MUTPL museum with the code MUTPL-R-598. In the BPCB, this species was found on tree trunks at heights ranging from 100 cm to 400 cm, near buildings, secondary roads, and trails. It is classified as Near Threatened (NT) by the IUCN (2024) and on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Anolis gracilipes (Boulenger, 1898) Fig. 5e

Anolis gracilipes is a small lizard that reaches a maximum size of 54 mm SVL (MECN, 2010). This species has a thin body and a slightly widened, light-colored face (Williams et al., 1995; MECN, 2010). It also has a lateral stripe that runs along the flanks to the inguinal region, and the belly is greenish-yellow while the gular sac is orange with black longitudinal scales. It feeds on insects and is oviparous (Arteaga et al., 2013; Uetz et al., 2023). At night, they can be found sleeping at the ends of ferns and bushes, clinging to thin branches, sometimes up to 200 cm from the ground (MECN, 2010). During fieldwork, 41 specimens were reported, and just an adult female was collected and deposited in the ZSFQ museum with the code ZSFQ4917. In the BPCB, they have been sighted in exactly these locations, near vegetation along secondary roads and trails. It is classified as Least Concern (LC) by the IUCN (2024) and on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Gekkonidae

Hemidactylus frenatus (Duméril & Bibron, 1836) Fig. 5f

Hemidactylus frenatus is a lizard characterized by long divided digital pads, non-retractable claws, and digits without basement membranes (Zug et al., 2007). This species is known for emitting vocalizations that vary according to their state (Savage, 2002) and is frequently associated with man-made structures, such as buildings, where it moves rapidly on vertical surfaces and roofs (Zug et al., 2007). It feeds on arthropods, especially attracted by electric lights and spiders, and seeks refuge in cracks, holes, and cavities (Savage, 2002). During fieldwork, 19 specimens were reported, and just an adult specimen was deposited in the ZSFQ museum with the code ZSFQ4911. In fact, in the BPCB, it is mainly recorded in various types of buildings within the reserve, with few sightings in forested areas. It is classified as Least Concern (LC) by the IUCN (2024) and Not Evaluated (NE) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Iguanidae

Iguana iguana (Linnaeus, 1758) Fig. 5g

It is a very large lizard, reaching up to 200 cm including its tail (MECN, 2010). This species is easy to recognize; its dorsal coloration varies between intense green and brownish-green, with gray tones forming transverse bands, and it may also exhibit reddish hues (Boulenger, 1885; Köhler, 1999; MECN, 2010). Additionally, it has a large dorsal crest extending over more than a third of its tail, and a gular pouch with front-facing spikes that can be fully extended (Taylor, 1956; Köhler, 1999; Savage, 2002). They are sedentary and can remain in the same tree for several weeks. Communication occurs through body language, such as head tilting and scratching movements (Köhler, 1999; MECN, 2010; Guerra-Correa & Rodríguez-Guerra, 2020). During the fieldwork were observed seven individuals and none were collected. They are a common species in the canopy of trees near human buildings and secondary roads, but not within forested areas. Classified as Least Concern (LC) by the IUCN (2024) and in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Phyllodactylidae

Phyllodactylus reissii (Peters, 1862) Fig. 5h

Phyllodactylus reissii is a lizard characterized by having tubercles on the head, torso, and tibias, excluding the femurs. It also has an enlarged row of scales under the tail and terminal lamellae on the digits that are moderately enlarged and truncated in

a T-shape (Dixon & Huey, 1970; MECN, 2010). This species has nocturnal and climbing habits and is mainly associated with urbanized coastal and island habitats, rarely reported in natural environments (MECN, 2010). During fieldwork, 63 individuals were observed but only one individual was collected and deposited in the ZSFQ museum with the code ZSFQ4910. In the BPCB, it has been observed feeding on building walls, rocks, tourist bridges, signposts, and even bathrooms. It is categorized as Least Concern (LC) by the IUCN (2024) and in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Polychrotidae

Polychrus femoralis (Werner, 1910) Fig. 5i

This is an intermediate-sized lizard with a thin, laterally compressed body, along with a long, semi-prehensile tail. It also has a pointed snout, a smooth dorsal surface of the head, and smooth gular scales, as large as the ventral ones, forming longitudinal rows (Schluter, 2013; Guerra-Correa, 2020). This lizard is found in areas of deciduous forest or open areas near rivers, where it usually perches on branches 150 cm high and uses a bipedal jump to move between the branches, although it does not use its tail as a mechanism to hold on to them (Schluter, 2013; Guerra-Correa, 2020). During fieldwork this species were sighted only four times. In the BPCB, it is uncommon and has been observed perching on trunks or bushes at a height of no more than 300 cm in the reserve's secondary and primary forests. This species is classified as Least Concern (LC) by the IUCN (2024); however, on the Red List of Reptiles of Ecuador (Carrillo et al., 2005), it is listed as Near Threatened (NT).

Family Sphaerodactylidae

Gonatodes caudiscutatus (Günther, 1859) Fig. 5j

This small lizard reaches 45.4 mm SVL, with 89-101 scales around the midbody. Adult males display elongated orange-yellow spots on the dorsal surface of the head (Sturaro & Avila-Pires, 2013) and a large blue ocellus bordered in black on each shoulder, with scattered blue dots on the flanks and back (Carvajal-Campos & Torres-Carvajal, 2012). *G. caudiscutatus* can be mistaken for *Lepidoblepharis buchwaldi*; key features for differentiation include coloration, with male *G. caudiscutatus* being quite distinctive, and free nails but is more commonly observed in urban areas, such as house roofs (MECN, 2010). Its diet mainly consists of small arthropods (Vitt & de la Torre, 1996; Vitt et al., 1997). During fieldwork 435 individuals were reported, but just two were collected and deposited in the ZSFQ museum with the codes

ZSFQ4914, ZSFQ4915, and ZSFQ4915. It is categorized as Least Concern (LC) by the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Lepidoblepharis buchwaldi (Werner, 1910) Fig. 6k

Lepidoblepharis buchwaldi is one of the smallest species in its genus, measuring only 28 mm in SVL (MECN, 2010). This tiny lizard is characterized by juxtaposed dorsal scales that are not keeled and are of uniform size (Peters & Donoso-Barros, 1970), as well as claws covered by a symmetrical sheath typically consisting of six scales (MECN, 2010). Its natural history remains largely understudied; however, based on studies of its congeners, its diet likely consists of arthropods and small amphibians (Ayala & Castro, 1983; Vitt et al., 2005). During the fieldwork 14 specimens were sighted but only one adult were collected and deposited in the ZSFQ museum with the code ZSFQ4913. Within the BPCB, it has been observed among the leaf litter near facilities and in the vicinity of small bodies of water, mostly in less disturbed areas. It is classified as Least Concern (LC) by the IUCN (2024); however, it is listed as Near Threatened (NT) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Teiidae

Holcosus septemlineatus (Duméril & Duméril, 1851) Fig. 6l

Holcosus septemlineatus is a conspicuous medium-sized lizard, particularly striking in its youth when its vivid blue tail and contrasting pattern of a black dorsum with interrupted orange lateral stripes make it stand out (Peters, 1964; MECN, 2010). Adult lizards have a black dorsal coloration with interrupted pale-yellow lateral bands, while their bellies are pale-yellow with broad, smooth scales (MECN, 2010). Its diet mainly includes orthopterans, and it exhibits active hunting behavior, especially on sunny days when its activity peaks (MECN, 2010; Valencia et al., 2008). During fieldwork 210 specimens were recorded but only a juvenile female was collected and is catalogued in the ZSFQ museum under code ZSFQ4923. Within the BPCB, this lizard is very common in both well-preserved areas and tourist-frequented zones. Observations indicate that it basks in the sun on sunny days along trails, atop rocks, or on fallen logs. The species is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Medopheos edracanthus (Bocourt, 1874) Fig. 6m

This species is distinguished by a unique or bifurcated frontal scale and eight longitudinal rows of ventral scales (Peters,

1964). Its dorsal coloration is olive green with five longitudinal yellowish lines, which become less distinct and often interrupted on the flanks (Barbour & Noble, 1915; Harvey et al., 2012). During fieldwork four specimens were recorded, but only an adult male was collected and deposited in the ZSFQ museum under the code ZSFQ4924. It has only been observed occasionally along tourist trails on sunny days, similar to *H. septemlineatus*, this species is very elusive. It is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Tropiduridae

Stenocercus iridescens (Günther, 1859) Fig. 6n

Stenocercus iridescens is a medium-sized lizard characterized by a brown back with dark chevrons, most prominent on the neck, and sometimes light blue vertebral scales in males (Torres-Carvajal, 2007; Carvajal-Campos, 2020). During fieldwork 457 specimens were observed and two of them were collected and deposited in the ZSFQ museum: a female under the code ZSFQ4921 and a male with the code ZSFQ4922. At the BPCB, this species was the most frequently observed lizard, found foraging among leaf litter and perching on rocks or logs during the day, sometimes reaching heights of up to 200 cm. An individual was even observed in a vertical position on a tree trunk at a height of 160 cm. Observations were made in various habitats, including primary and secondary forests, near shrubs, leaf litter on secondary roads, buildings, and trails throughout the year. It is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Order Squamata: Serpentes

Family Boidae

Boa imperator (Daudin, 1803) Fig. 6o

Boa imperator is a large snake, with adults reaching up to 4,000 mm (MECN, 2010). A distinctive feature of this species is the presence of pelvic vestiges, such as claws on either side of the cloaca. It also lacks labial pits and has small scales on the top of its head and snout (loreal region) (Duellman, 1978; Savage, 2002; O'Shea, 2007). Its diet primarily includes mammals, birds, lizards, and amphibians. Although non-venomous, it employs various hunting techniques, including ambushes and active foraging, capturing and consuming prey headfirst through constriction (Mattison, 1995; Roveri-Scartozzoni & de Barros-Molina, 2014). During fieldwork four individuals were observed but none were collected. This snake has been mostly observed

in anthropogenically affected areas within the BPCB, such as tourist trails, leaf litter in secondary forests, and thickets no higher than 200 cm. It is categorized as Least Concern (LC) by the IUCN (2024) and Vulnerable (VU) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Colubridae

Chironius flavopictus (Werner, 1909) Fig. 6p

Chironius flavopictus is a moderately sized non-venomous snake, reaching up to 1,000 mm in total length (TL) (MECN, 2010). This species has distinctive features, including a divided anal plate, 12 rows of dorsomedial scales, and white or yellow spots on most of the dorsal scales. However, adult coloration alone is usually sufficient for species identification (Dixon et al., 1993). Its back is dark with white, bright orange, golden, light brown, or yellowish spots, and the ventral scales range from ivory, pale yellow, or orange to pale faded greenish orange (Dixon et al., 1993; MECN, 2010). During fieldwork this species was observed only once. It was reported in the area affected by tourism, found near trails in areas with predominant bush vegetation, where this species can find its main prey, frogs (Dixon et al., 1993). It is categorized as Data Deficient (DD) by the IUCN (2024) but classified as Vulnerable (VU) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Clelia clelia (Daudin, 1803) Fig. 6q

Clelia clelia is a large non-venomous snake, reaching up to 2,500 mm in adulthood (MECN, 2010). It can be distinguished from its congeners by the following characteristics: rows of dorsal scales in the middle of the body number 17-19; ventral scales 218-225 in males and 228-242 in females; subcaudal scales 94-96 in males and 77-86 in females (Duellman, 1978; Schwartz & Henderson, 1992; Martins & Oliveira, 1998). This snake has a peculiar ontogenetic change, with its color shifting from red with a black head and yellow collar in juveniles to a grayish-black or fully black body in adulthood (Duellman, 1978; Martins & Oliveira, 1998; MECN, 2010). Additionally, it has ophiophagous habits, feeding on both vipers and colubrids, suggesting resistance to the venom of some venomous snakes (Cerdas & Lomonte, 1982; Lomonte et al., 1990). It is a very elusive and fast snake; during fieldwork, only two individuals were observed. In the BPCB, it has been sighted only once, the specimen was found hidden among the leaves at the base of a mature tree near permanent streams, but when it was discovered, it quickly retreated. Both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005) categorize it as Least Concern (LC).

