

Amphibians and reptiles recorded in the Conservation Area Imiría in the Ucayali region in Peru

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Abstract. This study summarizes the faunistic and natural history information for 38 amphibians and 17 species of reptiles recorded in and in the vicinity of the northern part of the Regional Conservation Area Imiría (Region Ucayali, Peru). Considerable extensions in ranges of *Pristimantis delius* Duellman et Mendelson, 1995 (Craugastoridae) and *Osteocephalus yasuni* Ron et Pramuk, 1999 (Hylidae) are documented. Current knowledge of the local herpetofauna is discussed and the importance of the conservation area for the protection of the regional flora and fauna is highlighted.

Key words. Biogeography, species diversity, habitat conservation, Amphibia, Reptilia, Amazonia.

INTRODUCTION

The Regional Conservation Area Imiría (Área de Conservación Regional Imiría) managed by the Regional government of Ucayali, is located on the right bank of the Ucayali River within the watersheds of the rivers Tamaya and Inamapuya (District Masisea, Province Coronel Portillo, Region Ucayali, Peru). This conservation area was founded in June 2010 in order to protect the ecosystem of humid and seasonally flooded lowland forests, local natural resources and the esthetical value of the landscape. It covers an area of 135,737.52 ha (including the large black-water lakes Laguna Imiría and Laguna Chauya). Fundamental data on the history, mission and geography of the Regional Conservation Area Imiría and data on its flora and fauna are summarized in the “Plan Maestro” of the area (GRU 2014). It is expected that anthropogenic pressure on the area will increase in the near future as a consequence of the plan to connect the city of Pucallpa with the Brazilian road network (Schick et al. 2016).

In cooperation with the Regional government of Ucayali in Pucallpa two short-term surveys of the amphibian and reptilian fauna were carried out in the northwestern part of the Regional Conservation Area Imiría and in the vicinity of its northern part (surroundings of the community of Masisea). The primary goals of the surveys were: (i) to contribute to the knowledge of the local species diversity of amphibians and reptiles and (ii) to evaluate the importance of the Regional Conservation Area Imiría for the conservation of the unique biodiversity of lowland rainforests in western Amazonia.

MATERIAL AND METHODS

The field research was done by the first two authors (JM, IAT) in November 2009 and September 2011. In the vicinity of the northern part of the Regional Conservation Area Imiría (RCAI) the amphibian and reptilian faunas were surveyed around the community of Masisea (most frequently in the area of the settlement Nuevo Ceylan located ca. 8 km W of the NW frontier of RCAI, 08° 36' 18.7" S, 74° 18' 23.2" W; Fig. 1) on 20–22 November 2009 and on 24 September 2011. The field studies were carried out within a radius of ca. 1000 m around two collecting points (CP) situated ca. 2 km north and ca. 3 km south of the settlement Nuevo Ceylan (CP1: 08° 35' 25.8" S, 74° 18' 02.7" W; CP2: 08° 38' 06.2" S, 74° 18' 30.5" W; altitude 150–160 m a. s. l.). The landscape surrounding the community of Masisea is a mosaic of open disturbed habitats, pastures, small agricultural fields, secondary growth, inundated grassland, marshes, and small lakes (Figs 2A, B; characterized as an anthropogenic area in the Fig. 1).

In RCAI amphibians and reptiles were collected on 23–24 November 2009 and photographically documented on 25–30 September 2011. The field studies were carried out around five collecting points (radius up to 500 m) located along an

