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**Synopsis of the Amphibians of Equatorial Guinea  
based upon the Authors' Field Work and  
Spanish Natural History Collections**

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**TABLE OF CONTENTS**

(Abstract) . . . . .	138
(Introduction) . . . . .	138
Material and Methods . . . . .	139
Study area . . . . .	141
Results and Discussion . . . . .	144
Synopsis of the Amphibians of Equatorial Guinea . . . . .	146
Order Anura . . . . .	146
Family Arthroleptidae . . . . .	146
Subfamily Arthroleptinae . . . . .	146
Genus <i>Arthroleptis</i> . . . . .	146
Genus <i>Cardioglossa</i> . . . . .	148
Subfamily Astylosterninae . . . . .	150
Genus <i>Astylosternus</i> . . . . .	150
Genus <i>Leptodactylodon</i> . . . . .	150
Genus <i>Nyctibates</i> . . . . .	150
Genus <i>Scotobleps</i> . . . . .	151
Genus <i>Trichobatrachus</i> . . . . .	151
Subfamily Leptopelinae . . . . .	151
Genus <i>Leptopelis</i> . . . . .	151
Family Bufonidae . . . . .	154
Genus <i>Didynamipus</i> . . . . .	154
Genus <i>Nectophryne</i> . . . . .	154
Genus <i>Sclerophrys</i> . . . . .	155
Genus <i>Werneria</i> . . . . .	157
Genus <i>Wolterstorffina</i> . . . . .	158
Family Conrauidae . . . . .	158
Genus <i>Conraua</i> . . . . .	158
Family Hyperoliidae . . . . .	159
Genus <i>Acanthixalus</i> . . . . .	159
Genus <i>Afrixalus</i> . . . . .	159
Genus <i>Alexteroon</i> . . . . .	161
Genus <i>Arlequinus</i> . . . . .	161
Genus <i>Cryptothylax</i> . . . . .	161
Genus <i>Hyperolius</i> . . . . .	161
Genus <i>Opisthothylax</i> . . . . .	163

Genus <i>Phlyctimantis</i> . . . . .	164
Family Petropedetidae . . . . .	164
Genus <i>Petropedetes</i> . . . . .	164
Family Phrynobatrachidae . . . . .	165
Genus <i>Phrynobatrachus</i> . . . . .	165
Family Pipidae . . . . .	167
Genus <i>Hymenochirus</i> . . . . .	167
Genus <i>Xenopus</i> . . . . .	168
Family Ptychadenidae . . . . .	169
Genus <i>Ptychadena</i> . . . . .	169
Family Pyxicephalidae . . . . .	170
Genus <i>Aubria</i> . . . . .	170
Family Ranidae . . . . .	170
Genus <i>Amnirana</i> . . . . .	170
Family Rhacophoridae . . . . .	171
Genus <i>Chiromantis</i> . . . . .	171
Order Gymnophiona . . . . .	172
Family Dermophiidae . . . . .	172
Genus <i>Geotrypetes</i> . . . . .	172
Family Herpelidae . . . . .	172
Genus <i>Herpele</i> . . . . .	172
Acknowledgments . . . . .	173
Bibliography . . . . .	173
Photographs . . . . .	179
Distribution Maps . . . . .	203

**Equatorial Guinea is a small west-central African tropical country situated in the Gulf of Guinea. It has a main insular area comprising the volcanic land-bridge island Bioko, the oceanic island Annobón, and a continental part known as Río Muni, which accounts for most of the country's land area and borders on Cameroon to the north and Gabon to the east and south. Only a few and mostly old publications have dealt specifically with the amphibians of Equatorial Guinea, and an accurate and updated catalogue is lacking. Based on fieldwork, a compilation of literature, and the examination of two important Spanish scientific collections, we present a comprehensive catalogue of the amphibian fauna for Equatorial Guinea. We report 80 species belonging to 32 genera, 13 families and two orders. Of these 80 species, 14 are present only on Bioko, 36 are known only in Río Muni, and 30 occur in both regions. No amphibians are currently known from Annobón. There is a very low level of endemism, with only one species endemic to Bioko. This may be due to the country's small size, to the relatively uniform landscape (lowland rainforest) of Río Muni, and to the recent connections between Bioko and the continent. Our work revealed several new species and country records and highlighted problems in the taxonomic status of many amphibian populations that need to be addressed. As further field and taxonomic work is carried out, we expect new species records for the country that will assuredly enrich this catalog.**

The diversity and distribution of African amphibians are, in general, still poorly known (Poyn-ton et al. 2007; Blackburn 2008; Menegon et al. 2008). During the last decade, amphibians of Central Africa, especially those from countries bordering the Gulf of Guinea, have been the subject of several studies within a systematic or biogeographic framework (e.g., Blackburn 2010; Barej et al. 2014; Bell et al. 2015, 2017; Evans et al. 2015; Charles et al. 2018; Sánchez-Vialas et

al. 2018). Most of the published herpetofaunal surveys in this region have been conducted in particular countries such as Cameroon (Perret 1966; Zimkus 2009; Amiet 2012; Portik et al. 2016) and Gabon (Frétey and Blanc 2001; Burger et al. 2006; Pauwels and Rödel 2007; Frétey et al. 2011; Carlino and Pauwels 2015; Jongsma et al. 2017; Dewynter et al. 2018), whereas others, like Equatorial Guinea, remain largely unexplored (De la Riva 1994; Lasso et al. 2002; Blackburn 2010).

In spite of the geographic and biological interest in the Gulf of Guinea region, several basic aspects of the amphibian fauna of Equatorial Guinea remain mostly unknown (see, for example, Rödel et al. 2004), and only a handful of old publications deal specifically with the amphibians of this country. For example, Boulenger (1899a, 1899b, 1900, 1903, 1906a, 1906b) provided records and described several new species of amphibians collected in the continental part —Río Muni—, and Mertens (1965) presented a synthesis of the amphibians of Bioko (at that time known as Fernando Poo). It was not until 1994, with a study on the amphibians of Monte Alén National Park, in Río Muni, that the amphibians of Equatorial Guinea again attracted attention (De la Riva 1994). In De la Riva's study, 41 species were recorded from the park, 24 of them representing first records for Río Muni. Later, Frétey and Blanc (2000) carried out a literature-based synthesis of the amphibian species from seven countries of central Africa, including Equatorial Guinea, for which they reported 74 species. Lasso et al. (2002) provided an updated checklist and several notes on natural history of amphibians and reptiles of Monte Alén National Park (including four additional new records of amphibian species for Río Muni), and Gonwouo and Nsang (2005) focused on the herpetofauna of Monte Mitra, also part of the Monte Alén National Park. Blackburn (2010) described a new species of *Arthroleptis* from Bioko and commented about the diversity of the island's amphibians. Recently, Ceriaco et al. (2018) published a checklist of the herpetofauna of São Tomé, Príncipe, and Annobon islands, the latter belonging to Equatorial Guinea, stating that no record exists for any species of amphibian in Annobon. Despite the existence of several molecular studies including samples of amphibians from Equatorial Guinea (mostly from Bioko) (Blackburn 2008; Barej et al. 2014; Liedtke et al. 2016; Bell et al. 2017; Charles et al. 2018; Jongsma et al. 2018); Bell et al. 2019; Leaché et al. 2019), a comprehensive regional synthesis of the amphibians of Equatorial Guinea has yet to be carried out.

One of the main problems that governments must face when developing environmental policies is the lack of basic faunal information. Despite its small size, Equatorial Guinea remains a poorly known country from a biological standpoint, specifically its biodiversity. And as already noted above, to date no comprehensive catalogue of the amphibians of the whole country with accurate information has been published. With this contribution, in addition to encouraging further research, it is our aim to make available a basic tool to be used by both scientists and environmental agencies when dealing with the faunistic diversity of Equatorial Guinea and the ways to preserve it.

In summary, the main goals of this work are to: 1) provide an updated list of the amphibians of Equatorial Guinea with data on their distribution; 2) comment on some particular problems concerning the taxonomic status and/or distribution of several species; and 3) provide a comprehensive list of the pertinent literature relating to the amphibians from this country.

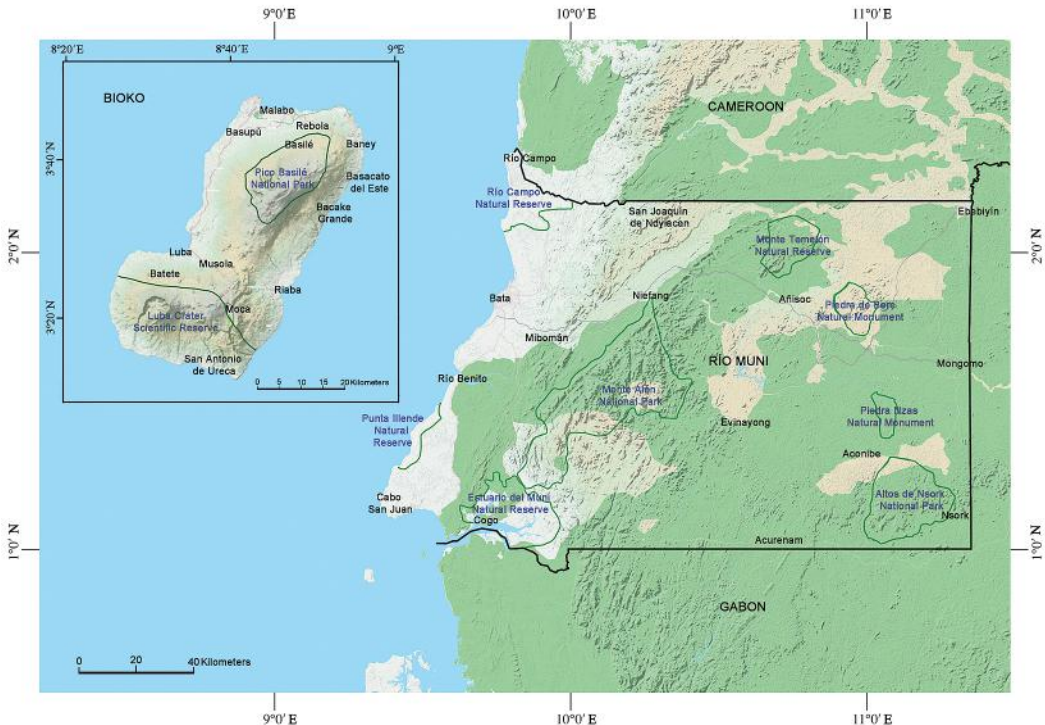
## MATERIAL AND METHODS

The information presented herein comes mainly from four different sources: 1) the personal field experience of the authors, IDIR, mostly at Monte Alén National Park (Río Muni) from May to December 1993 (De la Riva 1994), and of SC-F along southern Bioko in November and December 2003. Both field campaigns yielded valuable material and biological data; 2) the specimens held in the collections of the Museo Nacional de Ciencias Naturales-CSIC, Madrid, Spain (MNCN)

and the Estación Biológica de Doñana-CSIC, Sevilla, Spain (EBD); 3) the databases of the California Academy of Sciences (CAS) and the Museum of Comparative Zoology-Harvard University; and 4) the literature. We have not examined the specimens of amphibians of Equatorial Guinea in other collections or reported in online databases (e.g., GBIF [Global Biodiversity Information Facility]: Muséum National d'Histoire Naturelle, France [reportedly holding 332 specimens], Senckenberg Museum [113 specimens], Natural History Museum in London [80 specimens], North Carolina Museum of Natural Sciences [236 specimens], Cornell University [221 specimens], Peabody Museum, Yale University [128 specimens], Field Museum of Natural History, Chicago [35 specimens], and Royal Museum for Central Africa, Belgium [number unknown]). We are aware that, most likely, some additional species and, for sure, new distribution data, do exist in these and maybe other collections, but we did not rely on databases mainly because locality data and/or taxonomic identifications are usually in need of confirmation via direct examination of specimens.

A total of 685 specimens of 54 species of amphibians held at the EBD and MNCN collections were examined. Most of the specimens held at EBD were collected during the 1980s and early 90s by the researchers J. Juste and R. Castelo, with minor older contributions by J.A. Valverde, whereas the MNCN collection conserves both old specimens (collected by M. M. Escalera during 1901 and by F. Bonet and Gil Collado during 1933) and recently collected specimens (by Santiago Castroviejo-Fisher during 2003 and Ignacio Martín during 2005 and 2007). Also, the MNCN herpetological collection conserves the holotype of *Schistometopum garzonheydti* Taylor and Salvador, 1978 [synonym of *Geotrypetes seraphini* (Duméril, 1859)] and the neotype of *Petropedetes newtonii* (Bocage, 1895), recently designated (Sánchez-Vialas et al. 2018).

Specimens were fixed in the field with 10% formalin and then preserved in 70% ethanol. In



MAP 1. Map of Equatorial Guinea showing Bioko and Río Muni with their respective natural protected areas.

the catalog text that follows, each species entry generally consists of the species name, the type locality, distribution, comments, and a list of material examined. Nomenclature and general distribution information used herein mostly follow Frost (2020). Distribution maps were made at the Laboratorio de Biogeografía Informática, Museo Nacional de Ciencias Naturales.

ADDENDUM: When this work was almost totally edited and formatted, it came to our attention that three species, the arthroleptid *Cardioglossa nigromaculata* Nieden, 1908, and the hyperoliids *Arlequinus krebsi* (Mertens, 1938) and *Hyperolius kuligae* Mertens, 1940, were reported for Bioko by Channing & Röddel (2019) (and already updated by Frost [2020]) in their recent field guide of African amphibians. The picture of *C. nigromaculata* in this book's page 245 corresponds to an individual from southern Cameroon, being the record from Bioko based on three specimens deposited in the North Carolina Museum of Natural Sciences; these specimens have an unusual coloration (Patrick McLaughlin, pers. comm.). The picture of *A. krebsi* in Channing & Röddel's field guide (page 167) was taken by Jessica Weinberg of an individual from Bioko. We contacted Jessica Weinberg and she called our attention to an additional new species record for the island, the bufonid *Wolterstorffina parvipalmata* (Werner, 1898), which confirms the already suspected presence of this species in Equatorial Guinea. Likewise, she loaned us photos of *A. krebsi* (including an individual distinct from that portrayed by Channing & Röddel) and *W. parvipalmata*; additional photos of the latter species were kindly provided by P. McLaughlin as well. For editorial reasons, instead of being in their proper taxonomic and alphabetical order, these photos and the distribution maps for *A. krebsi*, *H. kuligae* and *W. parvipalmata* are placed at the end of their respective groups (Figure 25 and Map 27)]. The four species mentioned were found during surveys made under the Bioko Biodiversity Protection Program (BBPP) of the Drexel University in Philadelphia; Dr. Mary Gonder, BBPP's director, kindly allowed us to include these records here.

## STUDY AREA

Equatorial Guinea is a small country located in the vicinity of the Gulf of Guinea, Central West Africa (Map 1), formed by a mainland part, Río Muni, and five islands in the Gulf of Guinea (Bioko, Annobon, Elobey Grande, Elobey Chico and Corisco). The largest island is Bioko (on whose northern coast lies Malabo, the capital of the country), which has an area of 2017 km<sup>2</sup> and is 32 km distant from the nearest mainland (Cameroon). Bioko is located in the northern hemisphere, between 03°12'N and 03°48'N, whereas the small island of Annobon (or Pagalu; 17 km<sup>2</sup>) is in the southern hemisphere, between 01°24'S and 01°28'S. Bioko and Annobon are 565 km apart, and between them there is another insular country, São Tomé and Príncipe. Finally, the smaller islands of Corisco and the two Elobeyes are located off the coast of Río Muni, the continental part of the country. Río Muni, with an area of 26,000 km<sup>2</sup>, which accounts for about 90% of the land area of Equatorial Guinea, lies between 01°01'N and 02°21'N, and it borders with Cameroon to the north, and Gabon to the east and the south, and is part of an ancient granitic plateau with a maximum altitude of 1250 m (Fa 1991).

Equatorial Guinea has a tropical climate, hot and humid year-round. The continental Río Muni has an annual mean temperature of 25°C with oscillations rarely exceeding more than 5°C, and with annual precipitation that ranges from 1800 to 3800 mm, most of which occurring between September and December; there are two dry seasons, one between December and February, which is influenced by the dry Harmattan season and is less severe, not reaching the southern part of the region, and the second one during June and August (Fa 1991).

The climate of Bioko is more heterogeneous than that of Río Muni, being mainly affected by the continental proximity, latitudinal location, oceanic currents, and the island's mountainous topography, which is of volcanic origin. It is characterized by two seasons; the dry season extends

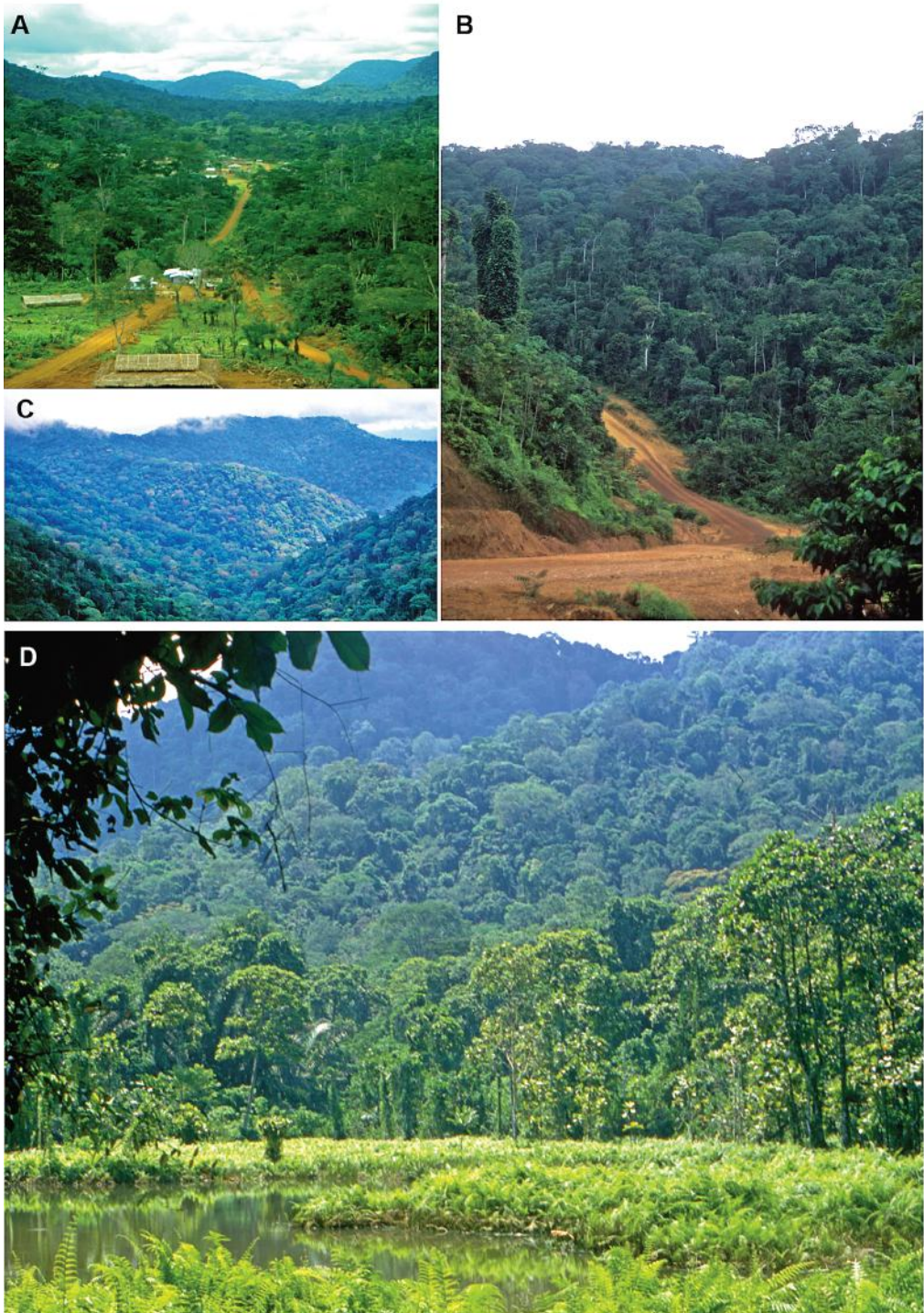


FIGURE 1. A. Moka, Monte Alén National Park, Río Muni. Photo IDIR; B. Los Altos de Nsork, Río Muni. Photo TL; C. Monte Alén National Park, Río Muni. Photo IDIR; D. Atoc Lake, Monte Alén National Park, Río Muni. Photo IDIR.



FIGURE 2. A. Asia Rapids, Midyobo, Río Muni. Photo IDIR.; B. Laña River, Río Muni. Photo IDIR.



from November to March (Fa 1991; Galán Cela et al. 2018) and is followed by a variable and often wet period from April through October. There are three volcanic calderas on Bioko: Pico Basilé, located in the north, with 3011 m in elevation, and Pico Biao and Caldera de Luba in the southern region, with elevations of 2009 m and 2261 m respectively. Annual mean temperature is about 25°C in Malabo with maximum of 26.2°C in February and minimum of 24°C in September. Bioko exhibits marked differences in rainfall between its northern and southern blocks. The northern block of Bioko receives an annual mean precipitation of 1930 mm, while the southern block, which experiences a monsoon season, reaches an annual mean of 10900 mm, with a record of 14451 mm in Ureca (one of the highest precipitations recorded in the world) (Fa 1991).

Overall, the vegetation of Equatorial Guinea is quite uniform, due to the homogeneous topography, geology, and climate, and to the small area covered by the country. The Lower Guinean forest ecosystem covers most of the country (Bell et al. 2017) (Figs. 1 and 2), and it is formed by 70–80 tree species in Río Muni (Fa 1991). Only Bioko is characterized by different vegetation communities, as a result of the altitudinal gradients and the marked precipitation differences between the northern and southern blocks. The highlands of Bioko are dominated by montane forest (800–1400 m), *Schefflera* forest/Mossy forest (1400–2600 m) and heath and grass/shrubs (2600–3000 m) (Butynski and Koster 1994; Juste and Pérez del Val 1995). This island forms part of the Cameroon Volcanic Line, which is considered a biodiversity hotspot (Myers et al. 2000). A synthesis of vegetation types and most common species plants of Equatorial Guinea was presented by Fa (1991).

## RESULTS AND DISCUSSION

Our study recovered 80 species of described amphibians present in Equatorial Guinea, 14 of them only present on Bioko, 36 only in Río Muni, and 30 known from both regions. Overall, our list differs quantitatively from Frétey and Blanc's (2000) by adding seven more species, but the geographic allocation differs as well, since they report only eight species exclusively from Bioko and, in contrast, as many as 44 from Río Muni, and only 22 from both regions. There are also qualitative differences, as they report species now referred to the synonymy of other species or subjected to taxonomic or other nominal changes. Besides their 74 “confirmed” species, they suggested as possible the presence in the country of five species (*Hoplobatrachus occipitalis*, *Hyperolius marmoratus*, *Phrynobatrachus hylaios*, *Sclerophrys regularis*—also cited with no data by Dewynter and Frétey [2019]—, and *Xenopus andrei*), none of which are listed in our catalog.

Several new undescribed species are known to occur within Equatorial Guinea (De la Riva 1994; Jongsma et al. 2018). Thus, an increase in the number of described species is to be expected in the near future. Also, the taxonomic status of several species recorded in Equatorial Guinea remains uncertain (*Hymenochirus boettgeri*, *Arthroleptis* aff. *poecilnotus*, *Phlyctimantis* cf. *leonardi*, *Leptodactylodon* cf. *stevarti*, *Sclerophrys funerea*, and *Werneria* cf. *mertensiana*; see each account). Furthermore, some species names cited in the literature likely represent misidentifications and are not included in this checklist; these include: *Arthroleptis taeniatus*, recorded by Dewynter and Frétey (2019) and previously by Mertens (1965) (as *A. bivittatus*), and considered herein as *A. sylvaticus*; *Astylosternus diadematus*, a Cameroonian species recorded by Gonwouo and Nsang (2005) (misspelled as “*Astylosternus diadematis*”) who did not provide either data or comments on this record; *Leptopelis viridis*, a savannah-living species mostly distributed in West Africa (Schlötter 1999), listed by Frétey and Blanc (2000), excluded herein until further evidence on its presence in the country is obtained; *Sclerophrys maculatus*, recorded by Gonwouo and Nsang (2005), considered herein as *S. latifrons*; *Sclerophrys pusilla*, cited by Dewynter & Frétey (2019) without data, excluded herein from the checklist until further evidence on its presence in the country is obtained; *Hyperolius concolor*, recorded by Mertens (1965), considered herein as *H. tuber-*

*culatus*; *Hyperolius fusciventris*, another West African species (Schjötz 1999) listed by Frétey and Blanc (2000), excluded herein from the checklist until further evidence on its presence in the country is obtained; *Hyperolius mosaicus*, considered of likely presence in the country by Frost (2020) and cited with no data by Dewynter & Frétey (2019), excluded herein from the checklist until further evidence on its presence is obtained; and *Ptychadena mascareniensis*, recorded by Boulenger (1903) and Gonwouo and Nsang (2005), considered herein as *P. aequiplicata*. We report *Afrixalus osorioi*, *Nectophryne batesii*, and *Wolterstorffina parvipalmata* (but see comment under species account) for the first time in Equatorial Guinea, *Cardioglossa leucomystax* and *Opisthothylax immaculatus* (but see comment under species account) for the first time on Bioko, and *Arthroleptis sylvaticus* for Río Muni; we also provide several additional records for most of the species both on Bioko and in Río Muni, emphasizing the importance of scientific collections.

Most species from Río Muni are widely distributed across the Central African region; however, some species seem to be geographically located within a restricted area, such as for example *Werneria* cf. *mertensiana*, and *Leptodactylodon* cf. *stevarti*, which have only been found in Monte Alén National Park (De la Riva 1994), and it has been suggested that these populations could belong to undescribed species (Rödel and Pauwels 2003; Rödel et al. 2004). One of the localities where *Afrixalus osorioi* has been found lies in southeastern Río Muni, an overlooked region from a biological standpoint. Many species remain poorly known as only one or two records exist, mainly due to lack of fieldwork in Río Muni and, possibly, the elusive nature of some taxa. This could be the case of *Acanthixalus spinosus*, *Alexteroon obstetricans*, *Cardioglossa escalerae*, *C. gracilis*, *Hyperolius olivaceus*, *H. pardalis*, *H. phantasticus*, *H. platyceps*, *Leptodactylodon* cf. *stevarti*, *Opisthothylax immaculatus*, *Phrynobatrachus sandersoni*, and *Werneria* cf. *mertensiana*. Currently, no endemic formally described species are known from Río Muni. Likewise, despite being an island, Bioko presents low levels of endemism, and relatively close phylogenetic relationships among species populations from Bioko and Cameroon have been reported (Jones 1994; Blackburn 2010; Barej et al. 2014; Bell et al. 2017, 2019; Charles et al. 2018; Leaché et al. 2019), mainly due to the cycles of rising and retreating sea levels that resulted in repeated periods of isolation and connection between Bioko and the continental mainland (Jones 1994; Bell et al. 2017). The authors' unpublished molecular data (12S partial gene) from taxa such as *Phrynobatrachus cornutus* and *Cardioglossa leucomystax* support this hypothesis; however, in contrast, some phylogeographic structure is revealed by the existence of distinct allopatric lineages of *Leptopelis modestus* (Portillo et al. 2015) and *L. calcaratus* (unpublished data) from Bioko and Cameroon, suggesting a more complex pattern of diversification for several taxa on Bioko. Future research should focus on the integration of additional sources of evidence to determine whether the mentioned lineages of *Leptopelis* fall within the intraspecific variation of formerly described species or they represent distinctive, new taxonomic units. Most of the efforts for studying amphibians in Equatorial Guinea have focused on Bioko and on the western half of Río Muni, specially Monte Alén National Park, whereas no published work deals with the eastern part of Río Muni, where some interesting and putatively protected natural areas also exist (e.g., Monte Temelón Natural Reserve, Altos de Nsork National Park, Piedra Bere Natural monument, and Piedra Nzás Natural monument). In the same way, within the western part of Río Muni, the amphibian diversity of other natural protected areas is mostly unknown (e.g., Río Campo Natural Reserve, Punta Llendi Natural Reserve, Estuario del Muni Natural Reserve). The revision of the amphibians collected from southeastern Río Muni has revealed new populations of *Afrixalus osorioi*, more than 360 km northward from the closest recorded populations of southern Gabon (Dewynter et al. 2018). This suggest that future field work along most regions of Río Muni, including the natural protected areas, should be carried out for a better understanding of the biodiversity of these overlooked areas.

Some of the candidate species suggested by De la Riva (1994) to be found during future field work at Monte Alén National Park have not been yet reported in Equatorial Guinea and they might be discovered in the future; these are: *Leptopelis aubryioides* (Anderson, 1907), *Hyperolius koehleri* Mertens, 1940, and *Ptychadena perreti* Guibé and Lamotte, 1958. Likewise, *Afraxalus equatorialis* (Laurent, 1941), *Alexeroon hypsiphonus* Amiet, 2000, *Hyperolius adspersus* Peters, 1877, *H. dartavellei* Laurent, 1943, *H. guttulatus* Günther, 1858, *H. kuligae* Mertens, 1940, *H. mosaicus* Perret, 1959, *Arthroleptis taeniatus* Boulenger, 1906, *A. tuberosus* Andersson, 1905, *Phrynobatrachus mayokoensis* Rödel, Burger, Zassi-Boulou, Emmrich, Penner, and Barej, 2015 and *Wolterstorffina parvipalmata* could be found in Río Muni. Overall, we assume that the diversity of amphibians of Equatorial Guinea, as currently known, is underestimated.

## SYNOPSIS OF THE AMPHIBIANS OF EQUATORIAL GUINEA

### Order Anura

#### Arthroleptidae Mivart, 1869

#### Arthroleptinae Mivart, 1869

#### *Arthroleptis* Smith, 1849

#### *Arthroleptis adelphus* Perret, 1966

Photo figures 3A–C

TYPE LOCALITY.—“Foulassi”, near Sangmelima, Cameroon.