Coniophanes dromiciformis (Peters, 1863) Fig. 6r

Coniophanes dromiciformis is a small snake species distinguished from its congeners by the rows of dorsal scales midway down the body, the dorso-medial stripe that generally occupies five rows of scales in width, and the thin white lines that cross the dark lateral stripes (Bailey, 1939; Myers, 1969; Peters & Orejas-Miranda, 1970). Although there is little information about its natural history, it is known to be oviparous, terrestrial, and nocturnal (Myers, 1969). During fieldwork six specimens were reported and some male specimens were collected and deposited in the ZSFQ and MUTPL museums with the codes ZSFQ4904, ZSFQ4905, and MUTPL-R-605. In the BPCB, its presence has been recorded in the vicinity of primary forests and in adjacent areas of secondary forest, as well as near buildings in areas with human intervention. This small snake is listed as Vulnerable (VU) by the IUCN (2024) and Near Threatened (NT) according to Carrillo et al. (2005) in the Red List of Reptiles of Ecuador.

Dendrophidion brunneum (Günther, 1858) Fig. 6s

Dendrophidion brunneum is a medium-sized snake with the dorsal coloration ranges from green to greenish-brown, often with yellowish or bronzy reflections, while the belly is light with dark spots, distinguishing it from *D. nuchalis* and *D. percarinatus* (Cadle, 2010; MECN, 2010). This diurnal snake is terrestrial or semi-arboreal, is not venomous, but displays defensive behaviors when handled (MECN, 2010). Also, it is often found basking in sunlight in open areas and foraging along pool edges (Cadle, 2010; MECN, 2010), the latter being the exact habitat where the collected individual was found. During fieldwork four specimens were observed but only one juvenile individual was deposited in the MUTPL museum under the code MUTPL-R-595. It holds a conservation status of Least Concern (LC) by the IUCN (2024) and Near Threatened (NT) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Dipsas georgejetti (Arteaga et al., 2018) Fig. 6t

This medium-sized snake, endemic to Ecuador, with males reaching up to 710 mm and females up to 850 mm, this snake has a jaw design is specialized for feeding on gastropods (Arteaga et al., 2018). Also, it can be distinguished from other *Dipsas* species by its smooth dorsal scales in a 15-15-15 arrangement, with the loreal and prefrontal scales not contacting the orbit, absence of infralabials touching behind the symphysis, and possessing 172-180 ventral scales in males and 177 in females (Arteaga et al., 2018). According to Cadle and Myers (2003), dipsadines are substantially docile snakes that do not attack when handled,

although they may modify their head posture defensively in response to threats. During fieldwork, two specimens were sighted. In the BPCB it was observed in disturbed areas, perching on branches of medium-sized shrubs and foraging in leaf litter at night. Currently, it is categorized as Not Evaluated (NE) in both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Drymarchon melanurus (Duméril et al., 1854) Fig. 7u

Drymarchon melanurus is a large snake characterized by four distinctive black stripes, vertical or oblique, below the eyes (Peters & Orejas-Miranda, 1970; Guerra et al., 2012) being this very conspicuous of this species. While it is terrestrial, it is often found near bodies of water. During the fieldwork six specimens were sighted, but none were collected. In the BPCB, this species was observed near disturbed areas and in different areas of secondary and primary forest. Their diet includes small vertebrates from birds to turtles and even other snakes (Venegas, 2005; Guerra et al., 2012).

It is listed as Least Concern (LC) by the IUCN (2024), while it is considered as Near Threatened (NT) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005). It is important to mention that, in the BPCB tourist area, a visibly thin individual was observed, which was in the process of shedding its skin and had an infestation of 127 ticks of the *Amblyomma* genus near its head (G. Brito, pers. comm., May 27, 2024).

Imantodes cenchoa (Linnaeus, 1758) Fig. 7v

Imantodes cenchoa is a medium-sized snake, with adult males reaching up to 1,240.4 mm and females up to 1,500 mm (MECN, 2010). It features a laterally compressed body and a long tail, which constitutes about one-third of its total length. Its head is enlarged and distinct from the neck, characterized by bulging eyes and vertical elliptical pupils (Duellman, 1978; MECN, 2010). The diet of this snake primarily consists of frogs from the genus *Pristimantis* and arboreal lizards (*Anolis*), along with eggs from reptiles and other frogs (Savage, 2002). During fieldwork four specimens were observed but only one individual was collected and deposited in the MUTPL museum under the code MUTPL-R-601. Within the BPCB, it has been observed in bushes near secondary roads or trails in secondary forests, at heights not exceeding 200 cm. This species is listed as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Lampropeltis micropholis (Cope, 1860) Fig. 7w

The medium-sized species reaches up to 1900 mm in males and 1,400 mm in females, featuring a cylindrical body, a short tail, and a small head with medium-sized eyes, not distinctly separated from the neck (MECN, 2010). It can be identified by its rows of dorsal scales, typically 19 or 21, and its temporal scales, usually 1+2 or 2+3 (Williams, 1994). Its diet includes small mammals, birds, eggs, snakes, and lizards (Savage, 2002). Although non-venomous, its dorsal coloration mimics that of a coral snake. In the BPCB, sightings are rare; during this study, it was observed only once at night near a tourist trail by a stream. It is classified as Least Concern (LC) by the IUCN (2024) but is considered Endangered (EN) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Leptodeira ornata (Bocourt, 1884) Fig. 7x

Leptodeira ornata is a medium-sized snake, with a cylindrical and laterally compressed body (Savage, 2002; MECN, 2010). Its head is well differentiated from the neck and features a pattern of brown dorsal spots on a cream to reddish tan back, with between 20 and 70 dark to black spots (Savage, 2002). Although relatively docile and rarely biting when handled, if it does bite, it can inflict a painful but not serious bite with its grooved rear fangs (Savage, 2002; MECN, 2010). During fieldwork 26 specimens were observed but only three were collected, and deposited in the ZSFQ and MUTPL museums under the codes ZSFQ4900, MUTPL-R-600, and MUTPL-R-606 respectively. This snake was observed in all sampled areas in the BPCB, covering a variety of ecosystems, including stream areas, primary and secondary forests, as well as areas affected by human activity such as secondary roads and trails. *L. ornata* is listed as Least Concern (LC) by the IUCN (2024) and in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Leptophis occidentalis (Günther, 1859) Fig. 7y

These diurnal snakes are medium-sized, reaching a TL of 2,000 mm, and are characterized by a distinctive deep green coloration on the back. They differ from other western colubrid snakes by their 15 rows of scales halfway down the body (MECN, 2010). Their speed allows them to flee quickly when discovered, but they can exhibit defensive behavior by biting if cornered. However, their venom does not pose a threat to people (MECN, 2010). During fieldwork, four specimens were observed, and one of them was collected and deposited in the MUTPL museum under the code MUTPL-R-603. In the BPCB, they are often seen perched on branches of moderately sized bushes and occasionally on signs

within the forest. This species is classified as Not Evaluated (NE) by the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Mastigodryas pulchriceps (Cope, 1868) Fig. 7z

Mastigodryas pulchriceps is a medium-sized snake with a total length that can reach up to 1,400 mm (MECN, 2010). It is distinguished from its congeners by its rows of 17-17-15 dorsal scales, third, fourth and fifth supralabial scales that touch the eye, divided cloacal scale and banded body coloration pattern (Stuart, 1941; Montingelli, 2009). Its dorsal coloration presents dark brown rectangular markings separated by light brown intermediate spaces; on the flanks, the markings are slightly quadrangular with grayish-cream spaces (MECN, 2009). In the BPCB, its sighting has been recorded on only one occasion, finding it foraging inside a secondary forest. Classified as Least Concern (LC) in the IUCN (2024) and Near Threatened (NT) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Mastigodryas reticulatus (Peters, 1863) Fig. 7aa

This endemic snake is distinguished by its striped dorsal pattern and a light lateral stripe formed by rows of scales 4 and 5. Its dorsal scales have dark apical edges, and the basal and naked regions of the elongated hemipenes feature enlarged and thin lateral spines leading to the spermatic groove (Montingelli et al., 2011). This diurnal snake's diet includes lizards, frogs, small mammals, and bird and snake eggs (Montingelli, 2009). During fieldwork, five specimens of this species were observed, but only two individuals were collected and deposited in the ZSFQ and MUTPL museums under the codes ZSFQ4901 and MUTPL-R 472. In the BPCB, it has been sighted in tourist areas and primary forests. It is a fast species and poses no danger to humans if bitten. It is categorized as Near Threatened (NT) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Oxybelis transandinus (Torres-Carvajal et al., 2021) Fig. 7ab

Oxybelis trasandinus is a medium-sized, endemic snake in Ecuador, reaching up to 1,600 mm in total length (Torres-Carvajal et al., 2021). This species is distinguished within the *O. aeneus* complex by specific characteristics, such as the second pair of chin shields being in contact with each other for most of their length, a midventral dark stripe on the first quarter of the belly, supraocular scales longer than the prefrontal ones, and approximately 176-187 ventral scales in females and 178-190 in males (Torres-Carvajal et al., 2021). This diurnal species exhibits

arboreal habits, often found sleeping on leaves or branches up to 4 m high at night. In fact, an adult male was found asleep on a branch near a trail. It shows aggressive behavior when handled but it is not venomous (Torres-Carvajal et al., 2021). During fieldwork nine specimens were sighted and two of them were collected and deposited in the ZSFQ and MUTPL museums under the codes ZSFQ4902 and MUTPL-R-599. It is categorized as Not Evaluated (NE) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Oxyrhopus petolarius (Linnaeus, 1758) Fig. 7ac

Oxyrhopus petolarius is a medium-sized snake, with adults capable of exceeding 1,120 mm in total length (Lynch, 2009; MECN, 2010). Known as a false coral due to its coloration mimicking true corals of the genus *Micrurus*, it features a distinctive dorsal pattern with dark rings and light reddish interspaces, where the dark rings are two or three times wider than the interspaces, while the belly is white (Lynch, 2009). This mimicry serves as a defense mechanism (Campbell & Lamar, 2004). Typically docile, this snake may bite if it feels threatened; however, its venom, though mildly toxic, does not pose significant harm to humans (Savage, 2002; Lynch, 2009; Vidal et al., 2010; Alencar et al., 2013; MECN, 2010).

During fieldwork six specimens were observed and two of them been deposited in the MUTPL museum under the codes MUTPL-R-593-3668 and MUTPL-R-602. In the BPCB, this snake can be observed in various environments, including primary forest areas, secondary forests, and regions with human intervention such as secondary roads and trails, predominantly found foraging among the leaf litter. This species is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Stenorrhina degenhardtii (Berthold, 1846) Fig. 7ad

This small to medium-sized snake, reaching up to 900 mm in total length in adults, features a slender, cylindrical body with a short tail and a head that is not distinctly differentiated from the body (Solórzano, 2004; MECN, 2010). Within the genus *Stenorrhina*, it is distinguished by specific characteristics such as an enlarged rostral plate, a shovel-shaped snout, a fused internasal to the anterior nasal, and a generally present loreal plate (Savage, 2002; Natera-Mumaw et al., 2015).

This species exhibits semifossorial or cryptozoic habits, making encounters with it rare. It is primarily diurnal and crepuscular but has occasionally been observed active at night

near streams (Savage, 2002; Solórzano, 2004). During fieldwork five specimens of this species were sighted. An individual of this species that was deposited in the ZSFQ museum under the code ZSFQ4903. This species is categorized as Least Concern (LC) by the IUCN (2024) and Near Threatened (NT) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Tantilla capistrata (Cope, 1875) Fig. 8ae

Tantilla capistrata is a small snake with a cylindrical body that reaches 500 mm in total length, with a short tail and a head that is poorly differentiated from the neck (MECN, 2010). It is distinguished by specific characteristics such as a narrow dark stripe on the dorsomedial row of dorsal scales, a pale nuchal band and between 130-156 ventral and 46-71 subcaudal scales (Wilson, 1985).