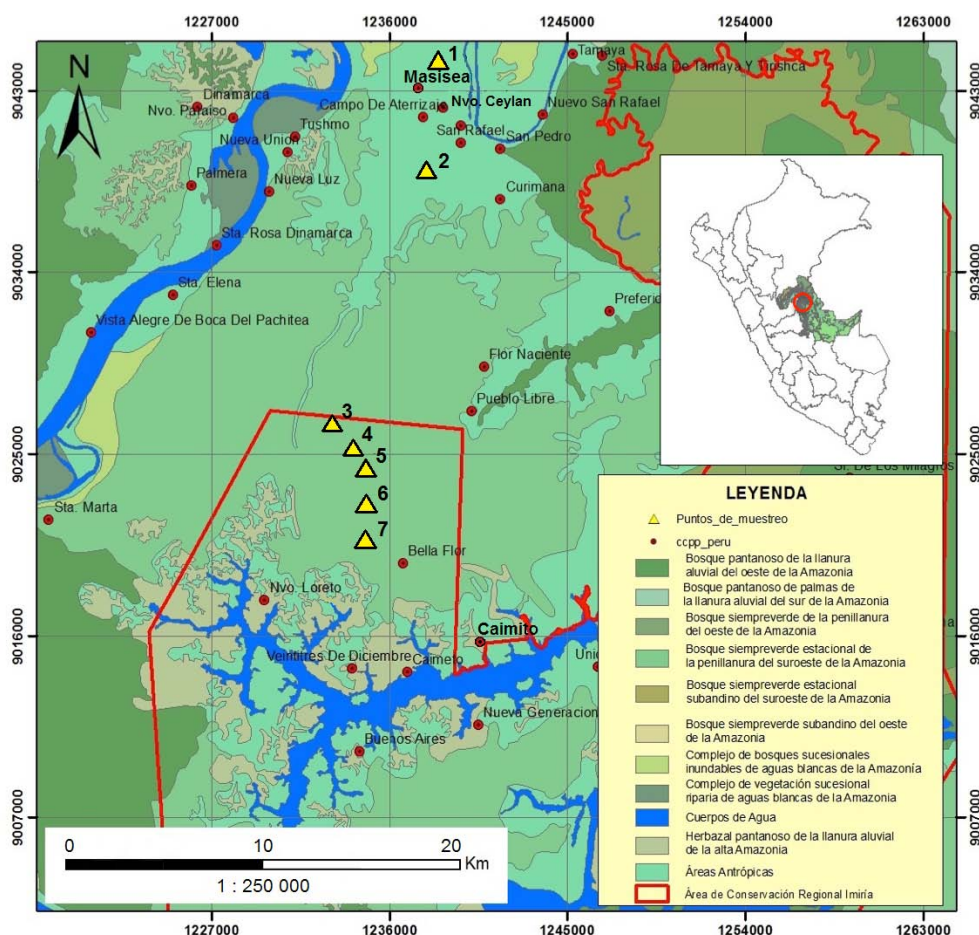


Fig. 1. Schematic map of the northern part of the Regional Conservation Area Imiría (Region Ucayali, Peru) and its vicinity. Delineation of the Conservation Area is outlined by a red line; yellow triangles 1–7 indicate collecting points CP1–CP7. See text for more details.

ca. 6 km long transect (CP3: 08° 44' 54.7" S, 74° 20' 57.6" W; CP4: 08° 45' 28.4" S, 74° 20' 22.5" W; CP5: 08° 46' 26.7" S, 74° 20' 17.5" W; CP6: 08° 46' 50.3" S, 74° 20' 08.5" W; CP7: 08° 47' 49.9" S, 74° 19' 44.0" W; altitude 170–175 m a. s. l.; Fig. 1). The transect was marked out along a forest road (Fig. 3A) connecting the community of Masisea on the Ucayali River with the settlement of Caimito on the northern bank of Laguna Imiria (08° 51' 23.6" S, 74° 18' 56.3" W). The distance between the collecting points CP2 and CP3 was ca. 14 km. The area studied was covered by tall seasonally flooded forest (categorized as Amazonian moist forest in the "Plan Maestro" and as Evergreen seasonal flat land forest in southwestern Amazonia in Fig. 1). Despite the selective logging that occurred in the area both in 2009 and in 2011 the forest appeared relatively well preserved. It was characterized by a canopy height of ca. 30 m with emergent trees (including *Ceiba pentandra* [L.] Gaertn.), dense understory and frequent occurrence of palms of the genera *Mauritia* L.f. (Fig. 3B) and *Socratea* H. Karst. Several small houses of local settlers and hunters surrounded by crop fields with pineapple, manioc, rice and banana were scattered along the forest road between collecting points CP4 and CP5.

In the record of species, families, genera and species are listed in alphabetical order. Selected voucher specimens as well as photographs are deposited in the herpetological collections of the National Museum Prague (NMP) and in Museo de Historia Natural de la Universidad Nacional de San Antonio Abad del Cusco.

To facilitate genetic comparisons, tissue samples from five specimens of three species of *Osteocephalus* Steindachner, 1862 collected at CP3 were taken from preserved voucher specimens NMP6V 74441, NMP6V 74442/1–2, NMP6V 74442/4 and NMP6V 74913. The genomic DNA was extracted using a commercial kit. The mitochondrial fragment covering a portion of the 12S rRNA, complete tRNA-Val and a portion of the 16S rRNA genes (*12S-16S rRNA*, 1932 bp) was targeted, or alternatively two separate fragments of the 12S rRNA (*12S*, 352 bp) and 16S rRNA (*16S*, 549 bp) genes if the whole long fragment was not successfully amplified. For primers, PCR conditions and more details see Moravec et al. (2009). New nucleotide sequences were deposited in GenBank (KY211975–KY211981).