DISTRIBUTION.— This species ranges over the forests of the Gulf of Guinea region, from southern Cameroon to Gabon. In Equatorial Guinea, *A. adelphus* has been recorded in Río Muni, at Monte Alén National Park (De la Riva 1994), and on Bioko at Pico Basilé (Blackburn 2008) (Map 2A).

COMMENTS.— Our identifications of the preserved *A. adelphus* are confirmed by molecular data (authors' unpublished data). Two preserved specimens (MNCN 48825–48826) from Batete, Bioko, have a striped pattern. The external morphology of this species is similar to that of members of the *A. poecilonotus* species complex (see entry for *A. aff. poecilonotus*), and a close relationship has been evidenced by molecular data (Blackburn 2008). However, in life, *A. adelphus* can be diagnosable by the presence of marked and larger skin granules over the dorsal and lateral parts of the body, whereas in *A. poecilonotus* the dorsal surface of the skin is smoother and homogeneously granulated. Additional subtle differences such as the metatarsal tubercle and the subarticular tubercle of Finger I seem to be diagnostic (Dewynter et al. 2018).

SPECIMENS EXAMINED.— Nine specimens. Illadji River, Bioko, 03°19'46.04"N, 08°40'26.13"E, 14 November 2003 (MNCN 48833); surroundings of BBPP camp, Caldera de Luba, Bioko, 03°20'47.32"N, 08°29'48.44"E, 26 November 2003 (MNCN 48827–48828, MNCN 48830, 48832), 27 November 2003 (MNCN 48829, 48831); path behind church in Bakelele forest, Batete, Bioko, 03°26'37.34"N, 08°30'24.76"E; 02 November 2003 (MNCN 48825–48826).

#### *Arthroleptis bioko* Blackburn, 2010

TYPE LOCALITY.—“Republic of Equatorial Guinea, Bioko Norte Province, along Pico Basilé road, northeast slope of Pico Basilé, 03°37'42.4"N, 08°48'11"E, ca. 1820 m elevation”.

DISTRIBUTION.— This species was known only from some localities of the Pico Basilé region (Blackburn 2010), from where it was presumably endemic, but we record an additional population from Bioko Sur province, close to Caldera de Luba surroundings (Map 2B).

COMMENTS.— This species is currently the only known endemic amphibian of Equatorial

Guinea. The additional record provided herein represents the southernmost known locality for this species. The identity of the single examined specimen, a female, was also confirmed by molecular analyses (authors unpublished data).

SPECIMENS EXAMINED.— One specimen. Narciso's farm, Moka, Bioko, 03°20'53.57"N, 08°39'49.91"E, 12 November 2003 (MNCN 48835).

***Arthroleptis* aff. *poecilnotus***

**Photo figures 3D–E**

TYPE LOCALITY.— Unknown taxonomic identity (see comments).

DISTRIBUTION.— Members of the *Arthroleptis poecilnotus* species complex are widely distributed, ranging from Guinea-Bissau to Uganda, and southwards to Gabon, Congo and Central African Republic. In Equatorial Guinea, it has been recorded both in Río Muni at Cabo San Juan (Boulenger 1900, 1903), Monte Alén (De la Riva 1994) and in several localities on Bioko (Mertens 1965; Hydeman et al. 2017) (Map 2C).

COMMENTS.— See comments on *A. adelphus*.

Phylogenetic evidence suggests that under the name *A. poecilnotus* Peters, 1863 there is a species complex comprising multiple allopatric species from (1) Western Ghana and Sierra Leone, (2) Togo Hills of Eastern Ghana, (3) Cameroon, and (4) Bioko (Blackburn 2008). The lineage identified from Bioko by Blackburn (2008) was formally described as *A. bioko* (Blackburn 2010). *Arthroleptis poecilnotus* has two available synonyms, *A. macrodactylus* Boulenger, 1882 described from Gabon and *A. inguinalis* Boulenger, 1900 described from Benito River (Equatorial Guinea). As the type locality of *A. poecilnotus* is in Ghana (Holländischen Besitzungen (Boutry) [Ghana] an der Küste von Guinea), the different lineage from Cameroon, and also, the unstudied populations from Gabon and Equatorial Guinea deserve other nomenclatural denominations once an exhaustive taxonomic revision is made.

SPECIMENS EXAMINED.— 26 specimens. Patio Alosa (Niefang), 14 August 1985 (EBD 21033); Cabo San Juan, Río Muni, 21 August 1901 (MNCN 3921–3942); Río Muni, 21 August 1901 (MNCN 3958); Río Muni, Cabo San Juan, 25 May 1901 (MNCN 3997–3998).

***Arthroleptis sylvaticus* (Laurent, 1954)**

**Photo figure 3F**

TYPE LOCALITY.— “Buta”, Uele, Dem. Rep. Congo.

DISTRIBUTION.— *Arthroleptis sylvaticus* (sensu lato) ranges from southern Cameroon and Gabon to Republic of Congo, Democratic Republic of Congo and Central African Republic. In Equatorial Guinea, this species is known from Bioko, where it has been recorded near Moka (Blackburn 2008; Hydeman et al. 2017) (Map 3A). It is present in Monte Alén, Río Muni (IDIR, Fig. 3F).

COMMENTS.— This taxon may comprise several undescribed cryptic species (Blackburn 2008). Frost et al. (2006) included in their study a specimen (CAS 207926) from Moka, Bioko, identified as *Schoutedenella taeniata*, which was previously assigned to *A. sylvaticus* by Blackburn (2008), and briefly described as a juvenile with a pair of light dorsolateral lines. This striped phenotype exhibited by some specimens of *A. sylvaticus* could have led Mertens (1965) to misidentify his specimens of *Arthroleptis* from Moka as *A. bivittatus* Müller, 1885. At that time, Mertens (1965) considered *A. bivittatus* as a senior synonym of *A. taeniatus* Boulenger, 1906 (another taxon in which the dorsal pattern can be formed by light dorsolateral lines). However, both taxa (*A. bivittatus* and *A. taeniatus*) are currently recognized as different species (Perret 1991); while *A. bivittatus* is restricted to its type locality (Tumbo-Insel [Tumbo Island, Sierra Leone]), *A. taeniatus* is widespread along the Gulf of Guinea mainland. Mertens (1965) compared the specimen from Moka with specimens of *A. taeniatus* from Cameroon, noting morphological similarity. The

conservative morphological evolution undergone by some species groups of the genus *Arthroleptis*, sometimes only revealed by molecular data, suggests that at the times of Mertens' work, the limitations for studying the diversity of this group of frogs were considerable, and consequently, yielded misidentifications, especially for the smallest species of *Arthroleptis*, such as the Mertens' specimens. Thus, based on current evidences, it is likely that the specimen from Moka recorded by Mertens (1965) is neither *A. bivittatus* nor *A. taeniatus*; despite further sampling efforts carried out at Moka surroundings, no specimens of *A. taeniatus* have been recorded, but some other congeneric species such as *A. poecilnotus*, *A. variabilis*, and *A. sylvaticus* are commonly found. Consequently, we consider that the identity of Mertens' (1965) specimen from Moka corresponds to *A. sylvaticus*, a taxon that can also exhibit the dorsolateral light stripes shown by the sequenced specimen (CAS 207926) from the same locality (Blackburn 2008). Therefore, we exclude the taxon *A. taeniatus* (or *A. bivittatus* sensu Mertens [1965]) from the checklist of amphibians of Equatorial Guinea. However, *A. taeniatus* could be found during future field work in Río Muni.

**SPECIMENS EXAMINED.**— Seven specimens. Moka, Bioko Sur, 23 July 1984 (EBD 18612–18614); Belebu to Ureca, along the path, Bioko, 03°24'25.81"N, 08°33'03.23"E, 19 November 2003 (MNCN 48884); Illadji River, Bioko, 03°19'46.04"N, 08°40'26.13"E, 14 November 2003 (MNCN 48883); surroundings of BBPP camp, Caldera de Luba, Bioko, 03°20'47.32"N, 08°29'48.44"E, 27 November 2003 (MNCN 48834); Caldera de Luba, Bioko, 03°21'17.59"N, 08°31'42.35"E, 14 March 2007 (MNCN 46705).

***Arthroleptis variabilis* Matschie, 1893**

**Photo figures 3G–H; 4A–E**

**TYPE LOCALITY.**— “Buea, Barombie, Kamerun”, Cameroon.

**DISTRIBUTION.**— This species inhabits the lowland rainforest over the Gulf of Guinea region, extending from Nigeria to Gabon, and inward reaching Central African Republic and Democratic Republic of Congo. In Equatorial Guinea, it occurs both in Río Muni and Bioko. Within Río Muni, *Arthroleptis variabilis* had only been recorded in Monte Alén (De la Riva 1994), while on Bioko it is known from several localities over most part of the island (Bocage 1895a; Boulenger 1900, 1906a; Mertens 1965; Hydeman et al. 2017) (Map 3B).

**COMMENTS.**— This species has been redescribed by Blackburn et al. (2009). Old highland records from Basilé (2000 m a.s.l) (Bocage 1895a) need confirmation since a newly described congeneric taxon (*A. bioko*) inhabits the same region at high altitudes. Mraz et al. (2018) reported a case of predation of *A. variabilis* by an unidentified shrew within a human-mediated trap.

**SPECIMENS EXAMINED.**— 24 specimens. Ayene, Wele Nzaz, 9 September 1985 (EBD 21041); [Batonós, Guinea Ec] (not found), January 1933 (MNCN 3943); Monte Alén lake, 22 August 2001 (MNCN 46336); Caldera de Luba, Bioko, 03°20'46.54"N, 08°29'48.20"E, 12 March 2007 (MNCN 46702, MNCN 46707); Forest close to Illadji River, Bioko, 03°19'46.04"N, 08°40'26.13"E, 14 November 2003 (MNCN 48836–48839); Río San Nicolás, Belebu to Ureka along the path, Bioko, 03°24'25.81"N, 08°33'03.23"E, 20 November 2003 (MNCN 48840); descending into Caldera de Luba, Bioko, 03°20'05.02"N, 08°29'14.33"E, 26 November 2003 (MNCN 48841); surroundings of BBPP camp, Caldera de Luba, Bioko, 03°20'47.32"N, 08°29'48.44"E, 26 November 2003 (MNCN 48842–48851), 27 November 2003 (MNCN 48852–48853); Batete, path behind church, Bakelele forest, 03°26'37.34"N, 08°30'24.76"E, 02 December 2003 (MNCN 48854).

***Cardioglossa* Boulenger, 1900**

***Cardioglossa elegans* Boulenger, 1906**

**Photo figures 5A–B**

**TYPE LOCALITY.**— “Efulen”, Cameroon.

DISTRIBUTION.— From Cameroon to Gabon, in lowland rainforest. In Equatorial Guinea, it is recorded from Monte Alén (De la Riva 1994) (Map 3C).

COMMENTS.— This is a poorly known species. Amiet and Goutte (2017) provided an account including the call spectrum.

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Cardioglossa escalerae* Boulenger, 1903**

TYPE LOCALITY.— “Cap Saint Jean, Guinée espagnole” (Cabo San Juan, Río Muni, Equatorial Guinea).

DISTRIBUTION.— This species occurs in lowland rainforests from Cameroon and Equatorial Guinea to Central African Republic and Democratic Republic of Congo. In Equatorial Guinea, it has been recorded at the type locality, and at Monte Alén by Lasso et al. (2002) (Map 4A).

COMMENTS.— This is a poorly known species. Amiet and Goutte (2017) provided an account including the call spectrum.

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Cardioglossa gracilis* Boulenger, 1900**

**Photo figure 5C**

TYPE LOCALITY.— “Benito River”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— This species is distributed over southeastern Nigeria, Cameroon, continental Equatorial Guinea, Gabon and Democratic Republic of Congo. In Equatorial Guinea, it was only known from the type locality, at Río Muni (Boulenger 1900), from Cabo San Juan (Boulenger 1903), and from Monte Alén National Park (De la Riva 1994); the specimen examined provides an additional record (Map 4B).

COMMENTS.— This is a poorly known species. Amiet and Goutte (2017) provided an account including the call spectrum.

SPECIMENS EXAMINED.— One specimen. Noayong (Evinayong-Aconibe), 16 March 1987 (EBD 25045).

***Cardioglossa gratiosa* Amiet, 1972**

TYPE LOCALITY.— “Ongot, env. 750 m, Cameroon”.

DISTRIBUTION.— This species ranges from Cameroon to Gabon and Democratic Republic of Congo. In Equatorial Guinea is listed for Río Muni by Frétey and Blanc (2000), but no particular locality was provided (Map 4C).

COMMENTS.— It is expected to be found in Monte Alén (De la Riva 1994).

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Cardioglossa leucomystax* (Boulenger, 1903)**

**Photo figures 5D–E**

TYPE LOCALITY.— “Cap Saint Jean, Guinée espagnole”, Cabo San Juan, Río Muni, Equatorial Guinea.

DISTRIBUTION.— This species has the largest geographic range in the genus, occurring from Nigeria to Gabon, and throughout Central African Republic, Democratic Republic of Congo and Republic of Congo. Within Equatorial Guinea, it has been recorded from Río Muni only, in Cabo San Juan (Boulenger 1903) and in Monte Alén National Park (De la Riva 1994). Here we present the first records of *C. leucomystax* for Bioko, and also an additional locality for Río Muni (Map 5A).

COMMENTS.— The newly recorded populations from Bioko are closely related to the ones from Cameroon (authors' unpublished data).

SPECIMENS EXAMINED.— Seven specimens. Niefang, Alosa, 14 August 1985 (EBD 34220); River mouth of Moaba, Bioko, 03°14'01.41"N, 08°37'19.64"E, 21 November 2003 (MNCN 48923–48925); Río Ole, on the way to Caldera de Luba, Bioko, 03°15'55.40"N, 08°28'31.64"E, 26 November 2003 (MNCN 48926–48927); between Río Ole and Casa Moraca, Bioko, 03°15'33.05"N, 08°29'11.18"E, 29 November 2003 (MNCN 48928).

***Cardioglossa nigromaculata* Nieden, 1908**

TYPE LOCALITY.— “Johann-Albrechtshöhe [=Kumba]”, Cameroon.

DISTRIBUTION.— This species ranges from southeastern Nigeria to southwestern Cameroon, and it is also present on Bioko (Channing & Rödel 2019) (Map 5B).

COMMENTS.— This species was found for the first time in Equatorial Guinea by the BBPP in Caldera de Luba, Bioko, during November 2015. Recorded specimens are held at the North Carolina Museum of Natural Sciences. Channing & Rödel (2019) published the presence of this species on Bioko (without specific locality) based on these specimens. See addendum in Material and Methods.

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

**Astylosterninae Noble, 1927**

***Astylosternus* Werner, 1898**

***Astylosternus batesi* (Boulenger, 1900)**

**Photo figures 6A–B**

TYPE LOCALITY.— “Benito River, Equatorial Guinea”.

DISTRIBUTION.— This species ranges from southern Cameroon to Gabon, western Democratic Republic of Congo and southwestern Central African Republic. In Equatorial Guinea, it has been reported from three localities of Río Muni (Boulenger 1900, 1903; De la Riva 1994) (Map 5C).

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Leptodactylodon* Anderson, 1903**

***Leptodactylodon* cf. *stevarti* Rödel and Pauwels, 2003**

**Photo figures 6C–E**

TYPE LOCALITY.— “Forest stream, 550 m a.s.l., 0°37'301"N, 10°24'402"E, near Tchimbélé dam, Haut-Komo Department, Woleu-Ntem Province, Gabon”.

DISTRIBUTION.— Currently, *L. stevarti* is only known from the type locality. See comments below regarding the Equatorial Guinea population (Map 6A).

COMMENTS.— Rödel and Pauwels (2003) suggested that the population of Monte Alén recorded as *L. albiventris* (Boulenger, 1905) by De la Riva (1994) could represent an undescribed species or an additional population of *L. stevarti*, conclusion also followed by Dewynter and Frétey (2019). De la Riva et al. (2001) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— No specimens were found in the collections we have examined.

***Nyctibates* Boulenger, 1904**

***Nyctibates corrugatus* Boulenger, 1904**

**Photo figures 7A–B**

TYPE LOCALITY.— “Efulen, Bulu Country, Southern Cameroon”.

DISTRIBUTION.— It is distributed from Nigeria to Gabon in lowland rainforest. In Equatorial Guinea, *N. corrugatus* has been recorded from Río Muni at Monte Alén (De la Riva 1994) (Map 6B).

COMMENTS.— De la Riva et al. (2001) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Scotobleps* Boulenger, 1900**

***Scotobleps gabonicus* Boulenger, 1900**

**Photo figure 7C**

TYPE LOCALITY.— “Benito River”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— It is distributed across the Gulf of Guinea region, from eastern Nigeria to Gabon and Democratic Republic of Congo. In Equatorial Guinea, it has been reported in Río Muni, at the type locality, at Cabo San Juan (Boulenger 1903), and in Monte Alén (De la Riva 1994). Our results provide several additional records, suggesting that this is a widespread species within continental Equatorial Guinea (Map 6C).

COMMENTS.— De la Riva et al. (2001) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— Twenty-six specimens. Miboman, Litoral Bata, 01 September 1984 (EBD 18282), April 1988 and December 1977 (EBD 28046, 28059, 28062–28065, 28067, 28069, 28070, 28071), April 1988 (EBD 28075, 28081, 28079, 28084, 28073, 28088), December 1987 (EBD 28080); Miboman, Km 27 Bata–Niefang, October 1987 (EBD 28068, EBD 28077); San Joaquín de Ndyiacom, December 1987 (EBD 28060, 28061); Ayamiken (EBD 27498); Nvom-Noayong, (Evinayong-Aconibe), 16 April 1987 (EBD 25044); without data (two specimens from EBD labeled B9120, B9119).

***Trichobatrachus* Boulenger, 1900**

***Trichobatrachus robustus* Boulenger, 1900**

**Photo figures 7D–E**

TYPE LOCALITY.— “Benito River”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— It ranges over the Gulf of Guinea, from Nigeria to Gabon and Democratic Republic of Congo and, more recently, was also recorded from Angola (Ernst et al. 2014:298). In Equatorial Guinea, it is only known from Río Muni, where the type locality is (Boulenger 1900). It has been also found in Monte Alén (Río Bilene, close to lake Atoc [De la Riva 1994] and Río Lobo [Lasso et al. 2002]) and in Monte Mitra (Gonwouo and Nsang 2005) (Map 7A).

SPECIMENS EXAMINED.— Three specimens. Mirador de Moka, Río Lobo, Evinayong, 21 May 1986 (EBD 21019); Miboman (Bata), August 87 (EBD 27496); Río Muni, Equatorial Guinea (EBD 23072).

**Leptopelinae Laurent, 1972**

***Leptopelis* Günther, 1859**

***Leptopelis aubryi* (Duméril, 1856)**

**Photo figures 8A–B**

Type locality.— Gabon.

DISTRIBUTION.— It is distributed from southern Nigeria to Democratic Republic of Congo and Central African Republic, including Gabon, Cameroon and Equatorial Guinea, where it has been recorded in Río Muni at Cabo San Juan (Boulenger 1903) and Monte Alén (De la Riva 1994), and on Bioko at Moka (Hydeman et al. 2017); more recently, it was also reported from Angola (Marques et al. 2018). Our revision provides additional records from Río Muni (Map 7B). Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000).

SPECIMENS EXAMINED.— Twelve specimens. Miboman, Movo, Bata, Litoral, Río Muni, 08 September 1984 (EBD 18251), 24 August 1987 (EBD 27501–27505); Miboman, Bata, April 1988 (EBD 27836, 27838), December 1988 (EBD 27838); Akurenam Centro Sur, 27 August 1984 (EBD



18426); Cabo San Juan, Río Muni, 08 September 1901 (MNCN 3999), 25 August 1901 (MNCN 4004).

***Leptopelis boulengeri* (Werner, 1898)**

**Photo figure 8C**

TYPE LOCALITY.—“Victoria Kamerun”, [Limbé, Cameroon]

DISTRIBUTION.— This species is widespread over the Gulf of Guinea region, from southeastern Nigeria to Gabon and Democratic Republic of Congo. In Equatorial Guinea, it has been recorded from Bioko (Boulenger 1906a; Ahl 1929; Bell et al. 2019) and Río Muni (Ahl 1929; De la Riva 1994). Our revision provides additional records from Río Muni (Map 7C).

COMMENTS.— Some records of this species are located in Equatorial Guinea under the synonym of *Leptopelis poensis* Ahl, 1929 for Bioko populations (Type locality: Fernando Poo [=Bioko]), and *Leptopelis violescens* Ahl, 1929 for Río Muni populations (Type locality: Makomo, Spanish-Guinea).

SPECIMENS EXAMINED.— Nineteen specimens. Miboman km 27 Ctra Bata-Movo, 1984 (EBD 19633), April 1988 (EBD 27824); Ayebe (Akurene), cerca de la cascada de Nguelensok, 15 June 1986 (EBD 21012, EBD 21020); Cabo San Juan, 19 August 1901 (MNCN 4000–4001), 21 August 1901 (MNCN 4002–4003, MNCN 4038–4041), August 1901 (MNCN 4042–4048).

***Leptopelis brevirostris* (Werner, 1898)**

**Photo figure 8D**

TYPE LOCALITY.—“Kamerun (ein Exemplar aus Victoria, ...)”.

DISTRIBUTION.— This species is widespread over the rainforests of the Gulf of Guinea region, from southern Nigeria to Gabon and Democratic Republic of Congo. In Equatorial Guinea, it has been recorded from Bioko (Boulenger 1906a; Mertens 1965; Hydeman et al. 2017; Bell et al. 2019) and Río Muni (Boulenger 1900; De la Riva 1994), where our revision adds a new record (Map 8A).

COMMENTS.— The taxonomic identity of *L. brevipes* (Boulenger, 1906) (only known from its type locality at Musola, Bioko) has been problematic (Mertens 1965; Lötters et al. 2005; Channing & Rödel 2019). This taxon has been recently synonymized with *L. brevirostris* based on morphological and molecular evidences (Bell et al. 2019).

SPECIMENS EXAMINED.— 1 specimen. Besabeba (02°10'N 10°12'E), orilla del río Campo en la confluencia, centro sur, Kie-Ntem, 24 September 1985 (EBD 21011).

***Leptopelis calcaratus* (Boulenger, 1906)**

**Photo figure 8E**

TYPE LOCALITY.—“Efulen”, Cameroon, and “Cape St. John and the Rio Benito District” (Cabo San Juan and Benito River, Equatorial Guinea).

DISTRIBUTION.— *Leptopelis calcaratus* inhabits the rainforests of the Gulf of Guinea region, from southeastern Nigeria to Gabon and eastern Democratic Republic of Congo. In Equatorial Guinea, it is present on Bioko (Mertens 1965; Hydeman et al. 2017) and Río Muni (Boulenger 1906a; De la Riva 1994) (Map 8B).

COMMENTS.— Populations from Bioko represent an independent lineage from those from mainland Cameroon (authors' unpublished data). However, an integrative approach is necessary to test if this insular lineage is part of the geographically structured intraspecific variability or a distinctive species.

SPECIMENS EXAMINED.— Illadji River, Bioko, 03°19'46.04"N, 08°40'26.13"E, 13 November 2003 (MNCN 48862–48868).

***Leptopelis millsoni* (Boulenger, 1895)**

TYPE LOCALITY.—“Mouths of the Niger”, Nigeria.

DISTRIBUTION.— This species occurs over the rainforests of the Gulf of Guinea region, from southern Nigeria to Gabon and eastern Democratic Republic of Congo. *Leptopelis millsoni* has been only recorded in Equatorial Guinea at Río Muni (Ahl 1929; see comments) (Map 8C).

COMMENTS.— Ahl (1929) recorded this species in Río Muni under the synonym *L. guineensis* Ahl, 1929 (Type locality: Makomo, Río Muni). Our results provide a new record, confirming the presence of this species in Río Muni, where it had not been recorded since Ahl (1929).

SPECIMENS EXAMINED.— One specimen. Wele-Nzas, Ayene, 09 September 1985 (EBD 21016).

***Leptopelis modestus* (Werner, 1898)**

TYPE LOCALITY.— “Kamerun”; restricted to “Buéa, Cameroon” by lectotype designation.

DISTRIBUTION.— This species inhabits the forests of southern Nigeria and Cameroon. In Equatorial Guinea, it is only recorded from Bioko (Hydeman et al. 2017) (Map 9A).

COMMENTS.— Populations from Bioko represent an independent lineage from those in mainland Cameroon (authors’ unpublished data). However, an integrative approach is necessary to test if this insular lineage is part of the geographically structured intraspecific variability or a different species.

SPECIMENS EXAMINED.— One specimen. Moka, Bioko, 03°20'23.47"N, 08°40'6.20"E, 15 November 2003 (MNCN 50377).

***Leptopelis notatus* (Peters, 1875)**

TYPE LOCALITY.— “Cameruns”, Douala, Cameroon (see Frétey et al. 2014).

DISTRIBUTION.— The distribution of *L. notatus* encompasses the rainforests of the Gulf of Guinea region, extending from south-eastern Nigeria through Cameroon to northern Angola. In Equatorial Guinea, it has been recorded from Bioko (Nieden 1908) and Río Muni (Nieden 1909; Lasso et al. 2002) (Map 9B).

COMMENTS.— Nieden (1909) recorded this species in Río Muni under the synonym *L. tessmanni* Nieden, 1909 (Type locality: Makomo, Río Muni). Our revision provides two additional records for Río Muni.

SPECIMENS EXAMINED.— Five specimens. Nvom Aconibe-Asoc, 08 April 1987 (EBD 25047); Engong Aconibe-Asoc, 01 April 1987 (EBD 25067–25070).

***Leptopelis ocellatus* (Mocquard, 1902)**

**Photo figure 8F**

TYPE LOCALITY.— “Gabon ... à environ 50 kilomètres au Sud-Ouest de Lambaréné”.

DISTRIBUTION.— It occurs in the rainforests from southern Cameroon through Equatorial Guinea and Gabon to Republic Democratic of Congo and Republic of Congo. In Equatorial Guinea, it has been recorded only in Río Muni (Lake Atoc, Monte Alén National Park) by De la Riva (1994) (Map 9C).

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

***Leptopelis rufus* Reichenow, 1874**

**Photo figures 8G–H**

TYPE LOCALITY.— “Walde bei Victoria, am Fusse der Camerunberge”, Limbé, Cameroon.

DISTRIBUTION.— It occurs throughout the rainforests of the Gulf of Guinea region, from south-eastern Nigeria through Cameroon to northern Angola, although Marques et al. (2018) did not include it in the Angolan amphibian fauna. In Equatorial Guinea, it has been recorded from Bioko (Boulenger 1900; Boulenger 1906a) and Río Muni (Boulenger 1903; De la Riva 1994) (Map 10A).

COMMENTS.— We provide additional records from both Bioko and Río Muni.

SPECIMENS EXAMINED.— Five specimens. Moka, Bioko, 03 March 1933 (MNCN 3739); Miboman, Bata, December 1987 (EBD 27837); Yengue, Litoral (Bata), 22 February 1988 (EBD 27826); Miboman, Km 27 Ctra Bata–Niefang, Guinea, October 1987 (EBD 27825); Ayamiken (San Joaquin de Ndyiacom), 1990 (without EBD number, labeled B8972).

### Family Bufonidae Gray, 1825

#### *Didynamipus* Andersson, 1903

##### *Didynamipus sjostedti* Andersson, 1903

TYPE LOCALITY.— “Kamerun”, Cameroon.

DISTRIBUTION.— This species occurs both in continental Africa, where it extends from Cameroon (see Gonwouo et al. 2013) to Nigeria (Onadeko et al. 2010), and on Bioko, where it was reported from Basilé by Boulenger (1906a). Since then, no additional records have been published for this country. We found an additional population from south Bioko province, located in the surroundings of Caldera de Luba (Map 10B).

COMMENTS.— The distribution of this poorly known species has been recently revised by Gonwouo et al. (2013), who also provided insights on its natural history, stating that its reproductive mode is direct development. Our record from southern Bioko expands the distribution range of this species southwards.

No phylogeographic studies have been performed including this monotypic taxon. The synonym *Atelophryne minutus* Boulenger, 1906, described from Bioko, represents an available name if future work confirms the specific distinctiveness of insular populations.

SPECIMENS EXAMINED.— Nine specimens. From Belebu to Ureca, 3°24'25.81"N, 8°33'3.23"E, 19 November 2003 (MNCN 48947–48954, 46872).

#### *Nectophryne* Buchholz and Peters, 1875

##### *Nectophryne afra* Buchholz and Peters, 1875

Photo figure 9A

TYPE LOCALITY.— “Cameruns”, restricted to Douala by Frétey et al. (2014).

DISTRIBUTION.— *Nectophryne afra* occurs throughout West Africa including Nigeria, Cameroon, Equatorial Guinea, Gabon and Democratic Republic of Congo. In Equatorial Guinea, *N. afra* has been recorded from mainland at Cabo San Juan (Boulenger 1903), Benito River (Boulenger 1900), and Monte Alén (Lasso et al. 2002), and on Bioko at Basilé, Bahía de San Carlos, Musola (Boulenger 1906a), Río Iladyi (Mertens 1965) and along the road to Pico Basilé (Hydeman et al. 2017) (Map 10C).

COMMENTS.— *Nectophryne afra* was the only species of the genus present in Equatorial Guinea until this work (see *N. batesii* section). Juveniles of *Nectophryne afra* are characterized by a dorsal pattern based on thin whitish lines that form rings or loops over the nostril and mid-body region respectively, together with additional transversal stripes over a blackish surface (Scheel 1970).

SPECIMENS EXAMINED.— Thirteen specimens. Cabo San Juan, Río Muni, 15 October 1901 (MNCN 3152–3161, 3163); path behind church in Bakelele forest, Batete, Bioko, 03°26'37.34"N, 8°30'24.76"E, 02 December 2003 (MNCN 48824); north of Caldera de Luba, 3°21'28.73"N, 8°31'55.01"E, 13 March 2007 (MNCN 46704).