It has a back that varies between yellowish and reddish tones with black longitudinal lines, a white belly and a prominent pale spot on the snout (Wilson, 1985; MENC, 2010). During fieldwork within the BPCB, four specimens were observed. Sightings of this snake have mainly occurred in tourist areas, where it has been observed foraging through leaf litter on tourist trails in secondary forests. And individual was collected and deposited in the MUTPL museum under the code MUTPL-R-597. It is listed as Data Deficient (DD) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Elapidae

Micrurus bocourti (Jan, 1872) Fig. 8af

Micrurus bocourti is a medium-sized venomous snake, reaching up to 700 mm in total length, with a distinctive body pattern featuring only two black rings in the first triad, and a tail with 5 to 8 yellow or black-and-white rings in males and 4 to 6 in females (Roze, 1996; Campbell & Lamar, 2004). Their primary defense when threatened lies in their warning coloration, and their behavior in the face of danger includes hiding their head between their body coils, moving jerkily back and forth, and displaying their shiny tails as a decoy (Valencia et al., 2016). Eight specimens were observed during the fieldwork, three of them have been deposited in the ZSFQ and MUTPL museums with the codes ZSFQ4908, ZSFQ4909, and MUTPL-R-604. In the BPCB, this species is mainly found foraging among the leaf litter and rocks of streams at night, although one individual was observed searching for food during the day. It is cataloged as Least Concern (LC) by the IUCN (2024) and Vulnerable (VU) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Leptotyphlopidae

Epictia subcrotilla (Klauber, 1939) Fig. 8ag

Epictia subcrotilla is a small snake, with adults exceeding 188 mm in total length. This species is characterized by 324-331 dorsomedial scales, 17 subcaudal scales, and 10 scales around the middle region of the tail, along with a white spot on the rostral and caudal spine (Schmidt & Walker, 1943; Francisco et al., 2012). Like other species in the Leptotyphlopidae family, *E. subcrotilla* has fossorial habits, feeding mainly on larvae and eggs of social insects. It lives primarily beneath the soil surface and organic matter (Webb et al., 2000; Adalsteinsson et al., 2009; Vitt & Caldwell, 2013). This snake was sighted only once in the BPCB during all years of sampling, observed on a daytime occasion after a brief rain near leaf litter on a tourist trail. It is registered as Least Concern (LC) by the IUCN (2024) and as Data Deficient (DD) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Viperidae

Bothrops asper (Garman, 1884) Fig. 8ah

This is a large venomous snake with a distinctive characteristics such as a brown or tan back with V- or X-shaped markings, which can be dark gray or black with pale crossbars (Campbell & Lamar, 2004; MECN, 2010). Juvenile males have yellow tail tips, which is why they are called "rabo de hueso" in Spanish, while juvenile females are uniformly brown (Campbell and Lamar, 2004). In the BPCB, this was the only species of viper identified, occupying diverse habitats including primary forests, secondary forests, and areas with human intervention such as buildings on the forest edges. Specimens were found in leaf litter, on tourist trails, secondary roads, low shrubs (less than 150 cm), and rocky soils in streams. Their behavior is unpredictable when they feel threatened, as they can move quickly and defend themselves vigorously (Campbell & Lamar, 2004). During fieldwork, 38 specimens were observed, two of them were deposited in the ZSFQ museum with the codes ZSFQ4906 and ZSFQ4907. This species is classified as Least Concern (LC) by both the IUCN (2024) and the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Order: Testudines

Family Chelydridae

Chelydra acutirostris (Peters, 1862) Fig. 8ai

Chelydra acutirostris is a considerable-sized aquatic turtle, capable of reaching lengths up to 490 mm and weighing as much as 34 kg. Its shell is broad and flat, with roughly parallel lateral margins, featuring three keels that resemble individual protrusions over the rows of vertebral and costal shields, which tend to fade as the turtle ages (Rueda-Almonacid et al., 2007). It has an omnivorous diet and is a voracious predator, feeding on crabs, shrimps, fish, mollusks, worms, insects, frogs, turtle hatchlings, snakes, birds, and small mammals (Rodríguez-Guerra, 2020). At the BPCB, the presence of this species was recorded on only one occasion during this study, indicating its rare observation. The individual was found in a stream with permanent water, surrounded predominantly by bush vegetation, within a primary forest. The species is listed as Not Evaluated (NE) by the IUCN (2024), yet it remains Vulnerable (VU) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Geoemydidae

Rhinoclemmys annulata (Gray, 1860) Fig. 8aj

This medium-sized turtle species reaches up to 230 mm in length (Rueda-Almonacid et al., 2007). It is distinguished by its dorsally pointed and profile-truncated face, as well as its domed shell, which features a yellowish mid-dorsal keel and a flat presentation on the second, third, and fourth vertebral scutes (MECN, 2010). The plastron is dark brown or black towards the center, with a characteristic yellow ring-shaped band, which gives the species its name (MECN, 2010). In the BPCB, two specimens were sighted, they both have been observed in permanent streams. This turtle is categorized as Near Threatened (NT) according to the IUCN (2024) and Endangered (EN) on the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

Family Kinosternidae

Kinosternon leucostomum (Duméril & Duméril, 1851) Fig. 8ak

Kinosternon leucostomum is a medium-sized turtle, reaching up to 170 mm, although typically only reaching 120 mm (Rueda-Almonacid et al., 2007). It can be distinguished from other Kinosternon species by its smooth, flattened, oblong-shaped brown shell in adults and uncarinated shell in hatchlings and juveniles. Its plastron is slightly unscathed or very slightly fissured between the anal shields, yellowish-brown with blackened fissures, relatively wide, and completely covers the shell openings. Additionally, it has two pairs of chin barbels (Rhodin et al., 2009). In the BPCB, this species has been recorded only once, indicating that its sighting is unusual. The observed

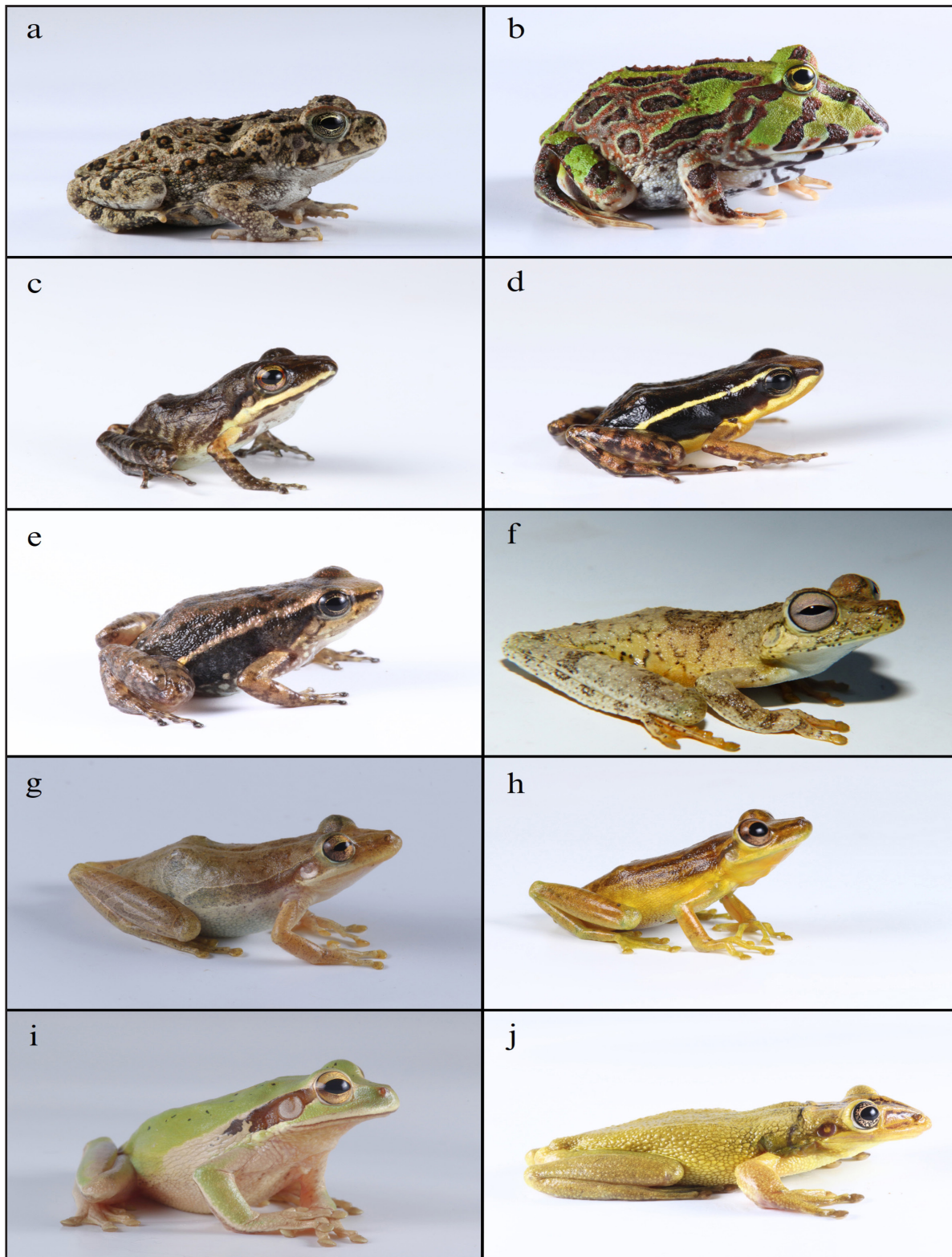


Figura 3. Especies de anfibios registrados en el Bosque Protector Cerro Blanco (BPCB) (Parte 1). a) *Rhinella bella*, b) *Ceratophrys stolzmanni*, c) *Craugastor longirostris*, d) *Epipedobates machalilla*, e) *Hyloxalus infraguttatus*, f) *Boana rosenbergi*, g) *Scinax quinquifasciatus*, h) *Scinax tsachila*, i) *Smilisca phaeota*, j) *Trachycephalus jordani*. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

Figure 3. Amphibian species recorded in the Bosque Protector Cerro Blanco (BPCB) (Part 1). a) *Rhinella bella*, b) *Ceratophrys stolzmanni*, c) *Craugastor longirostris*, d) *Epipedobates machalilla*, e) *Hyloxalus infraguttatus*, f) *Boana rosenbergi*, g) *Scinax quinquifasciatus*, h) *Scinax tsachila*, i) *Smilisca phaeota*, j) *Trachycephalus jordani*. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra.