The nomenclature and higher systematic categories used follow Frost (2016) and Uetz et al. (2016). The only exception is the generic name *Mabuya*, as proposed by Pinto-Sánchez et al. (2015).

SPECIES RECORD

Amphibia

Anura

Aromobatidae

***Allobates femoralis* (Boulenger, 1884)**

(Figs 4A, B)

LOCALITY. RCAI (2011).

Two individuals observed in closed-canopy forest around CP5 and CP6.

Bufonidae

***Rhinella marina* (Linnaeus, 1758)**

(Fig. 4C)

LOCALITIES. Masisea (2009, 2011), RCAI (2011).

Common species in secondary habitats around the community at Masisea (CP2); associated with open habitats along the forest road in RCAI (CP3–7).

***Rhinella poeppigii* (Tschudi, 1845)**

(Fig. 4D)

LOCALITY. Masisea (2009, 2011).

Observed only in non-inundated habitats around the community Masisea, where it was recorded calling at the same water bodies as *Rhinella marina*.

***Rhinella* sp. (*R. margaritifera* complex)**
(Figs 4E, F)

LOCALITIES. RCAI (2009, 2011).
MATERIAL. NMP6V 74915.

Relatively common species in forested habitats. A group of 4–5 males was recorded calling after a shower at night on 27 September 2011. The calling males aggregated around a small temporary puddle (partly overgrown by herbaceous vegetation and low bushes) situated close to a forest road.

Based on a comparison of the mitochondrial 16S rRNA gene sequences, the collected subadult specimen NMP6V 74915, GenBank: KF992143 (Moravec et al. 2014) was genetically similar (1.3% uncorrected *p*-distance) to a specimen of the *Rhinella margaritifera* complex (KU 215145) from Madre de Dios (Peru) analyzed by Pramuk (2006). Adult males (*n*=2) examined had the following characters: SVL (snout-vent length) 53 and 59 mm; snout pointed in dorsal view, protruding beyond the margin of lip, bearing rostral keel; canthal crest not elevated, supraorbital and widely expanded supratympanic crests continuous; tympanum large, oval vertically; bony protrusion at angle of jaw large; protruding neural crest of vertebrae present; parotid glands narrowly triangular, protruding laterally, incorporated into lateral row of tubercles; skin on dorsum tubercular.

Craugastoridae

***Pristimantis delius* Duellman et Mendelson, 1995**
(Figs 4G, H)

LOCALITY. RCAI (2011).

An adult individual observed sitting on vegetation ca. 1 m above the ground at CP5. This is the first record of *Pristimantis delius* in the Amazonian lowland of central Peru. The finding extends the range of this species by ca. 230 km SW of the closest known locality (Cruseiro do Sul, Acre, Brazil; López-Rojas et al. 2013).

Dendrobatidae

***Ameerega* cf. *hahneli* (Boulenger, 1884)**
(Figs 5A, B)

LOCALITY. RCAI (2011).

A single individual observed during the day at CP5. It is difficult to distinguish between *Ameerega hahneli* and morphologically similar *A. altamazonica* Twomey et Brown, 2008 without an advertisement-call comparison. Nevertheless, niche models published by Twomey & Brown (2008) indicate that the RCAI should provide better environmental conditions for *A. hahneli*.

Hylidae

***Dendropsophus haraldschultzi* (Bokermann, 1962)**
(Fig. 5C)

LOCALITY. Masisea (2009).
MATERIAL. NMP6V 74253/1–2.

Relatively common species in inundated grassland and secondary growth on banks of small lakes around CP1; only observed on herbaceous vegetation.



Fig. 2. Typical habitats of the anthropogenic area surrounding the community of Masisea. A – a permanent lake at collecting point CP1 covered partly by floating *Pistia* "carpets". B – area between CP1 and CP2 dominated by the palm, *Mauritia flexuosa*.

***Dendropsophus cf. leali* (Bokermann, 1964)**
(Fig. 5D)

LOCALITY. Masisea (2009, 2011).
MATERIAL. NMP6V 74911/1–6.

An explosive breeder forming aggregations of calling males around small temporary water bodies after heavy rain. Numerous mixed groups of *Dendropsophus cf. riveroi* (Cochran et Goin, 1970) and *D. triangulum* (Günther, 1869) were recorded calling both in November 2009 and September 2011. This species occurred in open grassland at CP2. Most of the specimens studied were characterized by small black dots on the head and scapular region.

***Dendropsophus parviceps* (Boulenger, 1882)**
(Figs 5E, F)

LOCALITY. Masisea (2009, 2011).
MATERIAL. NMP6V 74909.