##### *Nectophryne batesii* Boulenger, 1913

Photo figures 9B–C

TYPE LOCALITY.— “Neighbourhood of Bitey, on the Ja River (Congo System)”, Cameroon.

DISTRIBUTION.— *Netophryne batesii* is known from Nigeria, Cameroon, Gabon, and Demo-

cratic Republic of Congo. In Equatorial Guinea, it has been found both at Río Muni and Bioko (Map 11A).

COMMENTS.— The presence of *N. batesii* in Río Muni and Bioko had gone unnoticed until this work. The distribution of the species needs to be revised and, following the work of Blackburn and Droissart (2008), we suggest that the records of *N. afra* from Fernand-Vaz (Gabon) provided by Boulenger (1906a) and from Ijebu Oru (Nigeria) by Onadeko and Rödel (2009), correspond to *N. batesii*, as both records were based on juveniles showing the typical pattern of this species (Blackburn and Droissart 2008). The phenotype of juveniles of *N. batesii* is formed by four solid and wide transversal whitish stripes located at roughly equal intervals over a black dorsal surface, lacking the loops and ring pattern present in the juveniles of *N. afra* (Blackburn and Droissart 2008). The specimen from north of Bioko (Rebola) presents osteological singularities when compared with other specimens (author's unpublished data) suggesting that more field work should be carried out at this region for the study of additional individuals throughout integrative approaches including molecular analyses and detailed morphological and ecological studies.

We herein provide the first records of *N. batesii* for Río Muni and Bioko.

SPECIMENS EXAMINED.— Eight specimens. Cabo San Juan, Río Muni, 15 October 1901 (MNCN 3162); north of Campamento Hormiga, Caldera de Luba, 03°18'27.34"N 08°28'15.68"E, 08 March 2007 (MNCN 46715–46716); Campamento UPM-Campamento Hormiga, Caldera de Luba, 3°20'46.54"N 8°29'48.20"E, 08 March 2007 (MNCN 46717); River Osa, creek Chopepe, San Antonio de Ureca, 03°14'52.19"N, 08°32'23.77"E, 22 November 2003 (MNCN 48823); BBPP Camp, Caldera de Luba, 03°20'47.32"N, 08°29'48.44"E, 26 November 2003 (MNCN 48822); San Joaquín de Ndyiacom (EBD 31487); Rebola, Bioko, January 1933 (MNCN 3151).

### *Sclerophrys* Tschudi, 1838

#### *Sclerophrys camerunensis* (Parker, 1936)

Photo figures 9D; 10A–D

TYPE LOCALITY.— “Oban, Calabar”, Nigeria.

DISTRIBUTION.— This species is widely distributed across the Guinean forest in West Africa, extending from Guinea to East Africa, across Central African Republic and Tanzania. In Equatorial Guinea, it has been recorded both from Río Muni, at Monte Alén (De la Riva 1994), and Bioko (Mertens 1965; Hydeman et al. 2017) (Map 11B).

COMMENTS.— Our revision provides several new records from Río Muni and Bioko.

In their molecular phylogeny, Liedtke et al. (2016) included samples from Bioko, which seem to be closely related to the Cameroonian ones. Márquez et al. (2000) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— Thirtytwo specimens. Bata, Río Muni, 1965 (EBD 2714); Niefang, 13 July 1984 (EBD 18602); Oveng-Akurenám, 27 August 1984 (EBD 18406–18407); Bioko Sur (Luba), 08 June 1984 (EBD 18660); Oveng-Akurenám, 23 August 1984 (EBD 18432); Bata, Río Bizingui, 30 August 1986 (EBD 25024); Nvom (Aconibe-Asoc), 8 May 1987 (EBD 25025); Miboman, 01 September 1984 (EBD 18286); Anisoc (orillas del río Nobo), 17 September 1987 (EBD 27499); Akoaseng (Evinayong-Mongomo), 09 July 1987 (EBD 27500); San Joaquín de Ndyiacom (EBD 31489, B9242); San Joaquín de Ndyiacom (6 specimens with number EBD 31519); Moka, Bioko (MNCN 3085); Caldera de Luba, Bioko, 03°21'34.88"N 08°31'55.50"E, 09 December 2005 (MNCN 46713–46714); Ureca camp, Caldera de Luba, Bioko, 03°21'12.59"N 08°30'47.36"E, 18 March 2007 (MNCN 46718); Ureca camp, Caldera de Luba, Bioko, 03°21'12.59"N, 08°30'47.36"E, 10 March 2007 (MNCN 46723–46724); Biao Lake, Moka, Bioko, 3°21'14.97"N 8°37'25.64"E, 10 November 2003 (MNCN 48876–48881); Mariluz's farm, Moka, Bioko, 03°20'23.47"N, 8°40'6.20"E, 12 November 2003 (MNCN 48882).

***Sclerophrys funerea* (Bocage, 1866)**

TYPE LOCALITY.—“Duque de Bragança”, Calandula, Angola.

DISTRIBUTION.— This species has a wide range extending across the rainforests throughout west-central Africa, from Gabon to Uganda, and southwards to Angola. In Equatorial Guinea, it has been reported only from Bioko by Boulenger (1882) as *Bufo benguelensis* Boulenger, 1882 (Map 11C).

COMMENTS.— This species was described from a juvenile specimen collected in Calandula, Angola “Duque de Bragança”. In Equatorial Guinea, Boulenger (1882) reported this species, as *Bufo benguelensis*, on Bioko (then known as Fernando Poo) and “Benguela”; this taxon was synonymized with *B. funereus* by Bocage (1895b). However, the taxonomic status and, consequently, the distribution of *S. funerea* is not clear (Marques et al. 2018), and its presence in Equatorial Guinea is doubtful.

SPECIMENS EXAMINED.— We did not find any specimen of this taxon in the collections examined in this study.

***Sclerophrys gracilipes* (Boulenger, 1899)****Photo figure 10E**

TYPE LOCALITY.—“Benito River, French (Congo) (sic)”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— *Sclerophrys gracilipes* is known from West-Central Africa extending from Nigeria to Democratic Republic of Congo and Republic of Congo. Within Equatorial Guinea it has been recorded in Río Muni by Boulenger (1899a) (Type locality: “Benito River”) and De la Riva (1994), and on Bioko by Mertens (1965) (as *Bufo funereus gracilipes*) and Hydeman et al. (2017) (Map 12A).

COMMENTS.— The molecular phylogeny provided by Liedtke et al. (2016) suggests that this taxon is not monophyletic; thus, a taxonomic revision is in order. As the type locality is in mainland Equatorial Guinea, the specific epithet would be retained for the populations of the clade inhabiting the region of Río Muni and surroundings. On the other hand, populations from Bioko seem to represent a distinct undescribed taxonomic unit (Liedtke et al. 2016).

SPECIMENS EXAMINED.— Fourteen specimens. Ctra. airport Malabo-Luba (10 km from Malabo), 02 June 1984 (EBD 18658); Bata: Río Bizingui, 30 August 1986 (EBD 25038); Miboman, 01 September 1984 (EBD18285); Miboman, April 1988 (EBD 28090); San Joaquín de Ndyia-comm (B8438, B8541–B8544); Equatorial Guinea, without precise locality (5 specimens, one of them with the label EBD 27840).

***Sclerophrys latifrons* (Boulenger, 1900)****Photo figure 10F**

TYPE LOCALITY.—“Benito River”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— It inhabits dense and high tropical forests over the Gulf of Guinea region from Cameroon to Gabon and Congo, extending to the Democratic Republic of Congo. In Equatorial Guinea *S. latifrons* has been recorded in Río Muni (where the type locality is: “Benito River”) (Boulenger 1900; De la Riva 1994) and on Bioko (Boulenger 1906a) (Map 12B).

COMMENTS.— The record of Bioko is doubtful. Despite the efforts to sample amphibians from Bioko, *S. latifrons* has not been recorded from the island since Boulenger (1906a). This species has been included in a recent molecular phylogeny (Liedtke et al. 2016). However, the phylogeographic structure across most of its range, including the Equatorial Guinean populations, remains unknown. The record identified as “*Bufo maculatus*” from Monte Mitra at Monte Alén National Park (Gonwouo and Nsang 2005) likely belongs to *S. latifrons*.

SPECIMENS EXAMINED.— Eight specimens. Miboman, Bata-Movo (Km 27), 24 June 1984 (EBD 18601); Miboman-Movo-Bata (Km 27), 05 October 1984 (EBD 18253); Guinea Ecuatorial,

without precise locality (four specimens, three of them with the label EBD 27844, 27839, 27846); Miboman, 01 September 1984 (EBD 18283–18284).

***Sclerophrys superciliaris* (Boulenger, 1888)**

**Photo figures 11A–B**

TYPE LOCALITY.— “Rio del Rey, Cameroons”.

DISTRIBUTION.— The nominal subspecies (see comments) is known from Nigeria, Cameroon, Gabon, Equatorial Guinea and, tentatively, Central African Republic. In Equatorial Guinea, *S. superciliaris superciliaris* has been recorded from Río Muni (Boulenger 1900; De la Riva 1994) (Map 12C).

COMMENTS.— Barej et al. (2011) revealed the existence of three distinct taxa within the formerly known *S. superciliaris* sensu lato. One of them is represented by *S. superciliaris superciliaris*, which is distributed from eastern Nigeria, Cameroon, Gabon and Equatorial Guinea; a second taxon, *S. superciliaris chevalieri*, is distributed from Sierra Leone, Guinea, Liberia, Ivory Coast and Ghana; the third taxon is located over the eastern Democratic Republic of Congo and was described as a distinct species, *Amietophrynus channingi* Barej, Schmitz, Menegon, Hillers, Hinkel, Böhme, and Rödel, 2011 (currently *S. channingi*).

SPECIMENS EXAMINED.— No specimens of this species were found in the collections examined by us in this study.

***Sclerophrys tuberosa* (Günther, 1858)**

**Photo figures 11C–E**

TYPE LOCALITY.— “Fernando Po”, Bioko, Equatorial Guinea.

DISTRIBUTION.— It occupies the tropical forest of the Gulf of Guinea region from Cameroon to Gabon, Congo and Democratic Republic of Congo. In Equatorial Guinea, this species occurs both on Bioko and in Río Muni. Within Bioko it has been recorded from several localities (Mertens 1965; Boulenger 1900), while it is only known from two localities in the continental region of Río Muni (Boulenger 1903; De la Riva 1994) (Map 13A).

COMMENTS.— Populations from Río Muni appear morphologically different from those on Bioko and in Cameroon. Phylogenetic relationships within the genus were studied by Liedtke et al. (2016) based on molecular data.

SPECIMENS EXAMINED.— Twelve specimens. Nvom (Aconibe-Asoc), 08 May 1987 (EBD 25026); Acocnseng (Km 10 Aconibe-Asoc), 30 May 1987 (EBD 25027); UPM camp-Riaco river, Caldera de Luba, Bioko, 03°20'46.54"N, 08°29'48.20"E, 14 December 2005 (MNCN 46709–46710, 46712), 13 December 2005 (MNCN 46711); Moaba, Bioko, 03°14'01.41"N, 08°37'19.64"E, 21 November 2003 (MNCN 48870); top of trail into Caldera de Luba, Bioko, 3°20'5.02"N, 8°29'14.33"E, 26 November 2003 (MNCN 48871–48873); surroundings of BBPP camp, 03°20'47.32"N, 08°29'48.44"E, 26 and 27 November 2003 (MNCN 48874–48875, respectively).

***Werneria* Poche, 1903**

***Werneria* cf. *mertensiana* Amiet, 1976**

**Photo figures 12A–B**

TYPE LOCALITY.— “Mt. Nlonako, env. de N’Kongsamba, 1.000 m”, Cameroon.

DISTRIBUTION.— In Equatorial Guinea it is only known from Monte Alén National Park, Río Muni (De la Riva 1994) (Map 13B).

COMMENTS.— This genus was originally reported in Equatorial Guinea by De la Riva (1994) at Monte Alén National Park based on a single specimen, which was regarded as *W. mertensiana* Amiet, 1976. However, Rödel et al. (2004) suggested that the taxonomic status of the *Werneria* species from Equatorial Guinea needs to be revised, as no morphological characters concordant with those of other congeneric species, including *W. mertensiana* from Cameroon, were detected.

Thus, the population from Río Muni could represent an undescribed species (Rödel et al. 2004), but more data are necessary to test this hypothesis.

SPECIMENS EXAMINED.— No specimens of *Werneria* from Equatorial Guinea were found in the collections examined by us in this study.

***Wolterstorffina* Mertens, 1939**

***Wolterstorffina parvipalmata* (Werner, 1898)**

**Photo figures 25A–D**

TYPE LOCALITY.— “Kamerun?”, Cameroon.

DISTRIBUTION.— It is distributed from eastern Nigeria to Cameroon. There is a single published record of this species in Equatorial Guinea (see supplementary material in Liedke et al. [2016]), where it has been found on Bioko (Map 27A).

COMMENTS.— This species was found for the first time in the country by the Bioko Biodiversity Protection Program at the surroundings of Moka cascades viewing site (along Illadji River, Bioko). See addendum in Material and Methods. Liedke et al. (2016) sequenced a specimen collected on Bioko in 2015 by R.C. Bell and deposited in the CUMV (Cornell University Museum of Vertebrates) collections.

SPECIMENS EXAMINED.— We did not find any specimen of this taxon in the collections examined by us in this study.

**Conrauidae Dubois, 1992**

***Conraua* Nieden, 1908**

***Conraua crassipes* (Buchholz and Peters, 1875)**

**Photo figure 13A**

TYPE LOCALITY.— “Abo”, Nigeria.

DISTRIBUTION.— This species ranges from Nigeria to Democratic Republic of Congo. In Equatorial Guinea, it has been recorded both on Bioko (Bocage 1985b; Mertens 1968) and in Río Muni (Boulenger 1900, 1903; De la Riva 1994) (Map 13C).

SPECIMENS EXAMINED.— Forty-three specimens. Miboman, Bata-Movo (Km 27), 11 August 1984 (EBD 18710); Miboman, Litoral, Bata, (EBD 18623), December 1987 (EBD 28100), April 1988 (EBD 28092–28093, 28095–28096, 28099, 28102–28104, 28106–28110, 28112–28113, 28089); Kie Temp, Miboman (close to Asonga) (EBD 18279–18281); Ctra Mbini-Bata, Litoral Carut, 29 November 1985 (EBD 21022); Nsork, January 1986 (EBD 25042); Km 30 Ctra Bata-Niefang, December 1987 (EBD 28101, 28105, 28094), October 1987 (EBD 28097–28098); San Joaquín de Ndyiacom, April 1988 (EBD 28091); Santa Isabel, Malabo, Bioko Norte, 09 January 1933 (MNCN 3877), 01 February 1933 (MNCN 3883); Cabo San Juan, 15/19 September 1901 (MNCN 3884–3892); Nvom (Aconibe-Asoc), 6 May 1987 (EBD 25050); Poblado de Muga, Moka, Monte Alén, 22 August 2001 (MNCN 46338).

***Conraua goliath* (Boulenger, 1906)**

**Photo figure 13B**

TYPE LOCALITY.— “Efulen”, South Cameroon.

DISTRIBUTION.— *Conraua goliath* is distributed over south-western Cameroon (Nkongsamba region) and mainland Equatorial Guinea. In Equatorial Guinea, it has been recorded in several localities in Río Muni (Sabater Pi 1985; De la Riva 1994) (Map 14A).

COMMENTS.— This is the largest living frog in the world. The holotype measured 25 cm of snout-vent length (Boulenger 1906b), and the largest specimen recorded weighted 3.3 kg (Sabater Pi 1985). Adults live in the fast-flowing rivers in lowland rainforest, below 1000 m a.s.l., where they rest over the rocks, emerging from rapids during the day, while they move along the river margins during the night (Sabater Pi 1985). Some aspects of their reproductive behaviour, such as nest construction for spawning, have been recently described (Schäfer et al. 2019).

SPECIMENS EXAMINED.— Twenty specimens. [Río Muni] (MNCN 4050). Niefang, Sense (1°33'N, 09°48'W) June/July 1964 (EBD 2699–2701, EBD 2754–2756, EBD 20842–20854); San Joaquín de Ndyiacom (EBD 31507).

### **Hyperoliidae Laurent, 1943**

#### ***Acanthixalus* Laurent, 1944**

##### ***Acanthixalus spinosus* (Buchholz and Peters, 1875)**

TYPE LOCALITY.— “Cameruns”, restricted to Douala by Frétey et al. (2014).

DISTRIBUTION.— *Acanthixalus spinosus* ranges across the rainforests of Nigeria, Cameroon and Democratic Republic of Congo, as well as Equatorial Guinea, where it has been recorded in Río Muni at Cabo San Juan (Boulenger 1903) (Map 14B).

COMMENTS.— No more specimens have been observed in Equatorial Guinea since Boulenger (1903).

SPECIMENS EXAMINED.— No specimens were found at the collections examined by us in this study.

#### ***Afrixalus* Laurent, 1944**

##### ***Afrixalus dorsalis* (Peters, 1875)**

TYPE LOCALITY.— “Boutry” mouth of River Butre, Ghana, and “Victoria in einem Wassertümpel”, Cameroon. Meterns (1938) restricted the type locality to “Boutry”.

DISTRIBUTION.— From eastern Sierra Leone to Cameroon, southwards to Angola. There are general references to the presence of this species in mainland Equatorial Guinea (Schlötter 1999; Frétey and Blanc (2000) (Map 14C).

COMMENTS.— We provide the first accurate record of *A. dorsalis* for Equatorial Guinea, confirming its presence in Río Muni. The coloration pattern of the specimen examined here corresponds to the taxon *A. d. regularis* Laurent, 1951 (see Amiet 2012).

SPECIMENS REVISED.— One specimen. Río Muni: Asonga, Bata, 14 October 1985 (EBD 21025).

##### ***Afrixalus fulvovittatus* (Cope, 1861)**

**Photo figure 14A**

TYPE LOCALITY.— “Liberia”.

DISTRIBUTION.— This species extends over a vast area ranging from Guinea to Cameroon, including Equatorial Guinea, where it has been recorded from Monte Alén (De la Riva 1994). There are no records from Bioko (Map 15A).

COMMENTS.— We provide an additional record of the species in Río Muni.

Currently, the populations of Equatorial Guinea are ascribed to the subspecies *A. f. brevipalmatus* (Amiet 2012). Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000) (as *A. brevipalmatus* [Ahl, 1931]).

SPECIMENS EXAMINED.— Fifteen specimens. Engong (Aconibe-Asoc), 01 May 1987 (EBD 25102–25116).

##### ***Afrixalus laevis* (Ahl, 1930)**

TYPE LOCALITY.— “Kamerun”.

DISTRIBUTION.— This species ranges from southern Cameroon to Gabon and Republic of Congo, extending eastwards to Uganda. *Afrixalus laevis* has been recently reported in Equatorial Guinea at Bioko, by Hydeman et al. (2017) (Map 15B).

COMMENTS.— This species is likely to occur in Río Muni.

SPECIMENS EXAMINED.— No specimens of *A. laevis* were found in the collections examined by us in this study.



***Afrixalus osorioi* (Ferreira, 1906)****Photo figures 14B–C**

TYPE LOCALITY.—“Quilombo”, northern Angola.

DISTRIBUTION.—*Afrixalus osorioi* occurs from northern Angola and Gabon to Kenya and Uganda throughout Democratic Republic of Congo. There are no previous published records of this species in Equatorial Guinea (Map 15C).

COMMENTS.— We report for the first time the presence of *A. osorioi* in Equatorial Guinea. Specimens were found in southeastern Río Muni (see list of specimens examined) and in Monte Alén (IDIR photographic records: Fig. 14B–C). We tentatively assign the examined specimens to this taxon based on external morphological characters. However, these specimens differ slightly from the species’ typical pattern (Schjötz 1999; Amiet 2012). Recently, Jongsma et al. (2017) discovered this species in Gabon, providing three photographs: the figured specimen GFMJ1356 shows the typical pattern (see also Schjötz 1999), whereas the other two figured specimens, CAS 258270 and CAS 258161, present a more uniform dorsal pattern where the dark dorsal rectangle is absent. Jongsma et al. (2017) stated that their specimen’s identifications were confirmed by molecular data. Later, Dewynter et al. (2018) provided an additional record for Gabon, and some specimens were figured, showing a pattern similar to the ones observed by us from Equatorial Guinea. This suggest that the typical pattern of *A. osorioi* (a well-defined dark rectangular mark on dorsum) in Gabon and Equatorial Guinea might be uncommon or absent. Instead, these populations have irregular and smaller spots, often arranged in two areas: between the eyes and over the neck region (see Fig. 14B–C and pictures in Dewynter et al. 2018). However, a closely related species and morphologically similar, *A. equatorialis* (Laurent, 1941), is distributed in Cameroon and Democratic Republic of Congo (Amiet 2012; Portik et al. 2019). The dorsal pattern of *A. osorioi* is sometimes very similar to that of *A. equatorialis* from Cameroon. Although Jongsma et al. (2017) stated that the identification was confirmed by comparing DNA sequence data of the specimens from Gabon to another previously identified sample from Uganda, additional phylogenetic studies including samples from the type localities of each species will be necessary for resolving the taxonomy and distributional limits of the species in this group.

SPECIMENS EXAMINED.— Eight specimens. Engong (Aconibe-Asoc), 01 May 1987 (EBD 25094–25101).

***Afrixalus paradorsalis* Perret, 1960****Photo figures 14D–E**

TYPE LOCALITY.—“Foulassi, Cameroun”.

DISTRIBUTION.— This species ranges from southeastern Nigeria to Cameroon, Gabon and Republic of Congo. In Equatorial Guinea, *A. paradorsalis* has been recorded both on Bioko (Boulenger 1906a [as *Megalixalus fornasinii*]; Mertens 1965 [as *Afrixalus dorsalis*]; Hydeman et al. 2017; Charles et al. 2018) and in Río Muni (De la Riva 1994) (Map 16A).

COMMENTS.— Distinct allopatric lineages were detected over most of the species range; two of them are present in Equatorial Guinea: the first one is insular, belonging to the populations from Bioko, which are closely related to another lineage distributed over the Cameroonian Volcanic Line; the second lineage ranges from southern Cameroon to Gabon and Republic of Congo (Charles et al. 2018). Although no samples from Río Muni were included by Charles et al. (2018), it is highly likely that Río Muni populations fit within this latter lineage. Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000).

SPECIMENS EXAMINED.— Twelve specimens. BBPP camp, Caldera de Luba, Bioko, 03°20′47.32″N, 08°29′48.44″E, 28 November 2003 (MNCN 48855, MNCN 48860); Red swamp, Caldera de Luba, Bioko 03°21′27.99″N, 08°30′52.11″E, 27 November 2003 (MNCN 48856–

48859); path behind church, Bakelele forest, Batete, Bioko, 03°26'37.34"N, 8°30'24.76"E, 02 December 2003 (MNCN 48861).

*Alexteroon* Perret, 1988

*Alexteroon obstetricans* (Ahl, 1931)

Photo figures 15A–C

TYPE LOCALITY.— neotype from “Foulassi, rivière Lobô”; lost holotype from “Bipindi, Kamerun” Cameroon.

DISTRIBUTION.— It occurs from Cameroon to Gabon. In Equatorial Guinea, *A. obstetricans* has been recorded from Monte Alén, Río Muni (De la Riva 1994) (Map 16B).

COMMENTS.— Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000).

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

*Arlequinus* Perret, 1988

*Arlequinus krebsi* (Mertens, 1938)

Photo figures 25E–F

TYPE LOCALITY.— “Mubengue”, Cameroon.

DISTRIBUTION.— This species ranges from southwestern Cameroon to Bioko (Map 27B).

COMMENTS.— The presence of *Arlequinus* on Bioko was expected by Mertens (1938). This species was only known from a set of localities in southwestern Cameroon until the recently discovered population in Equatorial Guinea during the field surveys of the BBPP at the surroundings of Pico Basilé, Bioko. This Bioko population was reported by Channing & Rödel (2019) (without specific locality). See addendum in Material and Methods.

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

*Cryptothylax* Laurent and Combaz, 1950

*Cryptothylax greshoffii* (Schilthuis, 1889)

Photo figures 15D–E

TYPE LOCALITY.— “Boma (Congo, W. Africa)”, Democratic Republic of Congo.

DISTRIBUTION.— This species has been reported from Cameroon, Equatorial Guinea, Democratic Republic of Congo, Angola and Central African Republic. In Equatorial Guinea, it has been only found in Monte Alén, Río Muni (De la Riva 1994) (Map 16C).

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

*Hyperolius* Rapp, 1842

*Hyperolius kuligae* Mertens, 1940

TYPE LOCALITY.— “Camp II: 920 m über Mubenge, Kamerun-Berg”, Cameroon.

DISTRIBUTION.— This species has been recorded from Cameroon, Gabon, Democratic Republic of Congo and Equatorial Guinea (Map 27C). There are also dubious records of this species in Uganda (Schjøtz 1999). In Equatorial Guinea, it has been recently recorded on Bioko (Channing & Rödel 2019) although new material, said to be identical to that recorded by Channing & Rödel, was collected on Bioko and identified as *H. endjami* (Portik et al. 2019, Supplemental Table 1 [said to be accessible online but not verified by us {IDLR}]).

COMMENTS.— Channing & Rödel (2019) mentioned the presence of this species on Bioko (without specific locality), possibly based on specimens collected from the surroundings of Biao Lake and held at the collection of the Cornell University (not examined by us). See addendum in Material and Methods.

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

***Hyperolius ocellatus* (Günther, 1858)****Photo figures 16A–E**

TYPE LOCALITY.—“Fernando Po”, Bioko, Equatorial Guinea and “Angola”. Perret (1975) restricted the type locality to “Fernando Po” by lectotype designation.

DISTRIBUTION.— This species ranges over a vast area, from south-eastern Nigeria to Democratic Republic of Congo and southwards to Gabon and Republic of Congo. In Equatorial Guinea, it has been recorded both in Río Muni (De la Riva 1994; Bell et al. 2017) and Bioko (Boulenger 1900, 1906a; Mertens 1941, 1965; Hydeman et al. 2017; Bell et al. 2017) (Map 17A).

COMMENTS.— *Hyperolius ocellatus* sensu lato shows a complex phylogeographic structure formed by several lineages (Bell et al. 2017), which need taxonomic revision. Currently, there is one mitochondrial lineage on Bioko, whereas Río Muni could lie in a contact zone between two mainland mitochondrial lineages (Bell et al. 2017). Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000).

SPECIMENS EXAMINED.— Twenty-nine specimens. Bioko Sur (Luba), Moka, (3°19'N, 8°40'E), 25 July 1984 (14 specimens with the voucher number EBD 18606); Ayamiken (San Joaquín de Ndyiacom) (4 specimens without individual voucher number, EBD 31516), 1990; Caldera de Luba, Campamento Ureca, 11 March 2007 (MNCN 46720); Río San Antonio, Caldera de Luba, 13 March 2007 (MNCN 46725); northeast of Caldera de Luba, 12 March 2007 (MNCN 46726); BBPP camp, Caldera de Luba, Bioko, 03°20'47.32"N, 08°29'48.44"E, 28 November 2003 (MNCN 48945–48946); Río Iladyi, Bioko, 03°19'46.04"N, 08°40'26.13"E, 13 November 2003 (MNCN 48939–48944).

***Hyperolius olivaceus* Peters, 1876****Photo figure 17A**

TYPE LOCALITY.—“Limbareni am Ogowe”, Lambaréné, Gabon.

DISTRIBUTION.— This species ranges from the coastal region of Gabon and Republic of Congo to southwestern Equatorial Guinea, where it has been recorded in Río Muni, at lake Atoc, Monte Alén (De la Riva 1994). There are no records of this species from Bioko (Map 17B).

COMMENTS.— *Hyperolius olivaceus* (formerly considered as a subspecies of *H. cinnamomeoventris* Bocage, 1886) forms part of the *H. cinnamomeoventris* species complex. Bell et al. (2015) identified distinct evolutionary lineages within this complex across most part of its distribution and revealed that *H. cinnamomeoventris* represents a paraphyletic taxon. Subsequently, in order to resolve the taxonomy of the group, Bell et al. (2017) elevated the subspecies *H. cinnamomeoventris olivaceus* to full species status for the lineages inhabiting the Gabon region and south of the Congo River, which likely includes Río Muni populations (as considered herein). *Hyperolius olivaceus* is the sister species to a clade formed by the insular *Hyperolius thomensis* Bocage, 1886, *H. mollerii* (Bedriaga, 1892) and *H. drewesi* Bell, 2016 (Bell et al. 2017).

SPECIMENS EXAMINED.— Nine specimens. Engong (Aconibe-Asoc), 01 May 1987 (EBD 25089–25093, EBD 25071, 25073–25075).

***Hyperolius pardalis* Laurent, 1948****Photo figures 17B–D**

TYPE LOCALITY.—“Bitye, S. Cameroons”.

DISTRIBUTION.— This species ranges over the forests from southern Cameroon to southwestern Central African Republic and northwestern Republic of Congo, Gabon, and Equatorial Guinea, where there it has been recorded from Monte Alén only (De la Riva 1994) (Map 17C).

SPECIMENS EXAMINED.— Equatorial Guinea, Río Muni, no precise locality available, 1989 (EBD 32033).

***Hyperolius phantasticus* (Boulenger 1899)**

TYPE LOCALITY.—“Benito River, French Congo”, currently Río Muni, Equatorial Guinea.

DISTRIBUTION.— This species ranges from southwestern Cameroon and Gabon to Democratic Republic of Congo and Republic of Congo. In Equatorial Guinea, it was recorded from Río Muni by Boulenger (1899a) (Map 18A).

COMMENTS.— Since Boulenger (1899a, 1900) no specimens of this species have been recorded.