Figura 4. Especies de anfibios registrados en el Bosque Protector Cerro Blanco (BPCB)(Parte 2). k) *Trachycephalus quadrangulum*, l) *Engystomops guayaco*, m) *Engystomops pustulatus*, n) *Engystomops randi*, o) *Leptodactylus labrosus*, p) *Leptodactylus melanonotus*, q) *Leptodactylus ventrimaculatus*, r) *Barycholos pulcher*, s) *Pristimantis achatinus*, t) *Caecilia tenuissima*. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

Figure 4. Amphibian species recorded in the Bosque Protector Cerro Blanco (BPCB)(Part 2). k) *Trachycephalus quadrangulum*, l) *Engystomops guayaco*, m) *Engystomops pustulatus*, n) *Engystomops randi*, o) *Leptodactylus labrosus*, p) *Leptodactylus melanonotus*, q) *Leptodactylus ventrimaculatus*, r) *Barycholos pulcher*, s) *Pristimantis achatinus*, t) *Caecilia tenuissima*. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

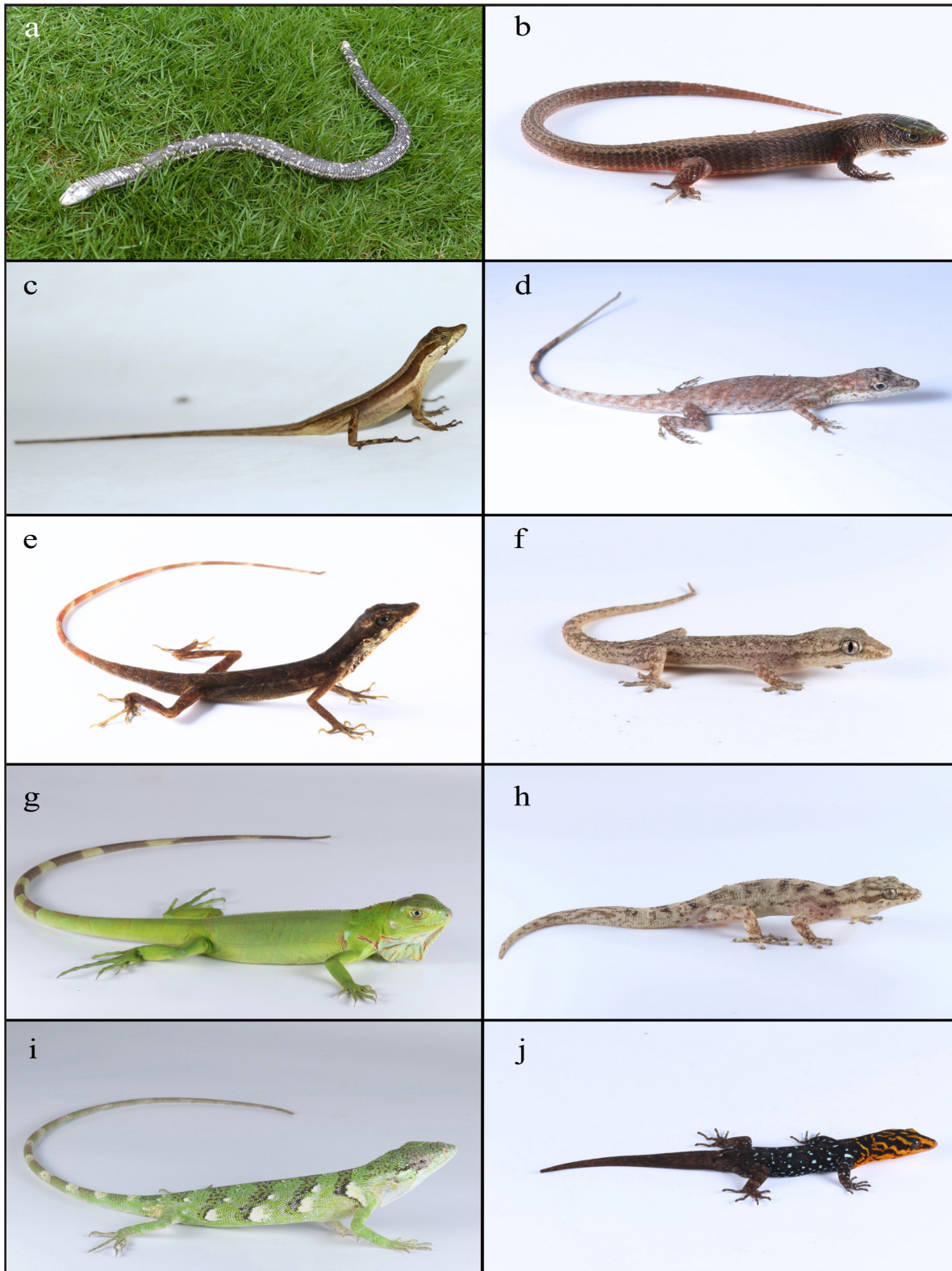


Figura 5.

Especies de reptiles registrados en el Bosque Protector Cerro Blanco (BPCB) (Parte 1). a) *Amphisbaena varia*, b) *Alopoglossus festae*, c) *Anolis binotatus*, d) *Anolis festae*, e) *Anolis gracilipes*, f) *Hemidactylus frenatus*, g) *Iguana iguana*, h) *Phyllodactylus reissii*, i) *Polychrus femoralis*, j) *Gonatodes caudiscutatus*. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

Figure 5. Reptile species recorded in the Bosque Protector Cerro Blanco (BPCB) (Part 1). a) *Amphisbaena varia*, b) *Alopoglossus festae*, c) *Anolis binotatus*, d) *Anolis festae*, e) *Anolis gracilipes*, f) *Hemidactylus frenatus*, g) *Iguana iguana*, h) *Phyllodactylus reissii*, i) *Polychrus femoralis*, j) *Gonatodes caudiscutatus*. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

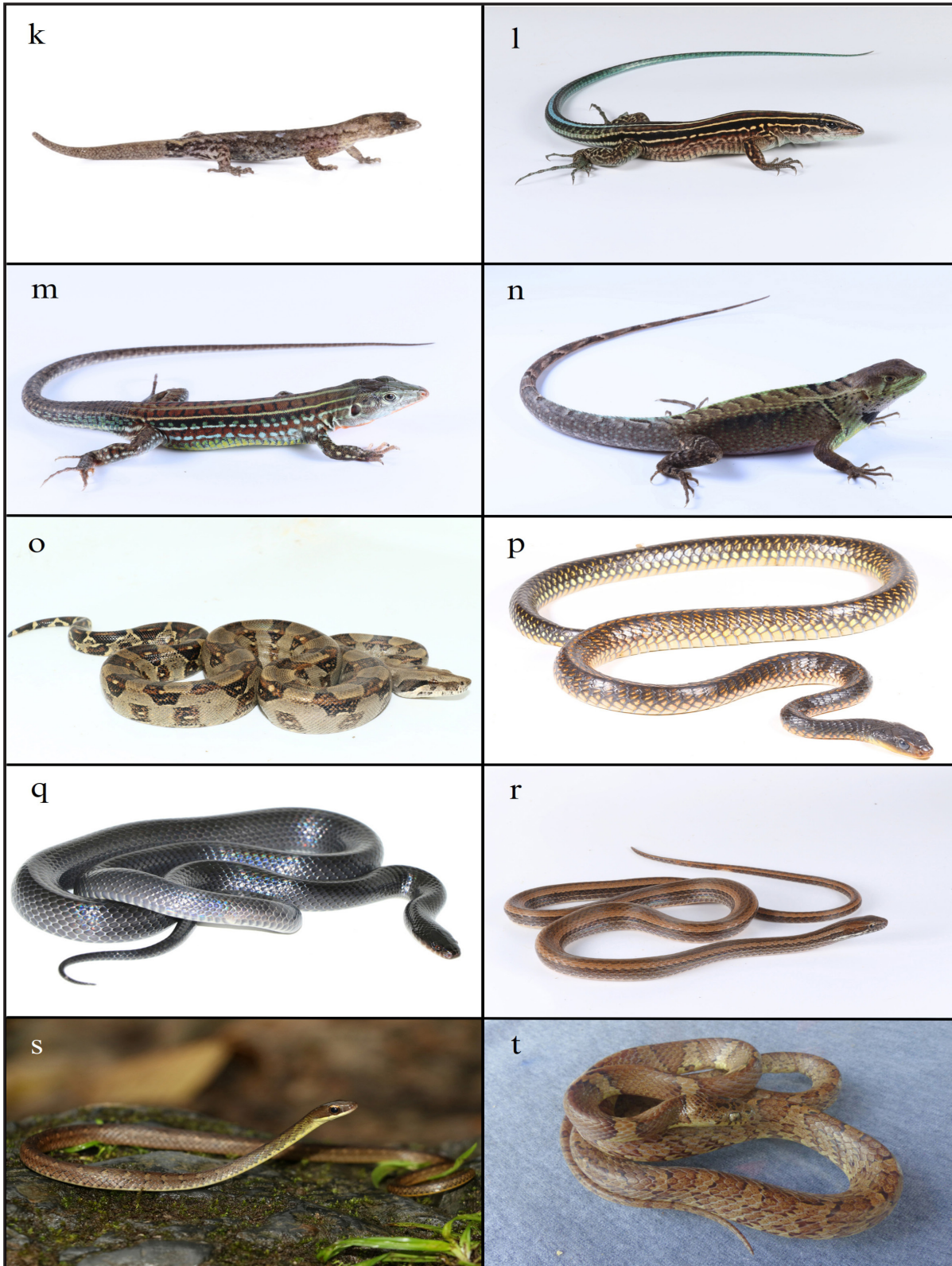


Figura 6. Especies de reptiles registrados en el Bosque Protector Cerro Blanco (BPCB)(Parte 2). k) *Lepidoblepharis buchwaldi*, l) *Holcosus septemlineatus*, m) *Medopheos edracanthus*, n) *Stenocercus iridescens*, o) *Boa imperator*, p) *Chironius flavopictus*, q) *Clelia clelia*, r) *Coniophanes dromiciformis*, s) *Dendrophidion brunneum*, t) *Dipsas georgejetti*. Fotos: Keyko Cruz-Garcia and Natalia Zapata-Salvatierra.

Figure 6. Reptile species recorded in the Bosque Protector Cerro Blanco (BPCB)(Part 2). k) *Lepidoblepharis buchwaldi*, l) *Holcosus septemlineatus*, m) *Medopheos edracanthus*, n) *Stenocercus iridescens*, o) *Boa imperator*, p) *Chironius flavopictus*, q) *Clelia clelia*, r) *Coniophanes dromiciformis*, s) *Dendrophidion brunneum*, t) *Dipsas georgejetti*. Photos: Keyko Cruz-Garcia and Natalia Zapata-Salvatierra.