Individual specimens were occasionally observed both on low herbaceous vegetation and low shrubs around CP2.

***Dendropsophus cf. riveroi* (Cochran et Goin, 1970)**
(Fig. 5G)

LOCALITY. Masisea (2009, 2011).
MATERIAL. NMP6V 74905, 74912/1–3.

Explosively breeding species seemingly less abundant than *Dendropsophus cf. leali* and also encountered in more densely overgrown inundated habitats around CP1.

***Dendropsophus triangulum* (Günther, 1869)**
(Figs 5H; 6A, B)

LOCALITIES. Masisea (2009, 2011), RCAI (2011).
MATERIAL. NMP6V 74908/1–2.

Fairly common species in open habitats around CP2 (groups of up to 10 calling males observed in 2011). Occasionally recorded also along the forest road in RCAI. The males occupied calling positions mostly on low herbaceous vegetation up to 50 cm above the ground (or water). The individuals studied unusually had a very variable dorsal pattern. In addition to specimens with the typical large triangular to hourglass dark brown spot on a yellow back (Fig. 5H) there were also many individuals recorded around CP2 that had a dorsal pattern consisting of more or less pronounced dark brown round spots (Fig. 6A, B).

***Hypsiboas lanciformis* Cope, 1871**
(Fig. 6C)

LOCALITIES. Masisea (2009, 2011), RCAI (2011).

Common species in open and secondary habitats; encountered also in open situations along the forest road (CP4–6).



Fig. 3. Examples of typical habitats of the Regional Conservation Imiria. A – forest road in the at the collecting point CP6. B – an understory of seasonally flooded forest at CP3 with frequent occurrence of *Mauritia flexuosa* seedlings.

***Hypsiboas punctatus* (Schneider, 1799)**

LOCALITY. Masisea (2009).

Numerous groups of males calling from *Gynerium sagittatum* (Aubl.) P.Beauv. and floating *Pistia* L. “carpets” close to the shores of small lakes at CP1. Individual males were also recorded calling in open grassland around CP2.

***Hypsiboas* sp. (*H. calcaratus* complex)**

LOCALITY. Masisea (2009).

MATERIAL. NMP6V 74903.

An adult female approaching a calling male was observed in a growth of *Gynerium sagittatum* in an inundated area around CP1.

This species belongs to the *Hypsiboas calcaratus* species complex and resembles *Hypsiboas alfaroi* Caminer et Ron, 2014 and *H. tetete* Caminer et Ron, 2014 in having a small tubercle on the heel and a pattern of irregular black spots in the inguinal area and on the inner surfaces of its thighs (see Caminer & Ron 2014). It is likely that the absence of a small triangular calcar on the heel differentiates this species from individuals occurring in Peruvian Cuzco Amazónico, which were assigned to *Hyla fasciata* Günther, 1858 by Duellman (2005) and probably belong to *Hypsiboas* clade G sensu Caminer & Ron (2014). The female collected (SVL 49.5 mm) is characterized by a dorsal pattern consisting of large irregular dark brown spots.

***Osteocephalus planiceps* Cope, 1874**

(Figs 6D–F)

LOCALITY. RCAI (2009, 2011).

MATERIAL. NMP6V 74913.

Relatively common species encountered around all the collecting points in RCAI. Subadult individuals (SVL 42–44 mm, n=3) were frequently seen in September 2011. These frogs usually perch on thin tree trunks up to 3 m above ground. However, an individual was also observed sitting in a tree hollow (Fig. 6F).

The specimen (NMP6V 74913) collected at CP3 was genetically identical in terms of fragments of *12S* and *16S* (KY211976, KY211978) with the individual from the nearby locality “Imiria” (08° 51’ 00” S, 74° 19’ 00” W), GenBank: KF002091 analyzed by Jungfer et al. (2013).

***Osteocephalus taurinus* Steindachner, 1862**

LOCALITY. RCAI (2009).

MATERIAL. NMP6V 74441.

This species seems to be relatively rare in this area. The only individual was found in seasonally flooded forest at CP3. The nucleotide sequence of the mitochondrial *12S-16S rRNA* fragment (KY211981) obtained is that, of as yet, an unrecognized new lineage of *O. taurinus* closely related to the haplotypes “Western Amazonia, Amazonas, Brazil” and “Southern Ecuador and northern Peru”/“Mato Grosso, Brazil” (sensu Jungfer et al. 2013; average uncorrected *p*-distance in *16S* was 0.5%). The same *16S* haplotype was recorded also in a specimen from Puerto Almendras (Iquitos area, Region Loreto, Peru; NMP6V 71184; unpublished data).