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

### ***Hyperolius platyceps* (Boulenger, 1900)**

TYPE LOCALITY.— “Benito River, north of the Gaboon River between 20 and 30 miles inland from the coast, Gaboon”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— It ranges from southern Cameroon to Angola, Republic of Congo and Democratic Republic of Congo, including Central African Republic. In Equatorial Guinea, it has been recorded from Río Muni (Boulenger 1900) (Map 18B).

COMMENTS.— Since Boulenger (1900) no specimens of this species have been recorded.

SPECIMENS EXAMINED.— No specimens of this taxon were found in the collections examined by us in this study.

### ***Hyperolius tuberculatus* (Mocquard, 1897)**

**Photo figures 17E–G**

TYPE LOCALITY.— “Lambaréné”, Gabon.

DISTRIBUTION.— This species extends over rainforests from southeastern Nigeria to western Central African Republic, and southwards to Republic of Congo and Democratic Republic of Congo. In Equatorial Guinea, it has been recorded from both Río Muni (De la Riva 1994; Bell et al. 2017) and Bioko (Bell et al. 2017) (Map 18C).

COMMENTS.— Mertens (1965) cited *Hyperolius concolor* (Hallowell, 1844) on Bioko (Moca lake surroundings) but this record likely represents a misidentification with *H. tuberculatus*, which has a similar dorsal pattern at juvenile stages, and it is a very common species around that locality (surprisingly, no records of *H. tuberculatus* were provided by Mertens [1965]). Thus, we exclude *H. concolor*—a species distributed from Sierra Leona to western Cameroon—from the amphibian list of Equatorial Guinea. Phylogeographic patterns of this species were studied by Bell et al. (2017). Descriptions of the advertisement calls from Monte Alén were provided by Bosch et al. (2000).

SPECIMENS EXAMINED.— Twenty-two specimens. Asonga (Bata-Niefang), 12 October 1984 (EBD 18256–18260), 09 October 1984 (EBD 18261–18263), 24 April 1985 (EBD: 21006–21007); Engong (Aconibe-Asoc), 01 May 1987 (EBD 25072); Ayamiken, San Joaquín de Ndyiacom, 1990 (11 specimens, without individual voucher numbers, EBD 31516).

### ***Opisthoxylax* Perret, 1966**

#### ***Opisthoxylax immaculatus* (Boulenger, 1903)**

TYPE LOCALITY.— “Cap Saint-Jean”, Cabo San Juan, Río Muni, Equatorial Guinea.

DISTRIBUTION.— This species ranges from Nigeria to Gabon, Democratic Republic of Congo and Republic of Congo. In Equatorial Guinea, it was recorded in Río Muni by Boulenger (1903), at the type locality (Map 19A).

COMMENTS.— We provide the first record of the genus *Opisthoxylax* on Bioko although Portik et al. (2019) sequenced a specimen they listed as coming from Bioko in their online Supplemental Table 1 to their paper (said to be accessible but not verified by us [IDLR]).

SPECIMENS EXAMINED.— Pico Basilé, Bioko, 01 February 1933 (MNCN 3915).

***Phlyctimantis* Laurent and Combaz, 1950*****Phlyctimantis* cf. *leonardi* (Boulenger, 1906)****Photo figures 18A–B**

TYPE LOCALITY.—“Punta Frailes, Fernando Po”, Bioko, Equatorial Guinea and “N’Djolè, French Congo” Ndjolé, Gabon. Capocaccia (1957) restricted the type locality by lectotype designation to “N’Djolè”, Gabon.

DISTRIBUTION.— This species is distributed from Cameroon to Gabon, Republic of Congo and Democratic Republic of Congo. In Equatorial Guinea, it has been cited in Río Muni, over the coast of Bome, and Monte Alén (De la Riva 1994), and on Bioko at Punta Europa (= Punta Frailes) (Boulenger 1906a) (Map 19B).

COMMENTS.— There is a second described species of *Phlyctimantis* inhabiting west-central Africa, namely *Phlyctimantis boulengeri* Perret, 1986 (Type locality: “Fainchang, région de Mamfe, Cameroon occidental”), considered as a subspecies of *P. leonardi* by some authors (Amiet 2012; Amiet and Goutte 2017). The identity of several populations from west and central-western Africa remains problematic (Amiet 2007; Köhler et al. 2005). Although there are records identified as *P. leonardi* from Bioko and Río Muni, the taxonomic allocation of both mainland and insular populations needs to be revised. Köhler et al. (2005) suggested that several populations from Cameroon, Gabon, Equatorial Guinea and Democratic Republic of Congo probably belong to *P. boulengeri*. Bosch et al. (2000) provided a call spectrogram of putative *Phlyctimantis leonardi* from Bome, Río Muni, which are highly similar to those of *P. boulengeri* from Barrage de Tchimbélé, Gabon (Köhler et al. 2005). However, both species names (*P. boulengeri* and *P. leonardi*) are likely representing still more undescribed species (Köhler et al. 2005; Amiet 2007; Onadeko and Rödel 2009). The specimen in the EBD collection came from Bata region, Río Muni, and morphologically resembles *P. leonardi*. Thus, we tentatively keep the populations from Equatorial Guinea as *P. cf. leonardi* until more studies help to clarify these questions.

SPECIMENS EXAMINED.— Asonga, Bata, 1984 (EBD 18254).

**Petropedetidae Noble, 1931*****Petropedetes* Reichenow, 1874*****Petropedetes cameronensis* Reichenow, 1874**

TYPE LOCALITY.— “Gebirgsbach bei Bimbia, in den Vorbergen des Camerun”, Limbé, Cameroon.

DISTRIBUTION.— It ranges from southeastern Nigeria to southwestern Cameroon, including Bioko, the only place in Equatorial Guinea where it has been recorded, at Musola (Boulenger 1906a) (Map 19C).

SPECIMENS EXAMINED.— No specimens were found at the collections examined by us in this study.

***Petropedetes newtonii* (Bocage, 1895)****Photo figures 19A–B**

TYPE LOCALITY.— Restricted by Neotype designation at “Chopepe creek at its confluence with Río Osa (03°14'52.19"N, 08°32'23.77"E, 27 m a.s.l.), Bioko, Equatorial Guinea” (Sánchez-Vialas et al. 2018). Lost holotype from “L’île de Fernão do Po dans le golfe de Guiné” (Bocage, 1895c).

DISTRIBUTION.— This species occurs in both provinces of Bioko (Bioko Norte and Bioko Sur) and in the southern coast of Cameroon (Bakingili and Mt. Etinde region) (Sánchez-Vialas et al. 2018) (Map 20A).

COMMENTS.— The taxonomical problems relating to the identity of this taxon were discussed by Sánchez-Vialas et al. (2018).

SPECIMENS EXAMINED.— Twelve specimens. Campamento Smith, Río Tudela, close to Caldera de Luba, Bioko, 07 March 2007 (MNCN 46703); Campamento UPM-Río Riaco, Caldera de Luba, Bioko, 10 March 2007 (MNCN 46708); Río Riaco, Caldera de Luba, Bioko, 15 March 2007 (MNCN 46719); Cho pepe creek on its confluence with Río Osa, Bioko, 3°14'52.19"N, 8°32'23.77"E, 22 November 2003 (MNCN 48728); Río Sibatá, Bococo Avendaño, Bioko, 3°26'46.04"N, 8°26'52.39"E (MNCN 48729); Afluent of Río Olé, on track to Caldera de Luba, Bioko, 3°18'27.08"N 8°28'24.36"E, 25 November 2003 (MNCN 48730); Río Olé, on the way to Caldera de Luba, Bioko, 3°18'27.08"N 8°28'24.36"E, 25 November 2003 (MNCN 48955); Cho pepe creek on its confluence with Río Osa, Bioko, 3°14'52.19"N, 8°32'23.77"E, 25 November 2003 (MNCN 48956); Río Sibatá, Bococo Avendaño, Bioko, 3°26'46.04"N, 8°26'52.39"E, 03 December 2003 (MNCN 48957); Cho pepe creek on its confluence with Río Osa, Bioko, 3°14'52.19"N, 8°32'23.77"E, 22 November 2003 (MNCN 48958–48959); BBPP camp, Caldera de Luba, Bioko, 3°20'47.32"N, 8°29'48.44"E, 26 November 2003 (MNCN 48960).

***Petropedetes palmipes* Boulenger, 1905**

**Photo figures 19C–F**

TYPE LOCALITY.— “Efulen, South Cameroon”.

DISTRIBUTION.— This species ranges from Cameroon to northwestern Gabon. In Equatorial Guinea, it has been recorded from Monte Alén, along the Laña and Bilene rivers (De la Riva 1994) (Map 20B).

SPECIMENS EXAMINED.— No specimens of this species were found in the collections examined by us in this study.

***Petropedetes parkeri* Amiet, 1983**

**Photo figures 20A–C**

TYPE LOCALITY.— “Atolo (region de Mamfe)”, Cameroon.

DISTRIBUTION.— It ranges from eastern Nigeria to Equatorial Guinea, where it has been recorded by De la Riva (1994) in Engong, Monte Alén, Río Muni. There are no records from Bioko (Map 20C).

SPECIMENS EXAMINED.— One specimen. Evinayong, Río Muni (EBD 18252).

***Petropedetes vulpiae* Barej, Rödel, Gonwouo, Pauwels, Böhme, and Schmitz, 2010**

**Photo figures 20D–E**

TYPE LOCALITY.— “Cameroon, Mt. Nlonako, Ekomtolo, 4°51'N, 9°54'E, app. 450 m a.s.l.”

DISTRIBUTION.— This species ranges from eastern Nigeria to Southern Gabon. In Equatorial Guinea, *P. vulpiae* has been recorded (considered as *P. newtonii*) in two localities from Monte Alén (De la Riva 1994) (Map 21A).

COMMENTS.— Taxonomical problems relating to this and other taxa such as *P. johnstoni* and *P. newtonii* were discussed by Barej et al. (2010; 2014) and Sánchez-Vialas et al. (2018).

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us.

**Phrynobatrachidae Laurent, 1941**

***Phrynobatrachus* Günther, 1862**

***Phrynobatrachus africanus* (Hallowell, 1858)**

**Photo figures 21A–C**

TYPE LOCALITY.— “Gaboon”.

DISTRIBUTION.— *Phrynobatrachus africanus* ranges from Cameroon to southern Gabon and eastwards to Central African Republic, Republic of Congo and Democratic Republic of Congo. In Equatorial Guinea, this species is found both on Bioko (Böhme 1994; Zimkus 2009) and in Río Muni (Boulenger 1900, 1903; De la Riva 1994) (Map 21B).

COMMENTS.— This species was previously considered under the nominotypic genus *Dimorphognathus*, currently a synonym of *Phrynobatrachus* (Scott 2005). Márquez et al. (2000) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— Ten specimens. Centro-Sur, Patio Alosa, Niefang, 1985 (EBD 21024, EBD 21035, EBD 21045); Miboman, Bata, Litoral, April 1988 (EBD 28086); Ayamiken (San Joaquín de Ndyiacom) (B9806–9808, B9810); San Joaquín de Ndyiacomm (B9809); Cabo San Juan, Río Muni, 18 September 1901 (MNCN 3993).

***Phrynobatrachus auritus* Boulenger, 1900**

**Photo figures 21D–G**

TYPE LOCALITY.— “Benito River”, Río Muni, Equatorial Guinea.

DISTRIBUTION.— This species is distributed from Nigeria and Cameroon to Gabon, and eastwards to Rwanda and western Uganda. In Equatorial Guinea, it has been recorded both from Río Muni (Boulenger 1900; De la Riva 1994) and Bioko (Bocage 1895a; Boulenger 1903, 1906a; Mertens 1941, 1965; Zimkus 2009; Zimkus et al. 2010; Taboue and Fokam 2016; Hydeman et al. 2017) (Map 21C).

COMMENTS.— This species seems to be abundant throughout Equatorial Guinea. Populations from Bioko are placed within the same clade of Cameroonian populations (Zimkus et al. 2010). The taxonomic status of *P. auritus* has been problematic (see Lamotte and Xavier 1966) due to Boulenger’s (1903) synonymization of it with *P. plicatus* (Günther, 1858), which is its vicariant sister species from West Africa. The identity of *P. auritus* as a full species and its relationships with *P. plicatus* have been studied using molecular data by Zimkus et al (2010). Márquez et al. (2000) described the calls for Río Muni populations.

SPECIMENS EXAMINED.— Eighty-three specimens. Miboman, Km 27 Bata-Movo (EBD 18294–18315); Noayong (Evinayong-Aconibe), 16 April 1987 (EBD 25043); Alosa, Niefang (EBD 21032, 21042, 21036–21037, EBD 21028, 21009, 21010, 21013); Ctra Bata-Movo, Km 27, 1984 (EBD 18629). Rebola, Bioko, 13 January 1933 (MNCN 3899); Cabo San Juan, Río Muni, 21 August (MNCN 3951–3992); Caldera de Luba, Bioko, 13 March 2007 (MNCN 46706, 46721); BBPP camp, Caldera de Luba, Bioko, 03°20′47.32″N, 08°29′48.44″E, 26 November 2003 (MNCN 48891–48894); Red swamp, Caldera de Luba, Bioko, 03°21′27.99″N, 08°30′52.11″E, 27 November 2003 (MNCN 48895–48899).

***Phrynobatrachus batesii* (Boulenger, 1906)**

TYPE LOCALITY.— “Efulen and ...Zima” Sangmelima, Cameroon.

DISTRIBUTION.— Recorded from Ghana, Nigeria, Gabon and Cameroon. In Equatorial Guinea, there is a doubtful record from Monte Mitra (Map 22A).

COMMENTS.— Gonwouo and Nsang (2005) provided the first record of this species for Equatorial Guinea, misspelled as “*Phrynobatrachus batesii*”. Surprisingly, there are no additional comments about the relevance of this record in their work, and we recommend that it be considered with caution until more evidence is provided. Dewynter and Frétey (2019) also include Equatorial Guinea in the distribution of the species, without more information.

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Phrynobatrachus calcaratus* (Peters, 1863)**

TYPE LOCALITY.— “Boutry”, Ghana.

DISTRIBUTION.— This species ranges from Senegal and Guinea to Cameroon, and eastward to Central African Republic. In Equatorial Guinea, this species was recorded on Bioko at Punta Frailes (= Punta Europa) by Boulenger (1906a) (Map 22B).

COMMENTS.— There are no additional records of this species from Bioko since Boulenger's (1906a) citation. This taxon represents a species complex (Zimkus et al. 2010).

SPECIMENS EXAMINED.— No specimens were found in the collections examined by us in this study.

***Phrynobatrachus cornutus* (Boulenger, 1906)**

TYPE LOCALITY.— “Zima” (= Sangmelima), Cameroon.

DISTRIBUTION.— *Phrynobatrachus cornutus* is distributed from Cameroon to western Republic of Congo, Gabon and Central African Republic. In Equatorial Guinea, it has been recorded from Río Muni at Monte Alén (as *Phrynobatrachus* sp. of the *P. cornutus* group; De la Riva 1994) and from Bioko at several localities (Mertens 1965; Zimkus 2009; Hydeman et al. 2017) (Map 22C).

COMMENTS.— There is no deep phylogeographic structure between Bioko and Cameroonian populations, which are part of the same lineage (authors' unpublished data). The populations reported from Río Muni are morphologically similar to *P. mayokoensis* (authors' pers. obs.), but additional studies are needed to confirm its systematic relationships and taxonomic identity.

SPECIMENS EXAMINED.— Six specimens. Forest close to Illadji River, Bioko, 03°19'46.04"N, 08°40'26.13"E, 14 November 2003 (MNCN 48885–48887); Rio Lukuele, on the way from Belebu to Ureka, Bioko, 03°24'25.81"N, 08°33'3.23"E, 20 November 2003 (MNCN 48888); casa Moraka, 9 km west of Ureka, Bioko, 03°15'33.05"N, 08°29'11.18"E, 24 November 2003 (MNCN 48889); path behind church, Bakelele forest, Batete, Bioko, 03°26'37.34"N, 08°30'24.76"E, 02 December 2003 (MNCN 48890).

***Phrynobatrachus sandersoni* (Parker, 1935)**

**Photo figure 21H**

TYPE LOCALITY.— “5 miles inland from Kribi, S. Cameroon”.

DISTRIBUTION.— This species is present in southwestern Cameroon and in Equatorial Guinea, where it has been recorded at Monte Alén by De la Riva (1994) (as *Phrynodon sandersoni*). There are no records of this species from Bioko (Map 23A).

COMMENTS.— This species was erroneously cited by Mertens (1968) from Bioko based on four specimens misidentified as *P. africanus* and subsequently deleted from the faunal list of Bioko by Böhme (1994).

SPECIMENS EXAMINED.— No specimens of this species were found in the collections examined by us in this study.

**Pipidae Gray, 1825**

***Hymenochirus* Boulenger, 1896**

***Hymenochirus boettgeri* (Tornier, 1886)**

*Hymenochirus boettgeri camerunensis* Perret and Mertens, 1957

TYPE LOCALITY.— “Foulassi”, 6 km northwest of Sangmelima, Cameroon.

DISTRIBUTION.— This species is known from southern Cameroon at Foulassi, Bibundi, Nkongsamba (Perret and Mertens 1957) and Kribi (Noble 1924), Republic Democratic of Congo at Bonguma (Perret 1966) and Equatorial Guinea, where it has been recorded in Benito (= Uoro) River (Boulenger 1899b) and in Monte Alén (Lasso et al. 2002) (Map 23B).

COMMENTS.— In spite of the low current taxonomic diversity of the genus, formed by only four species, the phylogenetic relationships between them remain unknown. A comprehensive systematic and taxonomic work on this genus is needed and should incorporate molecular data, including samples from the type locality of each species. Currently, there are two subspecies of *H. boettgeri*: *H. b. boettgeri*, widespread from north-central and eastern Cameroon to northeastern



Republic Democratic of Congo, and *H. b. camerunensis* Perret and Mertens, 1957, that occurs from southern Cameroon to the lowlands of the Congo Basin.

SPECIMENS EXAMINED.— Six specimens. Miboman, Bata, 01 September 1984 (EBD 18325, 18335); Río Bizingui, 1986 (EBD 25039); Miboman, Bata, Movo (EBD 18305); Arroyo Lobo, Poblado de Muga, Mirador de Moka, Monte Alén, 20 August 2001 (MNCN 46335); Poblado de Muga, Mirador de Moka, Monte Alén, 22 August 2001 (MNCN 46339).

***Xenopus* Wagler, 1827**

***Xenopus allofraseri* Evans, Carter, Greenbaum, Gvoždík, Kelley, McLaughlin, Pauwels, Portik, Stanley, Tinsley, Tobias, and Blackburn, 2015**

TYPE LOCALITY.— “Republic of Equatorial Guinea, Bioko Island, Bioko Sur Province, Arena Blanca road, N 3.5275°, E 8.5793°, ~30 m”.

DISTRIBUTION.— This species is known from Bioko (Arena Blanca and Comedor), coastal Cameroon and the Democratic Republic of Congo (Evans et al. 2015). The record of Boulenger (1906a) from “Punta Frailes, Musola” is herein considered *X. allofraseri* (Map 23C).

COMMENTS.— This species belongs to the subgenus *Xenopus*. Parker (1936) had allocated Boulenger’s (1906a) specimen to the taxon *X. fraseri*, whereas we refer it to *X. allofraseri*.

SPECIMENS EXAMINED.— Eight specimens. In a pond along the path from Belebu to Ureka, Bioko, 03°24′25.81″N, 08°33′3.23″E, 19 November 2003 (MNCN 48900–48907).

***Xenopus calcaratus* Peters, 1875**

TYPE LOCALITY.— “Cameruns (Victoria)”, Limbe, Southwest Province, Republic of Cameroon.

DISTRIBUTION.— *Xenopus calcaratus* is distributed in the lowlands of Bioko and in the coastal region of Limbe, Cameroon. In Equatorial Guinea, this species is only present on Bioko, where it inhabits the low elevations at Punta Europa (Boulenger 1906a), Basupú and Arena Blanca (Evans et al. 2015) (Map 24A).

COMMENTS.— This species belongs to the subgenus *Silurana*. The record of *X. calcaratus* provided by Boulenger (1900) from “Benito River”, Río Muni, is herein allocated in the taxon *X. (Silurana) mellotropicalis* (see the respective comments in its species account) and, in a similar way, the record of Boulenger (1903) of *X. calcaratus* of “Cap Saint-Jean” (=Cabo San Juan), Río Muni, is herein considered as *X. parafraseri*, based on the description of the coloration pattern of the examined specimens (Boulenger 1903) and in the extended revision of the genus by Evans et al. (2015).

SPECIMENS EXAMINED.— No specimens of the subgenus *Silurana* from Equatorial Guinea were found in the collections examined by us in this study.

***Xenopus mellotropicalis* Evans, Carter, Greenbaum, Gvoždík, Kelley, McLaughlin, Pauwels, Portik, Stanley, Tinsley, Tobias, and Blackburn, 2015**

TYPE LOCALITY.— “Gabonese Republic, Estuaire Province, Monts de Cristal National Park, Kinguele, N 0.4536°, E 10.2781°, 75 m”.

DISTRIBUTION.— *Xenopus mellotropicalis* occurs in disturbed and forested areas from Cameroon to Gabon, Republic of Congo and Democratic Republic of Congo. In Equatorial Guinea, this species has been cited in Río Muni by Boulenger (1900) as *X. calcaratus* (see comments below) (Map 24B).

COMMENTS.— This species belongs to the subgenus *Silurana*. Boulenger (1900) cited *X. calcaratus* based on a specimen (prepared as a skeleton) from Río Muni (Benito River), in which he

noted the fusion of the two first presacral vertebrae, a diagnostic character of the subgenus *Silurana* (see Evans et al. 2015). However, *Xenopus (Silurana) calcaratus* is only known from Bioko and the coastal region of Limbe, Cameroon, and does not reach the coastal area between southern Cameroon and Gabon. Based on its distribution and the revision provided by Evans et al. (2015), Boulenger's specimen is herein regarded as *X. (Silurana) mellotropicalis*.

SPECIMENS EXAMINED.— No specimens of the subgenus *Silurana* from Equatorial Guinea were found in the collections examined by us in this study.

***Xenopus parafraseri* Evans, Carter, Greenbaum, Gvoždík, Kelley, McLaughlin, Pauwels, Portik, Stanley, Tinsley, Tobias, and Blackburn, 2015** **Photo figures 22A–B**

TYPE LOCALITY.— “Republic of Cameroon, Centre Region, Mfoundi Department, Old Douala Road, N 3.7931°, E 11.4170°, 715 m”.

DISTRIBUTION.— This species is found in Southern Cameroon, central and eastern Gabon, and north-western Republic of Congo, where it inhabits pools in agricultural landscapes and pristine forest. In Equatorial Guinea, it has been recorded as *Xenopus calcaratus* from Cabo San Juan (Boulenger 1903) and as *X. fraseri* for specimens from Monte Alén (De la Riva 1994; Lasso et al. 2002) (Map 24C).

COMMENTS.— This species belongs to the subgenus *Xenopus*. We ascribe the records of *Xenopus* of Equatorial Guinea provided by Boulenger (1903), De la Riva (1994) and Lasso et al. (2002) to this recently described taxon, *X. parafraseri*. The records provided herein, based on collection specimens, suggest that it is widespread within Río Muni.

SPECIMENS EXAMINED.— Twentyseven specimens. Nsork, Wele-Nzas, January 1986 (EBD 25041); Añisoc, Bata, 1986 (EBD 24984–24986); Miboman, 1984 (EBD 18272, 18275, 18278); Miboman, Bata (EBD 18711); Oveng-Akurenam (EBD 18453–18458); Akurenam (5 specimens with a single label: EBD 27833); San Joaquín de Ndyiacom (4 specimens with a single label EBD 31490); Asonga, Bata (EBD 18255).

**Ptychadenidae Dubois, 1987**

***Ptychadena* Boulenger, 1917**

***Ptychadena aequiplicata* (Werner, 1898)** **Photo figures 22C–D**

TYPE LOCALITY.— “Kamerun (Victoria und Buca)” Limbé and Buea, Cameroon.

DISTRIBUTION.— This species occurs across the rainforests of southern Guinea, Ivory Coast, eastern Liberia, and southwards to Central African Republic and western Democratic Republic of Congo. In Equatorial Guinea, it has been recorded both in Río Muni, at Cabo San Juan (Boulenger 1903), Benito River (Boulenger 1900), Monte Alén region (De la Riva 1994) and Bioko, at Basupú (Bocage 1895a) (Map 25A).

COMMENTS.— Two records of *Ptychadena mascareniensis* (Duméril and Bibron, 1841) deserve some comments. The first one, from Cabo San Juan (Río Muni) was provided by Boulenger (1903), and the second one (misspelled as “*P. mascaraniensis*”) by Gonwouo and Nsang (2005) for the region of Monte Mitra, in Monte Alén National Park. However, due to the lack of reliable records and the morphological similarity with *P. aequiplicata* (a very common species in Cabo San Juan and in Monte Alén National Park), we herein consider these records as *P. aequiplicata*.

SPECIMENS EXAMINED.— Eighty-five specimens. Bata (N°02681); Miboman (EBD 18277–18278); Miboman, Km 27 Ctra Bata-Niefang, December 1987 (EBD 27881), April 1988 (EBD 27882–27890, EBD 27892–27894, EBD 27896), October 1987 (EBD 27891, EBD 27895, EBD

27897, EBD 27865–27872, 27874–27879), April 1988 (EBD 27873, EBD 27880); Noayong (Evinayong-Aconibe), 19 April 1987 (EBD 25046); Asonga-Bata, 24 July 1984 (EBD 18615); Akurenam, 24/27/28/29 August 1984 (EBD 18395–18405, EBD 18433–18436, EBD 18438–18439, EBD 18463), 24 August 1984 (EBD 18446); Río Muni (17 specimens with a single label EBD 20995); San Joaquín de Ndyiacom (7 specimens with a single label EBD 31517); Evinayong, Bata (EBD 18265–18271); Cabo San Juan, Río Muni, August/September 1901 (MNCN 3865–3871); Cabo San Juan, Río Muni, 15 September 1901 (MNCN 3876); Lago de Monte Alén, 22 August 2001 (MNCN 46337).

### **Pyxicephalidae Bonaparte, 1850**

#### ***Aubria* Boulenger, 1917**

##### ***Aubria subsigillata* (Duméril, 1856)**

TYPE LOCALITY.— Gabon.

DISTRIBUTION.— This species is distributed in rainforests from southern Guinea and northern Liberia to Gabon. In Equatorial Guinea, it has been recorded from Río Muni at Cabo San Juan (Boulenger 1903) and Benito River (Boulenger 1900). There is also a record of this species from Bioko based on the specimen CAS 207956, tentatively identified by Drewes et al. (1999) (Map 25B).

COMMENTS.— The specimens examined from Equatorial Guinea correspond to the long-legged form with the femoral glands half-way between knee and vent. These features correspond to *A. subsigillata* as stated by Ohler (1996), who also proved that *A. occidentalis* Perret, 1964, is a junior synonym and that the short-legged form with femoral glands closer to knees should be considered as *A. masako* Ohler and Kazadi, 1990. Rödel et al. (2005) provided a summary of the taxonomic history of *A. masako* and *A. subsigillata*, and suggested that the later might comprise more than one species. Members of this genus (currently comprising two morphologically distinct species, *A. subsigillata* and *A. masako*) present a remarkable sexual dimorphism in which the secondary sexual characters characterize females (see Perret 1994): femoral glands are best developed in females, while they are smaller or absent in males. Drewes et al. (1999) suggest the possible presence of this species on Bioko based on a tentative identification of a single specimen, that is yet unconfirmed.

SPECIMENS EXAMINED.— Six specimens. Bata, Río Muni, 1966 (N° 2694–2697); without data (B8715); Cabo San Juan, Río Muni (MNCN 3872).

### **Ranidae Batsch, 1796**

#### ***Amnirana* Dubois, 1992**

##### ***Amnirana albolabris* (Hallowell, 1856)**

**Photo figure 23A**

TYPE LOCALITY.— “West Africa”. Perret (1977) restricted the type locality to “Gabon” and Jongsma et al. (2018) deduced that it is “north of the Ogooué River in Gabon”.

DISTRIBUTION.— This species is widespread across lowland rainforests of Gabon, Equatorial Guinea, Cameroon, Democratic Republic of Congo, Republic of Congo, Central African Republic and Uganda, also reaching northern Angola (*vide* Marques et al. 2018). In Equatorial Guinea, it occurs in Río Muni, where it has been recorded from Cabo San Juan and Monte Alén (Boulenger 1903; De la Riva 1994). Published records from Bioko are at Musola, San Carlos de Luba region, Ureca, and Basupu (Boulenger 1900, 1906a; Mertens 1965; Hydeman et al. 2017) (Map 25C).

COMMENTS.— *Amnirana albolabris* is a polyphyletic taxon that contains several undescribed species (Jongsma et al. 2018). Populations from Bioko form part of an undescribed species close-

ly related to the nominotypic *A. albolabris*, which is present in Río Muni (Jongsma et al. 2018). The undescribed species from Bioko is also recorded from the coast of Cameroon (Jongsma et al. 2018); a similar distribution pattern is shown by *Petropedetes newtonii* (Sánchez-Vialas et al. 2018).

