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Herpetological records from the Abujao basin, central Peruvian Amazon

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Abstract. The effort to uncover herpetofauna within the zone of influence of the Sierra del Divisor National Park has been focused on the northern reaches. The Abujao basin represents the Sierra del Divisor region well in an understudied area central to the Peruvian Amazon. We found 108 species of amphibians and squamate reptiles. Seven records extend ranges from the northern regions, while two records unite with southern regions (Madre De Dios and the Fitzcarrald Arc/Purus valley). There are higher levels of diversity attributable to land-cover units indicative of high terraces and hilly zones, as opposed to low hydromorphic habitats. Our new record for *Pristimantis iiap* Padial, Gagliardi-Urrutia, Chaparro & Gutiérrez, 2016 brings more resolution to this newly described species. We made observations of an unidentified species of blindsnake, which could represent a unique part of the fauna. Despite variations, we only uphold the presence of various subspecies of *Micrurus annellatus* Peters, 1871.

Keywords. Amphibians, squamate reptiles, Fitzcarrald Arc, herpetofauna, Sierra del Divisor, Serra do Divisor

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Introduction

The Sierra del Divisor (SDD) National Park, located in the central Peruvian Amazon, draws much attention for its unique features as a natural protected area (ANP, Spanish abbreviation). Aspects of the area's geology have resulted in rocky outcrops, which rise out of expanses of intact lowland Amazon rainforest (Stallard 2006). Therefore questions addressed by past biogeographic studies concerned with geologic effects may apply to SDD (Sarmiento 1986; Gascon et al. 2000; Medina et al. 2015). For example, the description of the poison dart frog (family Dendrobatidae) *Ranitomeya cyanovittata* was tied to SDD (Pérez-Peña et al. 2010), showing the pertinence to amphibians (McDiarmid and Altig 1999, Graham et al. 2004). Given their low dispersal capabilities and environmental sensitivities (Gardner et al. 2007; Deutsch et al. 2008, Wells 2010), we should expect amphibians and reptiles to show stronger patterns (Pianka et al. 2003; Jenkins et al. 2013; Rabosky et al. 2019). The highlands of the SDD can reach elevations over 900 m and are forested, but of a separate land-cover class than surrounding forests (MINAM 2015). This classification developed by

the Peruvian Ministry of the Environment segmented land-cover units across the Amazonian landscape that includes SDD. The presence or absence of species in these conservation units is therefore amenable to analyses (Cáceres and Legendre 2009) to determine if biogeography affects amphibian and reptile diversity (Haffer 1997; Gaston 2000; Antonelli et al. 2010).

Stringent protection for the SDD falls under Peru's national park system (Oliveira et al. 2007; Finer et al. 2008; Schleicher et al. 2017; SERNANP 2016). There are also regionally managed conservation areas (Spanish abbreviation: ACR; Taboada et al. 2019). The study by Moravec et al. (2016) focused on the Imiria ACR and was of major importance for herpetology in Ucayali, which was virtually unknown until 2016, despite years of effort in the northern and southern Peruvian Amazon (Rodriguez and Duellman 1994; Rodríguez 1994; Morales et al. 1996; Doan and Arriaga 2002; Bartlett and Bartlett 2003; Duellman 2005; Vriesendorp et al. 2006a; Pérez et al. 2006; von May et al. 2010; Pitman et al. 2011; Pitman et al. 2015). Since then, a new ACR has been established in the SDD. It is known as the Comunal Alto Tamaya-Abujao (CATA) Reserve, and was established to further protect formations in the SSD of potential biogeographic significance (ARAU 2020).

Rapid biological inventories (Vriesendorp et al. 2006), as well as the description of *Ranitomeya cyanovittata* Pérez-Peña et al., 2010, have focused on the northern SDD national park in Loreto Department more than 150 km away from Abuajo. However, the southern portion of the SDD abutting Abujao has a density of isolated Sierra del Divisor tropical forest units, including "El Cono" (MINAM 2015). "El Cono" has become the photographic representation of the area, and/or the wider Amazon, in a plethora of media outlets (Andes Amazon Fund 2019; Actualidad Ambiente 2020). This southern portion contains the headwaters of the Rio Shesha, which becomes the main tributary of the Rio Abujao. The Abujao also has origins in the Brazilian borderlands (Salisbury 2007) near a separate portion of the Divisor high hilly forest land cover (Bosque de colina alta de Divisor, Bca-D) residing outside of the national park, but inside the CATA Reserve. A large portion of this area is within the native community San Mateo.

Abujao is an ignored region of the Peruvian Amazon positioned north of the Fitzcarrald Arc, which may hold biogeographic significance (Regard et al. 2009; Hoorn and Wesselingh 2011; Honorio Coronado et al. 2019). Several dozen sites have been investigated in the vast northern region of Loreto, where RAP 17 was located (Vriesendorp et al. 2006a, Vriesendorp et al. 2006b, Pitman et al. 2015). Our sites are actually closer to the sites of Souza (2009), who completed an exhaustive study of the Serra do Divisor area in Acre state, Brazil. Given the unprecedented effort on the Brazilian side of the SDD complex, we expect well over 100 species of amphibians in the fauna. Indeed, the species list from the nearby Purus Valley includes 122 species (Padial et al. 2016), three fewer than the list by Souza (2009). However, the position of the Purus sites below the Fitzcarrald Arc leaves little to be interpreted about the biogeographic effect of the SDD.

In this study, we aim to:

- Document amphibian and reptile species from the Abujao basin, which to our knowledge is the first attempt to do so;
- Compare our findings with the literature pertinent to the SSD complex;
- Look for distribution patterns corresponding to MINAM land-cover classes.

Study Area

In the Abujao basin, yearly precipitation is nearly 2000 mm, making this densely forested region a tropical rainforest (ARAU 2016; Sanchez Huaman et al. 2017). Forest types (Fig. 1), defined by both frequency of flooding and elevation, have 3- to 4-letter abbreviations, e.g. Bta. MINAM (2015) remains one of the only land-cover studies to include remote areas of Amazonian Peru, allowing for a systematic approach to amphibian and reptile distributions and diversity according to the MINAM classification.

The Tamaya Tipishca is a diffuse water body that carries waters of both the Abujao and Tamaya rivers. When river channels migrate they leave scroll patterns indicating "llanura meandrica" forests, which are under heavy riverine successional influences (Kalliola et al. 1992). As an example of how dynamic and stressful this type of environment is for the herpetofauna, this is the channel for which Coomes et al. (2009) documented the redirected flow of the Ucayali River in 1997. One site, Caserio Bethel, is within this region, having been formed by both riverine successional and human impacts. We sampled expanses of low floodplain forests south of the tipishca (Llm, Btb, Hehi), as well as high hilly forests (Bca). Importantly, all of the upper Abujao sites were only a little over 2 km from the Divisor high hill forest (Bca-D) (Fig. 1). This means that, among other things, San Mateo and alto-Abujao sites are on average 85 m higher in elevation (240–260 m above sea level) than those of Santa Rosa de Tamaya-Tipishca and Bethel (149–165 m above sea level), creating a simple dichotomy of low terrace and high hilly zones.

Methods

The fieldwork (Table 1) occurred in two different phases. First, we sampled in two subbasins of the upper Abujao in October of 2012. Then in June and July 2015 we completed data collection near the river's mouth at the native community of Santa Rosa de Tamaya Tipishca (TT) and San Mateo. We used transect methodologies to find amphibians and squamate reptiles. We delimited 2-m line transects each 1000 m in length, with observations limited to a height of 3 m and permitting active searches of downed vegetation. We also ran 100-m transects. Search time varied from 0.2–0.3 min/m.

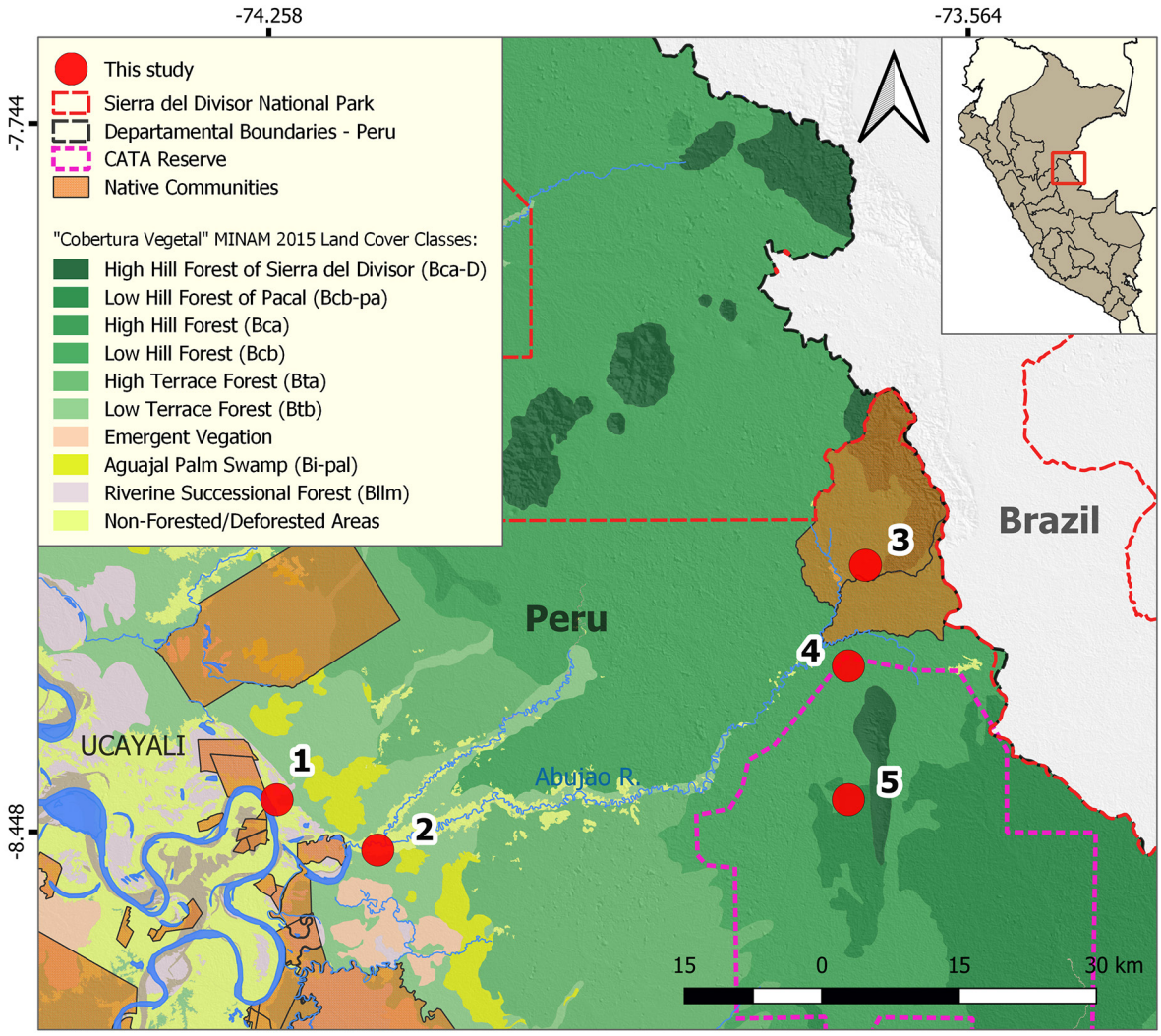

Figure 1. Map of Abujao sites. 1 = Caserio Bethel, 2 = Santa Rosa de Tamaya Tipishca, 3 = San Mateo, 4 = alto-Abujao 1, 5 = alto-Abujao 2.

Table 1. Effort summary**.**

Sites	Coordinates	Sub-sites	Tran-sects	Total search time (transects) (min)	Resampled/ concatenated transects for analyses	Opportunistic time-constrained searches	Casual encounter reports
Caserio Bethel	08°25.45′S, 074°15.73′W	1	4	198	1	4 (240 min)	0
Santa Rosa de Tamaya-Tipishca (TT)	08°28.78′S, 074°9.85′W	2	6	1440	12	0	1
alto- Abujao 1	08°17.24′S, 073°41.92′W	2	16	832	4	16 (480 min)	3
alto- Abujao 2	08°25.02′S, 073°41.20′W	3	24	1269	6	25 (750 mins)	5
San Mateo	08°11.47′S, 073°40.82′W	1	4	960	8	0	0

In addition to transects, we made note of species found during opportunistic time-constrained searches in the same areas as the transects, as well as any casual encounters at campsites, in transit, etc. We compiled these data to render the occurrence, richness, and abundance of all species recorded.

Amphibian taxonomy follows Frost (2020) and reptile taxonomy follows Uetz et al. (2020). All collected specimens were fixed in 4% formalin and temporarily stored in 50% alcohol until depositing in 70% (Simmons 2002). The specimens collected in October 2012 were deposited in the Natural History Museum of the

Universidad San Angustin (MUSA) in Arequipa. We are curating field-coded specimens at the Universidad Nacional de Ucayali. We made use of photographic documentation in the field to aid identifications. Data and sample collection was supported by the Resolución Directoral no. 008-2013-AG-DGFFS-DGEFFS. The Resolución Ministerial no. 057-2015-MINAM and the Resolución Ministerial no. 177-2014-MINAM established the methodologies used.