Fig. 4. Anuran species recorded in the northern part of the Regional Conservation Area Imiría or in its close vicinity. A, B – *Allobates femoralis*. C – *Rhinella marina*. D – *R. poeppigii*. E, F – *Rhinella* sp. (*R. margaritifera* complex). G, H – *Pristimantis delius*.

***Osteocephalus yasuni* Ron et Pramuk, 1999**
(Figs 6G, H; 7A–F)

LOCALITY. RCAI (2009, 2011).
MATERIAL. NMP6V 74442/1–4.

Common species encountered around all RCAI collecting points. In November 2009 only adult individuals in breeding condition were observed on vegetation 0.5–2.5 m above the ground. In total, 17 specimens were found by two people within three hours after dusk. The sexually active males were characterized by bright yellow throat and belly and yellow flanks; in some individuals the yellow colour prevailed also on the dorsal side (Figs 6G, H; 7A). In September 2011 mostly subadult specimens (SVL 36–43 mm, n=6; Figs 7B, C) were seen in the lower forest strata (up to 3 m). Sexually inactive adult males were light brown dorsally and white ventrally (Fig. 7D).

Morphologically the adult and subadult specimens are very similar to the descriptions published by Ron & Pramuk (1999) and Cisneros-Heredia (2007). Similarly, the RCAI specimens very closely resembled individuals of *Osteocephalus yasuni* observed by the third author (GGU) in the area of Rio Curaray (Region Loreto, Peru; Figs 7E, F). On the other hand, the RCAI specimens did not obviously differ morphological from the diagnosis of *O. lepriurii* (Duméril et Bibron, 1841) (see Jungfer & Hödl 2002) and Bolivian *O. lepriuri* [Ca 2] (sensu Jungfer et al. 2013). For photographs of *O. lepriuri* [Ca 2] see Moravec & Aparicio (2004) and Moravec et al. (2009) where this taxon is listed as *Osteocephalus* sp. and *Osteocephalus* sp. B, respectively. Therefore, with the aim of identifying the RCAI taxon using genetic data, the nucleotide sequences of the mitochondrial *12S-16S rRNA* fragment of two RCAI specimens (NMP6V 74442/1–2; CP3; GenBank: KY211979, KY211980) and two separate fragments (*12S*, *16S*) of one RCAI specimen (NMP6V 74442/4; CP3; GenBank: KY211975, KY211977) were compared with the GenBank data available for *O. yasuni* and *O. lepriurii*. This revealed that two specimens (NMP6V 74442/2, 4) were of the same haplotype as *O. yasuni* from Tarauacá, Acre, Brazil (KF002171, Jungfer et al. 2013). The third sequenced specimen (NMP6V 74442/1) was of a new, unique but highly similar haplotype differing by only 0.2%.

Our findings extend the known range of *O. yasuni* by ca. 670 km southwest of the southernmost published Peruvian record (Río Iauasiyacu, 03° 20' 25" S, 71° 59' 34" W; Jungfer et al. 2013) and for ca. 400 km west of the only Brazilian record of this species (Tarauacá, 08° 09' 39" S, 70° 45' 57" W; Jungfer et al. 2013).

***Scarthyla goinorum* (Bokermann, 1962)**
(Fig. 7G)

LOCALITY. Masisea (2009).
MATERIAL. NMP6V 74901/1–2.

Common species in inundated areas around CP1. Calling males observed mostly on *Gynerium sagittatum* and floating *Pistia* “carpets”.

***Scinax cruentommus* (Duellman, 1972)**
(Figs. 7H)

LOCALITY. RCAI (2009, 2011).
MATERIAL. NMP6V 74914.



Fig. 5. Anuran species recorded in the northern part of the Regional Conservation Area Imiría or in its close vicinity. A, B – *Ameerega* cf. *hahneli*. C – *Dendropsophus haraldschultzi*. D – *D.* cf. *leali*. E, F – *D.* *parviceps*. G – *D.* cf. *riveroi*. H – *D.* *triangulum*.

Two individuals found in closed-canopy seasonally flooded forest at CP3 and CP5. The characteristic median horizontal red streak in the iris was indistinct at night but become distinct when the frogs became a darker colour during the day.

***Scinax pedromedinae* (Henle, 1991)**
(Fig. 8A)

LOCALITY. Masisea (2009).
MATERIAL. NMP6V 74902/1–3.

Relatively common species in inundated habitats around CP1 dominated by growths of *Gynerium sagittatum*.

***Scinax ruber* (Laurenti, 1768)**
(Fig. 8B)

LOCALITIES. Masisea (2009, 2011), RCAI (2011).
MATERIAL. NMP6V 74910.