**SPECIMENS EXAMINED.**— Ninety specimens. Ayamiken (San Joaquín de Ndyiacom), Litoral, 1990 (EBD 31488); Bata, Litoral, 22 July 1987 (EBD 25040); Mbini-Bata, Carut, Litoral 21 October 1986 (EBD 21014, 21027); Miboman, Bata, Litoral, December 1987 (EBD 28111, EBD 28082–28083), (EBD 18290, EBD 18292–18293); Miboman, Km 27 Bata – Movo (EBD 18707–18709); Ela Nguema, Bioko Norte, 20 September 1984 (EBD 18661); Bolondo, 21 June 1984 (EBD 18624–18625, EBD 18627–18628, EBD 18630–18632); Centro Sur (Evinayong), Akurenan, 24 August 1984 (EBD 18450–18452, EBD 18456–18462, EBD 18440–18445, EBD 18447–18449, EBD 18411–18431, EBD 18402); Ayamiken (San Joaquín de Ndyiacom), December 1987 (EBD 28085), without date (EBD 23078, EBD 31518); [Río Muni] (EBD 27850, 27852, 27853, 27854, 27855, 27856, 27857, 27859, 27860, 27862, 27863, 27864); Aconibe, 1 May 1987 (EBD, no label found); Basilé, Bioko, 01 February 1933 (MNCN 3916–3917); Concepción (=Riaba), Bioko Sur, 21 February 1933 (MNCN 4073–4075); Sosolo pond, Bioko, 03°14'44.83"N, 08°34'54.67"E 21 November 2003 (MNCN 48912–48913); River mouth of Baka, Bioko, 03°14'44.83"N, 08°34'54.67"E, 21 November 2003 (MNCN 48914–48919); River mouth of Fola, Bioko, 03°14'44.13"N, 08°34'41.58"E, 21 November 2003 (MNCN 48920); Río Osa, Bioko, 03°14'52.19"N, 08°32'23.77"E, 22 November 2003 (MNCN 48921); Río Rocrim Bococo Aven-daño, Bioko, 03°26'46.04"N, 08°26'52.39"E, 03 December 2003 (MNCN 48922).

***Amnirana amnicola* (Perret, 1977)**

**Photo figure 23B**

**TYPE LOCALITY.**— “Ilanga, Eséka, Cameroun meridional”

**DISTRIBUTION.**— This species ranges from Cameroon to Republic of Congo. In Equatorial Guinea, it has been cited from Monte Alén, Río Muni (De la Riva 1994). An additional record is herein provided from Río Muni (Miboman) (Map 26A).

**SPECIMENS EXAMINED.**— Four specimens. Miboman, Litoral, 01 September 1984 (EBD 18287); Miboman, Litoral, Bata, April 1988 (EBD 28076, EBD 28074); Equatorial Guinea, without data (B9126).

***Amnirana lepus* (Andersson, 1903)**

**Photo figure 23C**

**TYPE LOCALITY.**— “Kamerun”.

**DISTRIBUTION.**— *Amnirana lepus* is distributed from Cameroon through Gabon to western of Democratic Republic of Congo and northwestern Angola. In Equatorial Guinea, there are records from Monte Alén, Río Muni (De la Riva 1994) (Map 26B).

**SPECIMENS EXAMINED.**— Eight specimens. Etom, Evinayong-Mongomo (EBD 27497); Miboman, Km 27 Ctra Bata-Movo, 02 June 1985 (EBD 21000); Miboman, Km 27, Ctra Bata-Niefang, October 1987 (EBD 28087); Ayene-Akuvene. Cercanías de la cascada Nguelenso, 13 July 1985 (EBD 21001); Equatorial Guinea, without data (B8429–8430); Noayong, Evinayong, Aconibe, 1987 (EBD 25048–25049).

**Rhacophoridae Hoffman, 1932 (1958)**

***Chiromantis* Peters, 1854**

***Chiromantis rufescens* (Günther, 1869)**

**Photo figures 24A–B**

**TYPE LOCALITY.**— “West Africa”.

DISTRIBUTION.— This species presents a wide distribution from Sierra Leone and Liberia to Uganda, and southwards to Democratic Republic of Congo. In Equatorial Guinea, it is known from Río Muni at Monte Alén (De la Riva 1994) and Bioko at Luba (Boulenger 1906a). We provide additional records from Río Muni and Bioko (Map 26C).

COMMENTS.— Márquez et al. (2000) described the calls for Río Muni populations, whereas Leaché et al. (2019) studied the phylogenetic diversification of this widely distributed rain forest species.

SPECIMENS EXAMINED.— Five specimens. Miboman, Litoral, 01 September 1984 (EBD 18288), April 1988 (EBD 27827–27830); BBPP camp, Caldera de Luba, Bioko, 03°20′47.32″N, 08°29′48.44″E, 28 November 2003 (MNCN 48908); path behind church, Bakelele forest, Batete, Bioko, 03°26′37.34″N, 08°30′24.76″E, 02 December 2003 (MNCN 48909–48911).

## Order Gymnophiona Dermophiidae Taylor, 1969

### *Geotrypetes* Peters, 1880

#### *Geotrypetes seraphini* (Duméril, 1859)

TYPE LOCALITY.— “Gabon”.

DISTRIBUTION.— This species ranges over Sierra Leone, Liberia, Guinea, and Ivory Coast to Ghana, Nigeria and Cameroon, expanding southwards to Gabon, Republic of Congo and Democratic Republic of Congo. In Equatorial Guinea, it has been recorded from Río Muni at Monte Alén National Park (Lasso et al. 2002). There is a dubious record from Bioko (see comments) (Map 28A).

COMMENTS.— The reliability of some records of caecilians from Equatorial Guinea has been highly problematic (Nussbaum and Pfrender 1998). The record of *G. seraphini* from Bioko is based on a single specimen, the holotype of *Schistometopum garzonheydti* Taylor and Salvador, 1978. This taxon was synonymized with *G. seraphini* by Nussbaum and Pfrender (1998), who suggested that the presence of this species on Bioko is dubious as the locality may be in error. Thus, these authors suggest removing the taxon *Geotripetes seraphini* from the faunal list of Bioko until additional specimens are found. We follow the suggestion provided by Nussbaum and Pfrender (1998) of not considering the species as part of the fauna of the island.

SPECIMENS EXAMINED.— One specimen [the following locality of the label may be in error]: Fernando Poo (=Bioko), <1885 (MNCN 1239); holotype of *Schistometopum garzonheydti* Taylor and Salvador, 1978 (synonym of *Geotrypetes seraphini*).

## Herpelidae Laurent, 1984

### *Herpele* Peters, 1880

#### *Herpele squalostoma* (Stutchbury, 1836)

TYPE LOCALITY.— “Gaboan, Africa”.

DISTRIBUTION.— This species is distributed from Nigeria to eastern of Central African Republic and southwards to Democratic Republic of Congo. In Equatorial Guinea, it has been recorded from Bioko (Martínez and Sáez 1886; Mertens 1941, 1965), and Río Muni (Nussbaum and Pfrender 1998; Lasso et al. 2002) (Map 28B). Furthermore, Taylor and Salvador (1978) mentioned the species on Elobey Island.

COMMENTS.— In a similar way to the argument presented about the reliability of the *Geotrypetes seraphini* record from Bioko, Nussbaum and Pfrender (1998) raised the question of

whether the locality of the specimen MNCN 1232 (collected from Bioko by Amado Osorio in 1865; see Bueno and Blanco 2002) is reliable. Even if the locality of this specimen represents a cataloguing error, there is another record of this species from the island between Musola and San Carlos (Mertens 1941, 1965). Wilkinson et al. (2003) provided a revision of the genus.

SPECIMENS EXAMINED.— Three specimens. Equatorial Guinea, Fernando Poo (=Bioko), <1885 (MNCN 1232); Río Muni <1885 (MNCN 1238); Bata, Litoral, <1885 (MNCN 1741).

#### ACKNOWLEDGMENTS

We are indebted to Victoria González Cascón, of Laboratorio de Biogeografía Informática of the Museo Nacional de Ciencias Naturales, who made the species distribution maps. We give thanks to María Tirante, who kindly made available the vertebrate collection facilities of Estación Biológica de Doñana, Sevilla. We are also grateful to Ignacio Martín and Twan Leenders, for kindly providing some pictures of amphibians from Equatorial Guinea. Mary Gonder, Patrick McLaughlin, and Jessica Weinberg, from the Bioko Biodiversity Protection Program; Rayna Bell, from the California Academy of Sciences; and Bryan Stuart, from the North Carolina Museum of Natural Sciences, helped us with information on new records and photographs. This paper was partially funded by projects CGL2014-56160-P and PGC2018-097421-B-100 of the Spanish Government (PI: I. De la Riva). Fieldwork in Bioko by SC-F was possible thanks to the Asociación Amigos de Doñana (AAD) and its director Javier Castroviejo. While in Bioko, the help of Ramón Castelo (AAD) proved invaluable. The authors wish to express their appreciation to Dr. Aaron Bauer, who reviewed the paper and offered many suggestions and grammatical edits for its improvement, as did Dr. Rayna Bell, and to Dr. Alan Leviton for his invaluable editorial advice.

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## **Photographs**

Photographers: Ignacio De la Riva (IDIR), Ignacio Martín (IM), Twan Leenders (TL), Rayna Bell (RB), Patrick McLaughlin (PM), and Jessica Weinberg (JW).

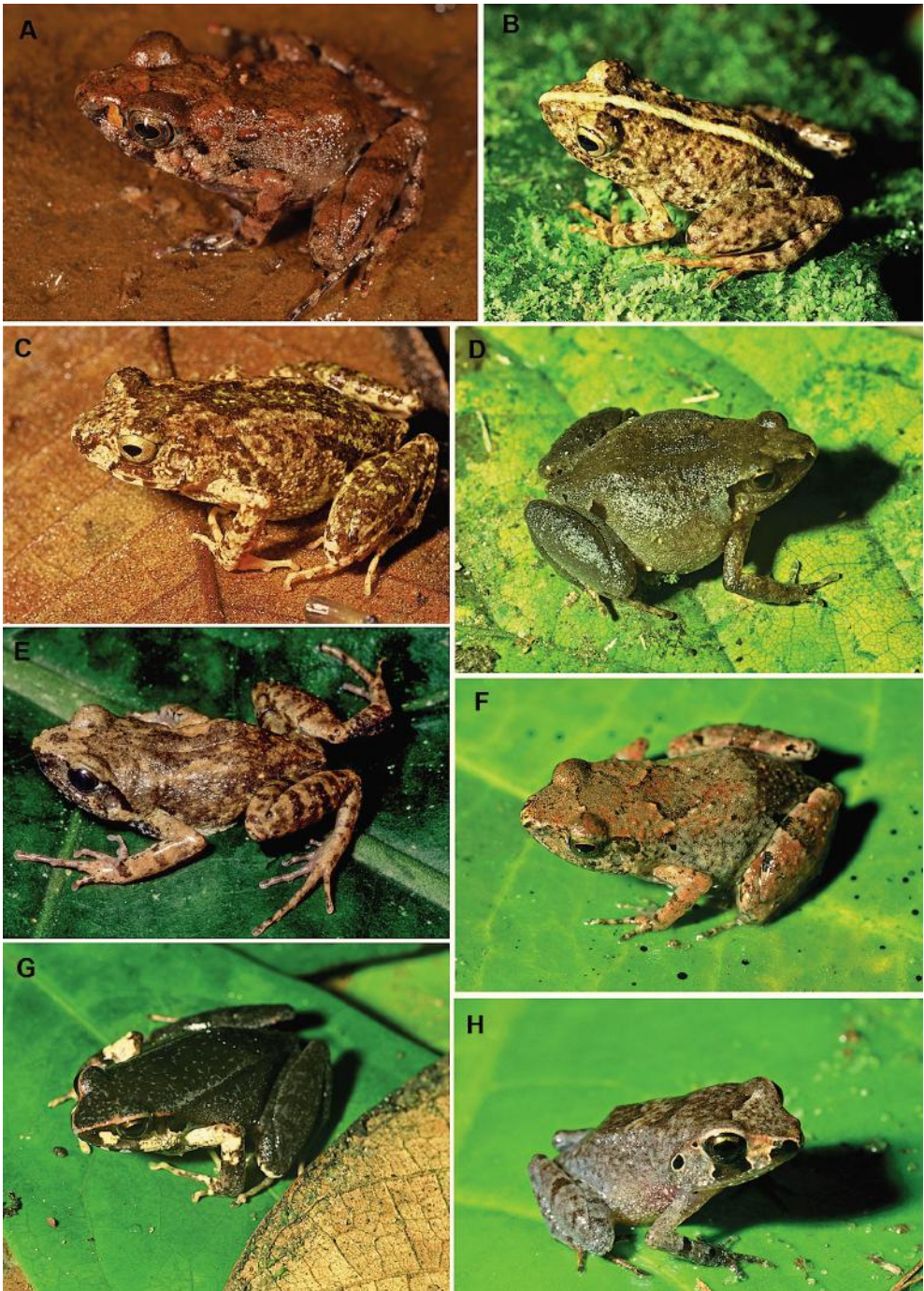


FIGURE 3. A. *Arthroleptis adelphus* (Caldera de Luba, Bioko Sur, Bioko). Photo IM.; B–C. *Arthroleptis adelphus* (Monte Alén National Park, Río Muni). Photos IDIR.; D. *Arthroleptis* aff. *poecilonotus*, female (Monte Alén National Park, Río Muni). Photo IDIR.; E. *Arthroleptis* aff. *poecilonotus*, male (Río Muni). Photo TL.; F. *Arthroleptis sylvaticus* (Monte Alén National Park, Río Muni). Photo IDIR.; G–H. *Arthroleptis variabilis* (Monte Alén National Park, Río Muni). Photos IDIR.

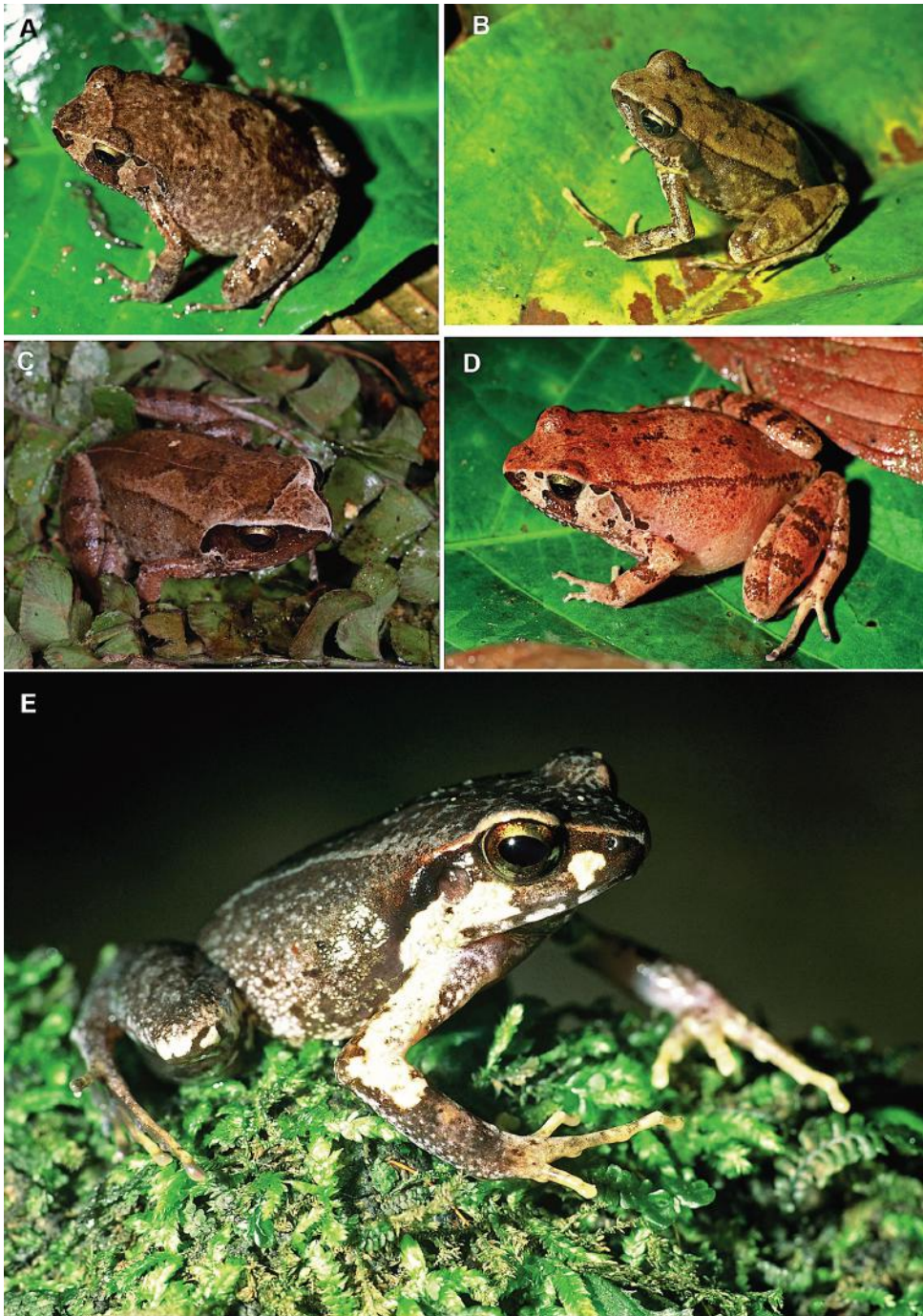


FIGURE 4. A–B, D–E. *Arthroleptis variabilis* (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Arthroleptis variabilis* (Caldera de Luba, Bioko Sur, Bioko). Photo IM.

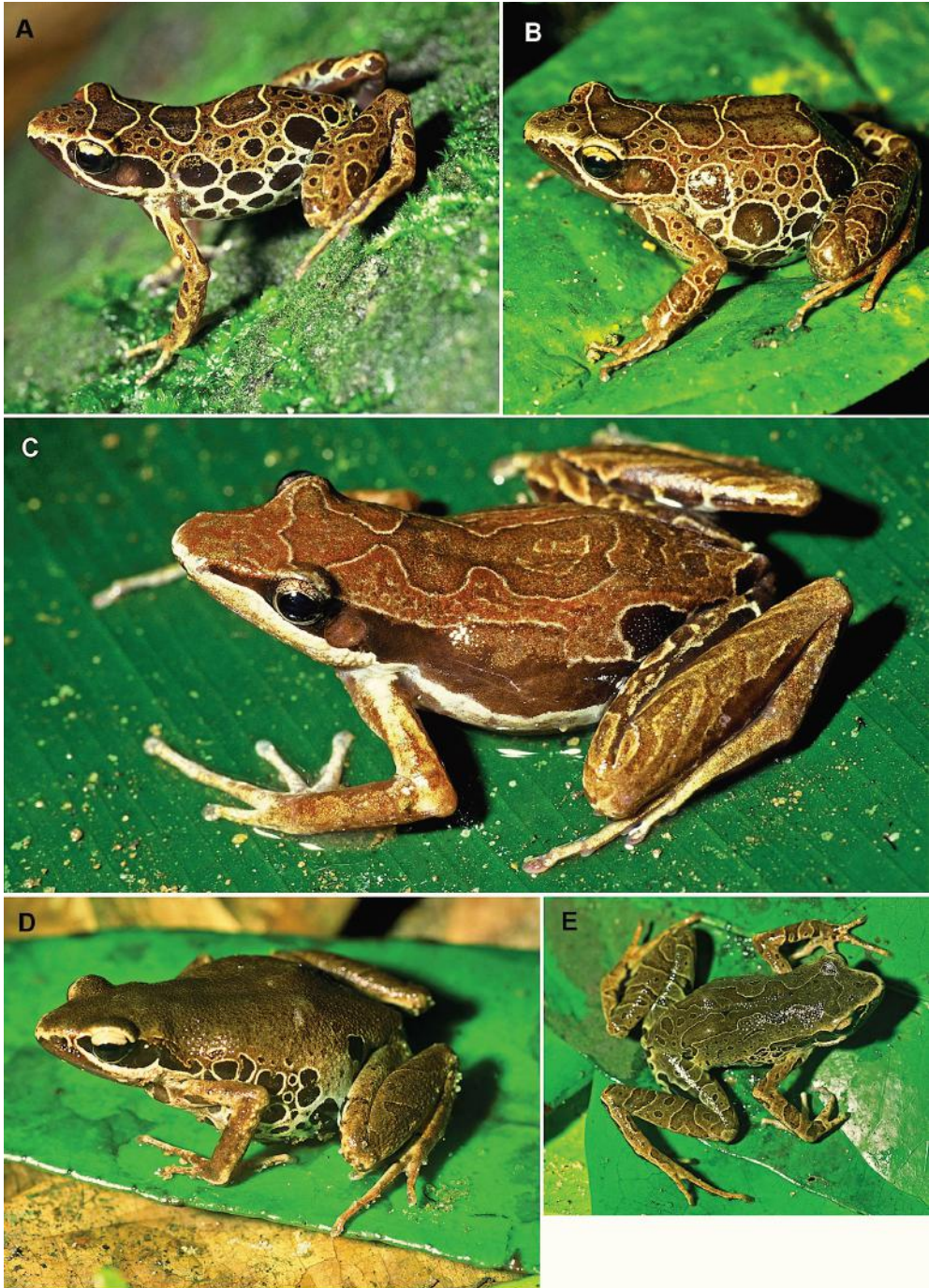


FIGURE 5. A–B. *Cardioglossa elegans* (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Cardioglossa gracilis* (Monte Alén National Park, Río Muni). Photo IDIR.; D–E. *Cardioglossa leucomystax* (Monte Alén National Park, Río Muni). Photos IDIR.



FIGURE 6. A–B. *Astylosternus batesi* (Monte Alén National Park, Río Muni). Photos IDIR.; C–E. *Leptodactylodon* cf. *stevarti* (Monte Alén National Park, Río Muni). Photos IDIR.





FIGURE 7. A–B. *Nyctibates corrugatus* (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Scotobleps gabonicus* (Monte Alén National Park, Río Muni). Photo IDIR.; D–E. *Trichobatrachus robustus* (Monte Alén National Park, Río Muni). Photos IDIR.



FIGURE 8. A–B. *Leptopelis aubryi* (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Leptopelis boulengeri* (Monte Alén National Park, Río Muni). Photo IDIR.; D. *Leptopelis brevirostris* (Monte Alén National Park, Río Muni). Photo IDIR.; E. *Leptopelis calcaratus* (Monte Alén National Park, Río Muni). Photo IDIR.; F. *Leptopelis ocellatus* (Atoc Lake surrounding, Monte Alén National Park, Río Muni). Photo IDIR.; G–H. *Leptopelis rufus* (Monte Alén National Park, Río Muni). Photos IDIR.

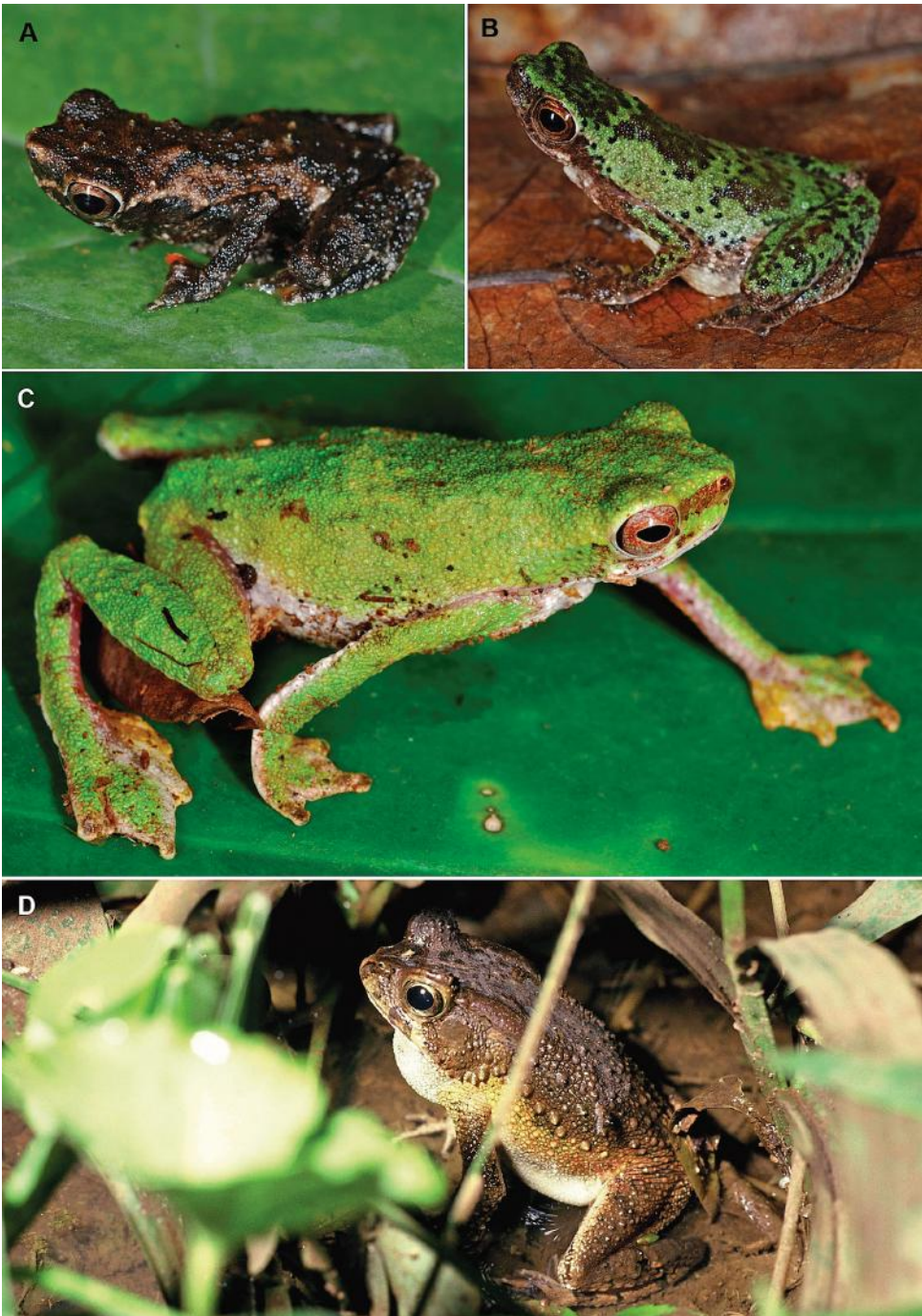


FIGURE 9. A. *Nectophryne afra* (North of Caldera de Luba, Bioko Sur, Bioko). Photo IM.; B–C. *Nectophryne batesii* (Caldera de Luba, Bioko Sur, Bioko). Photos IM.; D. *Sclerophrys camerunensis*, calling male (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 10. A, C–D. *Sclerophrys camerunensis* (Caldera de Luba, Bioko Sur, Bioko). Photos IM.; B. *Sclerophrys camerunensis* (Monte Alén National Park, Río Muni). Photo IDIR.; E. *Sclerophrys gracilipes* (Monte Alén National Park, Río Muni). Photo IDIR.; F. *Sclerophrys latifrons* (Monte Alén National Park, Río Muni). Photo IDIR.

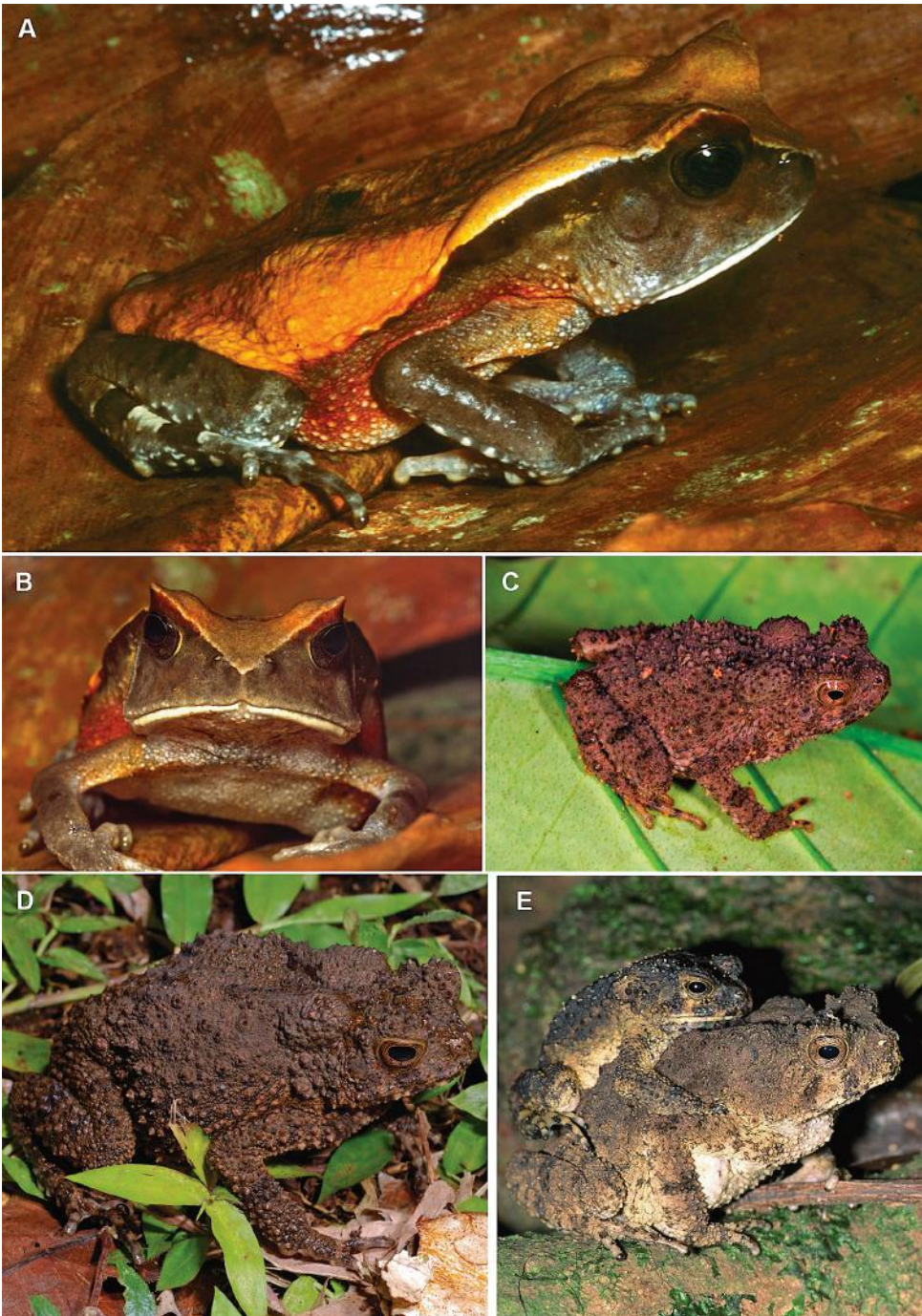


FIGURE 11. A–B. *Sclerophrys superciliaris* (Río Muni). Photos TL.; C–D. *Sclerophrys tuberosa* (Caldera de Luba, Bioko Sur, Bioko). Photos IM.; E. *Sclerophrys tuberosa*, amplexus (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 12. A–B. *Werneria cf. mertensiana* (Monte Alén National Park, Río Muni). Photos IDIR.