With heavy reliance on the photographs taken in the field, we completed identification using Duellman (2005), Rodriguez and Duellman (1994), Lehr and Duellman (2009), Avila-Pires (1995), and Dixon and Soini (1986). We also used some photographic guides: Villacampa et al. (2016), Lima et al. (2012), Vitt et al. (2008), and Fraga et al. (2013). We also made use of the Rapid Color Guides of the Field Museum: von May et al. (2006, 2007), Gagliardi (2010), Whitworth et al. (2016a), Whitworth et al. (2016b), and Guerrero et al. (2011). Further resources consulted included Brown et al. (2011), Lehr et al. (2010), Lehr et al. (2009), Elmer and Canatella (2008), Jungfer et al. (2013), Peloso et al. (2014), Ribiero-Junior et al. (2020), and Feitosa et al. (2015).

We used interpolation and estimation techniques to assess the completeness of our surveys. As transect samples were uneven in length (1000 m versus 100 m), we consider the 1000 m transect equivalent to four contiguous 100-m transects separated by 200 m from four more 100-m transects. This arrangement reduces the discrepancy in time effort (Ribeiro-Júnior et al. 2008) between 1000-m and 10-m transects, allowing data pooling for further analyses. Observations on the 1000-m transects were randomly assigned to two subsamples equivalent to 500 m (Table 1). The four concatenated 100-m transects create a small discrepancy in effort but retain transect structure in accordance with most studies on Amazonian herpetofauna in Peru (Doan 2003; von May et al. 2010). Also, the intensity of 100-m transects at each subsite was four, making larger pools further inappropriate in addition to the loss of robustness with a lower sample size.

For each site, we determined alpha diversity using Shannon entropy and their effective number of species (order 1, true diversity; Jost 2006). Likewise, we estimated the expected richness using the improved version of the Chao2 estimator (Chiu et al. 2014). All the above measures, as well as their 95% confidence intervals, were obtained using the "SpadeR" package (Chao et al. 2016) in R v. 4.0.3 (R Core Team 2020). We also constructed a species accumulation curve using the Mao Tau sample-based rarefaction method. This analytical method allows the estimation of 95% confidence intervals without the need to re-sample the data. Finally, we used the R package "iNEXT" (Hsieh et al. 2020; Chao et al. 2014) to plot the sample size-based rarefaction and extrapolate the effective number of species.

Results

To date, 108 species of reptiles and amphibians have been documented in Abujao basin (58 amphibians, 28 lizards, and 22 snakes; Table 3). There are notable differences in the communities present on the various land-cover units. Of the 36 species detected in low terrace zones (Bethel and Santa Rosa de Tamaya-Tipischa), only nine are shared with the high hilly zones (Fig. 2). Caserio Bethel is the only site with *Iguana iguana* (Linnaeus, 1758), and also features six hylid frogs that could not be found anywhere else (*Boana punctata* (Schneider, 1799), *Dendropsophus brevifrons* (Duellman & Crump, 1974), *D. rossalleni* (Goin, 1959), *D. triangulum* (Günther, 1869), *Sphaenorhynchus lacteus* (Bokermann, 1962), *Trachycephalus typhonius*, (Linnaeus, 1758)). This underscores a pattern played out to a lesser extent in the Btb data from Santa Rosa de Tamaya-Tishca, where the following species occurred but could not be found again in other sites or land-cover units: *Dendropsophus kubricki* Rivadeneira, Venegas & Ron 2018, *Boana geographica* (Spix, 1824), and an observation of the aquatic lizard *Dracaena guianensis* Daudin, 1801. This loose assemblage of unshared low terrace and hydromorphic habitat dwellers could be viewed as a low-diversity riverine/riparian and dynamic wetland

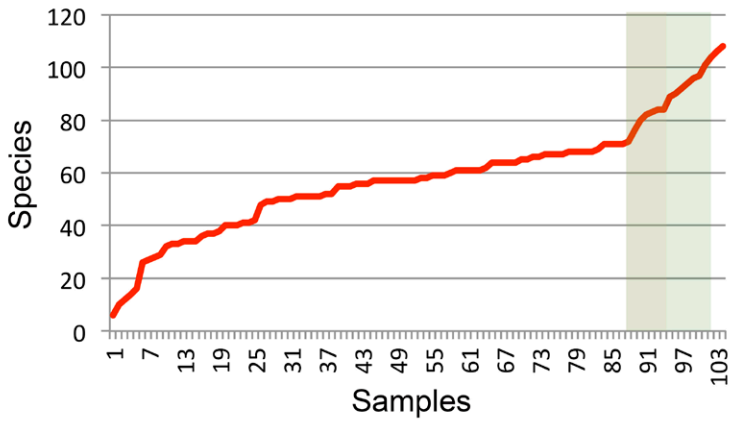

Figure 2. Empirical species accumulation: all transects, opportunistic time-constrained searches, and casual encounter reports arranged in chronological order. Species added from highlighted samples relate to low terrace sites Bethel (dark green) and Santa Rosa de Tamaya Tipishca (TT, light green).

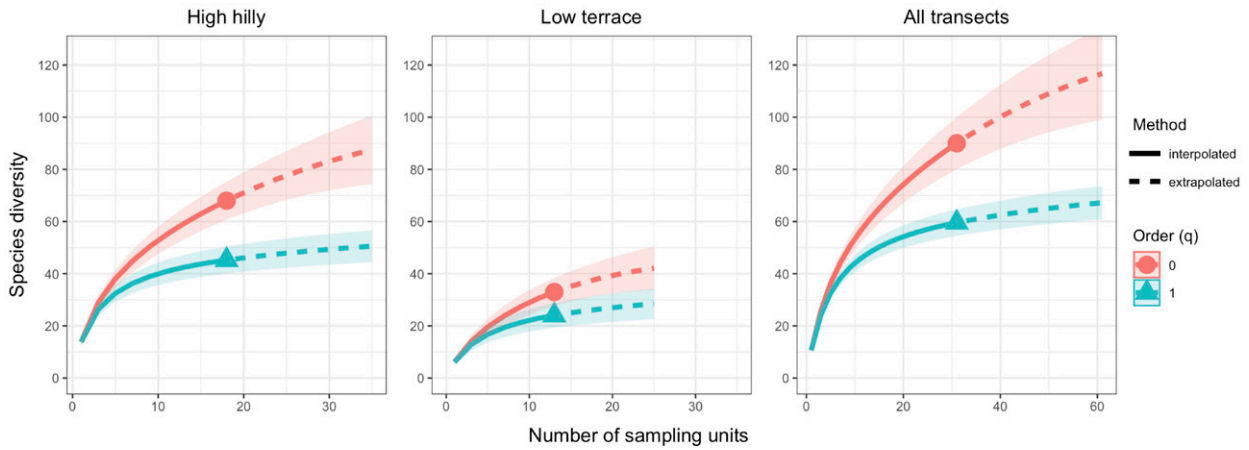

Figure 3. Sample size-based interpolation and extrapolation species accumulation curves using effective number of species of order 0 ($q = 0$) and 1 ($q = 1$). Extrapolation is calculated up to double the empirical sample size.

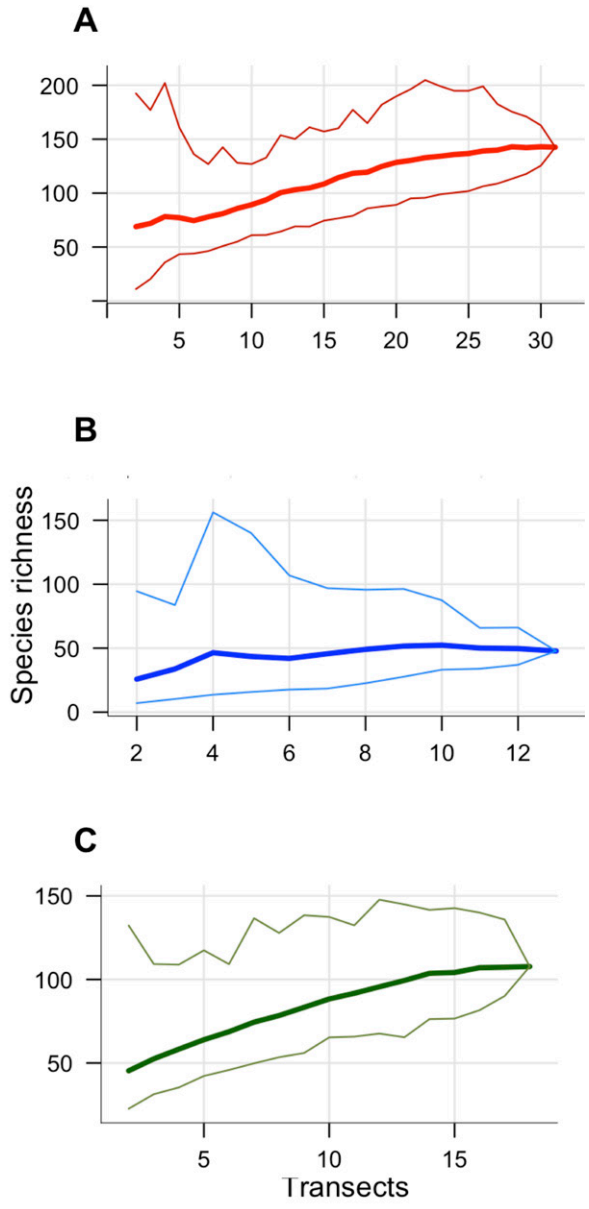

Figure 4. Chao2 results. **A.** All transects at all sites. **B.** Only transects from low terrace sites; upper and lower bound 95% confidence intervals showing potential convergence. **C.** Lack of convergence among transects originating from high hilly sites.

("llanura meandrica") herpetological community.

Greater richness and diversity shown by high hilly environments present the converse of this pattern in which many species are involved. Rarer singleton (only seen once) and doubleton (only seen twice) species occurred in the high hilly zones. Not only is there a markedly low overlap with the low terrace areas, there are empirically higher richness and diversity at San Mateo and the upper-Abujao sites (68 spp. on the transects, Shannon = 4.087 ± 0.048, true diversity (q =1) = 59.582 ± 2.586; low terrace: 33 spp. on the transects, Shannon = 3.18 ± 0.104, true diversity 24.039 ± 2.339; Figs. 3, 4).

While these general trends with distinct assemblages in the high hilly environments versus the low hydromorphic environments can be seen in the species lists (Table 2), diversity statistics indicate that the high terra firma forests should be considered to harbor much higher diversity. The Chao2 estimator, while predicting only 153 species, shows no sign of convergence among the 95 percent confidence intervals (Fig. 4), clearly stating that further sampling will uncover more species. By contrast, the Chao2 analysis run on only the 13 samples originating from low terrace environments exhibit marked convergence, at only 50 species.

Class Amphibia

Allobates femoralis (Boulenger, 1884)

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°23.62′S, 073°42.74′W; elev. 240 m; 16.X.2012; R. Santa-Cruz Farfan obs.; 1♀, 1♂, and 4 sex undetermined; MUSA vouchers: 3576, 4290.

We found six individuals. Some were moving in the litter and others were resting on leaves at night.

Amazophrynella cf. *moisesii* Rojas-Zamora et al., 2018

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°24.45′S, 073°41.67′W; elev. 249 m; 9.X.2012; R. Santa-Cruz Farfan obs.; 1, sex undetermined.

An individual was found moving through the litter

Table 2. Amphibians and squamate reptiles of the Abujao basin. Occurrence: B = Caserio Bethel, TT = Santa Rose de Tamaya-Tipischa, A1 = alto-Abujao 1, A2 = alto-Abujao 2, SM = San Mateo; in parenthesis: LT = in low terrace, HH = high hilly land-cover units. Vouchers: MUSA specimens collected in October 2012 were deposited in the Natural History Museum of the Universidad San Angustin (MUSA) in Arequipa; 3-digit vouchers beginning with zero are field codes curated at the Universidad Nacional de Ucayali. IUCN categories: LC = Least Concern, DD = Data Deficient.