Abundant in open inundated and anthropogenic habitats. Individual specimens encountered also along the forest road and in closed forest in RCAI.

***Sphaenorhynchus carneus* (Cope, 1868)**
(Fig. 8C)

LOCALITY. Masisea (2009).
MATERIAL. NMP6V 74900.

Observed only in an inundated area at CP1. Calling males were strictly associated with floating “carpets” of *Pistia stratiotes* L.

***Sphaenorhynchus dorisae* (Goin, 1957)**
(Fig. 8D)

LOCALITY. Masisea (2009).
MATERIAL. NMP6V 74899.

Occurred in the same habitats as *Sphaenorhynchus carneus*, where both species aggregated and called for mates after dusk.

***Trachycephalus typhonius* (Linnaeus, 1758)**
(Fig. 8E)

LOCALITY. RCAI (2011).

An adult male found in an old clearing inside the forest. An adult female seen in an open kitchen of a small house of local hunters.

***Trachycephalus cunauaru* Gordo, Toledo, Suárez, Kawashita-Ribeiro, Ávila,
Morais et Nunes, 2013**

LOCALITY. RCAI (2011).



Fig. 6. Anuran species recorded in the northern part of the Regional Conservation Area Imiriá or in its close vicinity. A, B – *Dendropsophus triangulum*. C – *Hypsiboas lanciformis*. D, F – *Osteocephalus planiceps* (D – adult female, E – subadult individual [SVL 44 mm]). G, H – *O. yasuni*, sexually active male.

One male heard calling in a tree hollow ca. 20 m above the ground in tall closed-canopy forest at CP6.

Leptodactylidae

***Adenomera* sp.**
(Fig. 8F)

LOCALITY. RCAI (2011).

Three individuals, including one gravid female, observed in tall closed-canopy forest (CP5 and CP6). *Adenomera andreae* (Müller, 1923) is reported from this area (GRU 2014), but the authors did not provide any details of its morphology and identification.

***Leptodactylus bolivianus* Boulenger, 1898**

LOCALITY. Masisea (2009).

MATERIAL. NMP6V 74898.

Common species in inundated habitats covered by *Gynerium sagittatum* and secondary growth around CP1.

***Leptodactylus leptodactyloides* (Andersson, 1945)**
(Fig. 8G)

LOCALITIES. Masisea (2009, 2011), RCAI (2009, 2011).

Common species inhabiting all open and secondary habitats around CP1 and CP2 and along the forest road in RCAI. Individual specimens were occasionally encountered also in closed-canopy seasonally flooded forest at CP3.

***Leptodactylus pentadactylus* (Laurenti, 1768)**
(Fig. 8H)

LOCALITY. Masisea (2009).

A single individual found on a path between secondary growth and pasture at CP2.

***Lithodytes lineatus* (Schneider, 1799)**
(Figs. 9A)

LOCALITY. Masisea (2009). Material: NMP6V 74907.

Three individuals observed in the same habitat as *Leptodactylus pentadactylus*.

Microhylidae

***Hamptophryne boliviana* (Parker, 1927)**
(Fig. 9B)

LOCALITY. Masisea (2009).

Relatively common species in inundated habitats covered by *Gynerium sagittatum* and secondary bushes.



Fig. 7. Anuran species recorded in the northern part of the Regional Conservation Area Imiría or in its close vicinity. A–F – *Osteocephalus yasuni* (A – sexually active male, B – subadult individual [SVL 36 mm], C – subadult individual [SVL 43 mm], D – sexually inactive adult male, E, F – adult males from the area of Rio Curaray [Region Loreto, photo GGU]). G – *Scarthyla goinorum*. H – *Scinax cruentommus*.

Phyllomedusidae

***Callimedusa tomopterna* (Cope, 1868)**
(Fig. 9C)

LOCALITY. RCAI (2011).

Occasionally encountered along the forest road in RCAI. A mixed assemblage of three males of *Callimedusa tomopterna*, five males of *Phyllomedusa camba* and one male of *Pithecopus palliata* was recorded calling from low vegetation around a ditch filled with water at CP5.

***Phyllomedusa bicolor* (Boddaert, 1772)**

LOCALITY. Masisea (2009, 2011).

Calling males heard in the trees at the settlement Nuevo Ceylan and along the road at CP2.

***Phyllomedusa camba* De la Riva, 1999**
(Fig. 9D)

LOCALITY. RCAI (2011).

This is the most common phyllomedusid species in the area of RCAI studied. Adult individuals were recorded both along the forest road and in the forest.

***Phyllomedusa vaillantii* Boulenger, 1882**
(Fig. 9E)

LOCALITY. RCAI (2011).