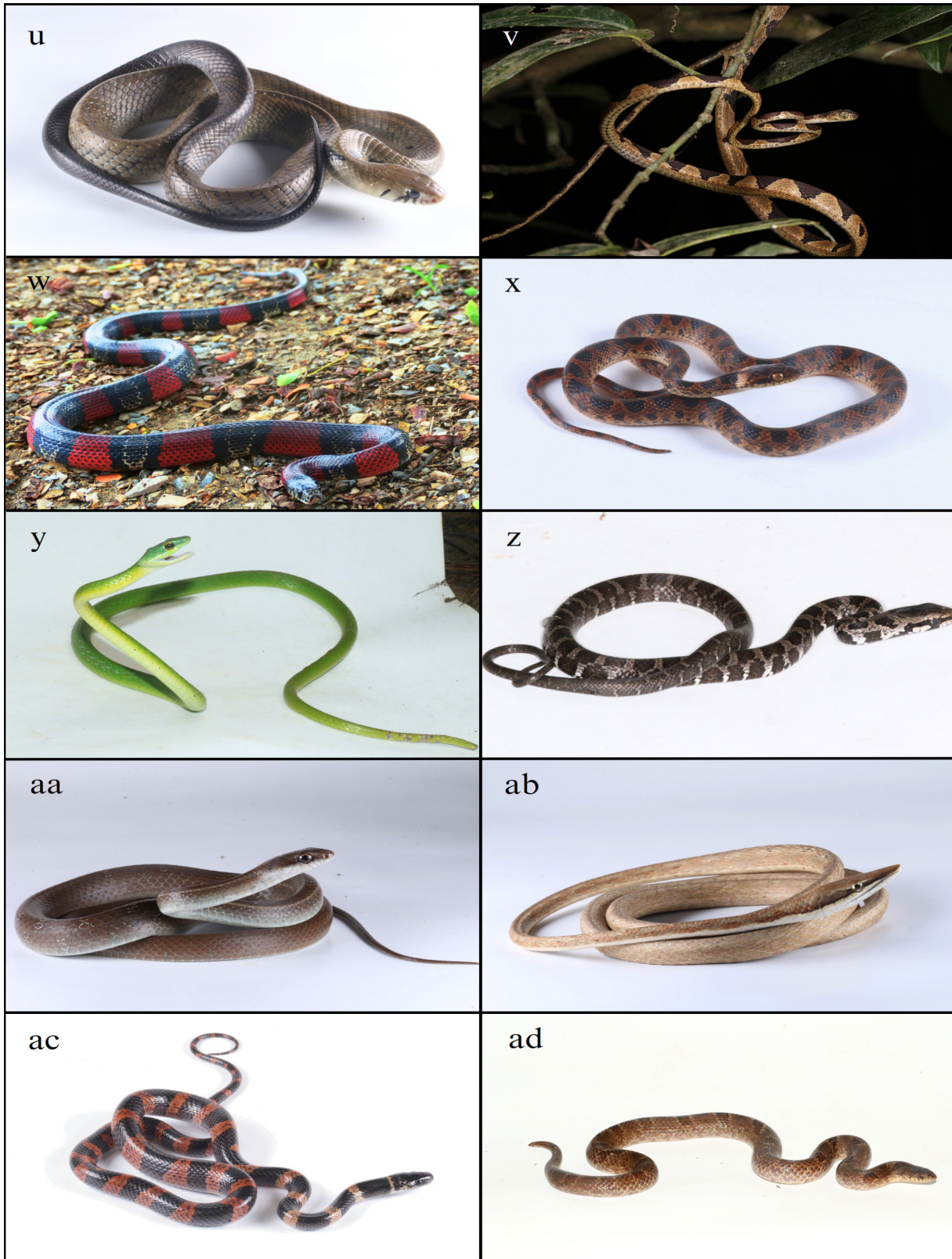


Figura 7. Especies de reptiles registrados en el Bosque Protector Cerro Blanco (BPCB) (Parte 3). u) *Drymarchon melanurus*, v) *Imantodes cenchoa*, w) *Lampropeltis micropholis*, x) *Leptodeira ornata*, y) *Leptophis occidentalis*, z) *Mastigodryas pulchriceps*, aa) *Mastigodryas reticulatus*, ab) *Oxybelis transandinus*, ac) *Oxyrhopus petalarius*, ad) *Stenorrhina degenhardtii*. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

Figure 7. Reptile species recorded in the Bosque Protector Cerro Blanco (BPCB) (Part 3). u) *Drymarchon melanurus*, v) *Imantodes cenchoa*, w) *Lampropeltis micropholis*, x) *Leptodeira ornata*, y) *Leptophis occidentalis*, z) *Mastigodryas pulchriceps*, aa) *Mastigodryas reticulatus*, ab) *Oxybelis transandinus*, ac) *Oxyrhopus petalarius*, ad) *Stenorrhina degenhardtii*. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

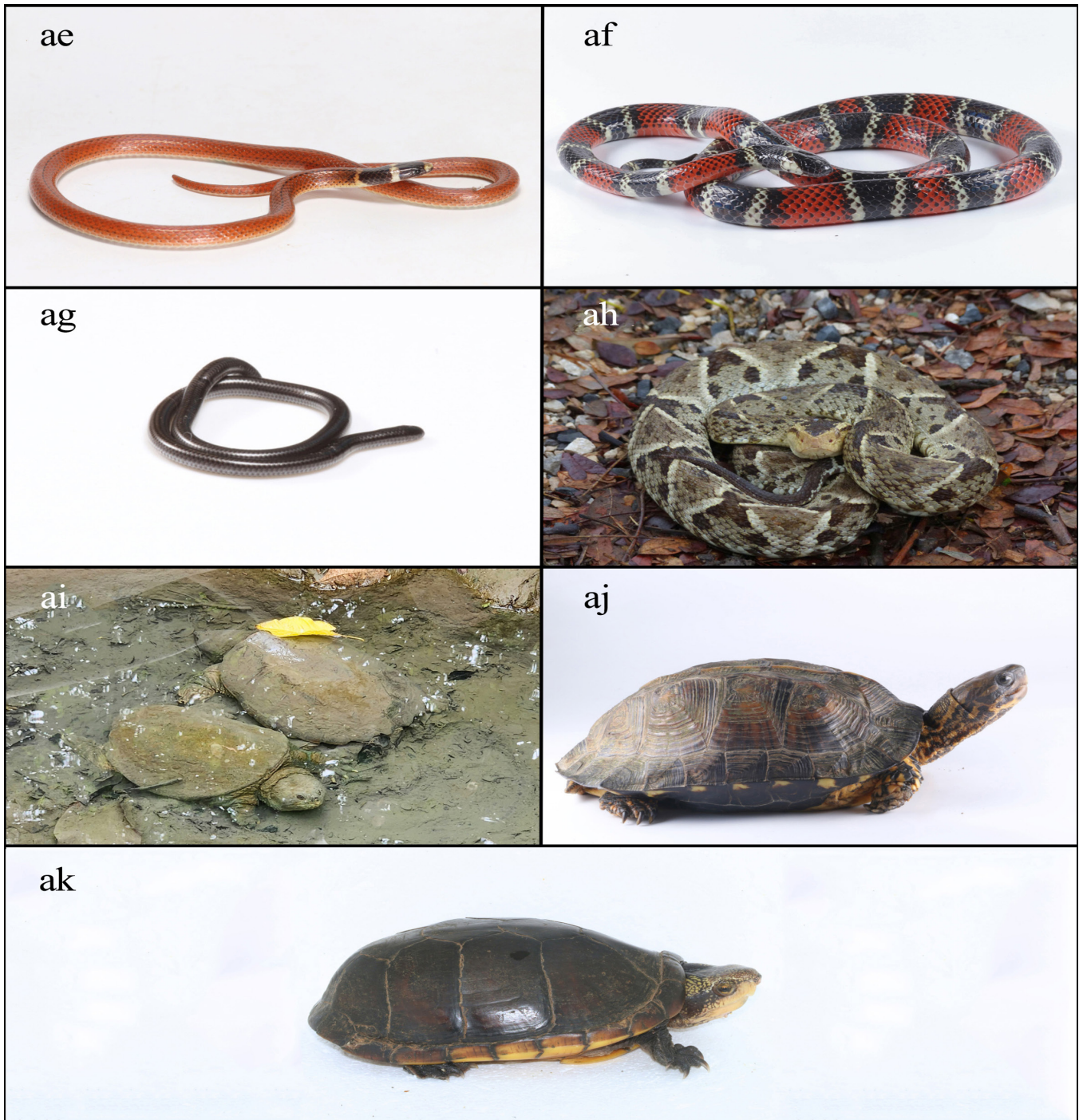


Figura 8. Especies de reptiles registrados en el Bosque Protector Cerro Blanco (BPCB) (Parte 4). ae) *Tanilla capistrata*, af) *Micrurus bocourti*, ag) *Epictia subcrotilla*, ah) *Bothrops asper*, ai) *Chelydra acutirostris*, aj) *Rhinoclemmys annulata*, ak) *Kinosternon leucostomum*. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

Figure 8. Reptile species recorded in the Bosque Protector Cerro Blanco (BPCB) (Part 4). ae) *Tanilla capistrata*, af) *Micrurus bocourti*, ag) *Epictia subcrotilla*, ah) *Bothrops asper*, ai) *Chelydra acutirostris*, aj) *Rhinoclemmys annulata*, ak) *Kinosternon leucostomum*. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra.

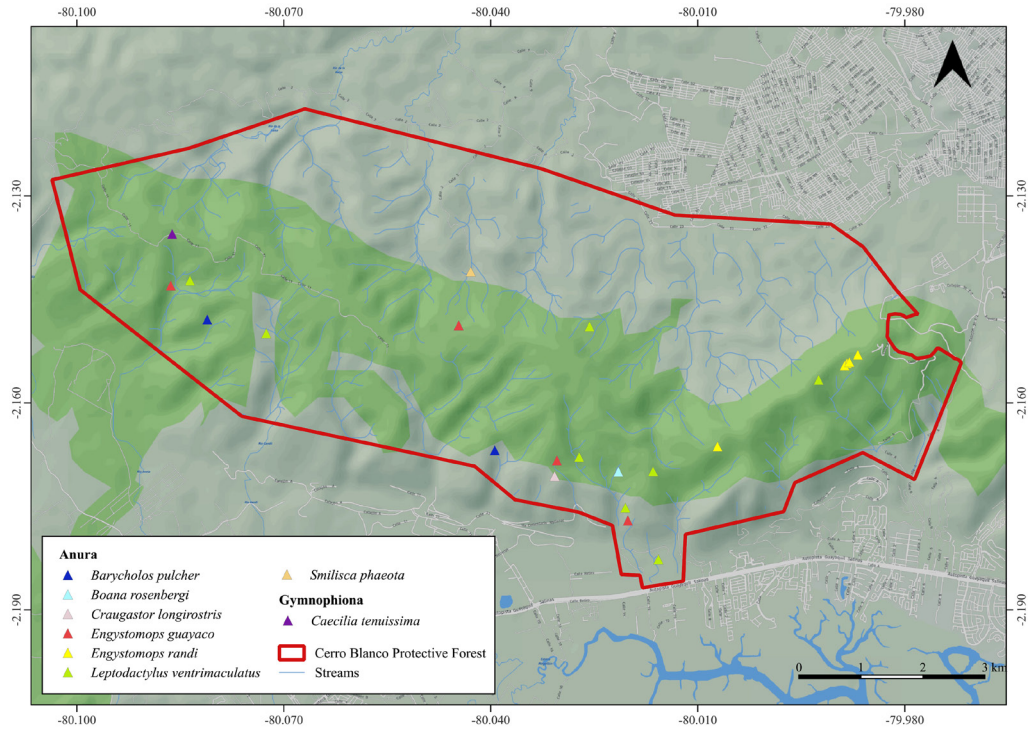


Figura 9. Mapa de distribución de anfibios que se registraron en menos de 10 ocasiones a lo largo del estudio en el Bosque Protector Cerro Blanco (BPCB).
Figure 9. Distribution map of amphibians that were recorded on less than 10 occasions throughout the study in the Bosque Protector Cerro Blanco (BPCB).

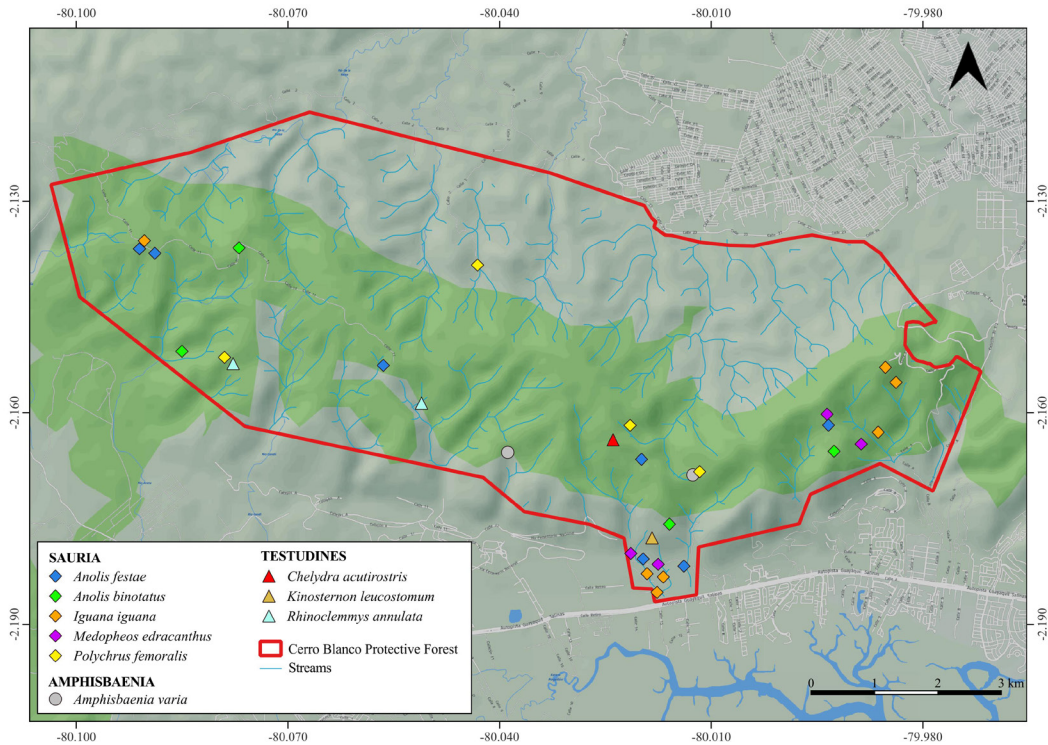


Figura 10. Mapa de distribución de amphisbenios, lagartijas y tortugas que se registraron en menos de 10 ocasiones a lo largo del estudio en el Bosque Protector Cerro Blanco (BPCB).
Figure 10. Distribution map of amphisbaenians, lizards and turtles that were recorded on less than 10 occasions throughout the study in the Bosque Protector Cerro Blanco (BPCB).