Species	Occurrence	MUSA vouchers	IUCN
ORDER AMPHIBIA			
CLASS ANURA			
Aromobatidae			
Allobates femoralis (Boulenger, 1884)	A2, SM (HH)	3576, 4290	LC
Bufonidae			
Amazophrynella cf. *moisesii* Rojas-Zamora, Fouquet, Ron, Hernández-Ruz, Melo-Sampaio, Chaparro, Vogt, Carvalho et al., 2018	A2 (HH)		—
Rhinella castaneotica (Caldwell, 1991)	SM (HH)		LC
Rhinella gr. *margaritifera* (Laurenti, 1768)	A1, A2, SM (HH)	4284, 6158	LC
Rhinella marina (Linnaeus, 1758)	B, TT, A1 ,A2 (LT/HH)		LC
Dendrobatidae			
Ameerega hahneli (Boulenger, 1884)	A1 (HH)		LC
Ameerega ignipedis Brown & Twomey, 2009	A1, A2, SM (HH)	3572, 3574–3575, 4297, 6139, 6140, 6161	LC
Ameerega trivittata (Spix, 1824)	A1, A2, SM (HH)	6131	LC
Ranitomeya sirensis (Aichinger, 1991)	A1, SM (HH)	4296, 6145	LC
Hemiphractidae			
Hemiphractus helioi Sheil & Mendelson, 2001	A1 (HH)		LC
Hylidae			
Boana aff. *alfaroi* (Caminer & Ron, 2014)	B, TT (LT)		—
Boana boans (Linnaeus, 1758)	SM (HH)		LC
Boana geographica (Spix, 1824)	TT (LT)		LC
Boana punctata (Schneider, 1799)	B (LT)		LC
Dendropsophus brevifrons (Duellman & Crump, 1974)	B (LT)		LC
Dendropsophus kubricki Rivadeneira, Venegas & Ron 2018	TT (LT)		—
Dendropsophus marmoratus (Laurenti, 1768)	A1, A2 (HH)	6156, 6157	LC
Dendropsophus rhodopeplus (Günther, 1858)	A2 (HH)	4283	LC
Dendropsophus rossalleni (Goin, 1959)	B (LT)		LC
Dendropsophus sarayacuensis (Shreve, 1935)	A2, SM (HH)	4304	LC
Dendropsophus triangulum (Günther, 1869)	B (LT)		LC
Osteocephalus helenae (Ruthven, 1919)	SM (HH)		DD
Osteocephalus planiceps Cope, 1874	A1 (LT/HH)	6198–6199, 4285–4286	LC
Osteocephalus taurinus Steindachner, 1862	TT (LT)		LC
Osteocephalus yasuni Ron & Pramuk, 1999	TT, SM (HH)	004	LC
Phyllomedusa vaillantii Boulenger, 1882	A1, A2, SM (HH)	6160, 6165–6166, 6195	LC
Scinax pedromedinae (Henle, 1991)	B, TT (LT)		LC
Scarthyla goinorum (Bokermann, 1962)	B (LT)		LC
Sphaenorhynchus dorisae (Goin, 1957)	B, TT (LT)		LC
Sphaenorhynchus lacteus (Daudin, 1800)	B (LT)		LC
Trachycephalus typhonius (Linnaeus, 1758)	B (LT)		LC
Leptodactylidae			
Adenomera andreae (Müller, 1923)	A1, A2, SM (HH)	4289, 4300, 6144, 6162, 6164, 6186	LC
Edalorhina perezi Jiménez de la Espada, 1871 "1870"	A1, A2, SM (HH)	4309, 4438, 4717, 6188, 008	LC
Engystomops petersi (Jiménez de la Espada, 1872)	A1, A2 (HH)	6163, 6180–6184	LC
Leptodactylus bolivianus Boulenger, 1898	TT (LT)	003	LC
Leptodactylus discodactylus Boulenger, 1884	TT (LT)	001	LC

Species	Occurrence	MUSA vouchers	IUCN
Leptodactylus leptodactyloides (Andersson, 1945)	B, TT (LT)		LC
Leptodactylus pentadactylus (Laurenti, 1768)	A1, A2, SM (HH)		LC
Lithodytes lineatus (Schneider, 1799)	A2, SM (HH)		LC
Microhylidae			
Chiasmocleis tridactyla (Duellman & Mendelson, 1995)	A2 (HH)	3570	LC
Chiasmocleis ventrimaculata (Andersson, 1945)	A2 (HH)	6168	LC
Hamptophryne boliviana (Parker, 1927)	B, TT, A1, A2 (LT/HH)		LC
Strabomantidae			
Noblella myrmecoides (Lynch, 1976)	A1 (HH)	6179	LC
Oreobates quixensis Jiménez de la Espada, 1872	A1, A2, SM (HH)	6133, 6150–6151, 6159	LC
Pristimantis academicus Lehr, Moravec & Gagliardi-Urrutia, 2010	A1, A2, SM (HH)	4294, 6170–6172, 6191	LC
Pristimantis acuminatus (Shreve, 1935)	A2 (HH)	6154, 6155	LC
Pristimantis conspicillatus (Günther, 1858)	A1, A2, SM (HH)	3533, 3565, 3567, 3571, 4299, 6137, 6177	LC
Pristimantis croceoinguinis (Lynch, 1968)	A1, A2, SM (HH)		LC
Pristimantis delius (Duellman & Mendelson, 1995)	A2 (HH)		DD
Pristimantis eurydactylus (Hedges & Schlüter, 1992)	A1, A2 (HH)	4287–4288, 6134–6135, 6152, 6153, 6197	LC
Pristimantis iiap Padial, Gagliardi-Urrutia, Chaparro & Gutiérrez, 2016	A1, SM (HH)		DD
Pristimantis luscombei (Duellman & Mendelson, 1995)	A1, A2, SM (HH)	4291–4293, 4295, 4298, 4301–4303, 6136, 6138, 6141, 6143, 6148–6149, 6167, 6173–6176, 6178, 6187, 6189, 6190, 6192–6194	LC
Pristimantis martiae (Lynch, 1974)	A1, A2 (HH)		LC
Pristimantis ockendeni (Boulenger, 1912)	SM (HH)		LC
Pristimantis reichlei Padial & De la Riva, 2009	A1, A2 (HH)	6146, 6185	—
CAUDATA			
Plethodontidae			
Bolitoglossa altamazonica (Cope, 1874)	A1, A2, SM (HH)	4305–4307, 6200, 6201, 6132	LC
GYMNOPHIONA			
Caeciliidae			
Caecilia tentaculata Linnaeus, 1758	A2 (HH)	4308	LC
CLASS REPTILIA			
SAURIA			
Alopoglossidae			
Alopoglossus atriventris Duellmen 1973	A1, A2, SM (HH)	3642–3643, 5181, 5201, 5202	LC
Anguidae			
Diploglossus fasciatus (Gray, 1831)	A1 (HH)	3653	LC
Dactyloidae			
Anolis fuscoauratus D'Orbigny, 1837	all sites (LT/HH)	3647, 3652, 5175	LC
Anolis ortonii Cope, 1868	SM (HH)		LC
Anolis punctatus Daudin, 1802	A1, SM (LT/HH)		LC
Anolis scypheus Cope, 1864	B (LT)		LC
Anolis tandai Avila-Pires, 1995	A1, A2, SM (HH)	5173	LC
Anolis trachyderma Cope, 1875	A1, A2, SM (HH)		LC
Anolis transversalis Duméril, 1851	A1 (HH)	5192	LC
Gymnophthalmidae			
Cercosaura argulus Peters, 1862	TT, A1, A2, SM (LT/HH)	5178, 5193–5195	LC
Iphisa elegans Gray, 1851	A1, SM (HH)	5199, 5200	LC
Potamites ecpleopus (Cope, 1875)	A1, A2 (HH)	3648, 5180, 5183, 5198	LC
Potamites juruazensis (Avila-Pires & Vitt, 1998)	A1, A2 (HH)	3644	LC

Species	Occurrence	MUSA vouchers	IUCN
Hoplocercidae			
Enyalioides laticeps (Guichenot, 1855)	A1, A2 (HH)	3655, 5172, 5176, 5184, 5185, 5191	LC
Enyalioides palpebralis (Boulenger, 1883)	A2, SM (HH)	3654	LC
Iguanidae			
Iguana iguana (Linnaeus, 1758)	B (LT)		LC
Scincidae			
Varzea altamazonica (Miralles, Barrio-Amoros, Rivas, Chaparro-Auza, 2006)	TT, SM (LT/HH)	005	LC
Sphaerodactylidae			
Gonatodes hasemani Griffin, 1917	A1 (HH)	5188, 5197	LC
Gonatodes humeralis (Guichenot, 1855)	TT, A1, A2, SM (LT/HH)	5174, 5179, 5189	LC
Pseudogonatodes guianensis Parker, 1935	A1, A2, SM (HH)	3645–3646, 5190	LC
Teiidae			
Ameiva ameiva (Linnaeus, 1758)	B (LT)		LC
Dracaena guianensis Daudin, 1801	TT (LT)		LC
Kentropyx altamazonica (Cope, 1876)	TT (LT)		LC
Kentropyx pelviceps (Cope, 1868)	TT, A1, A2, SM (LT/HH)	5196	LC
Tupinambis cuzcoensis Murphy, Jowers, Lehtinen, Charles, Colli, Peres Jr, Hendry & Pyron 2016	B (LT)		-
Tropiduridae			
Plica plica (Linnaeus, 1758)	SM (HH)		LC
Plica umbra (Linnaeus, 1758)	TT (LT)		LC
Stenocercus rosieventris D'orbigny in Duméril & Bibron, 1837	A1 (HH)	5204, 5380	-
SERPENTES			
Boidae			
Corallus batesii (Gray 1860)	SM (HH)		LC
Corallus hortulana (Linnaeus, 1758)	A2, SM (HH)		LC
Colubridae			
Chironius fuscus (Linnaeus, 1758)	A1, SM (HH)		LC
Chironius cf. *multiventris* Schmidt & Walker, 1943	TT (LT)		LC
Dendrophidion dendrophis (Schlegel, 1837)	A2, SM (HH)	3649	LC
Dipsas catesbyi (Sentzen, 1796)	TT, SM (LT/HH)		LC
Dipsas indica Laurenti, 1768	SM (HH)		LC
Drepanoides anomalus (Jan, 1863)	SM (HH)		LC
Drymarchon corais (Boie, 1827)	A2 (HH)		LC
Drymoluber dichrous (Peters, 1863)	A1, A2, SM (HH)		LC
Erythrolamprus reginae (Linnaeus, 1758)	TT, A2, SM (HH)	3650, 007, 010	LC
Imantodes cenchoa (Linnaeus, 1758)	A2, SM (HH)		LC
Oxyrhopus melanogenys (Tschudi, 1845)	SM (HH)		LC
Oxyrhopus occipitalis (Wagler, 1824)	SM (HH)	009	LC
Oxyrhopus petolarius (Linnaeus, 1758)	A1 (HH)	5113	LC
Phrynonax polylepis (Peters, 1867)	A2, SM (HH)		LC
Pseudoboa coronata Schneider, 1801	TT (LT)		LC
Xenoxybelis argentea (Daudin, 1803)	A2 (HH)		LC
Elapidae			
Micrurus annellatus Peters, 1871	A1, A2, SM (HH)	3651, 5177, 5203, 011	LC
Micrurus surinamensis (Cuvier, 1817)	A2 (HH)	5205	LC
Leptotyphlopidae			
Epictia sp.	A1 (HH)		LC
Viperidae			
Bothrops atrox (Linnaeus, 1758)	TT (LT)	006	LC

during the day using the transect method.

Identification. A single observation was made of this group of very small toads with acuminate snout and light tuberculate skin with highly grainy texture on the venter interspersed with darker brown blotches. Dorsal coloration included chevrons. The toad possesses a white labial stripe that continues onto the anterior fringe of the humeral region. Plantar surfaces of the fingers and toes are tinted light red. There are white pustules on the flanks. Cranial cresting was minimal.

Taxonomic notes. The wide-ranging genetic study by Rojas et al. (2018) gives us confidence that *A. moisesii* occurs in Abujao.

Comments. We suggest that future studies look into potential population declines.

***Rhinella castaneotica* (Caldwell, 1991)**

Materials examined. PERU – Ucayali • Coronel Portillo, San Mateo; 08°11.47′S, 073°40.82′W elev. 250m; 14.VI.2015; C. Gallegos obs.; sex undetermined.

Two individuals were displaced from leaf litter on diurnal transect**.**

***Rhinella* gr. *margaritifera* (Laurenti, 1768)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°22.82′S, 073°42.99′W; elev. 233 m; 20.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined; MUSA vouchers: 4284, 6158.

We found 44 individuals displaced from litter during both diurnal and nocturnal sampling.

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

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1 & 2; 08°25.46′S, 074°15.71′W; elev. 161 m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Eight individuals were found moving through the litter at night using the transect method.

***Ameerega hahneli* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°26.09′S, 073°42. 65′W; elev. 253 m; 16.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

An individual was found sleeping on the leaves of a shrub at night using the transect method.

***Ameerega ignipedis* (Brown & Twomey, 2009)**

Figure 5A

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.977′S, 073°42.807′W; elev. 258 m; 9.X.2012; R. Santa-Cruz Farfan obs.; 2♀ and 4♂; MUSA vouchers: 3572, 3574–3575, 4297, 6139–6140, 6161.

We found 16 individuals on leaf litter and shrub leaves during the daytime and at night using the transect method. One male had back-riding tadpoles.

Identification. The yellow dorsolateral stripes on these small poison dart frogs widen posteriorly until forming large yellow spots above the groin. The venter is mottled bright blue.

Distribution notes. This species is undocumented in Acre, Brazil, and its distribution is potentially restricted by the SDD.

***Ameerega trivittata* (Spix, 1824)**

Materials examined. PERU – **Ucayali** • Colonel Portillo, Calleria, alto-Abujao 1, San Mateo; 08°22.54′S, 073°40.52’W; elev. 258 m; 17.VII.2015; R. Santa-Cruz Farfan obs.; 1♂; MUSA vouchers: 6131

Thirty-five individuals of this species were found in leaf litter; of which the majority were moving during the day between 0800 h and 1200 h, except for one who was sleeping. One male had back-riding tadpoles.

***Ranitomeya sirensis* (Aichinger, 1991)**

Figure 5B

Taxonomic authority. Brown et al. (2011).

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2, San Mateo; 08°22.66′S, 073°43.17′W; elev. 253 m; 13.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 4296, 6145.

Three individuals were found calling and moving in the underbrush and leaf litter during the daytime using the transect method. One male had back-riding tadpoles.

Identification. This poison-dart frog has a wide mid-dorsal stripe between complete dorsolateral stripes. The mid-dorsal stripe, however, is interrupted by black spotting posteriorly. The venter bears a blue reticulate pattern, but the gular region is yellow, broken up by five black spots. There is no red or orange coloration on the specimens found, favoring clear yellow and/or blue. Finger I is shorter than finger II.

Taxonomic notes. *Ranitomeya uakarii* and *R. toraro* tend not to have complete mid-dorsal stripes (Brown et al. 2011).