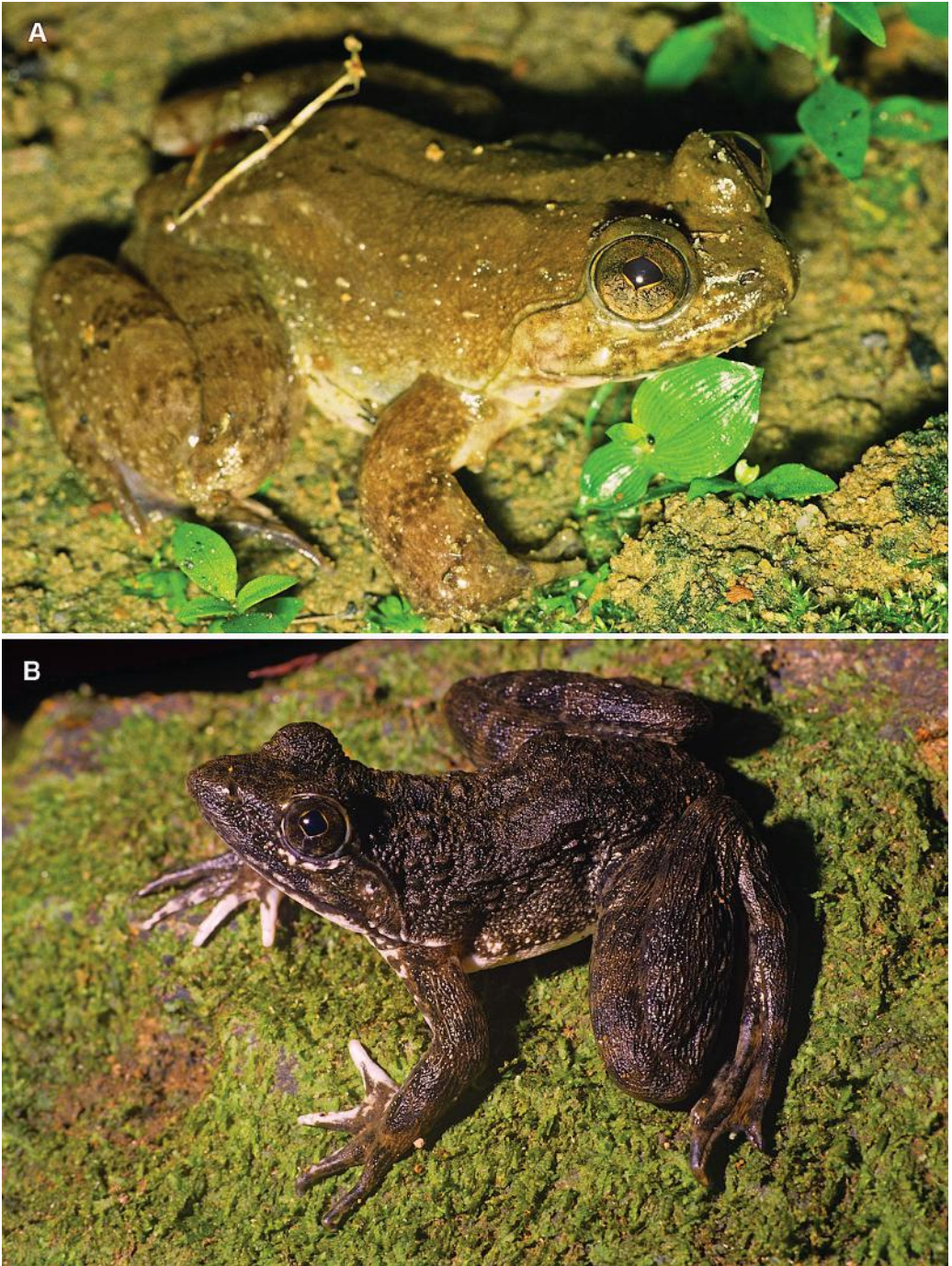


FIGURE 13. A. *Conraua crassipes* (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Conraua goliath* (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 14. A. *Afrixalus fulvovittatus* (Monte Alén National Park, Río Muni). Photo IDIR.; B–C. *Afrixalus osorioi* (Monte Alén National Park, Río Muni). Photos IDIR.; D. *Afrixalus paradorsalis* (Caldera de Luba, Bioko Sur, Bioko). Photo IM.; E. *Afrixalus paradorsalis* (Monte Alén National Park, Río Muni). Photo IDIR.





FIGURE 15. A–C. *Alexteroon obstetricans*, an egg clutch is showed in figure B (Monte Alén National Park, Río Muni). Photos IDIR.; D–E. *Cryptothylax greshoffii*, amplexus (E) (Monte Alén National Park, Río Muni). Photos IDIR.

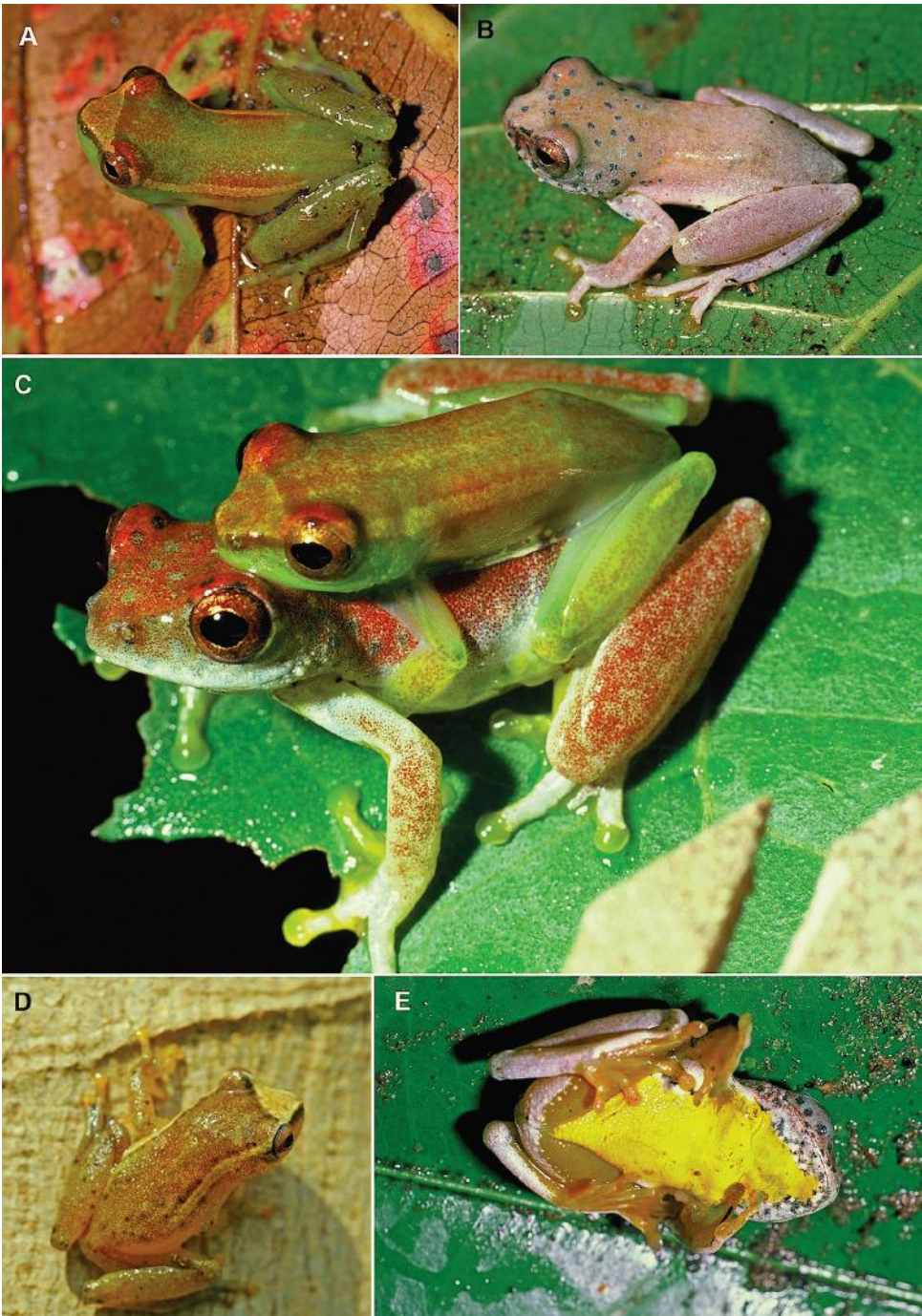


FIGURE 16. A. *Hyperolius ocellatus*, male (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Hyperolius ocellatus*, female (Monte Alén National Park, Río Muni). Photo IDIR.; C. *Hyperolius ocellatus*, amplexus (Monte Alén National Park, Río Muni). Photo IDIR.; D. *Hyperolius ocellatus*, male (Caldera de Luba, Bioko Sur, Bioko). Photo IM.; E. *Hyperolius ocellatus*, ventral view, female (Monte Alén National Park, Río Muni). Photo IDIR.

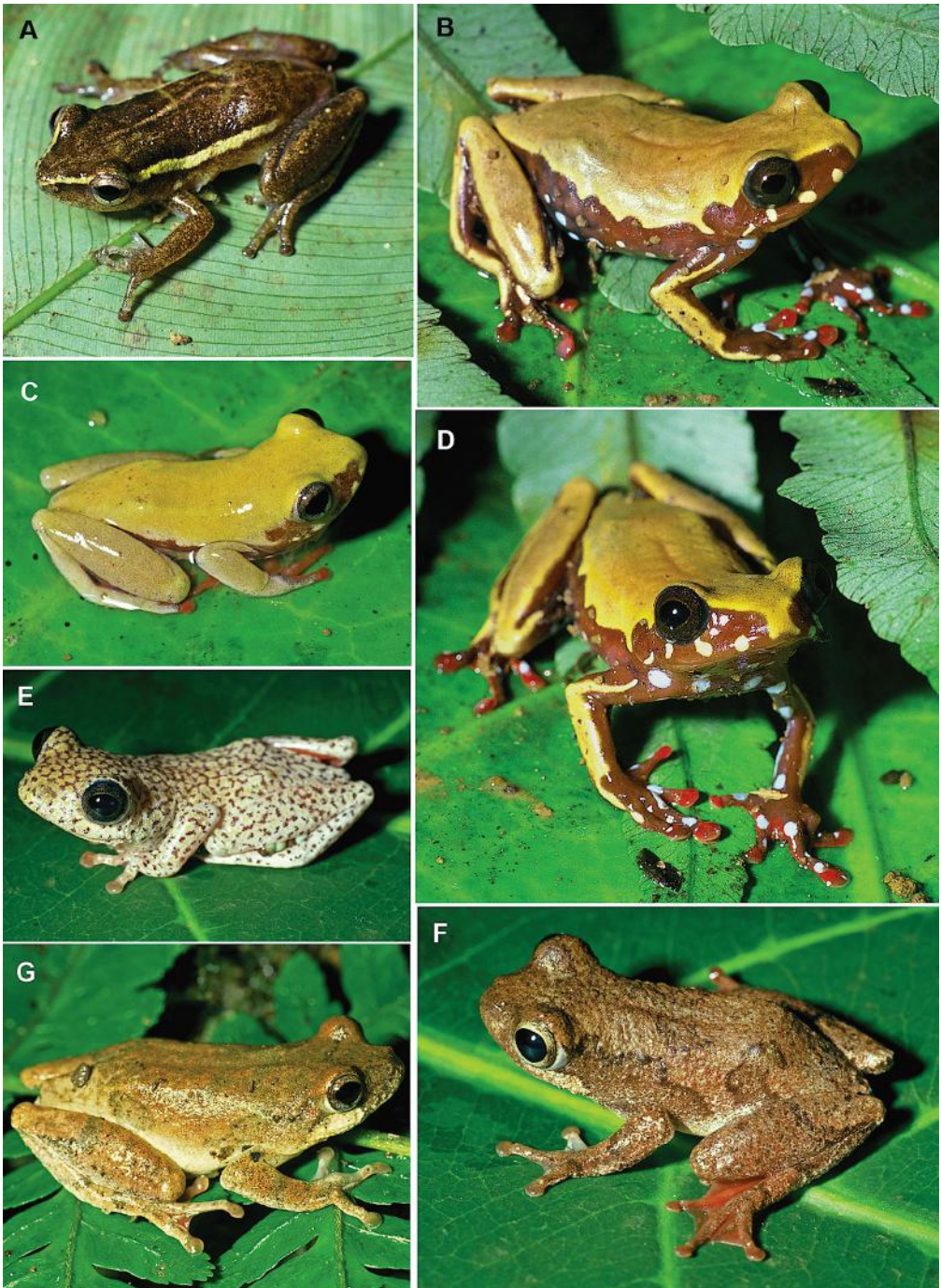


FIGURE 17. A. *Hyperolius olivaceus*, male (Monte Alén National Park, Río Muni). Photo IDIR.; B, D. *Hyperolius pardalis*, female (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Hyperolius pardalis*, male (Monte Alén National Park, Río Muni). Photo IDIR.; E–F. *Hyperolius tuberculatus* (Bome, Río Muni). Photos IDIR.; G. *Hyperolius tuberculatus* (Monte Alén National Park, Río Muni). Photo IDIR.

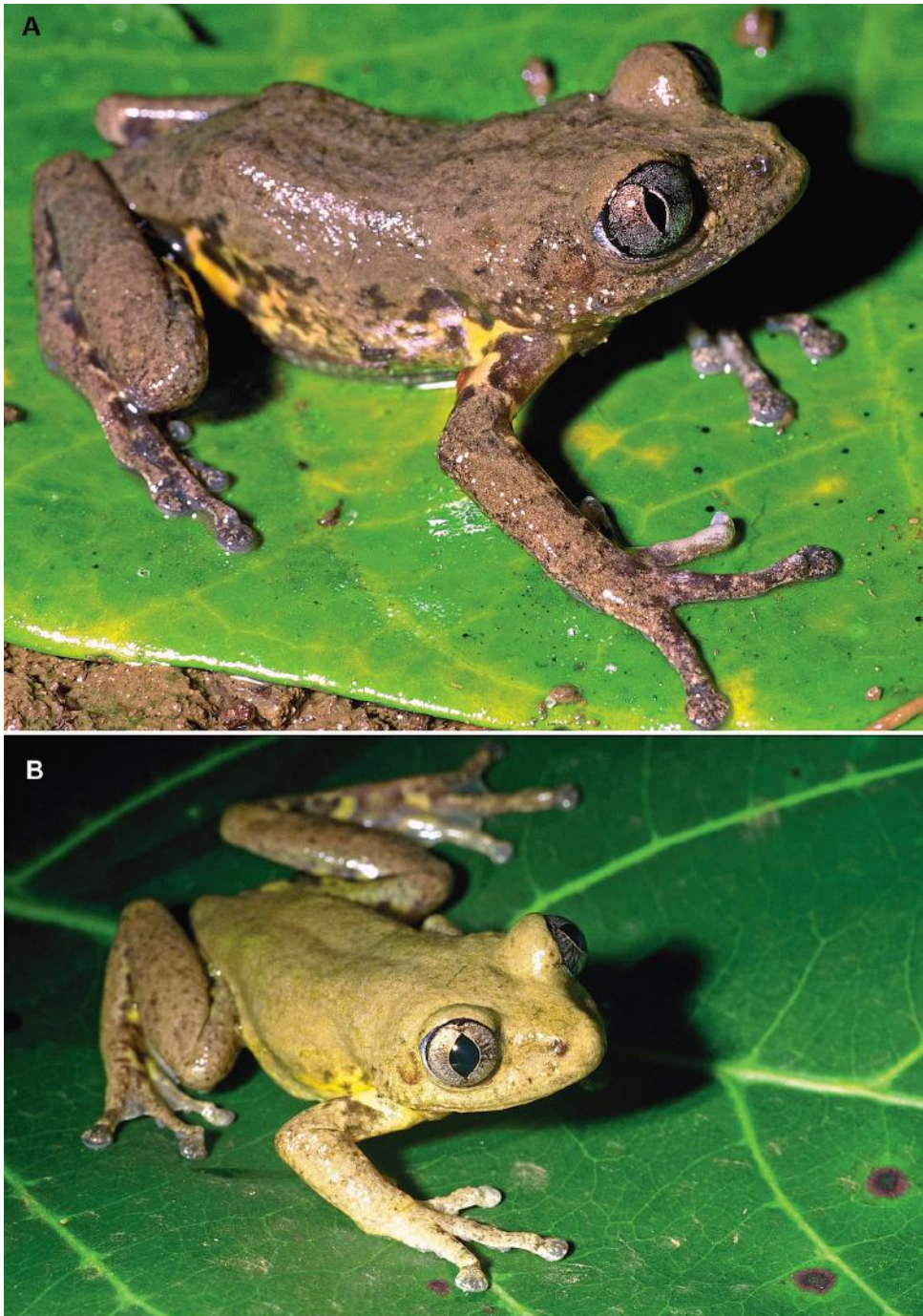


FIGURE 18. A. *Phlyctimantis* cf. *leonardi* (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Phlyctimantis* cf. *leonardi* (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 19. A–B. *Petropedetes newtonii*, females (Caldera de Luba, Bioko Sur, Bioko). Photos IM.; C–D. *Petropedetes palmipes*, male (Monte Alén National Park, Río Muni). Photos IDIR.; E. *Petropedetes palmipes*, tadpoles and egg clutch (Monte Alén National Park, Río Muni). Photo IDIR.; F. *Petropedetes palmipes*, juvenile (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 20. A–B. *Petropedetes parkeri*, male (Monte Alén National Park, Río Muni). Photos IDIR.; C. *Petropedetes parkeri* embryos in the egg clutch (Monte Alén National Park, Río Muni). Photo IDIR.; D. *Petropedetes vulpiae*, male (Monte Alén National Park, Río Muni). Photo IDIR.; E. *Petropedetes vulpiae*, female (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 21. A. *Phrynobatrachus africanus*, male (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Phrynobatrachus africanus*, detail of the male hand showing the suprametacarpal gland (Monte Alén National Park, Río Muni). Photo IDIR.; C. Ventral view of *Phrynobatrachus africanus*, male (Monte Alén National Park, Río Muni). Photo IDIR.; D–G. Different coloration patterns of *Phrynobatrachus auritus* (Monte Alén National Park, Río Muni). Photos IDIR.; H. *Phrynobatrachus sandersoni* (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 22. A–B. *Xenopus parafraseri* (Monte Alén National Park, Río Muni). Photo IDIR.; C–D. *Ptychadena aequiplicata* (Monte Alén National Park, Río Muni). Photo IDIR.



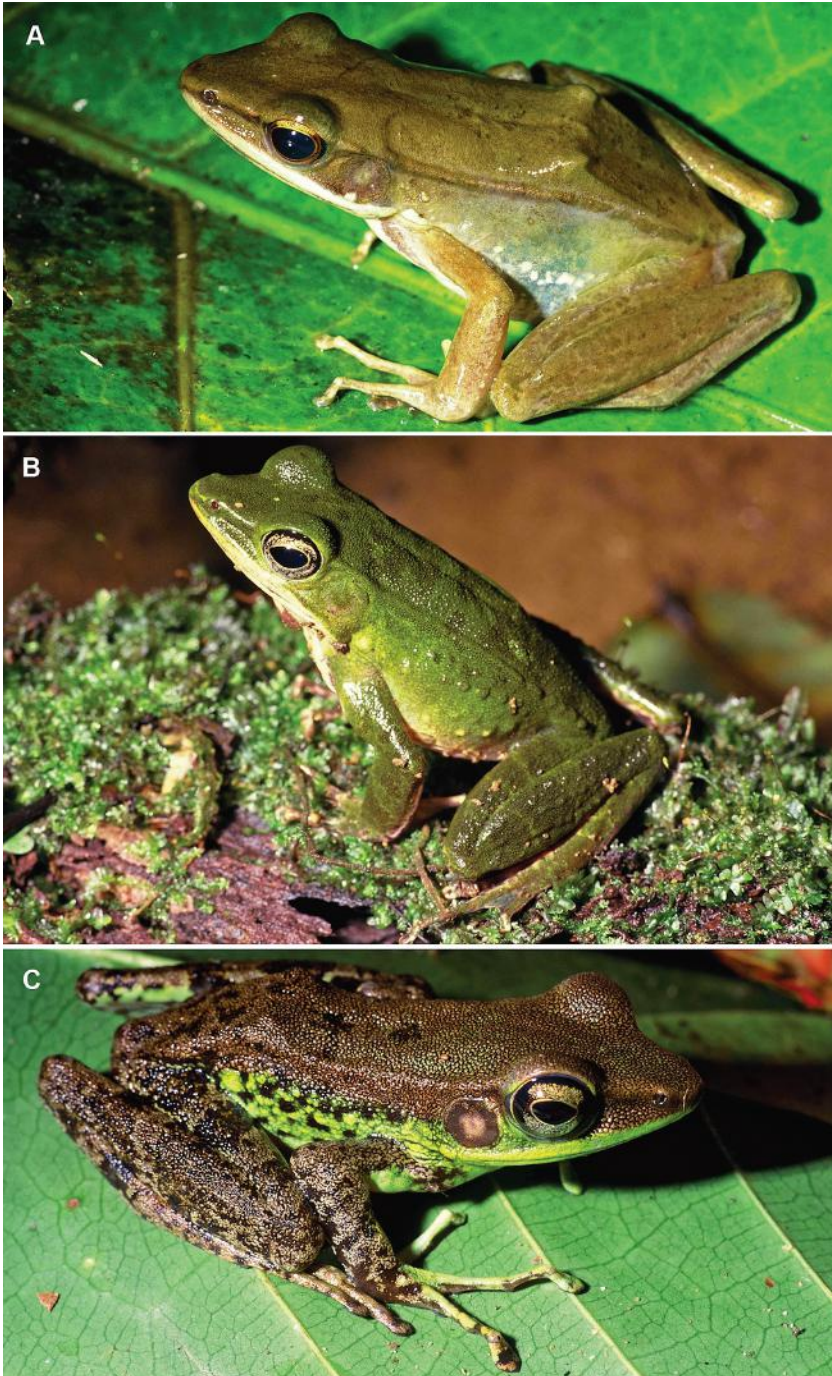


FIGURE 23. A. *Amnirana albolabris* (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Amnirana amnicola* (Monte Alén National Park, Río Muni). Photo IDIR.; C. *Amnirana lepus* (Monte Alén National Park, Río Muni). Photo IDIR.



FIGURE 24. A. *Chiromantis rufescens* (Monte Alén National Park, Río Muni). Photo IDIR.; B. *Chiromantis rufescens*, foam nests (Monte Alén National Park, Río Muni). Photo IDIR.

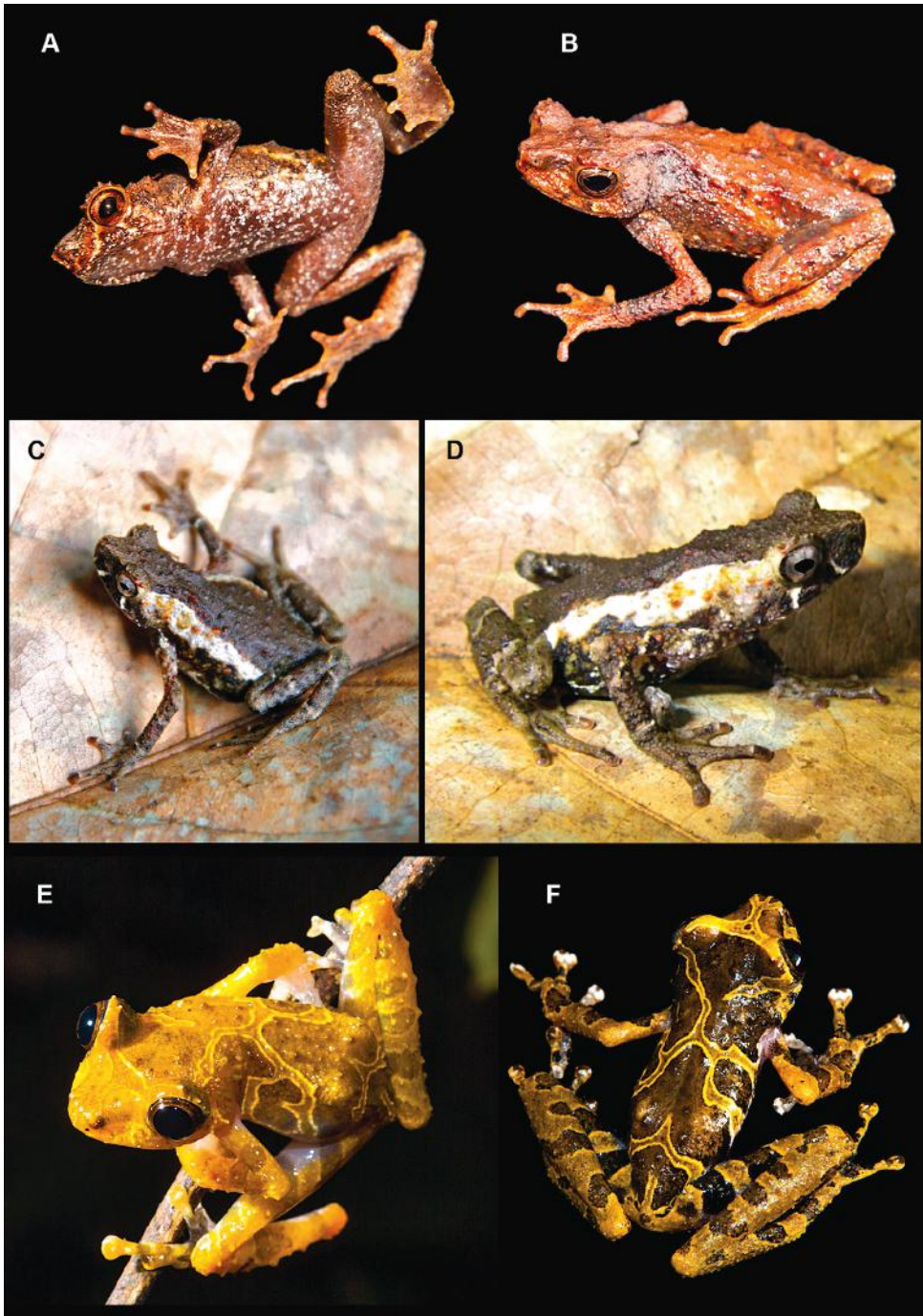
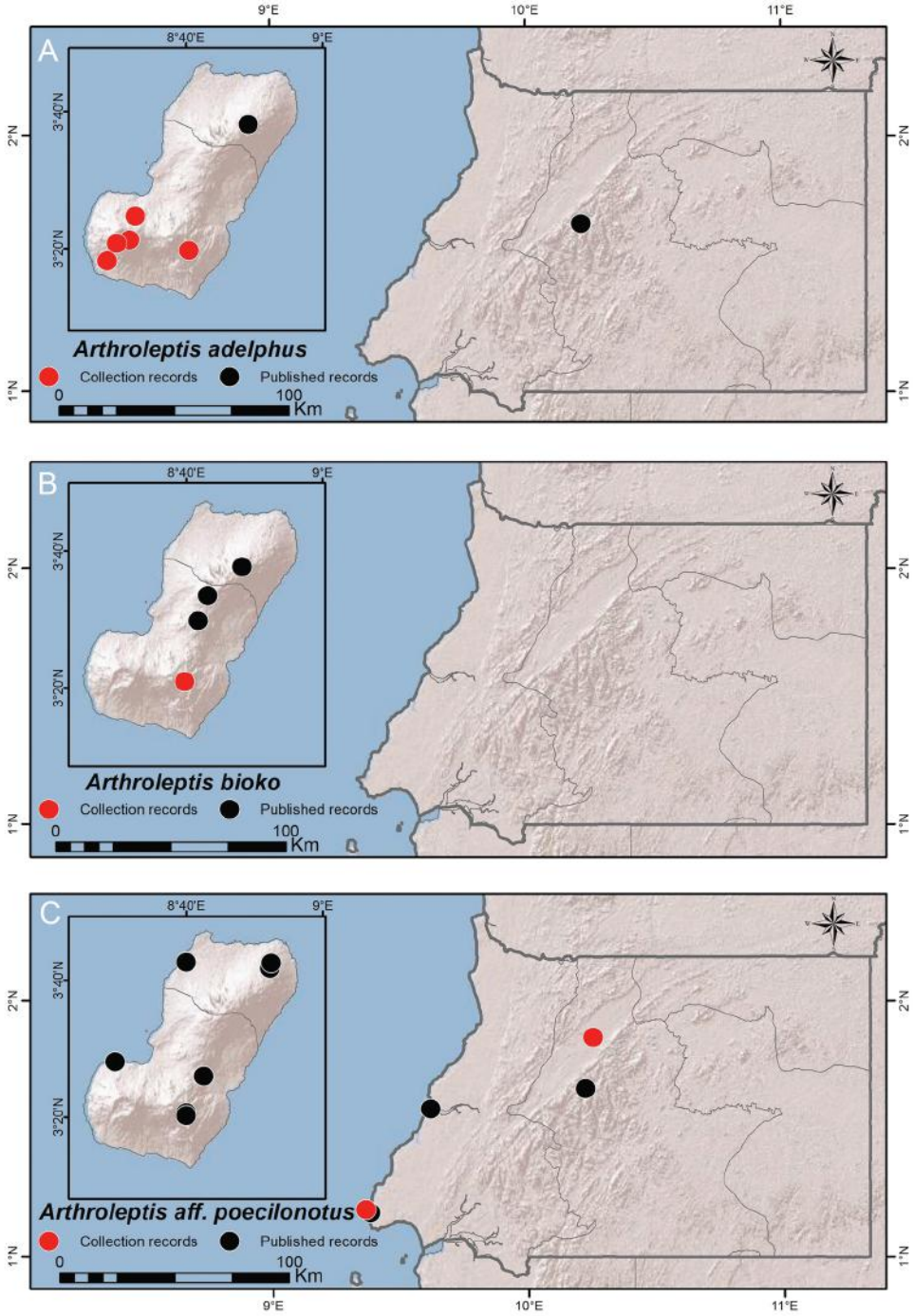
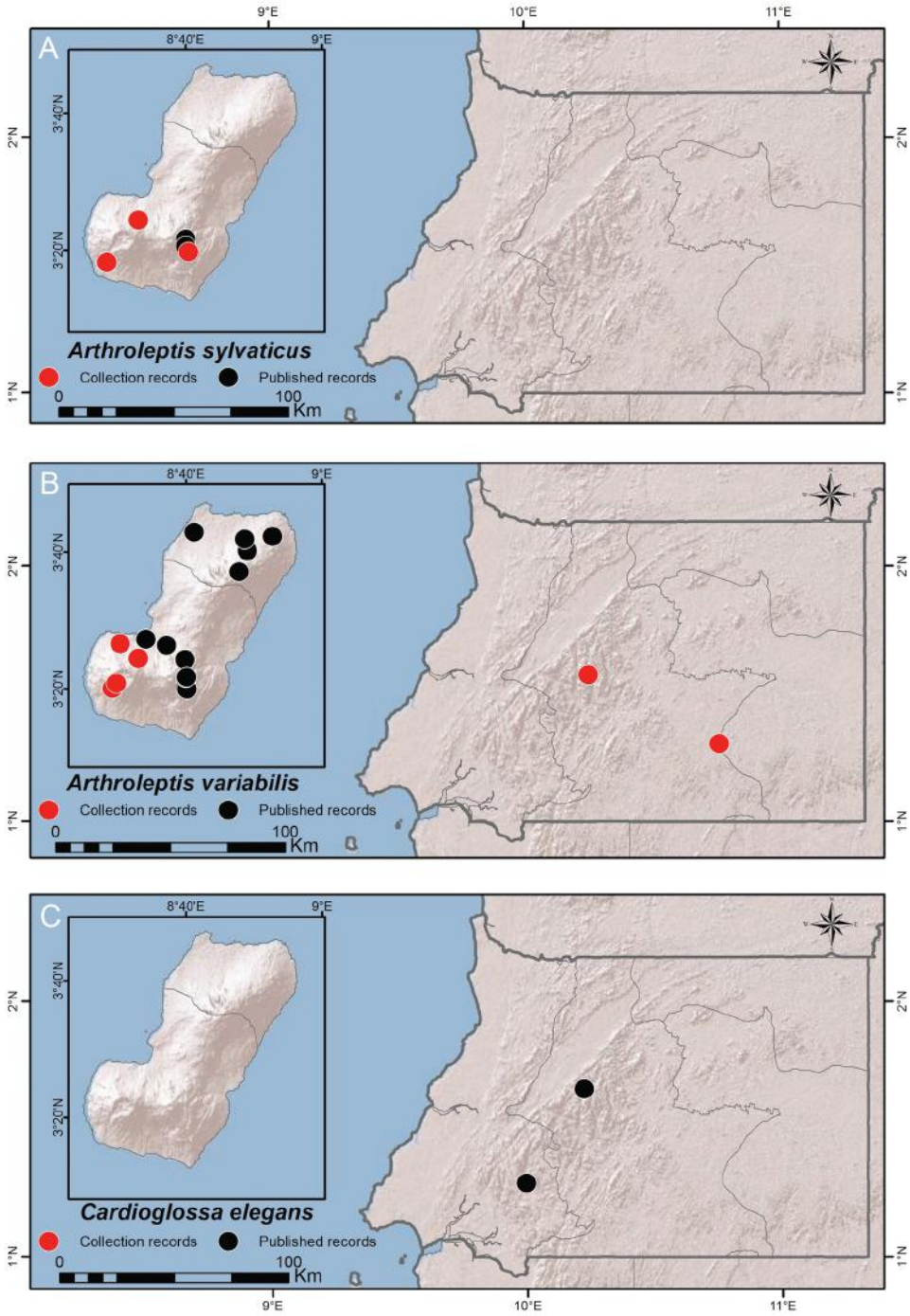