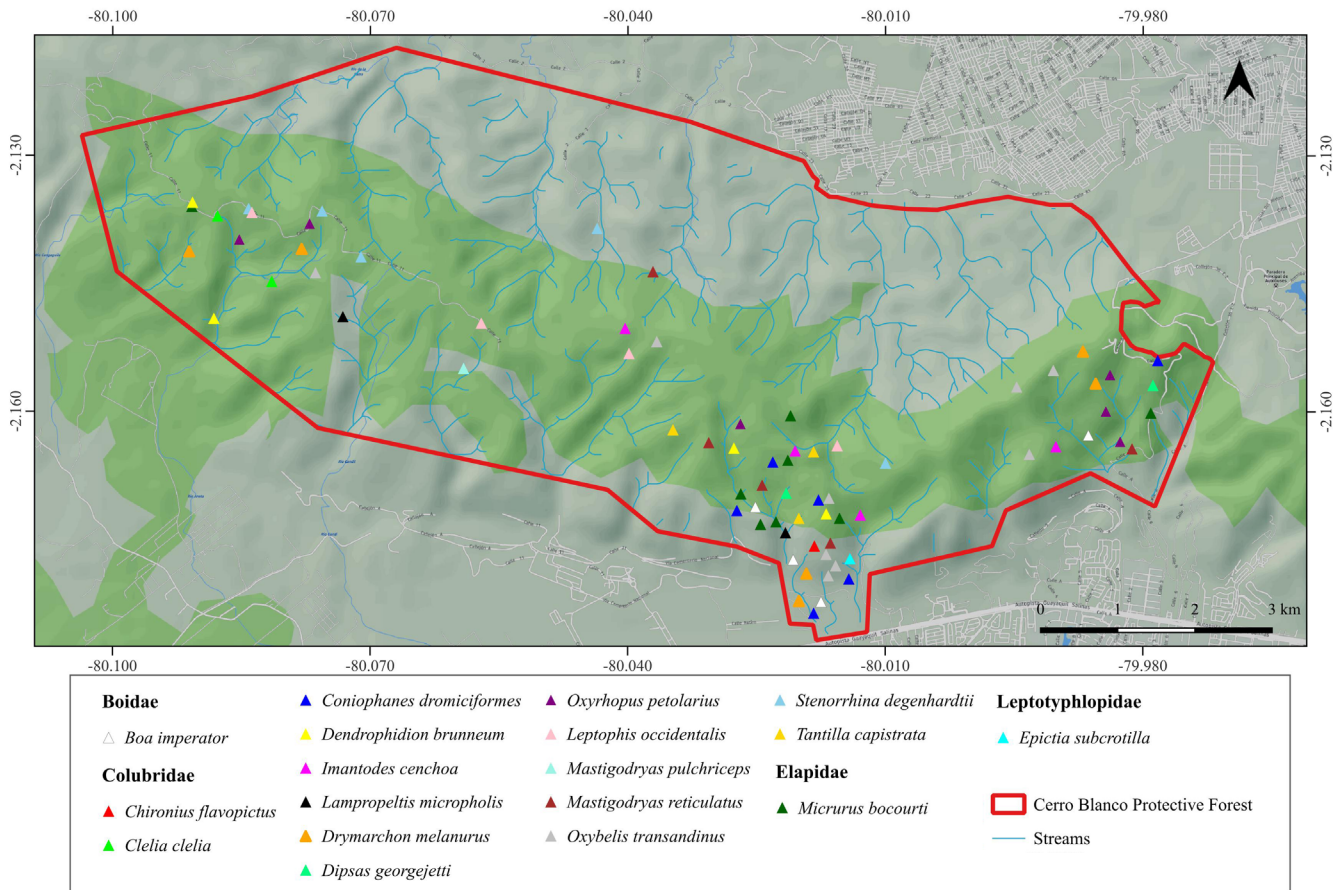


Figura 11. Mapa de distribución de serpientes que se registraron en menos de 10 ocasiones a lo largo del estudio en el Bosque Protector Cerro Blanco (BPCB).

Figure 11. Distribution map of snakes that were recorded on less than 10 occasions throughout the study in the Bosque Protector Cerro Blanco (BPCB).

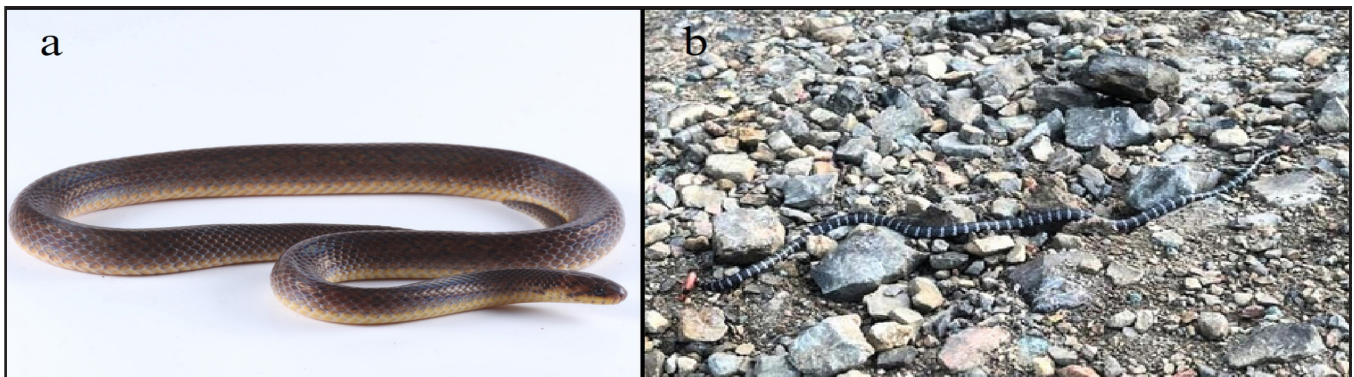


Figura 12. Especies relevantes con registros no completamente verificados en el Bosque Protector Cerro Blanco: a) *Atractus* aff. *microrhynchus*, confirmada en el BPCB, pero con identificación taxonómica aún no totalmente corroborada; y b) *Micrurus mipartitus*, registrada fotográficamente en áreas adyacentes al BPCB, aunque no dentro de sus límites. Fotos: Keyko Cruz-García and Natalia Zapata-Salvatierra (a), and Melba Morán Soto (b).

Figure 12. Notable species with records not fully verified in the Bosque Protector Cerro Blanco: a) *Atractus* aff. *microrhynchus*, confirmed in BPCB but with taxonomic identification not yet fully corroborated; and b) *Micrurus mipartitus*, photographed in areas adjacent to BPCB but not within its boundaries. Photos: Keyko Cruz-García and Natalia Zapata-Salvatierra (a), and Melba Morán Soto (b).

individual was found in a seasonal stream. It is categorized as Not Evaluated (NE) in the IUCN (2024), but it is listed as Endangered (EN) in the Red List of Reptiles of Ecuador (Carrillo et al., 2005).

DISCUSSION

Despite the lack of an updated record of species in the area, previous studies, such as Salvatierra et al. (2010), report only 22 species in the BPCB, including seven amphibians and 15 reptiles. In contrast, our multitemporal study has identified 57 species, including 20 amphibians and 37 reptiles, which represents a significant increase in records for the area.

Some previous studies, such as those by Parker & Carr (1992), Salvatierra et al. (2010), and Amador & Martínez (2011), focused mainly on areas such as the Canoa stream and its surroundings, located in the Tourist Zone of the BPCB, which is strongly influenced by ecotourism. This limitation in the sampling area may have affected the number of species recorded in these studies. Unlike these studies, our sampling aimed to cover extensively the entire area of the BPCB, from the tourist areas to the most pristine ones. Although we faced various climatic, logistical and even security obstacles, we managed to cover a large part of the BPCB, including areas where herpetological sampling had not been carried out before, such as the Caseta Jaguar, Caseta Pigio and Zone 507 (Fig. 2).

Fieldwork was conducted over ten years, covering both the rainy and dry seasons. This is important as seasonal changes affect temperature, availability of water, food and shelter, influencing the predominance of certain species at different times of the year (Martin & Freeland, 1988). In this context, 15 species were recorded that were only observed in a specific season, of which seven were amphibians and eight were reptiles. All amphibians found in a single season were observed during the rainy season, while of the reptiles, six were found only in the rainy season and two in the dry season (Tables 1, 2).

Twenty amphibian species were found at the BPCB, of which 19 are anurans (Figs. 3, 4). This diversity highlights the presence of varied habitats hosting species with different ecological needs, including terrestrial, arboreal, aquatic and seasonal habits. In addition, 14 lizard species and one amphisbaenian were found (Figs. 5, 6), reflecting the complexity of the BPCB ecosystem. The study also identified 20 snake species, outnumbering the number of amphibian species (Figs. 6, 7, 8). The high snake diversity is due to the varied structure of the forest, which creates diverse habitats.

Our study revealed an interesting finding: the presence of a notable abundance of herpetofauna in areas with intense ecotourism activity. This phenomenon coincides with the statement of Posse-Sarmiento & Banks-Leite (2024), who point out that forest edges can have a positive impact on temperature, which, in turn, is positively related to diversity of amphibian species. Just like *P. achatinus*, this species is frequently found in transition zones between forests and disturbed areas, it has been documented that it shows high resilience to human disturbances (Urbina-Cardona & Londoño, 2003, Isaacs & Urbina-Cardona, 2011). Therefore, this observation of high abundance could be explained by changes in habitat that have generated new favorable conditions for certain species, as well as the availability of resources that attract a wide variety of amphibians and reptiles. Similarly, at the top of the BPCB there is a transition from secondary forest to primary forest, which, although considered scarce, has been documented in previous studies (Horstman et al., 2017), and where a high abundance of species has also been recorded. This phenomenon is also attributed to the edge effect, where the overlap of ecosystems, known as ecotone, promotes significant diversity and species abundance (Ting & Shaolin, 2008). However, no specific species were found to be present only in the primary forest areas, probably because these primary forest areas are limited compared to the extent of secondary forests in the area.

Although our observation records span almost a decade, some extremely rare species, such as *A. varia*, *C. tenuissima* and *E. subcrotilla*, were sighted only once or twice. The rare occurrences of these species are largely due to their fossorial habits, which make them inconspicuous and present aspects of their biology that are still unknown (Adalsteinsson et al., 2009; Lowie et al., 2022). At BPCB, a specimen of *C. tenuissima* was collected on a single occasion, suggesting that the species still inhabits the locality, as no other collections have been made in Guayaquil or its surroundings since its discovery in 1973 (Taylor, 1973). However, it is important to highlight the work of Fernández-Roldán & Lynch (2023), in which they expose several problems with the original description of *C. tenuissima*; the holotype (USNM 12353), claimed to be from Guayaquil, was likely transported to the United States from this seaport in the 20th century. The absence of a collection date and field data raises doubts about its origin. The description indicates that the specimen's head was damaged and dissected (Taylor, 1973), leading Taylor to “estimate” the head measurements. The specimen is now in poor condition, with a dried body, two mid-body incisions, and a missing head (Fernández-Roldán & Lynch, 2023). So, this rediscovery of the species in a location where it had not been observed for over 50 years confirms its continued presence in the area.