Distribution notes. The identity of this frog could be a point of contention given the persistence of *R. uakarii* and *R. tararo* at nearby sites in Acre, Brazil (Brown et al. 2011). Our record unites a range across Brazilian borderlands with populations known from elsewhere in Acre (Melo-Sampaio and Souza 2009; França and Venâncio 2010)

***Hemiphractus helioi* (Sheil & Mendelson, 2001)**

Figure 5C

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1, 08°17.44′S, 073°41.743′W; elev. 214 m; 20.X.2012; R. Santa-Cruz Farfan obs.; 2 sex undetermined.

Two individuals were disturbed from leaf litter during nocturnal sampling.

Identification. This treefrog is characterized by a triangular head with a laterally depressed, fleshy snout,

Figure 5. Frogs of the Abujao basin. **A.** *Ameerega ignipedis*. **B.** *Ranitomeya sirensis*. **C.** *Hemiphractus helioi.* **D.** *Boana* aff. *alfaroi.* **E** *Dendropsophus marmoratus.* **F.** *Dendropsophus rossalleni.* **G.** *Dendropsophus triangulum*. **H.** *Osteocephalus helenae*. **I.** *Osteocephalus planiceps*. **J, K.** *Osteocephalus yasuni*. **L.** *Phyllomedusa vaillanti.* **M.** *Sphaenorhynchus dorisae*. **N.** *Sphaenorhynchus lacteus*. **O.** *Adenomera andreae*. **P.** *Leptodactylus discodactylus*. **Q.** *Chiasmocleis tridactyla*. **R.** *Pristimantis academicus*.

clear vertical stripes on the snout, and conical tubercle on the eyelid. Its body is depressed, and neural spines of the vertebrae protrude through the skin of the back. It has short calcars on the heels. All toes have expanded discs. The dorsum is tan to grayish brown with irregular, darker markings, and the belly is grayish white.

Taxonomic notes. This species was previously confused with *Hemiphractus johnsoni* (Souza 2009), but Peloso (2010) confirmed that the populations around SDD belong to *H. heloi.*

Distribution notes. This species occurs in the upper Amazon basin, on the lower Amazonian slopes of southern Peru and in adjacent Brazil (Acre). Its altitudinal range is from 300 m above sea levels to 2,000 m above sea level. According to our records and the closest distance to the polygon proposed by the IUCN, there is a minimum distance of about 60 km from the closest record by Souza (2009) in Acre.

***Boana* aff. *alfaroi* (Caminer & Ron, 2014)**

Figure 5D

Taxonomic authorities. Caminer and Ron (2014); Faivovich et al. (2005).

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria & Masisea, Santa Rosa de Tamaya-Tipishca, Caserio Bethel; 08°29.62′S, 074°10.42′W; elev. 161 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 2♂.

We found two individuals by various methods in late night hours. They were on leaves of shrubs. One male was actively calling.

Identification. These gracile treefrogs have no bony ridges. The hidden surfaces on the flanks and posterior surfaces of the thighs are spotted.

Taxonomic notes. We apply this name to frogs that would previously have been identified as *B. fasciata*. However, given notable discrepancy in the recorded calls for *B. maculateralis*, *B. alfaroi* (Caminer and Ron 2014), and "*Hyla fasciata*" sensu lato (Cocroft et al. 2001), the taxonomy has clearly not yet been resolved.

Distribution notes. Bioacoustic assessment will go a long way to distinguish the confirmed range of *B. alfaroi* in Ecuador from and what appears to be a widespread species of the Peruvian and Brazilian Amazon.

***Boana boans* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, San Mateo; 08°11.47′S, 073°40.82′W; 250 m; 14.VII.2015; C. Gallegos obs.; 2♂.

We observed two males calling in a tree.

***Boana geographica* (Spix, 1824)**

Materials examined. PERU – Ucayali • Colonel Portillo, Masisea, Santa Rosa de Tamaya-Tipishca; 08°29.62′S, 074°10.42′W; 162m; 20.X.2012; C. Gallegos obs.; 4♀ 4♂.

We observed eight individuals, of which several were calling makes, on one of the nocturnal transects in the low terrace forest of TT.

***Boana punctata* (Schneider, 1799)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, Caserío Bethel; 08°25.46′S, 074°15.71′W; elev. 161 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 1, sex undetermined.

An individual was found resting on a grass blade.

***Dendropsophus brevifrons* (Duellman & Crump, 1974)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, Caserío Bethel; 08°25.37′S, 074°15.76′W; elev. 154 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 2, sex undetermined.

Two individuals were found moving on herbaceous leaves during the night using the transect method.

***Dendropsophus kubricki* (Rivadeneira, Venegas & Ron 2018)**

Materials examined. PERU – Ucayali • Colonel Portillo, Masisea, Santa Rosa de Tamaya-Tipishca; 08°30.16′S, 074°13.31′W; elev. 155 m; 4.VII.2015; C. Gallegos obs.; 1, sex undetermined.

A specimen was found that was inactive, that is, in a state of rest on the leaves of a bush after 2000 h.

***Dendropsophus marmoratus* (Laurenti, 1768)**

Figure 5E

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°23.10′S, 073°42.77′W; elev. 231m; 10.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 6156, 6157.

We found four individuals by casual encounter, which were found moving on the leaves of bushes during the night.

Identification. This treefrog has a short, rounded snout in dorsal view and in profile. The dorsum has brownish gray to mottled, reddish-brown shades, resembling lichens or bird droppings (Bartlett and Bartlett 2003). Throat, belly, the underside of hind limbs, and axillary membranes are creamy white to dull yellow with black spots or mottling. Faint, scalloped dermal folds are present on the extremities. The fingers and toes are webbed. The pads of the fingers are large and rounded. The iris is pale gray with fine black reticulations and a medium-sized reddish-brown horizontal stripe.

Distribution notes. This species can be found throughout the Amazon basin. Camper et al. (2021) recorded this species at elevations up to 1,000 m above sea level.

***Dendropsophus rhodopeplus* (Günther, 1858)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°26.09′S, 073°41.197′W; elev. 229 m; 12.X.2012; R. Santa-Cruz Farfan obs.; 1 ♂; MUSA voucher: 4283

There was a casual encounter with an individual on a shrub leaf at night.

***Dendropsophus rossalleni* (Goin, 1959)**

Figure 5F

Taxonomic authority. De la Riva and Duellman (1997).

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, Caserio Bethel; 08°25.37′S, 074°15.76′W; elev. 161 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 1♂.

An individual was found active on an herbaceous leaf on a nocturnal transect.

Identification. These small, short-headed treefrogs have pale yellow toe pads. The distinctive color pattern includes supraorbital spots, which touch interorbitally. Two more postoccipital spots are less well-defined against an overall dark green dorsum, with irregular dark gray spots breaking up an overall drab frog. The legs are marked with a trifecta of spots on the heel, knee, and mid-tibia region. There are further oblong and misshapen white spots at the elbows. The iris has no noticeable color, but a black line accompanies the orbit.

***Dendropsophus sarayacuensis* (Shreve, 1935)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°24.86′S, 073°41.36′W; elev. 256 m; 26.X.2012; R. Santa-Cruz Farfan obs. 1♂; MUSA voucher: 4304.

Three individuals were found where two were resting and one was active on leaves.

***Dendropsophus triangulum* (Günther, 1869)**

Figure 5G

Materials examined. PERU – Ucayali • Cornel Portillo, Callería, Caserío Bethel; 08°25.45′S, 074°15.73′W; elev. 177m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

One specimen was found on the leaf of a shrub during a nocturnal transect.

***Osteocephalus helenae* (Ruthven, 1919)**

Figure 5H

Taxonomic authorities. Jungfer et al. 2013; Villacampa et al. 2016.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, San Mateo; 08°11.47′S, 073°40.82′W; elev. 250 m; 14.VII.2015; C. Gallegos obs.; 1 sex undetermined.

An individual was found active in underbrush during late night.

Identification. We observed a medium-sized dark green treefrog with finely tuberculate skin according to this species. The iris pattern includes darker regions on each side of the pupil, and single black perforation below the pupil.

Taxonomic notes. While Brazilian records have seemingly placed these frogs in *O. buckleyi* as recently as 2015 (Miranda et al. 2015), research by Jungfer et al. (2013) and Ron et al. (2012) has gone to great lengths in splitting the *buckleyi* group. We follow Jungfer et al. (2013) in assigning the majority of Peruvian specimens to *O. helenae* until further evidence emerges.

Distribution notes. This species is featured in reports from the Purus valley (Padial et al. 2016). A generalized lack of records from allied regions is perhaps due to this species' dry-season breeding activity (Jungfer et al. 2013) and a bias towards wet-season sampling.

***Osteocephalus planiceps* (Cope, 1874)**

Figure 5I

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo, 08°17.12′S, 073°42.01′W; elev. 247 m; R. Santa-Cruz Farfan obs.; 2♀ and 2♂; MUSA vouchers: 6198–6199, 4285–4286.

We found six individuals via both active and passive search. They were using shrubby branches at various times of night.

***Osteocephalus taurinus* (Steindachner, 1862)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, Santa Rosa de Tamaya-Tipishca; 08° 28.78′S, 074°9.85′W; elev. 162 m; 26.X.2012; C. Gallegos obs.; sex undetermined.

We found 12 individuals on shrub branches. Some appeared to be inactive during late night transects.

***Osteocephalus yasuni* (Ron & Pramuk, 1999)**

Figure 5J, K

Taxonomic authorities. Ron et al. 2012; Moravec et al. 2016.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria & Masisea, Santa Rosa de Tamaya Tipishca; 08°29.45′S, 074°10.23′W; elev. 162 m; 28.VI.2015; C. Gallegos obs.; 1♂; voucher COD-004 (UNU) • ibid.; San Mateo; 08°11.306′S, 073°40.292′W; elev. 263; 15.VII.2015; C. Gallegos obs.; 6 sex undetermined.

We found 20 individuals. Many of them were calling from shrubs and vines at night.

Identification. These medium-sized, agile, and gracile treefrogs have complete black eye masks and white labial stripes. The iris is faintly bicolored but not marked by any radial perforations. The ventral coloration is predominantly yellow.

Taxonomic notes. Initially reported as *O. leprieurii*, we followed Moravec et al. (2016) in supporting an alternative identity.

Distribution notes. These fogs were reported as very abundant at Santa Rosa de Tamya-Tipishca (TT) in both low terrace and middle terrace forests.

***Phyllomedusa vaillantii* (Boulenger, 1882)**

Figure 5L

Taxonomic authorities. Faivovich et al. 2005; Faivovich et al. 2010.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.88′S, 073°42.86′W; elev. 240 m; 10.X.2012; R. Santa-Cruz Farfan obs.; 4 sex undetermined; MUSA vouchers:

6160, 6165, 6166, 6195.

We observed five individuals. They did not show any activity during late night. Microhabitat was leaves and branches in the underbrush.

Identification. This frog has a row of imbricate bony tubercles running along each of the typically enlarged dorsolateral folds of the genus.

Distribution notes. We confirmed a pan-Amazonian distribution. This species was not found at the sites of Moravec et al. (2016), while most of the other phyllomedusid species were. It is also conspicuously missing from Souza (2009), speaking towards the patchy distribution for these frogs. Evidence for the presence and identity of the P*hyllomedusa tarsius* group in Ucayali is still lacking for regions north of the Fitzcarrald Arc.

***Scinax pedromedinae* (Henle, 1991)**

Materials examined. PERU – Ucayali, Coronel Portillo, Callería & Masisea, Santa Rosa de Tamaya-Tipishca, Caserio Bethel; 08°26.74′S, 074°13.31′W; elev. 168 m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Two individuals were found moving on the leaves of the bushes at night by the transect method.

***Scarthyla goinorum* (Bokermann, 1962)**

Materials examined. PERU – Ucayali • Coronal Portillo, Callería, Santa Rosa de Tamaya-Tipishca, Caserío Bethel; 08°25.37′S, 074°15.76′W, elev. 154 m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Fourteen individuals were found with the transect method. They appeared to be inactive during nighttime sampling.

***Sphaenorhynchus dorisae* (Goin, 1957)**

Figure 5M

Materials examined. PERU – Ucayali • Colonel Portillo, Callería & Masisea, Santa Rosa de Tamaya-Tipishca, Caserío Bethel; 08°25.53′S, 074°15.78′W; elev. 168 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 2 sex undetermined.

Two individuals were found on grass blades on nocturnal transects.

***Sphaenorhynchus lacteus* (Daudin, 1800)**

Figure 5N

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, Caserío Bethel; 08°25.53′S, 074°15.78′W; elev. 168 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

An individual was found on a grass blade.

Identification. This unicolored green tree frog has a prominent, acuminate snout viewed from above, with a dark brown canthal stripe. The belly and outer margins of the limbs are white, and the ventral surfaces of the limbs are bluish green. Denal fins are lateral to the cloacal opening. It has extensive axillary membranes and webbed toes up to the middle.

Distribution notes. This species can be found at an altitudinal range of up to 300 m above sea level in floodable areas in the Amazon Basin.

***Trachycephalus typhonius* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, Caserío Bethel; 08°25.53′S, 074°15.78′W; elev. 168 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

One individual was found active on a branch on transect.at night.

***Adenomera andreae* (Müller, 1923)**

Figure 5O

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°22.98′S, 073°42.81′W; elev. 250m; 20.X.2012; R. Santa-Cruz Farfan obs.; 3♀ and 3♂; MUSA vouchers: 4289, 4300, 6144, 6162, 6164, 6186.

We found 57 individuals. All were seen in leaf litter during nocturnal sampling.

***Edalorhina perezi* (Jiménez de la Espada, 1871 "1870")**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°17.44′S, 073°41.74′W; elev. 259m; 21.X.2012; R. Santa-Cruz Farfan obs.; 2♀ and 2♂; MUSA vouchers: 4309,4438, 4717, 6188, COD-008 (UNU).