In RCAI this species inhabits relatively undisturbed closed-canopy forest. Found most frequently in swamps in seasonally flooded forest.

***Pithecopus palliatus* (Peters, 1873)**
(Fig. 9F)

LOCALITY. RCAI (2011).

Single male found calling together with *Callimedusa tomopterna* and *Phyllomedusa camba*.

Pipidae

***Pipa pipa* (Linnaeus, 1758)**
(Fig. 9G)

LOCALITY. RCAI (2011).

One adult individual (SVL 123 mm) caught by local hunters in a fishing net in a forest stream at CP4.



Fig. 8. Anuran species recorded in the northern part of the Regional Conservation Area Imiría or in its close vicinity. A – *Scinax pedromedinae*. B – *S. ruber*. C – *Sphaenorhynchus carneus*. D – *S. dorisae*. E – *Trachycephalus typhonius*. F – *Adenomera* sp. G – *Leptodactylus leptodactyloides*. H – *L. pentadactylus*.

Caudata
Bolitoglossidae

***Bolitoglossa cf. altamazonica* (Cope, 1874)**
(Fig. 9H)

LOCALITY. RCAI (2011).

At night, four adult individuals were observed sitting motionless on leaves up to 1 m above the ground in closed-canopy seasonally flooded forest at CP5.

Crocodylia
Alligatoridae

***Caiman crocodilus* (Linnaeus, 1758)**
(Fig. 10A)

LOCALITY. Masisea (2009).

In total, four individuals were observed in small lakes surrounded by secondary forest and growths of *Gynerium sagittatum* at CP1.

Squamata
Boidae

***Epicrates cenchria* (Linnaeus, 1758)**
(Fig. 10B)

LOCALITY. RCAI (2011).

Relatively common snake in RCAI. Both adult and subadult individuals were encountered at night in closed-canopy forest around CP4–7. In addition, a large female feeding on a chicken was killed by local settlers in their house, which was surrounded by agricultural fields and secondary forest.

Colubridae

***Atractus* sp.**
(Figs 10C, D)

LOCALITY. Masisea (2009).

An adult individual (SVL 265 mm, tail length 31 mm) found crawling on the ground at edge of pasture at night (CP2). The individual had 15 rows of dorsal scales in the middle of its body, distinct white collar, uniformly dark brown dorsum and three more or less regular longitudinal rows of dark brown spots on its light orange belly.

***Chironius multiventris* Schmidt et Walker, 1943**
(Fig. 10E)

LOCALITY. RCAI (2011).

One subadult individual found sleeping on a tree branch ca. 3 m above the ground at night (CP7).



Fig. 9. Amphibian species recorded in the northern part of the Regional Conservation Area Imiriá or in its close vicinity. A – *Lithodytes lineatus*. B – *Hamptophryne boliviana*. C – *Callimedusa tomopterna*. D – *Phyllomedusa camba*. E – *P. vaillantii*. F – *Pithecopus palliatus*. G – *Pipa pipa*. H – *Bolitoglossa* cf. *altamazonica*.

***Dipsas indica* Laurenti, 1768**

(Fig. 10F)

LOCALITY. Masisea (2009).

An adult individual was observed at night on a tree ca. 2 m above the ground at the margin of an inundated area covered by *Gynerium sagittatum* (CP1).

***Imantodes cenchoa* (Linnaeus, 1758)**

LOCALITIES. Masisea (2009), RCAI (2011).

Recorded both in open inundated habitats (around CP1) and in closed-canopy forest in RCAI.

Elapidae

***Micrurus surinamensis* (Cuvier, 1817)**

(Figs 10G, H)

LOCALITY. RCAI (2011).

Over a period of three successive nights an adult female (total length 1210 mm) with dark dorsal colouration was repeatedly seen in a large puddle in the forest road at CP5. This snake was usually observed searching for prey in submerged vegetation, swimming slowly under the water and moving its head from side to side.

Dactyloidae

***Anolis fuscoauratus* Duméril et Bibron, 1837**

(Fig. 11A)

LOCALITY. RCAI (2011).

Relatively common species encountered both in open and in forest habitats (CP4–7).

***Anolis scypheus* Cope, 1864**

(Fig. 11B)

LOCALITY. Massiea (2009).

MATERIAL. NMP6V 74904.

Single individual collected in growth of *Heliconia* L. and *Gynerium sagittatum* in the inundated area at CP1.

Gymnophthalmidae

***Iphisa elegans* Gray, 1851**

LOCALITY. Masisea (2009).

One adult individual seen on a trail in *Gynerium sagittatum* at CP1.