FIGURE 25. A. Ventral view of *Wolterstorffina parvipalmata* (surroundings of Moka, Bioko). Photo JW.; B. *Wolterstorffina parvipalmata*, same specimen as A (surroundings of Moka, Bioko). Photo JW.; C. *Wolterstorffina parvipalmata* (surroundings of Moka, Bioko). Photo PM.; D. *Wolterstorffina parvipalmata*, same specimen as C (surroundings of Moka, Bioko). Photo RB.; E–F. *Arlequinus krebsi* (surroundings of Pico Basilé, Bioko). Photos JW.

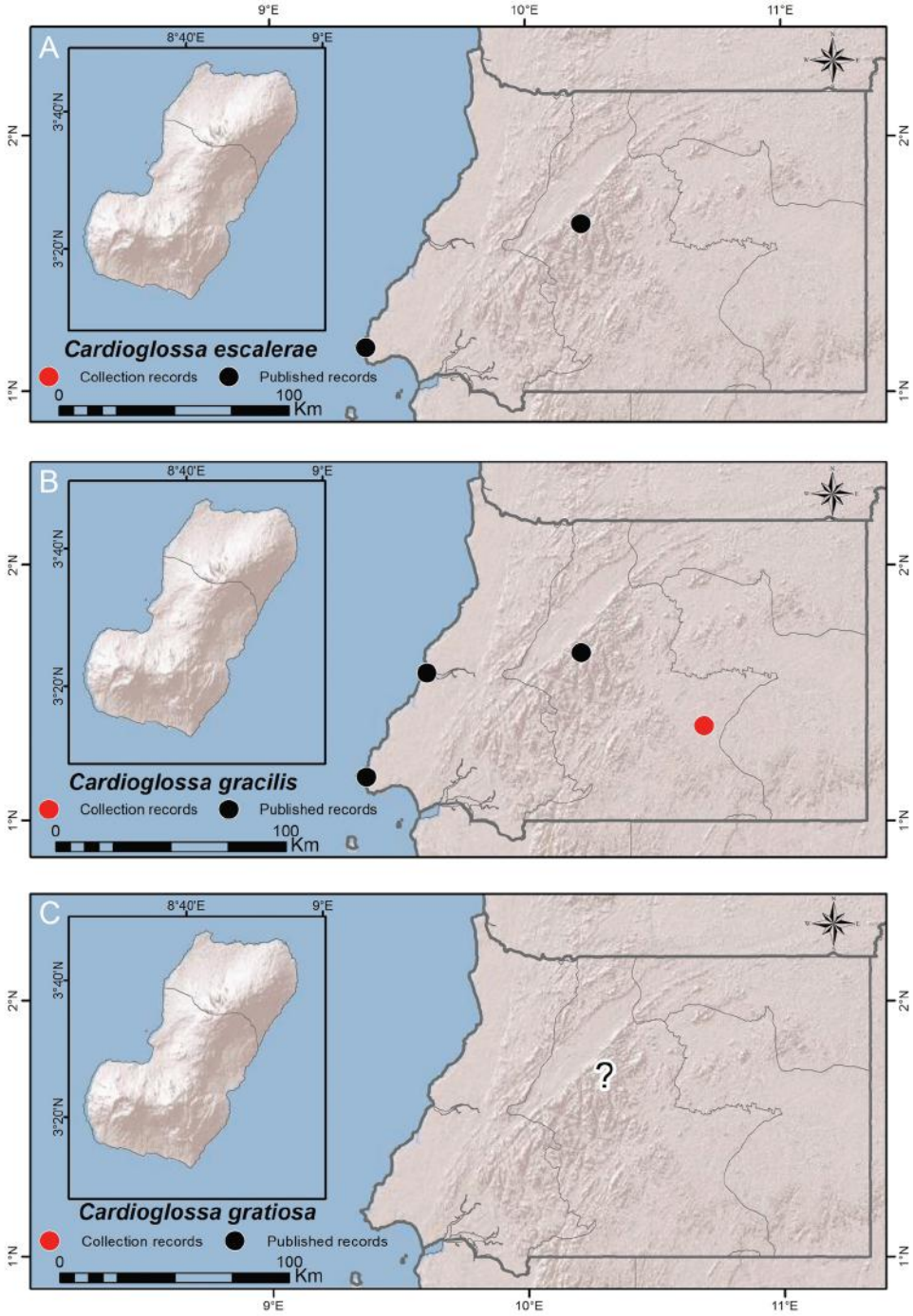
## **Distribution Maps**



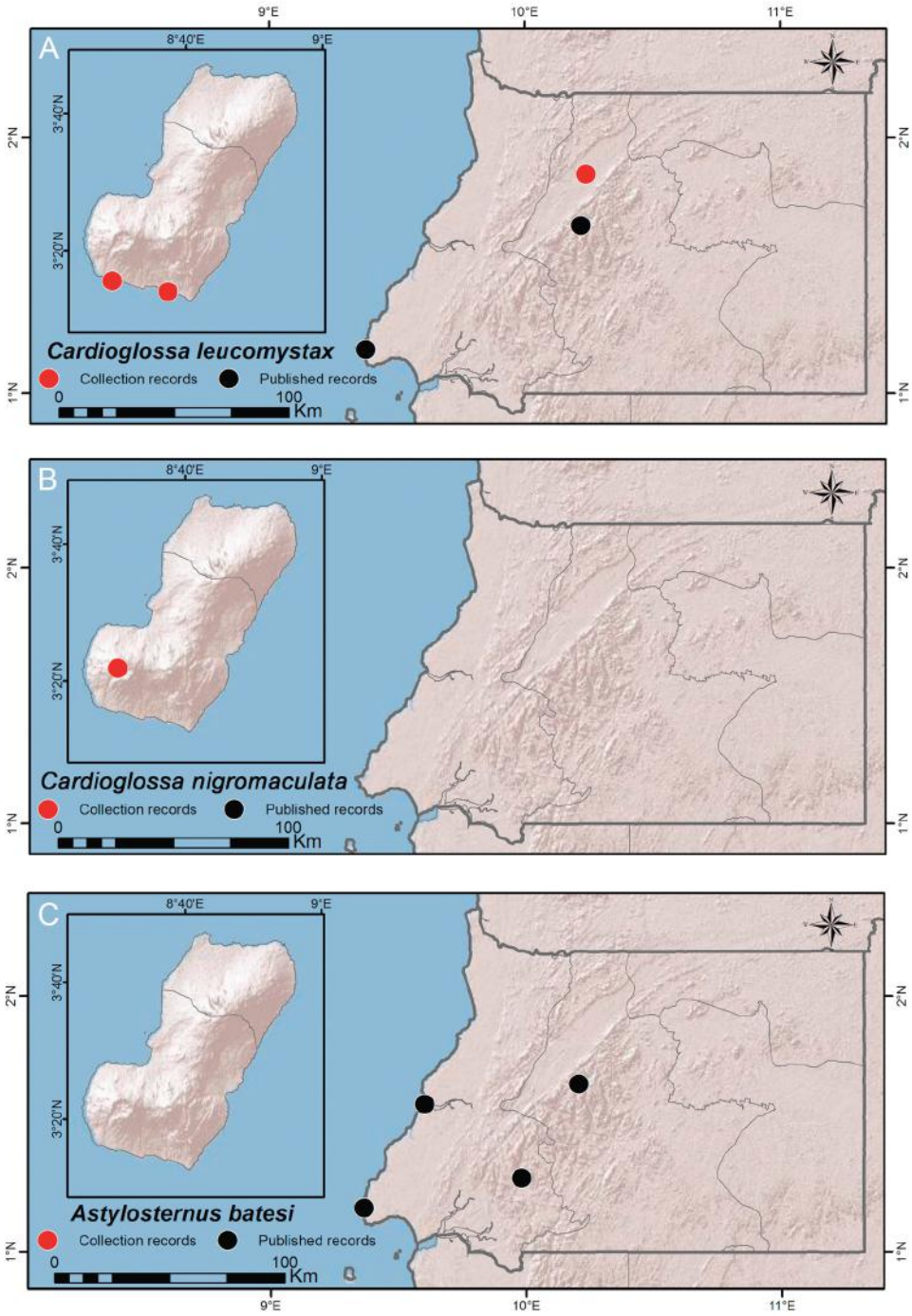
MAPS 2A–C. Distribution maps for Equatorial Guinean records of (A) *Arthroleptis adelphus*; (B) *Arthroleptis bioko*; (C) *Arthroleptis aff. poecilonotus*.



MAPS 3A–C. Distribution maps for Equatorial Guinean records of (A) *Arthroleptis sylvaticus*; (B) *Arthroleptis variabilis*; (C) *Cardioglossa elegans*.

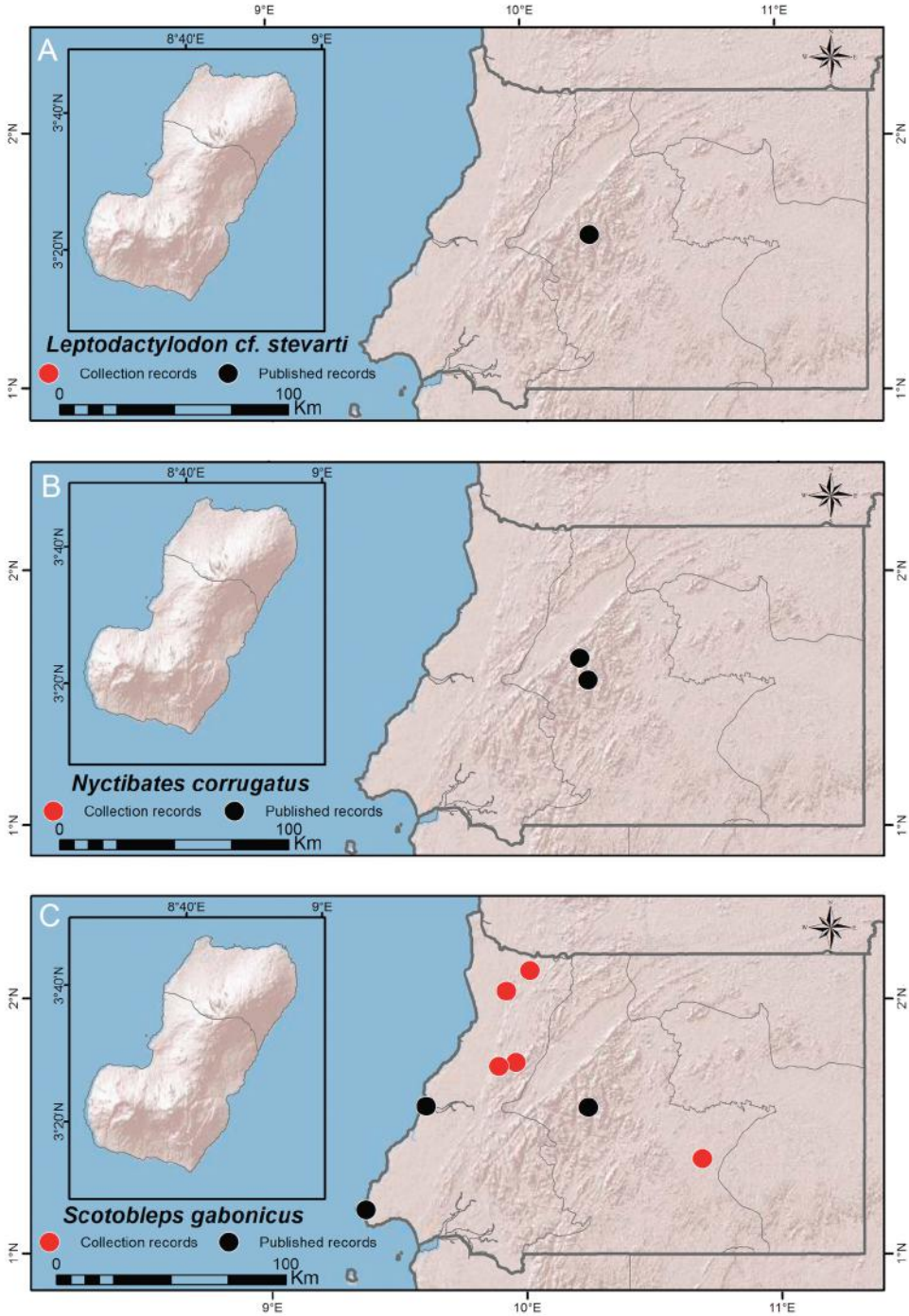


MAPS 4A–C. Distribution maps for Equatorial Guinean records of (A) *Cardioglossa escalerae*; (B) *Cardioglossa gracilis*; (C) *Cardioglossa gratiosa*.

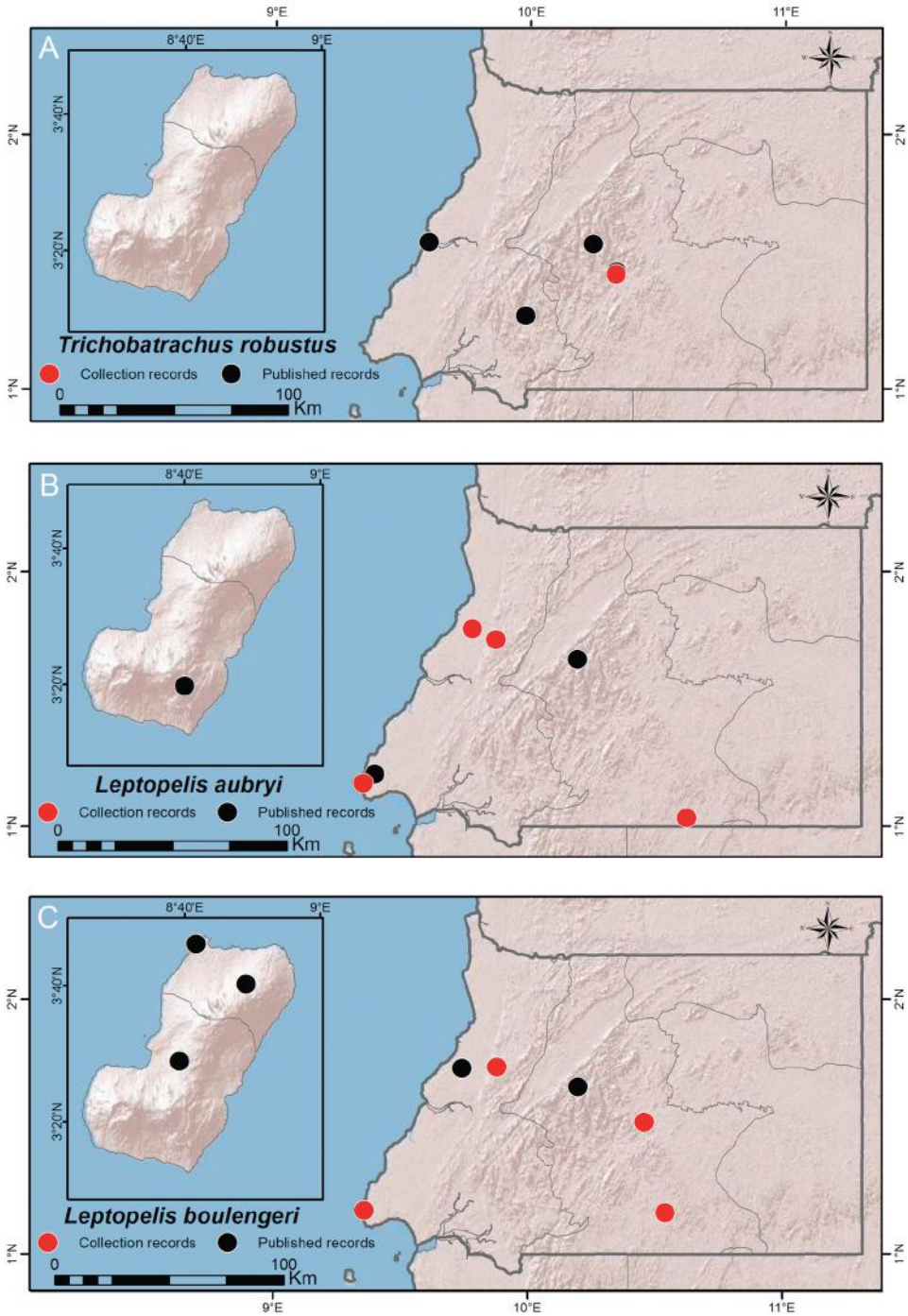


MAPS 5A–C. Distribution maps for Equatorial Guinean records of (A) *Cardioglossa leucomystax*; (B) *Cardioglossa nigromaculata*; (C) *Astylosternus batesi*.

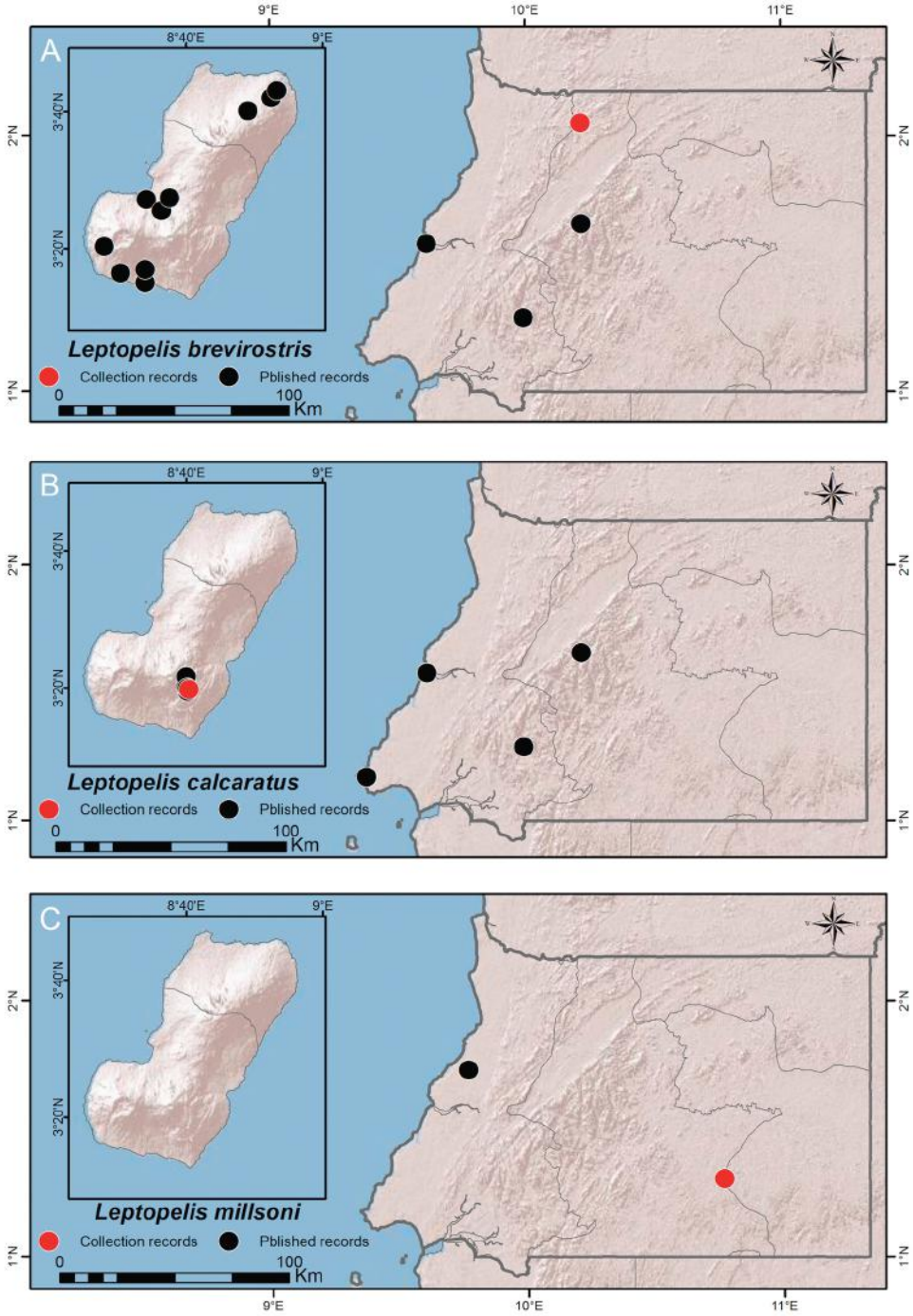




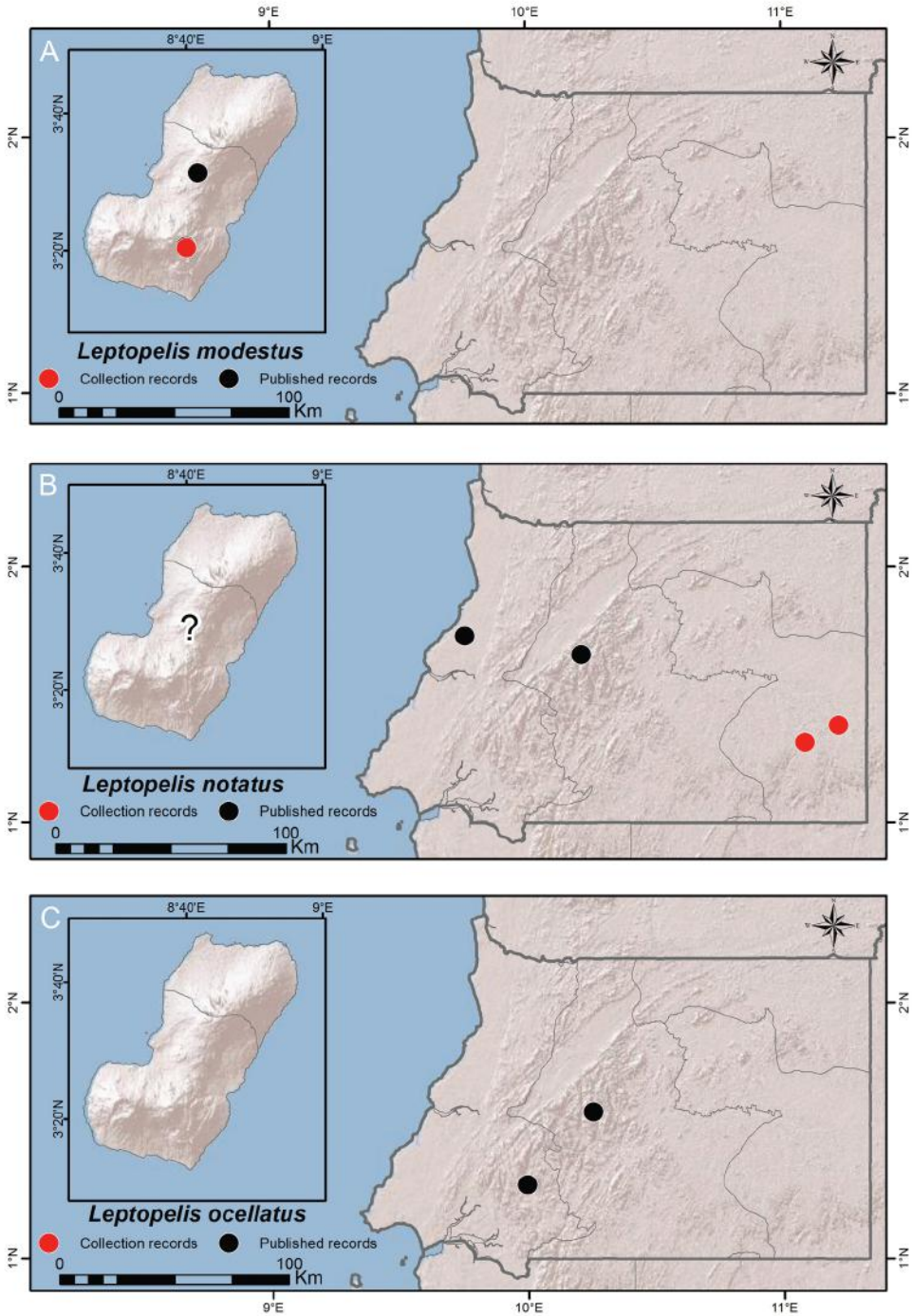
MAPS 6A–C. Distribution maps for Equatorial Guinean records of (A) *Leptodactylodon cf. stewarti*; (B) *Nyctibates corrugatus*; (C) *Scotobleps gabonicus*.