We made eight total observations by various methods throughout nighttime sampling.

***Engystomops petersi* (Jiménez de la Espada, 1872)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2; 08°22.98′S 073°42.81′W; elev. 234 m; 11.X.2012; R. Santa-Cruz Farfan obs.; 2♀ and 1♂; MUSA vouchers: 6163, 6180–6184

We found eight individuals active in leaf litter. All observations took place at night.

***Leptodactylus bolivianus* (Boulenger, 1898)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, Santa Rosa de Tamaya-Tipishca, 08° 28.30′S, 074°9.46′W; elev. 159m; 29.VII.2015; C. Gallegos obs.; 1♂; voucher: 003 (UNU)

An individual was disturbed from leaf litter during a night transect.

***Leptodactylus discodactylus* (Boulenger, 1884)**

Figure 5P

Taxonomic authorities. Heyer and Diment 1974; Heyer 1997; de Sa et al. 2014.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria & Masisea, Santa Rose de Tamaya-Tipischa; 08°29.45′S, 074°10.23′W; elev. 159 m; 29.VI.2015; C. Gallegos obs.; 1 sex undetermined; voucher: COD-001 (UNU).

We observed 35 individuals throughout nighttime sampling.

Identification. For these small-to-medium sized frogs the skin texture can include some diffuse conical tubercles on the flanks, but the shagreen or diffusely tuberculate texture does not give definition to any dorsolateral folds. Frogs of this species tend to have gray coloration in the gular region. There are white labial bars. Lateral fringes are visible on the toes.

Distribution notes. We documented a very high abundance of *Leptodactylus* species at the low-to-middle terrace sites. This species, along with *L. leptodactyloides*, was not found at any high hilly sites. This species was not featured in Moravec et al. (2016). While representing a typical feature of the herpetofauna of Ucayali, the distribution is still quite patchy.

***Leptodactylus leptodactyloides* (Andersson, 1945)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería & Masisea, Santa Rosa de Tamaya-Tipishca, Caserio Bethel; 08°25.62′S, 074°15.85′W; elev. 157m; 26.X.2012; R. Santa-Cruz Farfan obs.; 9 sex undetermined.

We observed 153 individuals among the low hydromorphic land cover classes. Leaf litter was the microhabitat.

***Leptodactylus pentadactylus* (Laurenti, 1768)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°23.10′S, 073°42.77′W; elev. 231m; 10.X.2012; R. Santa-Cruz Farfan obs.; 2♂ and 3 sex undetermined.

We found eight individuals. They were active in leaf litter at night. At least two were males that were calling.

***Lithodytes lineatus* (Schneider, 1799)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao2, San Mateo; 08°25.02′S, 073°41.20′W; elev. 229 m; 13.X.2012; R. Santa-Cruz Farfan obs.; 2 sex undetermined.

Two individuals were found active in leaf litter during the nighttime.

***Chiasmocleis tridactyla* (Walker, 1973)**

Figure 5Q

Taxonomic authorities. Zweifel 1986; Greenbaum et al. 2011; de Sa et al. 2012; Peloso et al. 2014.

Material examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2; 08°26.25′S, 073°42.84′W; elev. 239 m; 14.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined; MUSA voucher: 3570.

An individual was found on a time-constrained search of leaf litter.

Identification. These tiny narrow-mouthed frogs present only vestiges of a first digit on the hands, giving them only three fingers. The tympanum is distinct. A conglomeration of white spots on the upper eyelids forms an irregular white canthal stripe on the rostrum. There is further white spotting on the flanks and hands. The spots on the venter, to the extent they are visible in the preserved specimen, appear to be a continuation of the white spotting on the flanks.

Taxonomic notes. Peloso et al. (2014) say 1.2 cm is the max SVL for *C. tridactyla*. Our specimen is 1.3 cm SVL. The degree of reduction of fingers I, II, and IV, plus the almost non-existent toe I, lead us to believe that this is an example of *C. tridactyla*.

Distribution notes. Peloso et al. (2014) state that the material they examined for *C. antenori* came from Serra do Divisor in Acre, Brazil. Therefore, this record, should it stand, is not only a large range extension from Loreto, Peru, but could also begin to establish a distinction between the eastern versus the western versant of Sierra del Divisor. Given how difficult it is to detect these elusive and diminutive frogs, wide scale sympatry remains a possibility.

***Chiasmocleis ventrimaculata* (Andersson, 1945)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 2; 08°23.10′S, 073°42.77′W; elev. 231 m; 10.X.2012; R. Santa-Cruz Farfan obs.; 1♀; MUSA voucher: 6168

We logged one casual encounter of an individual disturbed from leaf litter.

***Hamptophryne boliviana* (Parker, 1927)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2; 08°25.37′S, 074°15.76′W; elev. 154 m; 26.X.2012; R. Santa-Cruz Farfan obs.; 1 ♂, 4 sex undetermined.

Eleven individuals were found active in litter at night.

***Noblella myrmecoides* (Lynch, 1976)**

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1; 08°17.28′S, 073°40.51′W; elev. 249 m; 22.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined; MUSA voucher: 6179.

An individual was found active in leaf litter at night.

***Oreobates quixensis* (Jiménez de la Espada, 1872)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°17.07′S, 073°42.08′W; elev. 247 m; 10.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Twenty-five individuals were found that were active at night after 2000 h in the leaf litter.

***Pristimantis academicus* Lehr, Moravec & Gagliardi, 2010**

Figure 5R

Taxonomic authorities. Lehr et al. 2010.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°17.28′S, 073°40.52′W; elev. 247 m; 19.X.2012; R. Santa-Cruz Farfan obs.; 6 sex undetermined; MUSA vouchers: 4294, 6170–6172, 6191.

Eight individuals were found active in bushes and on leaves during the day and at night using the transect method.

Identification. This small direct-developing frog varies from light brown to greenish dark brown. The skin on the dorsum could be considered coarsely tuberculate, but is marked by various ridges, making a rugose texture that hides all tympanic membranes and annuli under the skin. Although these ridges are dense and almost striated dorsolatterly on some individuals, they do not take the shape of a "W" on the scapular region. The venter is only weakly areolate but bears a diffuse blue pattern on black with two distinct yellow spots bordered by black at the groin.

Taxonomic notes. Lehr et al. (2010) made note of the tubercle on the type of snout as a diagnostic character. In our specimens the tubercle is also represented, but not part of the overall rough texture that produces noticeable protuberance to the nostrils. One would assume that the rough texture produced by the coalesced skin folds is a sexual dimorphism, and therefore not strictly diagnostic in males. We agree with Lehr et al. (2010) that dark brown individuals may be expressing a diel color change.

Distribution notes. This species is well known from Peruvian and Brazilian Amazonia (Bernarde et al. 2011; Fonseca et al. 2019). That it has not been found in surveys of Purus basin suggests that Abujao may be close to its southernmost extent.

***Pristimantis acuminatus* (Shreve, 1935)**

Figure 6A

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°26.09′S, 073°42.65′W; elev. 231 m; 16.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 6154, 6155.

We found two individuals by casual encounter. Both were at night.

***Pristimantis conspicillatus* (Günther, 1858)**

Figure 6B

Taxonomic authorities. Lynch 1980; Hedges et al. 2008; Lehr and Duellman 2009; Padial et al. 2014.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.54′S, 073°43.16′W; elev. 247 m; 10.X.2012; R. Santa-Cruz Farfan obs.; 4♀ and 3♂; MUSA vouchers: 3533, 3565, 3567, 3571, 4299, 6137, 6177.

We found 23 individuals on leaves and leaf litter during the daytime and at night using the transect method.

Identification. These frogs of the conspicillatus group have no notable dorsal pattern but do have dark masks. There are no post-occipital spots. Dorsal lateral folds are well developed. The posterior surfaces of the thighs bear a pattern of orange mottling.

Distributions notes. Abujao may represent an overlap in the ranges of *P. rechlei*, *P. peruvianus*, and *P. conspcillatus*. Taxonomic study could overturn some identifications (e.g. *P. reichlei* being distinguished from *P. iiap* at a larger scale), but overall the range of *P. conspicillatus* appears to be very widespread both east and west of our sites.

***Pristimantis croceinguinis* (Lynch, 1968)**

Figure 6C

Taxonomic authorities. Hedges et al. 2008; Lehr and Duellman 2009; Padial et al. 2014.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.88′S, 073°42.86′W; 12.X.2012. elev. 253 m; 13.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Twenty-five individuals were found on leaves in the underbrush at nighttime.

Identification. This frog can be distinguished by the yellow spots in the groin. The rest of the venter is unmarked. The dorsum is densely tuberculate, including the heel, but the tympanum is not visible. The scapula W is marked but not ridged.

Distribution notes. Found in humid regions of Ecuador and Colombia, the distribution of this frog is less well defined in Peru, with scattered records to the south (Morales et al. 1996). While it is unclear what has prevented its register in Acre, Brazil, our records uphold a widespread distribution.

***Pristimantis delius* (Duellman & Mendelson, 1995)**

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2; 08°24.32′S, 073°41.85′W; elev. 249 m; 13.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined

An individual was found on a shrub leaf at night by the transect method.

***Pristimantis eurydactylus* (Hedges & Schlüter, 1992)**

Figure 6D

Taxonomic authorities. Lehr and Duellman 2009.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2; 08°22.54′S, 073°43.16′W; elev. 228 m; 12.X.2012; R. Santa-Cruz Farfan obs., 3♀ and 3♂; MUSA vouchers: 4287–4288, 6134–6135, 6152–6153, 6197.

We found eight individuals on leaves of underbrush during nocturnal searches.

Identification. The darker-colored and larger-sized frogs of this species, which are members of the unistrigatus group of direct developing frogs, have prominent tympanic membranes and annuli. Dorsal skin is notably tuberculate, and a dark "W" in the scapular region can be seen. The pads of the toes and fingers are greatly expanded. The venter bears semi-diffuse but clear oblong dark spots. There are no yellow marks in the groin, on the venter, or anywhere on the animal.

Taxonomic notes. We cannot support *P. orcus* in Ucayali, mainly due to dorsal skin texture. The ventral pattern is also radically different from the reports for *P. orcus* (Lehr et al. 2009). It is also noteworthy that the snout in profile is less acuminate, showing a more robust frog overall.

Figure 6. Frogs of the Abujao basin. **A.** *Pristimantis acuminatus*. **B.** *Pristimantis conspicillatus* **C.** *Pristimantis croceinguinis* **D.** *Pristimantis eurydactylus*. **E.** *Pristimantis iiap* **F.** *Pristimantis luscombei*. **G.** *Pristimantis martiae*. **H.** *Pristimantis ockendeni*. **I.** *Pristimantis reichlei*. **J.** *Bolitoglossa altamazonica* **K** *Caecilia tentaculata*.

Distribution notes. Reports of this species are scattered and inconsistent. SDD can be considered within its range, but the lack of reports from areas in between central Amazonia and the Pachitea valley may be attributable to misidentifications.

***Pristimantis iiap* (Padial, Gagliardi, Chaparro & Gutierrez, 2016)**

Figure 6E, Appendix Figure A1A–E

Taxonomic authorities. Padial et al. 2016.

Materials examined. PERU – **Ucayali** • Colonel Portillo, Calleria, alto-Abujao 1, San Mateo; 08°17.07′S, 073°42.08′W; elev. 255; 17.X.2012, R. Santa-Cruz Farfan obs., 3 sex undetermined.

We found three individuals displaced from leaf litter on transect at night.

Identification. In these small to medium-sized direct developing frogs of the conspicillatus group the dorsolateral folds are present but poorly developed, having granular texture, and no further dorsal or interocular folds or ridges can be observed. The color is dark brown to black, with chevron patterns having lighter tan borders, and two black post-occipital spots. Finger I is the same length as finger II. The snout is round in dorsal view and in profile.

Taxonomic notes. In addition to the features laid out in Padial et al. (2016), the fact that these frogs have snout rounded in dorsal view, as opposed to subacuminate, appears to be a feature of taxonomic significance.

Distribution notes. Both survey phases independently observed and photographed this species at upper-Abujao 1 and San Mateo. The range of this frog is still in the process of being expanded beyond the type locality in the Sepahua Basin, southern Ucayali Dept. There is reason to believe it persists throughout the Brazilian borderlands. Both Bernarde et al. (2011) and Fonseca et al.

(2019) apply the name *P. fenestratus* to frogs apparently belonging to the conspicillatus group, indicating variations which could include the newly described *P. iiap*.

***Pristimantis luscombei* (Duellman & Mendelson, 1995)**
Figure 6F

Taxonomic authorities. Elmer and Cannatella 2008; Ortega-Andrade and Venegas 2014; Padial et al. 2014.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.98′S, 073°42.80′W; elev. 244; 10.X.2012; R. Santa-Cruz Farfan obs.; 7♀ and 10♂; MUSA vouchers: 4291–4293, 4295, 4298, 4301–4303, 6136, 6138, 6141, 6143, 6148–6149, 6167, 6173–6176, 6178, 6187, 6189–6190

Nineteen individuals were found moving on bush leaves and litter during the daytime and at night using the transect method.

Identification. We found small direct developing frogs with complete sinusoidal ridges of tubercles touching the scapular region and proceeding posteriorly. There is a reliable pattern of coloration that might be described as "semi-bicolored", wherein light coloration on flanks starts at the scapular ridges and covers most of the frog posteriorly. Lip bars are absent. The venter is unmarked.