Fig. 10. Reptile species recorded in the northern part of the Regional Conservation Area Imiria or in its close vicinity. A – *Caiman crocodilus*. B – *Epicrates cenchria*. C, D – *Atractus* sp. E – *Chironius multiventris*. F – *Dipsas indica*. G, H – *Micrurus surinamensis*.

Phyllodactylidae

***Thecadactylus solimoensis* Bergmann et Russell, 2007**
(Fig. 11C)

LOCALITY. RCAI (2009).

An adult individual was recorded in an open kitchen of a small house of local hunters.

Scincidae

***Mabuya nigropunctata* (Spix, 1825)**
(Fig. 11D)

LOCALITY. RCAI (2011).

Observed only in open secondary habitats around CP4.

Sphaerodactylidae

***Gonatodes humeralis* (Guichenot, 1855)**
(Fig. 11E)

LOCALITY. RCAI (2009, 2011).

Common both in open secondary habitats and in relatively undisturbed closed-canopy forest. Observed also inside wooden houses of local settlers and hunters.

Teiidae

***Ameiva ameiva* (Linnaeus, 1758)**

LOCALITIES. Masisea (2009, 2011), RCAI (2009, 2011).

A common inhabitant of open habitats including large clearings and edges of forest roads.

Tropiduridae

***Uracentron flaviceps* (Guichenot, 1855)**
(Fig. 11F)

LOCALITY. RCAI (2011).

In total, three individuals were recorded on exposed trunks of large trees along the forest road between CP6 and CP7. The individuals were basking or preying on insects in sunny spots ca. 15–20 m above the ground between 10:00–11:00 h.

Viperidae

***Bothrops atrox* (Linnaeus, 1758)**
(Figs 11G, H)

LOCALITIES. Masisea (2009), RCAI (2011).



Fig. 11. Reptile species recorded in the northern part of the Regional Conservation Area Imiria or in its close vicinity. A – *Anolis fuscoauratus*. B – *A. scyphus*. C – *Thecadactylus solimoensis*. D – *Mabuya nigropunctata*. E – *Gonatodes humeralis*. F – *Uracentron flaviceps*. G, H – *Bothrops atrox* (G – adult individual [CP1], H – subadult individual [CP4]).

The most frequently encountered snake in this area. Around the community of Masisea adult and subadult individuals were observed in open and inundated areas including on banks of lakes overgrown by dense herbaceous vegetation. In RCAI this species was mostly seen on the forest road or close by.

Testudines
Podocnemididae

***Podocnemis unifilis* Troschel, 1848**

LOCALITY. Masisea (2009).

Several individuals of *Podocnemis unifilis* were observed in a private lake at CP1. According to the lake owner, the turtle population in this lake was ca. 70. The population reproduced regularly but only 7–9 nests were found each year. Despite the presence of a small artificial sandy “beach” built to provide a more suitable place for the female turtles to lay eggs they continued to dig their nests in the clay bank of the lake, which they covered with a layer of soil and leaf litter. The nests each contained up to 42 eggs.

DISCUSSION

In addition to the list of amphibians (11 species) and reptiles (23 species) in the Plan Maestro del Área de Conservación Regional Imiría (GRU 2014) we recorded additional 30 species of amphibians and 10 species of reptiles in RCAI or its vicinity (surroundings of the community of Masisea). Taking into account the close proximity of Masisea to the border of RCAI and the similarity of the anthropogenic habitats outside and in RCAI (e.g. in vicinity of the settlement of Caimito; Fig. 1), we assume that most of the species recorded in open habitats around Masisea also occur in RCAI.

From the zoogeographic point of view, the majority of the species listed are relatively common species that are widely distributed in western and southwestern lowland Amazonia. We expect that research in the future will record many other amphibian and reptile species in RCAI and will contribute to better definitions of the ranges of the less common species (as indicated by our data on *Pristimantis delius* and *Osteocephalus yasuni*).

Members of the genus *Osteocephalus* are medium-sized to large arboreal frogs inhabiting primary and old secondary forests in the Neotropics. Some of them (e.g. *O. planiceps*) even need phytotelmata for reproduction (Jungfer et al. 2013). Therefore, the syntopic occurrence of three species of *Osteocephalus* and the abundance of *O. planiceps* and *O. yasuni* in the area studied may indicate that the forest protected in RCAI is of high quality.

We conclude, that the Regional Conservation Area Imiría provides good living conditions both for primary forest species and a number of species associated with open inundated habitats. This indicates the great importance of this conservation area for the protection of the native flora and fauna in western lowland Amazonia. The positive role of this protected area becomes very obvious in the light of the dynamic development of the nearby city of Pucallpa.

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