Tabla 1. Lista de anfibios registrados en el Bosque Protector Cerro Blanco. * = Endémico de Ecuador. Meses: Jan = Enero, Feb = Febrero, Mar = Marzo, Apr = Abril, May = Mayo, Jun = Junio, Jul = Julio, Aug = Agosto, Sep = Septiembre, Oct = Octubre, Nov = Noviembre, Dec = Diciembre. Especies por aparición estacional: R. S. = Temporada lluviosa, D. S. = Temporada seca. Lista Roja de Especies Amenazadas de la Unión Internacional para la Conservación de la Naturaleza (IUCN) y Lista Roja de Anfibios del Ecuador (RLAE); NE = No Evaluada, DD = Datos insuficientes, LC = Preocupación Menor, VU = Vulnerable, EN = En Peligro.

Table 1. List of amphibians registered in the Cerro Blanco Protective Forest. * = Endemic to Ecuador. Months: Jan = January, Feb = February, Mar = March, Apr = April, May = May, Jun = June, Jul = July, Aug = August, Sep = September, Oct = October, Nov = November, Dec = December. Species by seasonal appearance: R. S. = Rainy Season, D. S. = Dry season. The International Union for Conservation of Nature's Red List of Threatened Species (IUCN) and Red List of Amphibians of Ecuador (RLAE); NE = Not Evaluated, DD = Data Deficient, LC = Least Concern, VU = Vulnerable, EN = Endangered.

Taxa	Months												Seasonal Occurrence		Conservation status	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	R. S.	D. S.	IUCN	RLAE
Order Anura																
Family Bufonidae																
<i>Rhinella bella</i>	X	X	X	X		X	X	X	X	X	X	X			NE	LC
Family Ceratophryidae																
<i>Ceratophrys stolzmanni</i>	X	X	X									X	X		VU	VU
Family Craugastoridae																
<i>Craugastor longirostris</i>												X	X		LC	LC
Family Dendrobatidae																
<i>Epipedobates machalilla*</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
<i>Hyloxalus infraguttatus</i>	X	X	X	X	X	X	X	X	X	X	X	X			VU	VU
Family Hylidae																
<i>Boana rosenbergi</i>		X											X		LC	LC
<i>Scinax quinquefasciatus</i>	X	X	X	X	X	X	X		X	X	X	X			LC	LC
<i>Scinax tsachila</i>			X	X	X	X									LC	LC
<i>Smilisca phaeota</i>				X											LC	LC
<i>Trachycephalus jordani</i>	X	X	X		X		X	X	X		X	X			LC	LC
<i>Trachycephalus quadrangulum*</i>	X	X	X	X		X	X		X	X		X			LC	LC
Family Leptodactylidae																
<i>Engystomops guayaco*</i>	X	X	X									X	X		VU	VU
<i>Engystomops pustulatus</i>	X	X	X	X								X	X		LC	LC
<i>Engystomops randi</i>	X	X	X	X								X	X		LC	LC
<i>Leptodactylus labrosus</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
<i>Leptodactylus melanonotus</i>	X	X	X	X	X						X	X			LC	LC
<i>Leptodactylus ventrimaculatus</i>	X	X			X			X	X						LC	LC
Family Strabomantidae																
<i>Barycholos pulcher*</i>			X				X								LC	LC
<i>Pristimantis achatinus</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
Order Gymnophiona																
Family Caeciliidae																
<i>Caecilia tenuissima*</i>				X									X		DD	EN



Tabla 2. Lista de reptiles registrados en el Bosque Protector Cerro Blanco. * = Endémico de Ecuador. Meses: Jan = Enero, Feb = Febrero, Mar = Marzo, Apr = Abril, May = Mayo, Jun = Junio, Jul = Julio, Aug = Agosto, Sep = Septiembre, Oct = Octubre, Nov = Noviembre, Dec = Diciembre. Especies por aparición estacional: R. S. = Temporada lluviosa, D. S. = Temporada seca. Lista Roja de Especies Amenazadas de la Unión Internacional para la Conservación de la Naturaleza (IUCN) y Lista Roja de Anfibios del Ecuador (RLRE): NE = No Evaluada, DD = Datos insuficientes, LC = Preocupación Menor, NT = Casi Amenazado, VU = Vulnerable, EN = En Peligro.

Table 2. List of amphibians registered in the Cerro Blanco Protective Forest. * = Endemic to Ecuador. Months: Jan = January, Feb = February, Mar = March, Apr = April, May = May, Jun = June, Jul = July, Aug = August, Sep = September, Oct = October, Nov = November, Dec = December. Species by seasonal appearance: R. S. = Rainy Season, D. S. = Dry season. The International Union for Conservation of Nature's Red List of Threatened Species (IUCN) and Red List of Amphibians of Ecuador (RLAE): NE = Not Evaluated, DD = Data Deficient, LC = Least Concern, VU = Vulnerable, EN = Endangered.

Taxa	Months												Seasonal Occurrence		Conservation status	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	R. S.	D. S.	IUCN	RLAE
Order Squamata: Amphisbaenia																
Family Amphisbaenidae																
<i>Amphisbaena varia</i>		X				X									NE	NT
Order Squamata: Sauria																
Family Alopoglossidae																
<i>Alopoglossus festae</i>	X	X	X					X	X			X			LC	VU
Family Anolidae																
<i>Anolis binotatus</i>			X			X				X					LC	DD
<i>Anolis festae</i>		X		X	X	X				X	X				NT	NT
<i>Anolis gracilipes</i>	X	X		X		X	X		X		X	X			LC	LC
Family Gekkonidae																
<i>Hemidactylus frenatus</i>	X	X		X	X	X	X	X	X	X	X	X			LC	LE
Family Iguanidae																
<i>Iguana iguana</i>	X	X	X	X	X	X			X	X	X	X			LC	LC
Family Phyllodactylidae																
<i>Phyllodactylus reissii</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
Family Polychrotidae																
<i>Polychrus femoralis</i>	X	X								X		X			LC	NT
Family Spheerodactylidae																
<i>Gonatodes caudiscutatus</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
<i>Lepidoblepharis buchwaldi*</i>	X		X	X	X			X		X	X	X			LC	NT
Family Teiidae																
<i>Holcosus septemlineatus</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC



Tabla 2 (cont.). Lista de reptiles registrados en el Bosque Protector Cerro Blanco. * = Endémico de Ecuador. Meses: Jan = Enero, Feb = Febrero, Mar = Marzo, Apr = Abril, May = Mayo, Jun = Junio, Jul = Julio, Aug = Agosto, Sep = Septiembre, Oct = Octubre, Nov = Noviembre, Dec = Diciembre. Especies por aparición estacional: R. S. = Temporada lluviosa, D. S. = Temporada seca. Lista Roja de Especies Amenazadas de la Unión Internacional para la Conservación de la Naturaleza (IUCN) y Lista Roja de Anfibios del Ecuador (RLRE): NE = No Evaluada, DD = Datos insuficientes, LC = Preocupación Menor, NT = Casi Amenazado, VU = Vulnerable, EN = En Peligro.

Table 2 (cont.). List of amphibians registered in the Cerro Blanco Protective Forest. * = Endemic to Ecuador. Months: Jan = January, Feb = February, Mar = March, Apr = April, May = May, Jun = June, Jul = July, Aug = August, Sep = September, Oct = October, Nov = November, Dec = December. Species by seasonal appearance: R. S. = Rainy Season, D. S. = Dry season. The International Union for Conservation of Nature's Red List of Threatened Species (IUCN) and Red List of Amphibians of Ecuador (RLAE): NE = Not Evaluated, DD = Data Deficient, LC = Least Concern, VU = Vulnerable, EN = Endangered.

Taxa	Months												Seasonal Occurrence		Conservation status	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	R. S.	D. S.	IUCN	RLAE
<i>Medopheos edracanthus</i>				X	X					X					LC	LC
Family Tropiduridae																
<i>Stenocercus iridescens</i>	X	X	X	X	X	X	X	X	X	X	X	X			LC	LC
Order Squamata: Serpentes																
Family Boidae																
<i>Boa imperator</i>		X		X	X						X				LC	VU
Family Colubridae																
<i>Chironius flavopictus</i>							X							X	DD	VU
<i>Clelia clelia</i>				X								X	X		LC	LC
<i>Coniophanes dromiciformis</i>	X	X	X	X	X			X		X	X	X			VU	NT
<i>Dendrophidion brunneum</i>	X		X									X		X	LC	NT
<i>Dipsas georgejetti*</i>		X			X										NE	NE
<i>Drymarchon melanurus</i>		X		X	X					X	X				LC	NT
<i>Imantodes cenchoa</i>	X				X			X		X	X	X			LC	LC
<i>Lampropeltis micropholis</i>			X										X		LC	EN
<i>Leptodeira ornata</i>	X	X	X	X	X		X		X	X	X	X			LC	LC
<i>Leptophis occidentalis</i>	X	X		X				X							NE	NE
<i>Mastigodryas pulchriceps</i>	X												X		LC	NT
<i>Mastigodryas reticulatus*</i>				X	X							X			NT	NT
<i>Oxybelis transandinus*</i>	X	X		X			X			X	X	X			NE	NE
<i>Oxyrhopus petolarius</i>		X		X	X							X			LC	LC
<i>Stenorrhina degenhardtii</i>				X	X										LC	NT
<i>Tantilla capistrata</i>	X		X					X				X			LC	DD

Tabla 2 (cont.). Lista de reptiles registrados en el Bosque Protector Cerro Blanco. * = Endémico de Ecuador. Meses: Jan = Enero, Feb = Febrero, Mar = Marzo, Apr = Abril, May = Mayo, Jun = Junio, Jul = Julio, Aug = Agosto, Sep = Septiembre, Oct = Octubre, Nov = Noviembre, Dec = Diciembre. Especies por aparición estacional: R. S. = Temporada lluviosa, D. S. = Temporada seca. Lista Roja de Especies Amenazadas de la Unión Internacional para la Conservación de la Naturaleza (IUCN) y Lista Roja de Anfibios del Ecuador (RLRE): NE = No Evaluada, DD = Datos insuficientes, LC = Preocupación Menor, NT = Casi Amenazado, VU = Vulnerable, EN = En Peligro.

Table 2 (cont.). List of amphibians registered in the Cerro Blanco Protective Forest. * = Endemic to Ecuador. Months: Jan = January, Feb = February, Mar = March, Apr = April, May = May, Jun = June, Jul = July, Aug = August, Sep = September, Oct = October, Nov = November, Dec = December. Species by seasonal appearance: R. S. = Rainy Season, D. S. = Dry season. The International Union for Conservation of Nature's Red List of Threatened Species (IUCN) and Red List of Amphibians of Ecuador (RLAE): NE = Not Evaluated, DD = Data Deficient, LC = Least Concern, VU = Vulnerable, EN = Endangered.

Taxa	Months												Seasonal Occurrence		Conservation status	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	R. S.	D. S.	IUCN	RLAE
Family Elapidae																
<i>Micrurus bocourti</i>	X	X		X	X					X	X	X			LC	VU
Family Leptotyphlopidae																
<i>Epictia subcrotilla</i>									X				X		LC	DD
Family Viperidae																
<i>Bothrops asper</i>	X	X	X	X	X		X	X		X	X	X			LC	LC
Order Testudines																
Family Chelydridae																
<i>Chelydra acutirostris</i>			X										X		NE	VU
Family Geoemydidae																
<i>Rhinoclemmys annulata</i>		X			X										NT	EN
Family Kinosternidae																
<i>Kinosternon leucostomum</i>				X									X		NE	EN

On the other hand, species such as *C. stolzmanni* also had few observations, which is due to their dependence on water availability (Cuadrado et al., 2020). This species is strictly seasonal and only appears during the peak of the rainy season to reproduce (Amador & Brito, 2013). Despite the duration of our ten-year sampling, the detection of *C. stolzmanni* was limited due to its low abundance in the Cerro Blanco study area and rainfall conditions that were not always optimal for its activity.