Taxonomic notes. We are unable to apply strict identification criteria to any subset of these frogs, which could establish a putative species in the *unistrigatus* group. However, there is marked variation in color pattern, including labial bars and spotting on the flanks, and degree of development of scapular ridges. Some individuals have visible scapula ridges falling short of sinusoidal. These ridges, as ascertained in at least four specimens, appear more as raised areas not marked by extensive tubercles or bony ridges.

Lopez-Rojas et al. (2013) reported misidentifications of *P. ockendeni* and *P. altamazonicus*, including specimens from the Tapiche basin (i.e. Souza and Rivera 2006) and other sites in the SDD complex. Ortega-Andrade and Venegas (2014) later reassigned these frogs to *P. luscombei*. Similarly, the reports of *P. achuar* from Abujao now bear this name.

Distribution notes. The range covers regions allied to Santiago-Morona and Pastaza, Ecuador, and throughout Amazonas and Loreto, Peru. It is now also known from Acre, Brazil (López-Rojas et al. 2013).

***Pristimantis martiae* (Lynch, 1974)**
Figure 6G, Appendix Figure A1F–I

Taxonomic authorities. Elmer and Cannatella 2008; Hedges et al. 2008; Lehr and Duellman 2009; Padial et al. 2014.

Materials examined. PERU – **Ucayali** • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.54′S, 073°43.16′W; elev. 279; 19.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Thirteen individuals were found active on a leaves in the underbrush during the day and at night using the transect method.

Identification. In these small, drab direct-developing frogs, the dorsum is much smoother than other *Pristimantis* of the region, while supraorbital tubercles are present. The coloration can include a lighter region below the dorsolateral fold, approximating a white lateral line, in keeping with linear striations on other individuals. There are tubercles on the heel. The areolate venter is white with small black speckles, becoming denser posteriorly and giving dark coloration to the groin and legs.

Taxonomic notes. Having more truncate or nearly bilobate discs on the fingers could be useful in identification.

Distribution notes. This record helps to confirm the range of this species further south of localities in Ecuador and northern Peru. How far south its range may extend is questionable.

***Pristimantis ockendeni* (Boulenger, 1912)**
Figure 6H, Appendix Figure A1J–M

Taxonomic authorities. Morales et al. 1996; Lehr and Duellman 2009; Lima et al. 2012.

New Record. PERU – **Ucayali** • Coronel Portillo, Calleria, San Mateo; 08°11.47′S, 073°40.82′W; elev. 250 m; 14.VII.2015; C. Gallegos obs.; 1 sex undetermined

Found in an inactive state on the ground on a nocturnal transect

Identification. A single specimen from the high hilly forest of San Mateo possesses a color pattern with broad labial bars, interocular, and a heart-shaped blotch on the dorsum. The venter coloration is dark overall with some gray spotting lightly interspersed. Thigh and tibia regions have orange coloration. There are prominent tubercles on the eyelids, but no bony ridges or raised areas near the scapula.

Taxonomic notes. Given the misidentifications and re-description mentioned above, we assume a preponderance of misidentifications afflicting a variety of resources. The cryptic diversity described in Elmer and Canatella (2008) had ramifications for a wide range of collections from Ecuadoran, Peruvian, and Brazilian regions, but was ultimately a study focused on Ecuadoran frogs, which did not shed light on the identity of what appears to be a Peruvian species.

Distribution notes. In survey of previously published records—ruling out misidentifications—the majority of specimens are densely distributed in areas allied to Manu National Park, creating the possibility of it being very nearly endemic. This observation, with hundreds of kilometers separation, stands in counter to that notion. Taken together with further observations of the authors in Peruvian borderlands, *P. ockendeni* remains an Amazonian species.

***Pristimantis reichlei* (Padial & De la Riva, 2009)**
Figure 6I

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1 & 2; 08°16.99′S, 073°42.17′W;

elev. 226 m; 22.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 6146, 6185.

Seven individuals were found at night on leaves using the transect method.

Identification. In these masked direct-developing frogs two small post occipital spots adorn a dorsal pattern of chevrons. The poster surfaces of the thighs bear orange mottling.

Taxonomic notes. The description of *P. reichlei* in 2009 took on a certain amount of the variation previously assigned by *P. peruvianus* (Padial and De la Riva 2009). Early reports of *P. peruvianus* may or may not be based on solid evidence. We have one specimen (MUSA 6142) that appears to be a *conspicillatus* group member, but without orange mottling on the thighs, which could indicate that *P. buccinator* or *P. peruvianus* are present in the Abujao basin, and therefore validate records of those species from Acre and elsewhere (Souza 2009; Bernarde et al. 2011).

***Bolitoglossa altamazonica* (Cope, 1874)**

Figure 6J

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°22.54′S, 073°43.16′W; elev. 248m; 9.X.2012; R. Santa-Cruz Farfan obs.; 6 sex undetermined; MUSA vouchers: 4305–4307, 6200–6201, 6132.

We made 18 total observations both on transect and during time-constrained searches during late night hours. They were found on leaves and in leaf litter.

***Caecilia tentaculata* (Linnaeus, 1758)**

Figure 6K

Taxonomic authorities. Dunn 1942; Taylor 1968; Savage and Wake 2001.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2; 08°25.02′S, 073°41.20′W; elev. 229 m; 13.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined; MUSA voucher: 4308.

Identification. Overall coloration of this limbless amphibian is bluish gray. The eyes are conspicuous on the surface of the head. The snout is rather elongate. The anterior annuli encircling the body are incomplete, only proceeding moderately past the mid-lateral region.

Distribution notes. Extremely secretive habits of caecilians make records of this genus difficult to find. The specimen in question was found under plastic cover material left out at a campsite. We believe this technique could increase caecilian observations.

Class Reptilia

***Alopoglossus atriventris* (Duellman, 1973)**

Figure 7A

Taxonomic authorities. Avila-Pires 1995; Ribeiro-Junior et al. 2020.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°22.98′S, 073°42.81′W; elev. 243 m; 9.X.2012; R. Santa-Cruz Farfan obs.; 5 sex undetermined; MUSA vouchers: 3642–3643, 5181, 5201–5202.

We found 16 individuals. They were disturbed from leaf litter at night.

Identification. In these swift diurnal lizards the dorsal scales are rhomboid and keeled. The scales on the side of the neck, immediately posterior to the tympanum, are small, dense, and grainy giving a tuberculate texture.

Taxonomic notes. Ribiero-Junor et al. (2020) detected poor resolution in the *A. atriventris* clade and attributed taxonomic uncertainty to this lizard.

Distribution notes. Given the attribution of *A. avilapiresae* to lizards from Acre in Ribiero-Junior (2020), our record supports wide-scale sympatry between *A. atriventris* and *A. avilapiresae*. However, records of *A. buckleyi* coming from nearby regions of Loreto Department, Purus Valley, and the Manu buffer zone (Catenazzi et al. 2013; Padial et al. 2016; Ribeiro-Júnior et al. 2020) further confuse a densely speciose yet common group persisting in the Amazon lowland of Peru and Brazil. *A. atriventris* was found at every high terrace site.

***Diploglossus fasciatus* (Gray, 1831)**

Figure 7B

Taxonomic authorities. Avila-Pires 1995; Pianka et al. 2003.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2; 08°23.10′S, 073°42.77′W; elev. 231 m; 10.X.2012; R. Santa-Cruz Farfan obs.; MUSA voucher: 3653.

The specimen was found via casual encounter.

Identification. The "banded galliwasp" is a large, white lizard with smooth scales and a striking black-banded pattern. The specimen from Abujao has red legs.

Taxonomic notes. Updated taxonomies for lizards from the far east of Brazil appear unable to cast doubt upon diagnosis of Amazonian *Diploglossus* (Vanzolini and Williams 1970; Prates et al. 2017), which remain in accordance with Avila-Pires (1995).

Distribution notes. The "banded galliwasp" is incredibly difficult to find, making distribution notes presumptive. Fossorial habits may be exacerbating non-detection at many sites, but the paucity of records across so many Amazonian sites should be taken a sign of low population density, making this species a strong candidate for Red Listing (Gärdenfors et al. 2001, Rodrigues et al. al. 2006).

***Anolis fuscoauratus* (D'Orbigny, 1837)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°23.10′S, 073°42.77′W; elev. 231 m, 12.X.2012; R. Santa-Cruz Farfan obs.; 1♀; MUSA voucher: 3647

Twenty-one observations were made in total of both male and female specimens. Most were found sleeping on branches at nighttime.

***Anolis ortonii* (Cope, 1868)**

Materials examined. PERU- Ucayali • Coronel Portillo, Calleria, San Mateo 08°11.47′S, 073°40.82′W; 250m; 17.VII.2015; C. Gallegos obs.; 1♂

One individual was seen on a tree trunk.

Identification. Males of this species bear an orange dewlap.

Distribution notes. A male individual was seen and photographed displaying. Notable preference for height, including forest canopy, makes it difficult to detect at all sites.

***Anolis punctatus* Daudin, 1802**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1, San Mateo; 8 °17.35′S, 073°40.71′W; elev. 247 m; 23.X.2012; R. Santa-Cruz Farfan obs., sex undetermined

Two individuals were found using branch microhabitats on diurnal surveys.

***Anolis scypheus* (Cope, 1864)**

Figure 7C

Taxonomic authorities. Vanzolini and Williams 1970; Avila-Pires 1995.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, Caserio Bethel; 08°25.46′S, 074°15.71′W; elev. 161; 26.X.2012; R. Santa-Cruz Farfan obs.; 1♂

An individual was found on branch via diurnal time-constrained search.

Identification. In these diurnal and arboreal lizards a camouflage pattern involving various chevrons and marbled gray and brown lines predominates the dorsum and includes the hind limbs. The dewlap has a blue spot bordered by red.

Taxonomic notes. While the dorsal coloration can be considered more-or-less identical, the dewlap of the more widespread species *A. tandai* has no red coloration (Fig. 7B).

Distribution notes. The occurrence is only at Caserio Bethel, a low, hydromorphic site (similar to Moravec et al. 2016). *Anolis tandai* was not found in Imiria (Moravec et al. 2016). Given the lack of records of *A. scypheus* from Purus valley and Manu buffer zone, it remains unclear how widespread the sympatry is.

***Anolis tandai* Avila-Pires, 1995**

Figure 7D

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°22.66′S; 073°43.17W; elev. 244; 22.X.2012; R. Santa-Cruz Farfan obs.; 3♀ and 4♂; MUSA voucher: 5173.

We found seven individuals. They were found resting on the branches of bushes at night.

***Anolis trachyderma* Cope, 1875**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 2; 08°22.54′S; 073°43.16′W; elev. 248 m, 09.X.2012; R. Santa-Cruz Farfan obs., 3♂.

We made a total of 44 observations on both transects and time-constrained searches. Most were sleeping on shrub branches.

Identification. This small *Anolis* has a cylindrical body with a brownish-grayish coloration. It has two longitudinal brown stripes and rhomboidal shapes bordered by dark triangles in the vertebral region. The lateral crescent-shaped dewlap is orange to red, moderately large in males and smaller in females.

When attacked it changes to a cryptic coloration imitating a dark branch.

Distribution notes. It can be found at night resting on the leaves of bushes. It inhabits the western part of the Amazon basin, adjacent to the state of Acre, Brazil. This species occurs at elevations between 200 and 1,400 m above sea level.

***Anolis transversalis* (Duméril, 1851)**

Figure 7E

Taxonomic authorities. Williams and Vanzolini 1966; Avila-Pires 1995.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1; 08°17.07′S, 073°42.08′W; elev. 223 m; 19.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined; MUSA voucher: 5192.

The specimen was found on a branch during diurnal transect.

Identification. The color pattern of this diurnal and arboreal lizard has prominent dark lines, alternating with thin white lines, transversing the entire, predominantly yellow-green animal. The dewlap is yellow with faint blue flecks.

Distribution notes. The range of this species presumably breaks up somewhere south and west of our localities, but some specimens from El Sira Reserve need further evaluation (Whitworth et al. 2016b). There are no records from the Manu buffer zone (Catenazzi et al. 2013), so the range picks up somewhere around the Fitzcarrald Arc. The only mention in Padial et al. (2016) is from Puerto Breu—the northernmost site.

***Cercosaura argulus* Peters, 1862**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°22.90′S, 073°42.91′W, 10.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 5178, 5193–5195.

We made observations of 11 individuals both at night and during the day. They were disturbed from leaf litter.

***Iphisa elegans* (Gray, 1851)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1, San Mateo; 08°17.22′S, 073°40.32′W, 22.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1 ♂; MUSA vouchers: 5199–5200.

We found four individuals via active search of leaf litter both at night and during the day.

Figure 7. Reptiles of the Abujao basin. **A.** *Alopoglossus atriventris*. **B.** *Diploglossus fasciatus* **C.** *Anolis scypheus*. **D.** *Anolis tandai* **E.** *Anolis transversalis*. **F.** *Potamites ecpleopus*. **G.** *Potamites juruazensis* **H–I.** *Varzea altamazonica*. **J.** *Chironius fuscus*. **K.** *Chironius* cf. *multiventris*. **L.** *Dendrophidion dendrophis*. **M.** *Erythrolamprus reginae*. **N.** *Oxyrhopus occipitalis*. **O–P.** *Micrurus annellatus*. **Q.** *Epictia* sp.

***Potamites ecpleopus* (Cope, 1875)**

Figure 7F

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2; 08°25.99′S, 073°40.80′W; elev. 234 m; 17.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 3♂; MUSA vouchers: 3648, 5180, 5183, 5198.

We found five individuals in leaf litter at night.

***Potamites juruazensis* (Avila-Pires & Vitt, 1998)**

Figure 7G

Taxonomic authorities. Castoe et al. 2004; Doan and Castoe 2005.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2; 08°17.44′S, 073°41.74′W; elev. 227 m; 20.X.2012; R. Santa-Cruz Farfan obs.; 1♀; MUSA voucher: 3644.

We found eight individuals in leaf litter at night.

Identification. We found cascade lizards with fully-formed clawed digits, crested tails, and a density of head scales. The triangular frontonasals are divided. These scales and others have a plethora of interstitial scales, including interorbitals positioned between the frontonasals and the frontoparietals.

Taxonomic notes. *Potamites juruazensis* has a propensity for developing heavily keeled scales over multiple dorsal scale rows. The sympatric *P. ecpleopus* does not show this character with regularity, but does bear a spot immediately posterior to the forelimbs (Fig. 7F).

Distribution notes. Given that the male specimen was collected in mid-October may indicate it was closer to a reproductive season in which chin scales bear a bright yellow coloration.

***Enyalioides laticeps* (Guichenot, 1855)**

Materials examined. PERU – Ucayali • Coronel Portillo, alto-Abujao 1 & 2; 08°23.10′S, 073°42.77′W, elev. 231 m; 19.X.2012; R. Santa-Cruz Farfan obs., sex undetermined.

We found seven individuals resting on branches during the night. All methods applied.

Identification. Males are green to brown on the back and have orange, green, and brown striped throats with a large dark gular spot. The belly is orange. Females are paler and have a reddish gular spot, and the belly is tan with a pinkish blush. Most males have a white, cream, or orange longitudinal stripes extending from the corner of the mouth to a point below the tympanum. The vertebral crest is more noticeable in males than in females.

Taxonomic notes. This species differs from other *Enyalioides* by having caudal scales of relatively homogeneous size in each caudal segment (Torrest-Carvajal et al. 2011).

Distribution notes. This species inhabits lowlands and lower mountain elevations throughout the western Amazon basin. Its altitudinal range is from 80 to 1600 m above sea level.

***Enyalioides palpebralis* (Boulenger, 1883)**

Materials examined. PERU – Ucayali • Coronel Portillo, alto-Abujao 2, San Mateo, 08°25.02′S, 073°41.20′W; elev. 229 m; 13.X.2012; R. Santa-Cruz Farfan obs., 1♀ and 1♂; MUSA voucher: 3654.

Two individuals were found resting on trunks at night.

***Iguana iguana* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Caserío Bethel, 08°25.37′S; 74°15.76′W, elev. 154m; 26.X.2012; R. Santa-Cruz Farfan obs., 1♂.

While two adult individuals were seen on branches, a congregation of 24 small juveniles were found on a single transect at Caserio Bethel, likely sampling a rookery habitat.

***Varzea altamazonica* (Miralles, Barrio-Amoros, Rivas & Chaparro-Auza, 2006)**

Figure 7H, I

Taxonomic authorities. Miralles et al. 2009; Miralles and Carranza 2010; Hedges and Conn 2012.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria & Masisea, Santa Rosa de Tamaya-Tipishca; 08°29.45′S, 074°10.23′W; elev. 162 m; 28.VI.2015; C. Gallegos obs.; 1♂; voucher: COD-005 (UNU). • ibid.; Calleria, San Mateo; 08°11.57′S, 073°42.87′W; elev. 247 m; 17.VII.2015; C. Gallegos obs.; 1 sex undetermined.

Nine individuals were disturbed from downed wood on diurnal transects.

Identification. The eye in these skinks is positioned above the fifth of six supralabials. The parietal scales are in contact. Only a single pair of nuchals lies behind the parietals. The prefrontals are paired. There are 15 lamellae under the fourth finger, and 13 under the fourth toe, which bear the dark coloration of the plantar surfaces. Middorsal scale rows number 31. There are 52 dorsals. Figure 7I shows the arrangement of the four superoculars and the superciliaries.

Taxonomic notes. Souza and Rivera (2006) only reported "Mabuyidae sp." for SDD prior to the description of *Varzea altamazonica*. Other reports include *Copeoglossum nigropunctatum*, expressing further taxonomic uncertainties. Evidence for the presence of cryptic diversity in Scincidae in Ucayali is hard to come by.

Distribution notes. Skinks are common in the various land cover classes of TT. No individuals were seen at alto-Abujao sites, but a single observation was made at San Mateo—a counterexample to the "Varzea" habitat preference (all true Varzea forests would be in the "llanura meandrica" flooded forests closer to TT; Junk et al. 2010, 2012).

The biogeography of these skinks puts pressure on the SDD region to potentially draw a hard separation between the species *V. altamazonica* and *V. bistriata* (see Miralles and Carranza 2010: fig. 2B). *Varzea bistriata* still appears to be excluded from Peru.

***Gonatodes hasemani* (Griffin, 1917)**

Materials examined. PERU – Ucayali • Coronel Portillo, Callería, alto-Abujao 1; 08°17.068′S, 073°42.080′W; 20.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 1♂; MUSA vouchers: 5188, 5197.

We found five individuals. We logged both branch and leaf litter microhabitats. Many of the observation took place on active time-constrained searches at night.

***Gonatodes humeralis* (Guichenot, 1855)**

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1& 2, San Mateo; 08°22.90′S, 073°42.91′W; elev. 236 m; 10.X.2012; R. Santa-Cruz Farfan obs.; 3♂; MUSA vouchers: 5174, 5179, 5189.

Sixteen individuals were found: six during the day, and ten at night. They used leaf litter and shrub stem microhabitats.

***Pseudogonatodes guianensis* (Parker, 1935)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1 & 2; 08°22.62′S, 073°42.62′W; elev. 246 m; 10.X.2012; R. Santa-Cruz Farfan obs.; 1♀ and 2♂; MUSA vouchers: 3645, 3646, 5190.

Twenty-four individuals were found, mainly by disturbing them from leaf litter on active time-constrained searches.

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

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Caserio Bethel, 08°25.59′S, 074°15.83′W; elev. 164 m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Four individuals were found active in leaf litter during daytime sampling.

***Dracaena guianensis* (Daudin, 1801)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Santa Rosa de Tamaya-Tipishca; 08°28.781′S, 074°9.851′W; elev. 164 m; 28.VI.2015; C. Gallegos obs.; sex undetermined.

We observed one individual on a diurnal transect.

***Kentropyx altamazonica* (Cope, 1876)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Santa Rosa de Tamaya-Tipishca, 08° 29.615′S, 074°10.420′W, elev. 162 m; 30.VI.2015; C. Gallegos obs.; sex undetermined.

Two individuals were detected on a daytime transect in low terrace forest.

***Kentropyx pelviceps* (Cope, 1868)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 2, 08°22.977′S, 073°42.807′W; elev. 234 m; 12.X.2012; R. Santa-Cruz Farfan obs., 1♀, MUSA voucher: 5196

We found twelve individuals on daytime transects and by other methods. They inhabited leaf litter. The species is common at all but one site.

***Tupinambis cuzcoensis* (Murphy, Jowers, Lehtinen, Charles, Colli, Peres Jr, Hendry & Pyron, 2016)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Caserio Bethel; 08°25.446′S, 074°15.733′W; elev. 177 m; 26.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

An individual was found moving on a fallen trunk during daytime by the transect method.

***Plica plica* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, San Mateo; 08°11.47′S, 073°40.82′W elev. 250m; 28.VI.2015; C. Gallegos obs.; sex undetermined.

An individual was active on a tree trunk on a daytime transect**.**

***Plica umbra* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Santa Rosa de Tamaya-Tipishca; 08° 28.78′S, 074°9.85′W elev. 164 m; 17.VII.2015; C. Gallegos obs.; 1 sex undetermined.

An individual was active on a tree trunk on a daytime transect.

***Stenocercus rosieventris* (D'Orbigny in Duméril & Bibron, 1837)**

Materials examined. PERU – Ucayali • Coronel Portillo, alto-Abujao 1, 08°17.47′S; 073°41.03′W, elev. 249 m, 18.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined; MUSA vouchers: 5204, 5380.

We found one individual on daytime transect. Leaf litter was the microhabitat.

***Corallus batesii* (Gray, 1860)**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, San Mateo 08°11.47′S, 073°40.82′W; 250 m; 16.VII.2015; C. Gallegos obs.; 1 sex undetermined.

The specimen was found resting on a shrub branch via nocturnal transect.

***Corallus hortulanus* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1, San Mateo; 08°22.58′S; 073°43.17′W; elev. 247 m; 24.X.2012; R. Santa-Cruz Farfan obs.; 3 sex undetermined.

Three individuals were found moving through the branches of bushes at night using both transect and VES methods.

***Chironius fuscus* (Linnaeus, 1758)**

Figure 7J

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1, San Mateo; 08°22.58′S, 073°43.17′W; elev. 249 m; 22.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

An individual was found on a shrub branch on nocturnal transect.

***Chironius* cf. *multiventris* Schmidt & Walker, 1943**

Figure 7K

Taxonomic authorities. Bailey 1955; Dixon et al. 1993;

Klaczko et al. 2014; Hamdan et al. 2017.

Materials examined. PERU – Ucayali • Colonel Portillo, Masisea, Santa Rosa de Tamaya-Tipishca; 08°29.45′S, 074°10.23′W; elev. 156 m; 1.VII.2015, C. Gallegos; 1 sex undetermined.

An individual was found moving through litter during the daytime by the transect method.

Identification. The specimen captured by C. Gallegos at TT is representative of the group of very large whipsnakes with smooth paravertebral scales. There were nine supralabials, with the fourth and fifth in contact with the eye.

Taxonomic notes. As an indication of the degree of taxonomic uncertainty in this group, consider that more than two names can be applied. Souza and Rivera (2006) wrote "C*hironius exoletus* (*carinatus*)" in parenthesis, while Rabosky et al. (2019) wrote "*Chironius carinatus* / *exoletus* " separated by a slash. Catenazzi et al. (2013) were willing to include "*Chironius* cf. *multiventris*" as a species of the Manu buffer zone, in addition to verified accounts of *C. exoletus* and *C. carinatus*. Bernarde et al. (2017) laid out characters they found consistent with *C. laurenti*, while making no mention of *C. exoletus* or *C. multiventris* in very closely allied Brazilian borderlands. These records were updated to *C. carinatus* in Fonseca et al. (2019) and Nogueira et al. (2019) (Bernarde pers. comms.). We are open to *C. carinatus* as a possible identification of this snake. However, Torres-Carvajal et al. (2019) uphold that, even with proper documentation, the identification will still be prone to changes depending on phylogenetic advances. Being both common and imprecise, it is abundantly clear that this group needs very close attention in the future.

Distribution notes. The confirmed "*multiventris* clade three" of Torres-Carvajal et al. (2019) includes material from a site very close to Ucayali. It would be safe to assume that such wide-ranging snakes have little trouble inhabiting the lowlands of Ucayali—supporting the report of *C. multiventris* in Moravec et al. (2016) as coming from this clade as well.

***Dendrophidion dendrophis* (Schlegel, 1837)**

Figure 7L

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°24.74′S, 073°.42.46′W; elev. 239 m; 13.X.2012; R. Santa-Cruz Farfan obs.; 1♂; MUSA voucher: 3649.

Two individuals were found by night transect. They used shrub branch microhabitats.

***Dipsas catesbyi* (Sentzen, 1796)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, San Mateo; 08°11.47′S, 073°40.82′W; elev. 250m; 15.VII.2015; C. Gallegos obs.; 3 sex undetermined.

We found three individuals active in underbrush throughout nighttime transects.

***Dipsas indica* (Laurenti, 1768)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, San Mateo; 08°11.31′S, 073°40.29′W; elev. 227 m; 14.VII.2015; C. Gallegos obs.; 1 sex undetermined.

An individual was found moving through bushes after 2000 h with the transect method.

***Drepanoides anomalus* (Jan, 1863)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, San Mateo; 08°11.47′S, 073°40.82′W; elev. 250 m; 16.VII.2015; C. Gallegos obs.; 1 sex undetermined.

An individual was found moving through the litter after 2000 h using the transect method.

***Drymarchon corais* (Boe, 1827)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°26.09′S, 073°42.65′W; elev. 253 m; 16.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

An individual was found that was moving through the litter during the day.

***Drymoluber dichrous* (Peters, 1863)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 1 & 2, San Mateo; 08°17.15′S, 073°41.97′W; elev. 234 m; 19.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

We found four individuals by various methods. One was moving through underbrush on a diurnal transect.

***Erythrolamprus reginae* (Linnaeus, 1758)**

Figure 7M

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°25.02′S, 073°41.20′W; elev. 229 m; 20.X.2012; R. Santa-Cruz Farfan obs.; 2 ♀ and 1; vouchers: MUSA-3650, COD-007, COD-010 (UNU).

All three individuals were found via casual encounter. The specimen from San Mateo was in fully speckled phase, while Figure 7E shows the specimen from alto-Abujao in semi-lined phase.

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

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2; 08°25.99′S, 073°40.80′W; elev. 234 m; 17.X.2012; R. Santa-Cruz Farfan obs., 3 sex undetermined.

We saw three individuals. Nocturnal transects yielded the observations, but one of them was inactive during the early night period before 2000 h.

***Oxyrhopus melanogenys* (Tschudi, 1845)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, San Mateo; 08°11.31′S, 073°40.29′W; elev. 227 m; 15.VII.2015; C. Gallegos obs.; 1 sex undetermined.