In comparison, species such as *E. guayaco*, *E. pustulatus* and *E. randi* also require water for their survival (Cuadrado et al., 2020), but they are not as demanding as *C. stolzmanni*. These species do not need intense rainfall to reproduce and can appear as soon as seasonal pools form. The limited visibility of these species may reflect a combination of factors, including variations in

water availability over the years, as well as their adaptation to less extreme conditions, which facilitates their appearance in periods of more modest rainfall. The scarcity of records of *C. stolzmanni* during the study period highlights its rarity in the area and the influence of climatic conditions on its detectability.

Two important species should be mentioned that were not included in the results because they were not fully verified records in the BPCB. During our sampling at the BPCB, a specimen of *Atractus* aff. *microrhynchus* was found (Fig. 12a). We decided not to include this species in the results due to the considerable uncertainty surrounding its identification, unlike other species in this study that were identified but not collected. In the methodology, it is explained that species that could not be determined at the species level were not considered in the

final analysis. However, the fact that *Atractus* aff. *microrhynchus* was recorded in this area is significant, as this species has not been observed in the Guayaquil locality since 1868 (Cope, 1868). Therefore, although its identification is not yet confirmed, its presence is relevant and could be indicative of changes in the species' distribution or new populations. This finding underlines the need for further research to confirm the identity of the specimen and assess its status in the region. Additionally, recent photographic evidence suggests the presence of *Micrurus mipartitus*, with a photograph taken by Melba Morán Soto in the Cerro Azul Forest on May 4, 2024 (Fig. 12b). Although its presence in the BPCB has not yet been confirmed, the similarity of the ecosystems of both forests suggests a high probability that *M. mipartitus* is also present in the study area. Although further confirmation is necessary to verify its identification, the external characteristics of the snake make its recognition relatively simple, which reinforces the probability that it is indeed *M. mipartitus*.

This updated compendium identifies nine endemic species (Table 1), such as *C. tenuissima*, *L. buchwaldi*, and *B. pulcher*, as well as several threatened species according to the IUCN (2024), including *C. stolzmanni* and *H. infraguttatus*, classified as Vulnerable (VU), and *A. festae*, listed as Near Threatened (NT). These species are found throughout the BPCB, despite the forest's exposure to pressures from deforestation, illegal mining, and other anthropogenic activities. This highlights the critical need for a thorough assessment of their conservation status, given the severe alterations to their original habitats. The environmental challenges faced by these species underscore the urgency of implementing conservation measures and maintaining ongoing monitoring efforts to safeguard their specific habitats within the BPCB.

One significant finding of this investigation is the strong abundance of *H. infraguttatus*, across various water bodies within the BPCB such as the Canoa, Cóndor and Guitarra streams, which maintain water even during dry periods, forming puddles. The three species of turtles documented in this study were found in these same aquatic ecosystems: *Rhinoclemmys annulata*, *Chelydra acutirostris* and *Kinosternon leucostomum* (Fig. 8). These turtles were located in some streams of the BPCB. This discovery underlines the importance of these aquatic ecosystems in safeguarding endemic and vulnerable species, as they act as crucial refuges.

The tropical dry forest of the BPCB, although facing various pressures such as hunting, deforestation and limestone mining, remains an ecosystem of crucial importance, particularly as it is the largest remnant of this type of forest in Guayaquil. The

presence of species listed as threatened by the IUCN (2024), such as *C. stolzmanni*, *C. dromiciformis*, *H. infraguttatus* and *E. guayaco*, raises questions about the effectiveness of current conservation measures and underlines the need to strengthen the protection of these habitats. Furthermore, the detection of extremely rare endemic species, such as *C. tenuissima*, suggests that the BPCB is home to a unique biodiversity that is at risk, inviting deeper reflection on the management and conservation strategies implemented in the region. This context highlights the importance of protected areas not only as refuges for biodiversity, but also as vital spaces for the continuous monitoring of species, some of which have been rediscovered after long periods without records. Therefore, it is essential to continue and strengthen conservation initiatives to ensure the persistence of these species and the ecological integrity of the BPCB.

CONCLUSIONS

The present research has provided a significant advance in the knowledge of the herpetofauna of the Bosque Protector Cerro Blanco (BPCB), revealing a notable increase in the number of documented species, going from 22 to 57 species, composed of 20 amphibians and 37 reptiles. This increase is attributed to an extensive and multi-temporal sampling effort that covered both anthropogenically affected areas and more pristine areas of the BPCB, carried out over a decade and in different seasons of the year. Among the findings, two additional species could potentially be included, raising the total to 59. One of these, *Atractus microrhynchus*, is confirmed in CB but with its taxonomic identification not yet fully verified. The other, *Micrurus mipartitus*, was photographed in areas adjacent to BPCB, and while not confirmed within its limits, its proximity suggests it could be present.

One of the most interesting findings is the high abundance of herpetofauna in areas with intense ecotourism activity, a phenomenon that could be explained by the edge effect that generates favorable conditions for various species. This observation highlights the importance of transition zones between forests and disturbed areas, which can promote species diversity and abundance. Despite the extensive period of study, some extremely rare species were observed only once or twice, which is due to their fossorial habits and poorly understood biology.

However, the presence of threatened species according to the IUCN Red List (IUCN, 2024), such as *C. tenuissima*, *C. stolzmanni* and *H. infraguttatus*, as well as records of endemic species

underline the urgency of protecting the BPCB against threats such as hunting, deforestation and mining. In conclusion, the BPCB is a crucial ecosystem that hosts a rich and diverse herpetofauna, including rare and threatened species. The preservation of this tropical dry forest is crucial to preserve the biodiversity and ecological balance of the region, being one of the most threatened ecosystems in Ecuador. The research highlights the importance of protected areas as biodiversity refuges and the need to maintain continuous monitoring efforts to safeguard these valuable species.

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APPENDIX

Apéndice 1. Listado de especímenes colectados en el Bosque Protector Cerro Blanco y depositados en el Museo de Zoología, Universidad San Francisco de Quito (ZSFQ), Quito, Ecuador, y el Museo de Zoología de la Universidad Técnica Privada de Loja (MUTPL), Loja, Ecuador.

Appendix 1. List of specimens collected in the Bosque Protector Cerro Blanco and deposited at the Museo de Zoología, Universidad San Francisco de Quito (ZSFQ), Quito, Ecuador, and the Museo de Zoología de la Universidad Técnica Particular de Loja (MUTPL), Loja, Ecuador.

Class Amphibia

Rhinella bella (n= 1): ZSFQ4875 (SVL= 46 mm).

Ceratophrys stolzmanni (n= 1): ZSFQ4925 (SVL= 57 mm).

Epipedobates machalilla (n= 6): ZSFQ4892 (SVL= 16 mm), ZSFQ4893 (SVL= 10.3 mm), ZSFQ4894 (SVL= 13 mm), ZSFQ4895 (SVL= 13 mm), ZSFQ4896 (SVL= 16 mm), ZSFQ4897 (SVL= 15 mm).

Hyloxalus infraguttatus (n= 6): ZSFQ4878 (SVL= 17 mm), ZSFQ4879 (SVL= 19 mm), ZSFQ4880 (SVL= 20 mm), ZSFQ4881 (SVL= 22 mm), ZSFQ4882 (SVL= 21 mm), ZSFQ4883 (SVL= 22 mm).

Scinax quinquefasciatus (n= 3): MUTPL-A-1831 (SVL= 24.6 mm), MUTPL-A-1832 (SVL= 33.25 mm), MUTPL-A-1833 (SVL= 31.7 mm).

Trachycephalus jordani (n= 2): ZSFQ4870 (SVL= 55 mm), ZSFQ4871 (SVL= 39 mm).

Trachycephalus quadrangulum (n= 3): ZSFQ4872 (SVL= 60 mm), ZSFQ4873 (SVL= 70 mm), ZSFQ4874 (SVL= 72 mm).

Engystomops pustulatus (n= 2): ZSFQ4888 (SVL= 28 mm), ZSFQ4889 (SVL= 25 mm).

Engystomops randi (n= 2): ZSFQ4890 (SVL= 25 mm), ZSFQ4891 (SVL= 24 mm).

Leptodactylus labrosus (n= 2): ZSFQ4876 (SVL= 30.1 mm), ZSFQ4877 (SVL= 30.5 mm).

Pristimantis achatinus (n= 4): ZSFQ4884 (SVL= 35 mm), ZSFQ4885 (SVL= 37 mm), ZSFQ4886 (SVL= 40 mm), ZSFQ4887 (SVL= 33 mm).

Caecilia tenuissima (n= 1): ZSFQ4898 (SVL= 623 mm).

Class Reptilia

Alopoglossus festae (n= 2): ZSFQ4916 (SVL= 50 mm), MUTPL-R-596 (SVL= 50.10 mm).

Anolis festae (n= 2): ZSFQ4918 (SVL= 47 mm), MUTPL-R-598 (SVL= 51.96 mm).

Anolis gracilipes (n= 1): ZSFQ4917 (SVL= 57 mm).

Hemidactylus frenatus (n= 1): ZSFQ4911 (SVL= 39 mm).

Phyllodactylus reissii (n= 1): ZSFQ4910 (SVL= 67 mm).

Gonatodes caudiscutatus (n= 2): ZSFQ4914 (SVL= 37 mm), ZSFQ4915 (SVL= 34 mm).

Lepidoblepharis buchwaldi (n= 1): ZSFQ4913 (SVL= 18 mm).

Holcosus septemlineatus (n= 1): ZSFQ4923 (SVL= 70.3 mm).

Medopheos edracanthus (n= 1): ZSFQ4924 (SVL= 69 mm).

Stenocercus iridescens (n= 2): ZSFQ4921 (SVL= 71 mm), ZSFQ4922 (SVL= 93 mm).

Coniophanes dromiciformis (n= 3): ZSFQ4904 (SVL= 351 mm), ZSFQ4905 (SVL= 244 mm), MUTPL-R-605 (SVL= 290.5 mm).

Dendrophidion brunneum (n= 1): MUTPL-R-595 (SVL= 250.3 mm).

Imantodes cenchoa (n= 1): MUTPL-R-601 (SVL= 340.3 mm).

Leptodeira ornata (n= 3): ZSFQ4900 (SVL= 578 mm), MUTPL-R-600 (SVL= 480.30 mm), MUTPL-R-606 (SVL= 700.9 mm).

Leptophis occidentalis (n= 1): MUTPL-R-603 (SVL= 360.1 mm).

Mastigodryas reticulatus (n= 2): ZSFQ4901 (SVL= 800 mm), MUTPL-R-472 (SVL= 735 mm).

Oxybelis transandinus (n= 2): ZSFQ4902 (SVL= 677 mm), MUTPL-R-599 (SVL= 850.5 mm).

Oxyrhopus petolarius (n= 2): MUTPL-R-593 (SVL= 290.2 mm), MUTPL-R-602 (SVL= 430.6 mm).

Stenorhina degenhardtii (n= 1): ZSFQ4903 (SVL= 362 mm).

Tantilla capistrata (n= 1): MUTPL-R-597 (SVL= 210.8 mm).

Micrurus bocourti (n= 3): ZSFQ4908 (SVL= 703 mm), ZSFQ4909 (SVL= 769 mm), MUTPL-R-604 (SVL= 550.9 mm).

Bothrops asper (n= 2): ZSFQ4906 (SVL= 256 mm), ZSFQ4907 (SVL= 398 mm).