An individual was found active in the leaf litter on an early nighttime transect (16:00 to 20:00 h).

***Oxyrhopus occipitalis* (Wied-Neuwied, 1824)**

Figure 7N

Taxonomic authorities. Lynch 2009.

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, San Mateo; 08°11.62′S, 073°43.41′W; elev. 263 m; 16.VII.2015; C. Gallegos obs.; 1 sex undetermined; voucher: COD-009 (UNU).

Found on diurnal transect in leaf litter.

Identification. A juvenile individual from San Mateo was in a fully banded phase. The black bands were interspersed with reddish scales anteriorly. The iris color was red. It had one preocular and two postoculars. Supralabials numbered seven, while infralabials numbered eight. There were 19 middorsal scale rows, 184 ventrals, and 85 divided subcaudals.

Distribution notes. Until adult individuals are found no evidence can be presented for the presence of *O. formosus* in Ucayali, leaving open the possibility of a latitudinally determined distribution with *O. formusos* to the south and *O. occiptitalis* to the north.

***Oxyrhopus petolarius* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 1; 08°17.28′S, 073°40.51′W; elev. 243 m; 22.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined; MUSA voucher: 5113.

Found via casual encounter, microhabitat was a shrub branch.

***Phrynonax polylepis* (Peters, 1867)**

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2, San Mateo; 08°25.02′S, 79°41.20′W; elev. 229 m; 22.X.2012; R. Santa-Cruz Farfan obs.; sex undetermined.

Two individuals were found. One was disturbed from litter at night. The other was seen on a trunk after 2000 h.

***Pseudoboa coronata* Schneider, 1801**

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, Santa Rosa de Tamaya-Tipishca; 08°28.781′S, 074°9.851′W; elev. 164 m; 28.VI.2015; C. Gallegos obs.; 1 sex undetermined.

The specimen was active in leaf litter on late night transect.

***Xenoxybelis argentea* (Daudin, 1803)**

Materials examined. PERU – Ucayali • Colonel Portillo, Calleria, alto-Abujao 2; 08°25.02′S, 073°41.20′W; elev. 231 m; 13.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

Found via casual encounter, microhabitat was a shrub branch.

***Micrurus annellatus* (Peters, 1871)**

Figure 7O, P

Taxonomic authorities. Roze 1996; Campbell et al. 2004.

Materials examined. PERU – Ucayali • Coronel Portillo, Calleria, alto-Abujao 1 & 2, San Mateo; 08°11.47′S, 073°40.82′W; elev. 248 m; 16.X.2012; R. Santa-Cruz Farfan obs.; 4 sex undetermined; MUSA vouchers: 3651, 5177, 5203, COD-011 (UNU).

We found four individuals. They were disturbed from leaf litter during nocturnal searches.

Identification. These elapid coral snakes have complete bands and nuchal collars. A wide range of color polymorphism in *M. annellatus* has promoted the establishment of apparent subspecies, including *M. annellatus bolivianus* (Feitosa et al. 2015). We collected two specimens that adhere to this subspecies (MUSA 3651 and MUSA 5177), while the rest adhered more generally to normal *M. annellatus*—some with red bands (MUSA 5203) and others white bands (COD-011).

Taxonomic notes. Souza and Rivera (2006) asserted that *M. albicinctus* occurs in SDD National Park in Peru. While no more evidence was presented, it is apparent that their specimen has complete white bands, with a nuchal collar that may or may not form an incomplete band posterior to the parietals. Our examples of *M. annellatus* show that the white coloration of the nuchal band may not consistently cover the entire area of the parietal scales, making a seemingly broken band a possibility. Perhaps this feature does separate species, and further diversity needs to be drawn out with research, but the variation seen in this group compels us to think that it can be accommodated by *M. annellatus*.

Distribution notes. The fact that white-banded coral snakes have been found on multiple investigations into the SDD region indicates that, regardless of diagnosis, it should be considered a common and characteristic part of the fauna, i.e. the polymorphism may be reliably expressed in snakes of this region.

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

Materials examined. PERU – Ucayali • Colonel Portillo, Callería, alto-Abujao 2; 08°26.09′S, 073°42.65′W; elev. 253 m; 16.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

An individual was found moving through leaf litter at night. It was a casual encounter.

***Epictia* sp.**

Figure 7Q

Taxonomic authorities. Roze 1952; Hoogmoed 1977; Starace 1998; Franco and Pinto 2009; Adalsteinsson et al. 2009; McCranie and Hedges 2016; Wallach 2016.

Materials examined. PERU – **Ucayali** • Colonel Portillo, Calleria, alto-Abujao 1; 08°17.24′S, 073°41.92′W; elev. 248 m; 21.X.2012; R. Santa-Cruz Farfan obs.; 1 sex undetermined.

An individual was found moving in the litter during nighttime.

Identification. Like other blind snakes of the genus, this snake lacks distinct ventral scales and supralabial scales cover the eyes. The overall coloration was black, except

for supraocular, frontal, and rostral scales, which did bear light coloration.

Taxonomic notes. We can find no evidence of black color morphs in *E. diaplocia*. While no signs of any striped pattern could be observed in this individual, there are darker morphs of *E. tenella*, with the yellow frontals/rostrals preserved in most specimens. Disagreement about the relationship between *E. tenella* and *E. albifrons* includes proposals for species complexes in either species (Murphy et al. 2016). Potential synonymy between the two species could shift this observation to *E. albifrons* (Arredondo and Zaher 2010; Francisco et al. 2012; Pinto et al. 2018). This is of course barring the possibility that this individual was a representative of an as yet undescribed species.

Distribution notes. Missing records from allied regions could easily be attributable to the extremely secretive habits of blind snakes. This blind snake was found by casual encounter in leaf litter, off sample time of the time-constrained searches. Subsequently the snake escaped from the bag it was being temporarily kept in, leaving us with little means to support its taxonomic position. Overall this observation supports a wide distribution for *E. albifrons* (= *E. tenella*) across southern sectors of Amazonia (Arredondo and Zaher 2010, Fraga et al. 2013), and in sympatry with *E. diaplocia*.

***Bothrops atrox* (Linnaeus, 1758)**

Materials examined. PERU – Ucayali • Colonel Portillo, Masisea, Santa Rosa de Tamaya-Tipishca; 08°30.16′S, 074°13.31′W; elev. 155m; 4.VII.2015; C. Gallegos obs.; 1♀; voucher: COD-006 (UNU).

An individual was found that was inactive in leaf litter after 16:00 h.

Discussion

Taking into account 16 species detected by Moravec et al. (2016) species richness increases to 124 with published records from a closely allied zone within Ucayali dept. (ca. 25 km away). This richness is low compared to studies from neighboring regions. Catenazzi et al. (2013) presented a wide-ranging inventory of Manu National Park and all its surrounding buffer areas, and their list had 275 species. Fonseca et al. (2022) reported 311 species occurring in Acre, Brazil, which could be lowered to approximately 250 species by excluding those known only from the far east of the state. In addition to our rarefaction and estimation results, the Upper Ucayali Valley and associated tributaries are already being held to a higher standard. Much more work will need to be done to uncover the remaining unrecorded species.

While we can only provide photographic evidence, Abujao is a new locality for *Pristimantis iiap* and *Epictia* sp., but we are obligated to report here that the ranges of *Chaismocleis tridactyla*, *P. academicus, P. conspicillatus, P. luscombei, Alopoglossus atriventris, Anolis transersavalis,* and *Oxyrhopus occipitalis* extend into Ucayali from neighboring Loreto department, Peru. Furthermore, *P. delius, P. martiae, Anolis scypheus*, and *A. trachyderma* are highly likely to have similar range extensions given the photographic evidence we collected. Of these, range extensions of *C. tridactyla* and *P. martiae* are confirmed in Peru and potentially Brazil, while the others are known to occur in Acre state, Brazil (Avila-Pires 1995; Souza 2009; Vasconcelos da Silva et al. 2010; Bernarde et al. 2017; Fonseca et al. 2019, Fonseca et al. 2022).

Crucially, none of the 12 aforementioned species are known from the heavily studied southern zones of Madre De Dios department, Peru (Rabosky et al. 2019), although the proximity of the ranges of *Pristimantis iiap* and *Potamites juruazensis* may require further assessment. These species demonstrate that sites like Abujao draw from a wider Amazonian species pool. Therefore, our results uphold the persistence of a latitudinal diversity gradient (Pianka 1966; Willig et al. 2003; Wiens et al. 2006), which presumably reaches its apex in Loreto Department, Peru and allied regions to the north.

Our approach to the land-cover units laid out by MINAM states higher diversity in the Bca habitats. Whether this trend expands to the Sierra del Divisor (SDD) formations themselves is open to interpretation, but the kilometer-scale proximity we achieved speaks towards a unity of this biodiversity not only with "El Cono", but also the findings of Souza and Rivera (2006) from the larger formations further north in the national park. Our sampling covered a wide spread of the landscape at Santa Rosa de Tamaya-Tipishca (TT), but in reality, most observations fell within the Btb class, as opposed to transects fully nested within Btm, Bllm, or emergent vegetation areas. A certain amount of the lowland diversity was probably overlooked. An elevational approach is much more descriptive. Caserio Bethel is lower than TT by a number of meters, which could explain the variety of hylid frogs and other life forms that depend on the dynamics of riverine wetlands—e.g. floating vegetation (Zimmerman and Simberloff 1996; von May et al. 2010; Ribeiro et al. 2012; Boening et al. 2017), and other habitats absent from high hilly environments. The general pattern suggests a distinct herpetofauna in lower, more hydromorphic environs: being less susceptible to disturbance, and unable to achieve the diversity levels seen in the higher, drier expanses, where ample refugia may be driving biodiversity.

The dissimilarity in communities is most pronounced in the family Strabomantidae, like the *Pristimantis* assemblage of the high hilly environments, which is in many ways distinct from that of Souza and Rivera (2006) and Souza (2009). The small amount of photographic evidence presented by Souza and Rivera (2006) does not include all four unidentified *Pristimantis* species they reported. While we provide evidence for five more species attributable to SDD and its zone of influence in various protected areas, it is unclear how much of that diversity overlaps with Souza's work. This

is especially the case with *P. iiap*, whose type locality is relatively close to our sites (300 km), but distant from Souza and Rivera's (2006) sites in Loreto (450 km). There are 27 strabomantid species in SDD, but it stands to reason that the list could expand even more—especially when taking canopy-dwelling species into account.

Another group that will require extra attention is the family Centrolenidae. The high diversity of glass frogs presented by Souza and Rivera (2006) was one of their central findings. Even after our greater search effort in Abujao, we have no centrolenids to report. We can only speculate as to the reasons that cause the non-detection of centrolenids. Alternatively, the dramatic differences in the biota could be attributable to the Sierra del Divisor formations and their diversity across the north-south extent of the national park.

Protection for the SDD extends even further south, albeit with a diminished level of protection, with the establishment of the CATA Reserve. This demonstrates the ease with which new protected areas can be placed in large wilderness areas with very little biological description (Bruner et al. 2001; Brechin et al. 2002; Rodrigues et al. 2004; Adams and Hutton 2007). In strictly biological terms, the presence of awe-inspiring landscapes like "El Cono" do not predispose an area to protection, as opposed to an identifiable biogeographic effect exhibiting a unique biota. With the possible exception of *Epictia* sp., we cannot support the presence of endemism solely due to formations, nor did we detect any assemblage indicative of an adverse biogeographic effect.

This stands in contrast to examples from the Cordillera El Sira. El Sira is located on the extreme eastern edge of Ucayali Dept., and extends into more near-Andean regions of Peru (Gamarra et al. 2015; Graham et al. 2016). After extensive studies in the 1970s (Duellman and Toft 1979; Toft and Duellman 1979), further efforts established the presence of endemic species tied to high-elevation habitats of El Sira (van der Werff and Consiglio 2004; Monteagudo et al. 2014). The biogeography could be considered indicative of diversification (Sarmiento 1986; Haffer 1997; Smith et al. 1997; Moritz et al. 2000; Antonelli et al. 2010; Kozak and Wiens 2010) on the leeward slopes of Cordillera El Sira, although the requisite effort on the western versant in Ucayali Dept. has not yet been undertaken. In fact, the present study contributes in some small way to the complete understanding of the biogeographic effect of El Sira, even though we were unable to place sites closer to its endemism "hotspots".

Sierra del Divisor remains one of the last intact forest landscapes (Potapov et al. 2017; Scullion et al. 2019) in Amazonia. Continuing initiatives to protect the SDD and/or the Abujao basin should take into account that this landscape takes part in a heterogeneous Amazonian system, but must bear in mind that it does not appear to hold unique biodiversity.

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Conceptualization: GPP, BC, KA. Data curation: CG, GPP, RSCF, BC. Formal analysis: JJLR, ILA, BC. Funding acquisition: GPP. Investigation: RSCF, CG, BC, JJLR. Methodology: CG, ILA, RSCF, GPP. Project administration: KA. Resources: JJLR, GPP. Software: ILA. Supervision: KA. Visualization: ILA. Writing – original draft: BC. Writing – review and editing: JJLR.

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Appendix

Exhaustive photo collections for select *Pristimantis species*. We provide the entire collection for *Pistimantis iiap*, *P. martiae*, and *P. ockendeni*.

Figure A1. Exhaustive photo collections. **A–E.** For *Pristimantis iiap.* **F–I.** *Pristimantis martiae* **J–M.** *Pristimantis ockendeni*. Photos A, F–I by Roy Santa-Cruz; B–E, J–M by Cesar Gallegos.