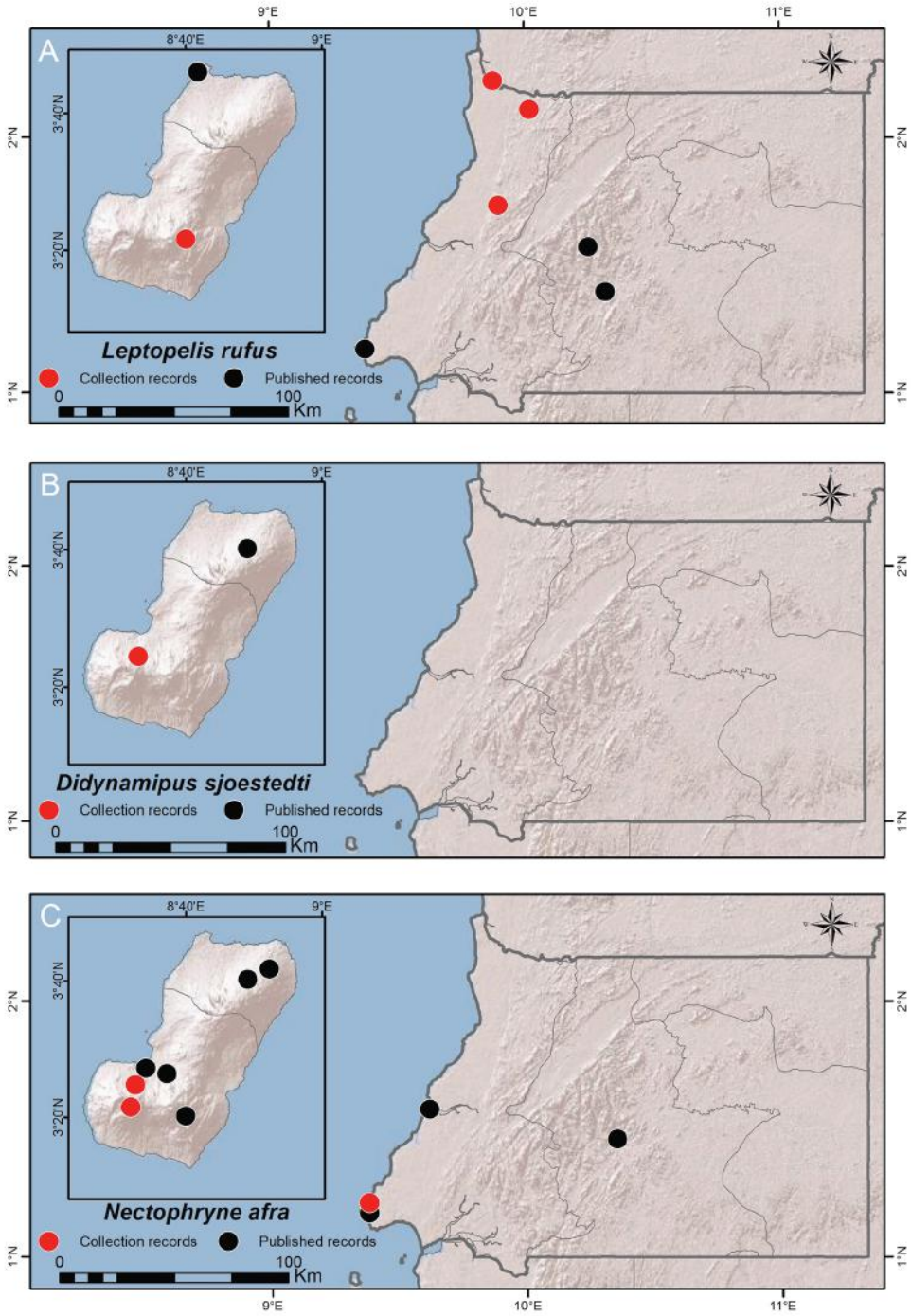
MAPS 7A–C. Distribution maps for Equatorial Guinean records of (A) *Trichobatrachus robustus*; (B) *Leptopelis aubryi*; (C) *Leptopelis boulengeri*.



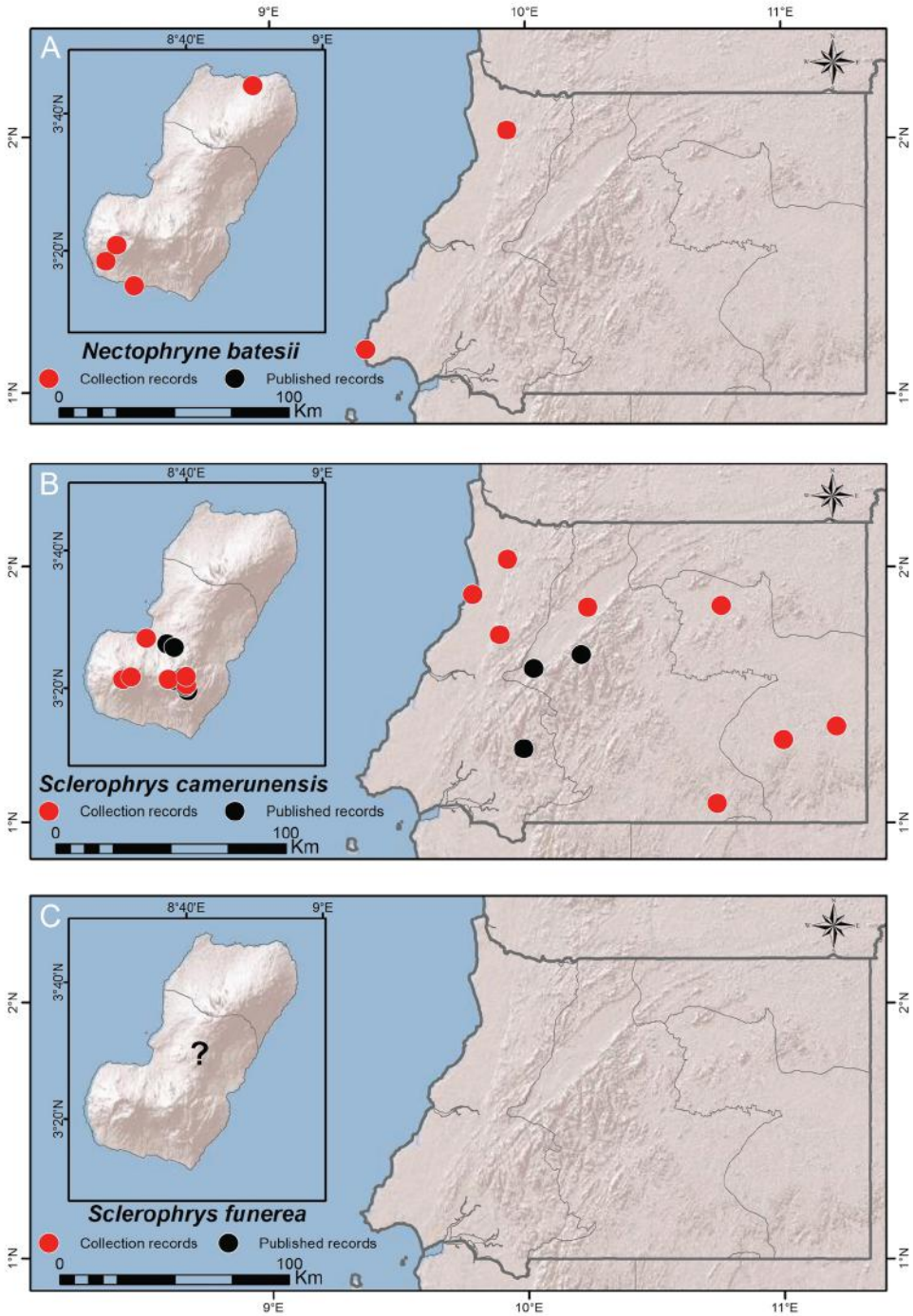
MAPS 8A–C. Distribution maps for Equatorial Guinean records of (A) *Leptopelis brevirostris*; (B) *Leptopelis calcaratus*; (C) *Leptopelis millsoni*.



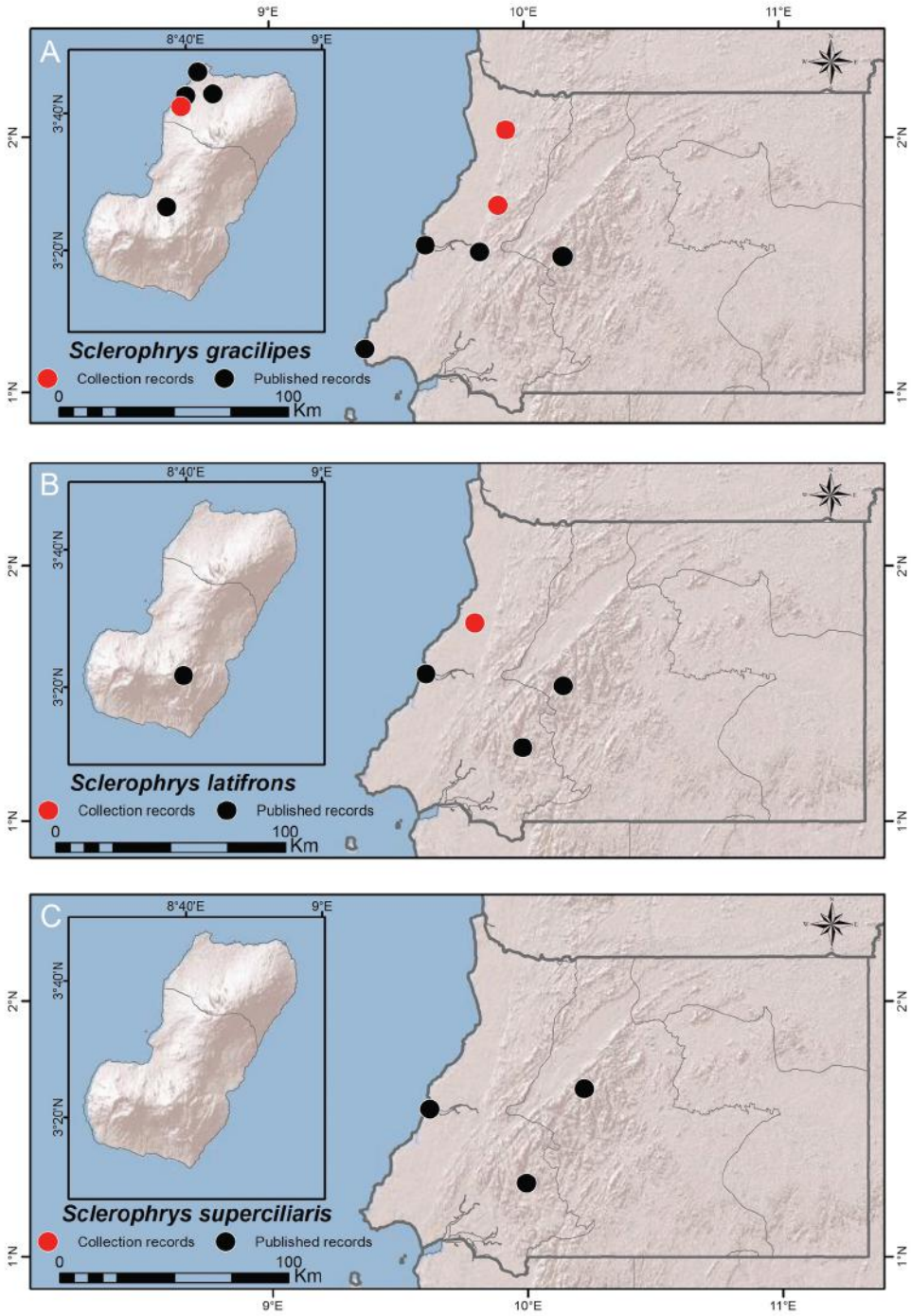
MAPS 9A–C. Distribution maps for Equatorial Guinean records of (A) *Leptopelis modestus*; (B) *Leptopelis notatus*; (C) *Leptopelis ocellatus*.



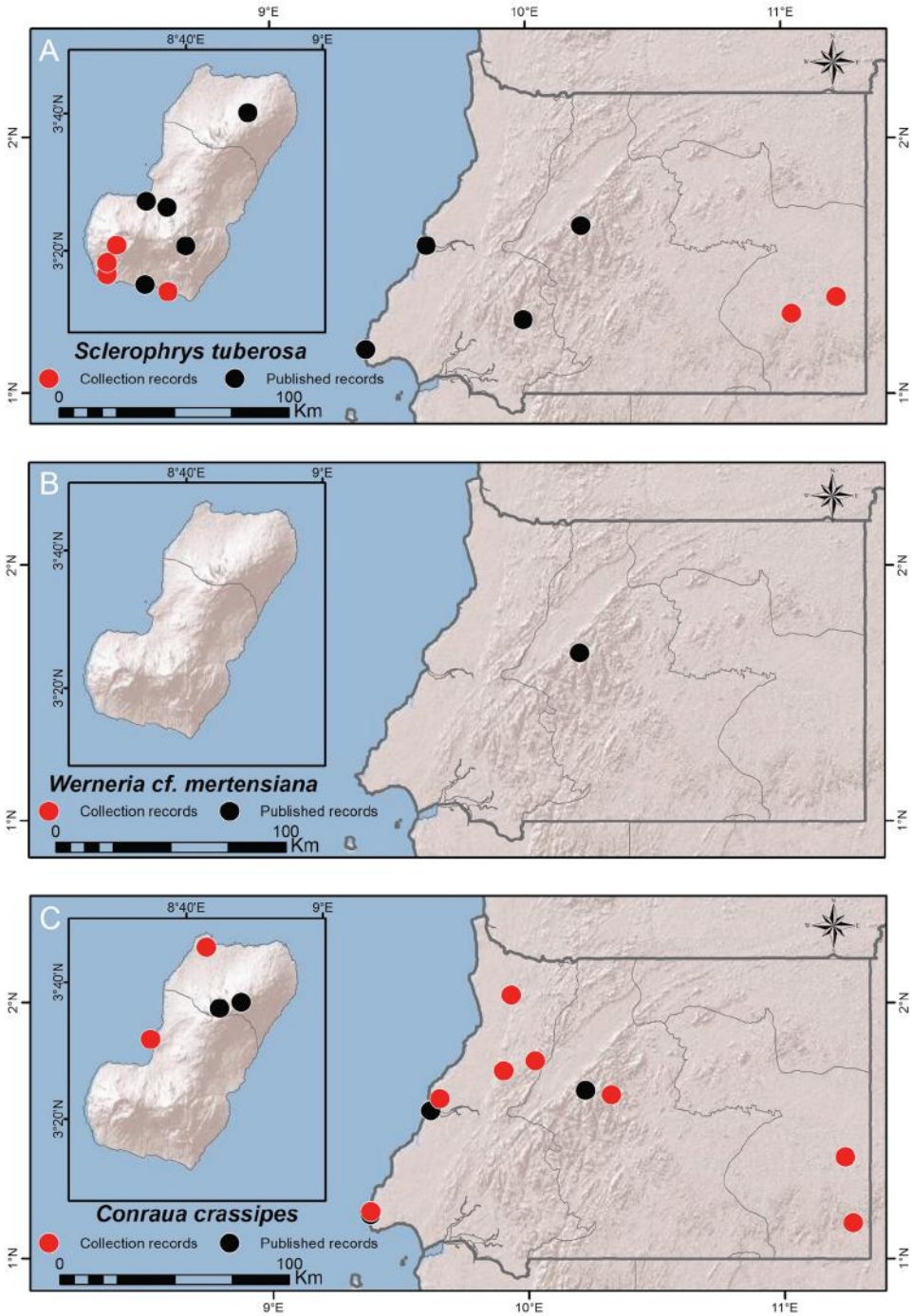
MAPS 10A–C. Distribution maps for Equatorial Guinean records of (A) *Leptopelis rufus*; (B) *Didynamis sjoestedti*; (C) *Nectophryne afra*.



MAPS 11A–C. Distribution maps for Equatorial Guinean records of (A) *Nectophryne batesii*; (B) *Sclerophrys camerunensis*; (C) *Sclerophrys funerea*.

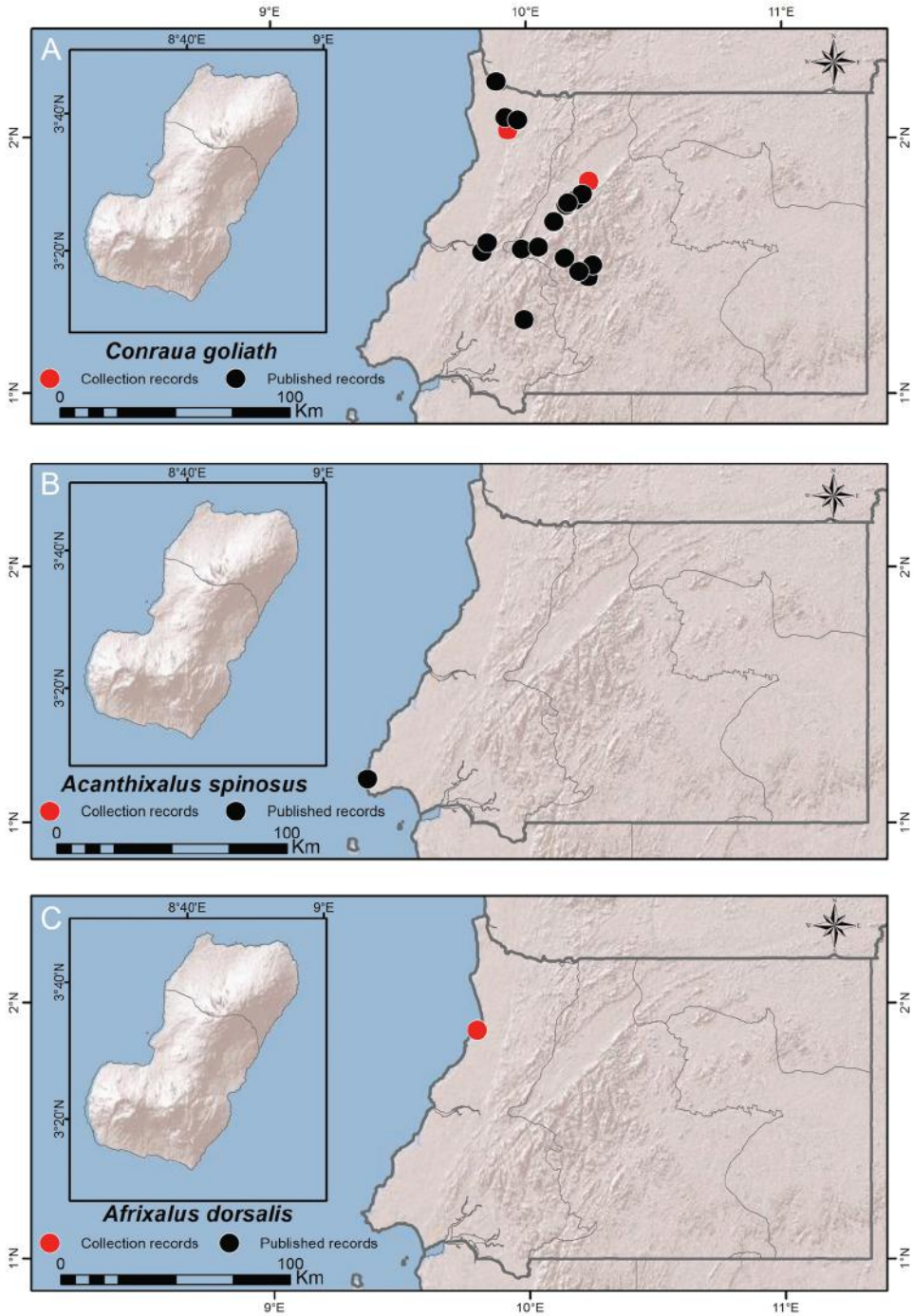


MAPS 12A–C. Distribution maps for Equatorial Guinean records of (A) *Sclerophrys gracilipes*; (B) *Sclerophrys latifrons*; (C) *Sclerophrys superciliaris*.

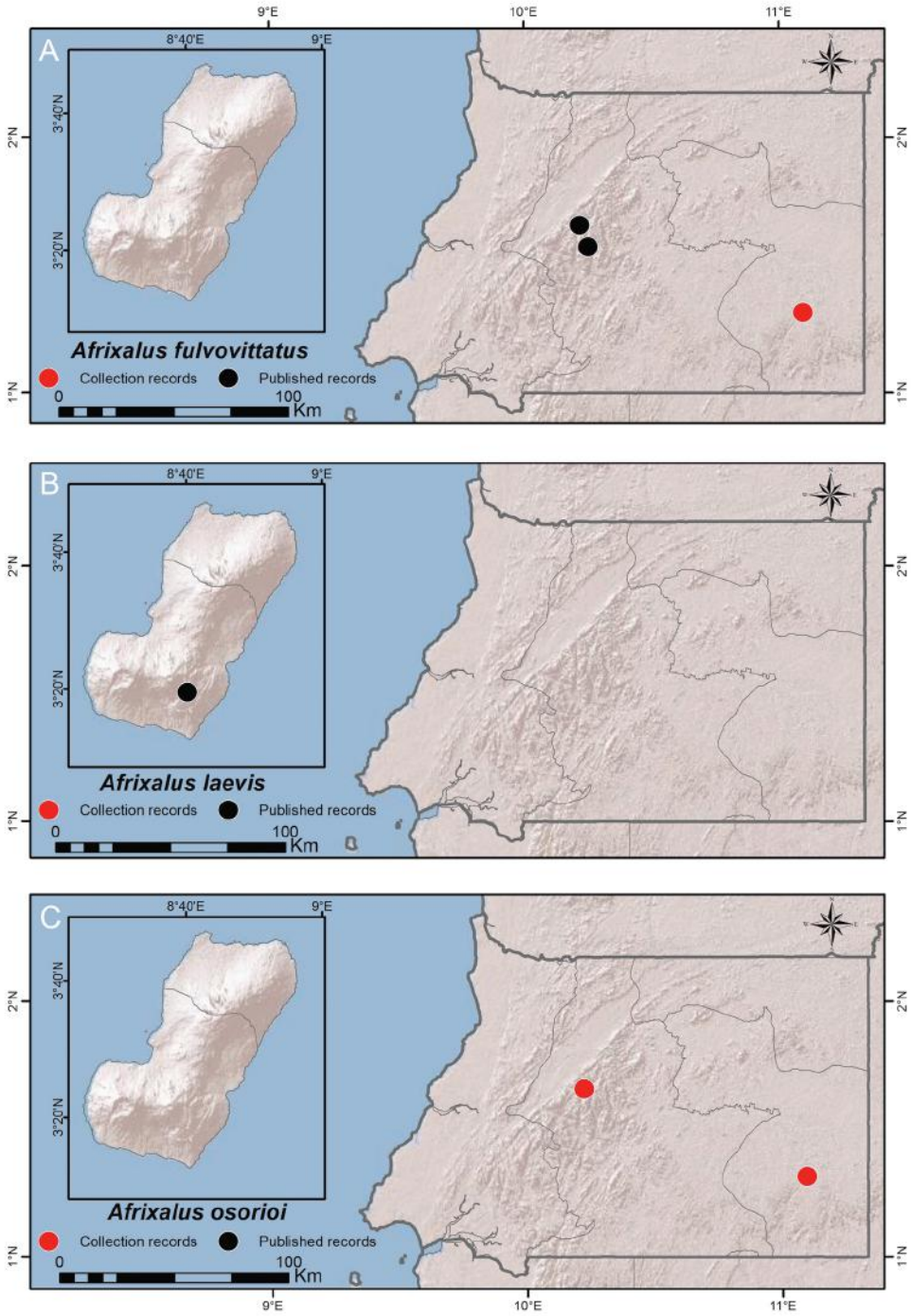


MAPS 13A–C. Distribution maps for Equatorial Guinean records of (A) *Sclerophrys tuberosa*; (B) *Werneria cf. mertensiana*; (C) *Conraua crassipes*.

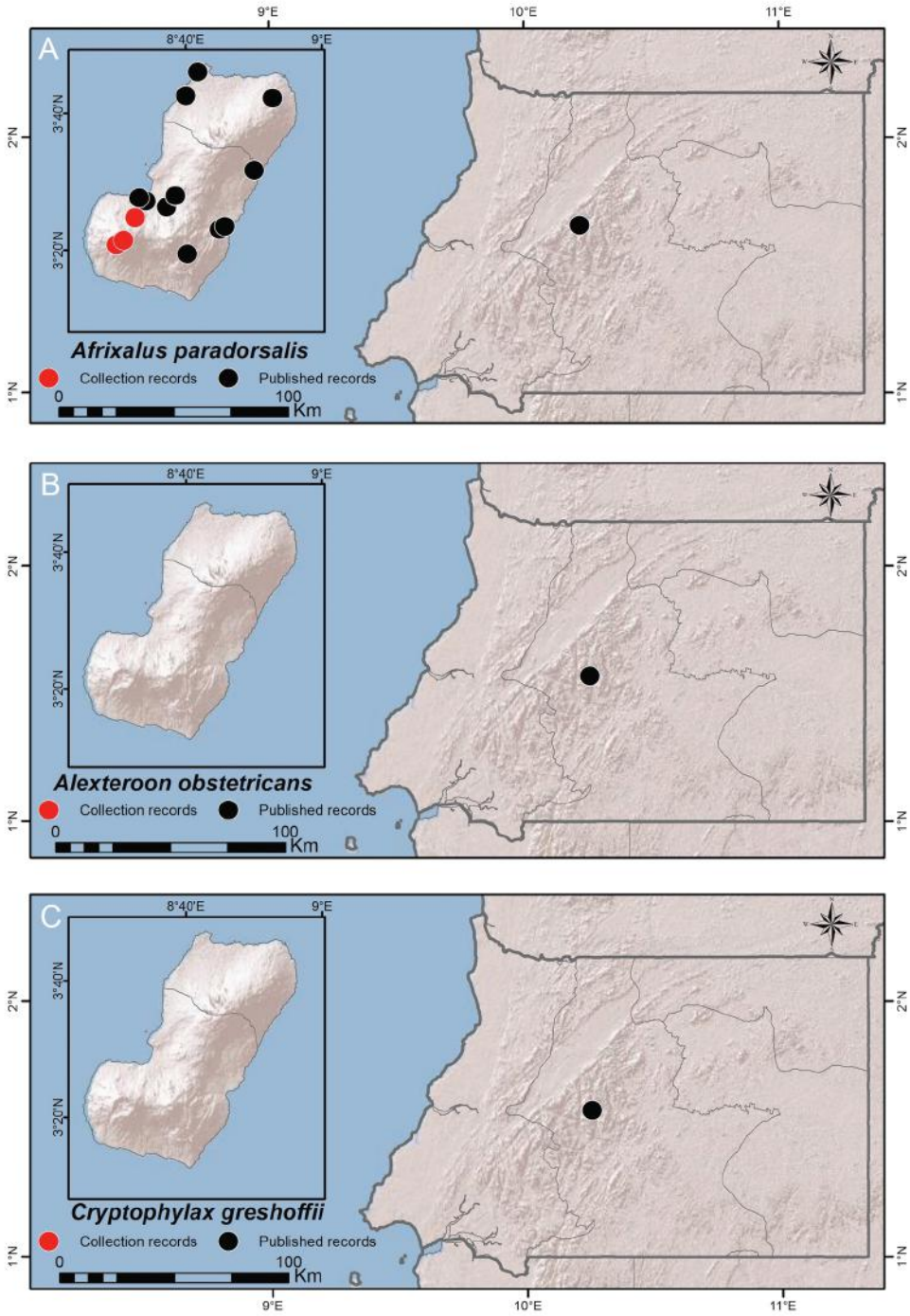




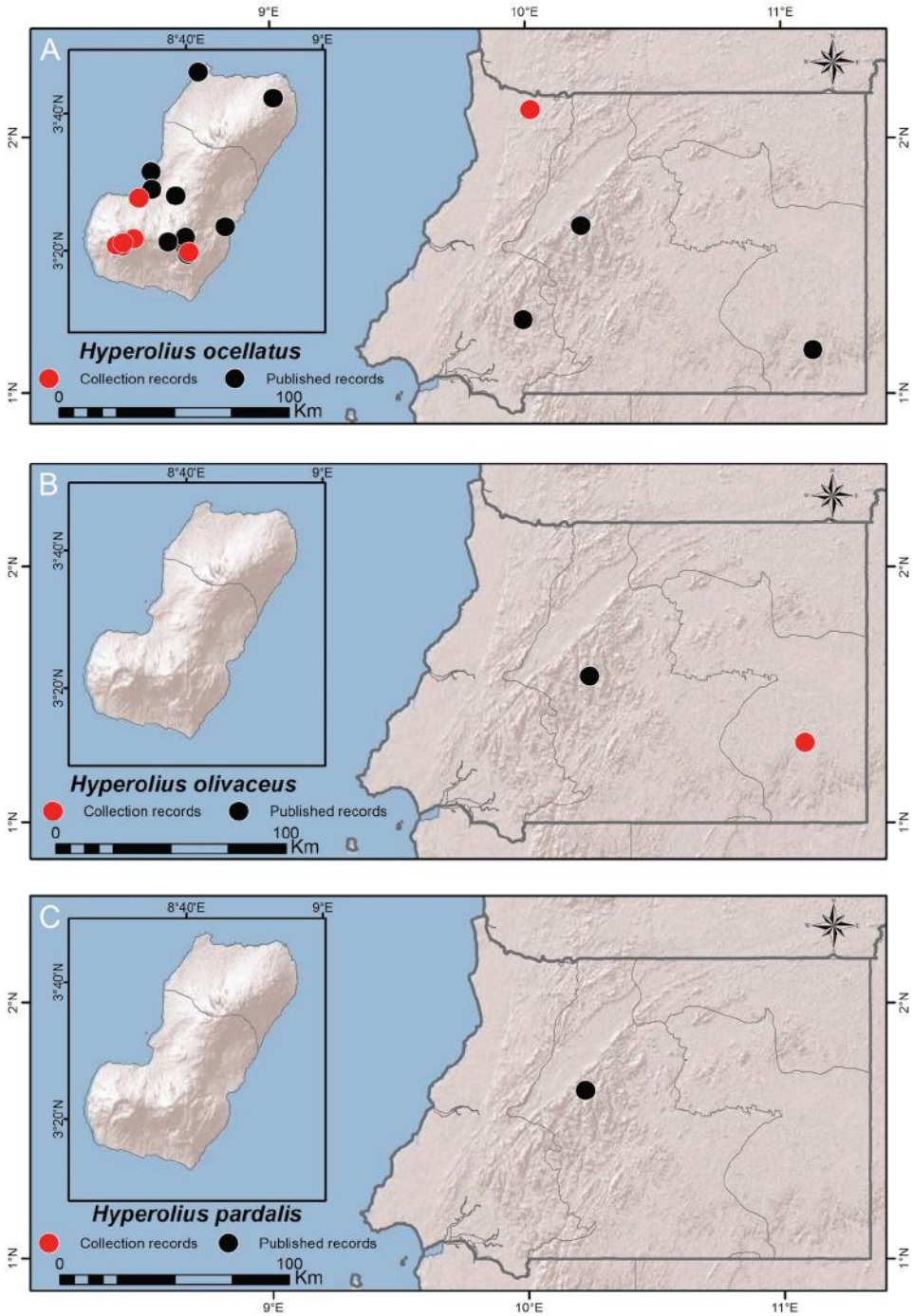
MAPS 14A–C. Distribution maps for Equatorial Guinean records of (A) *Conraua goliath*; (B) *Acanthixalus spinosus*; (C) *Afrixalus dorsalis*.



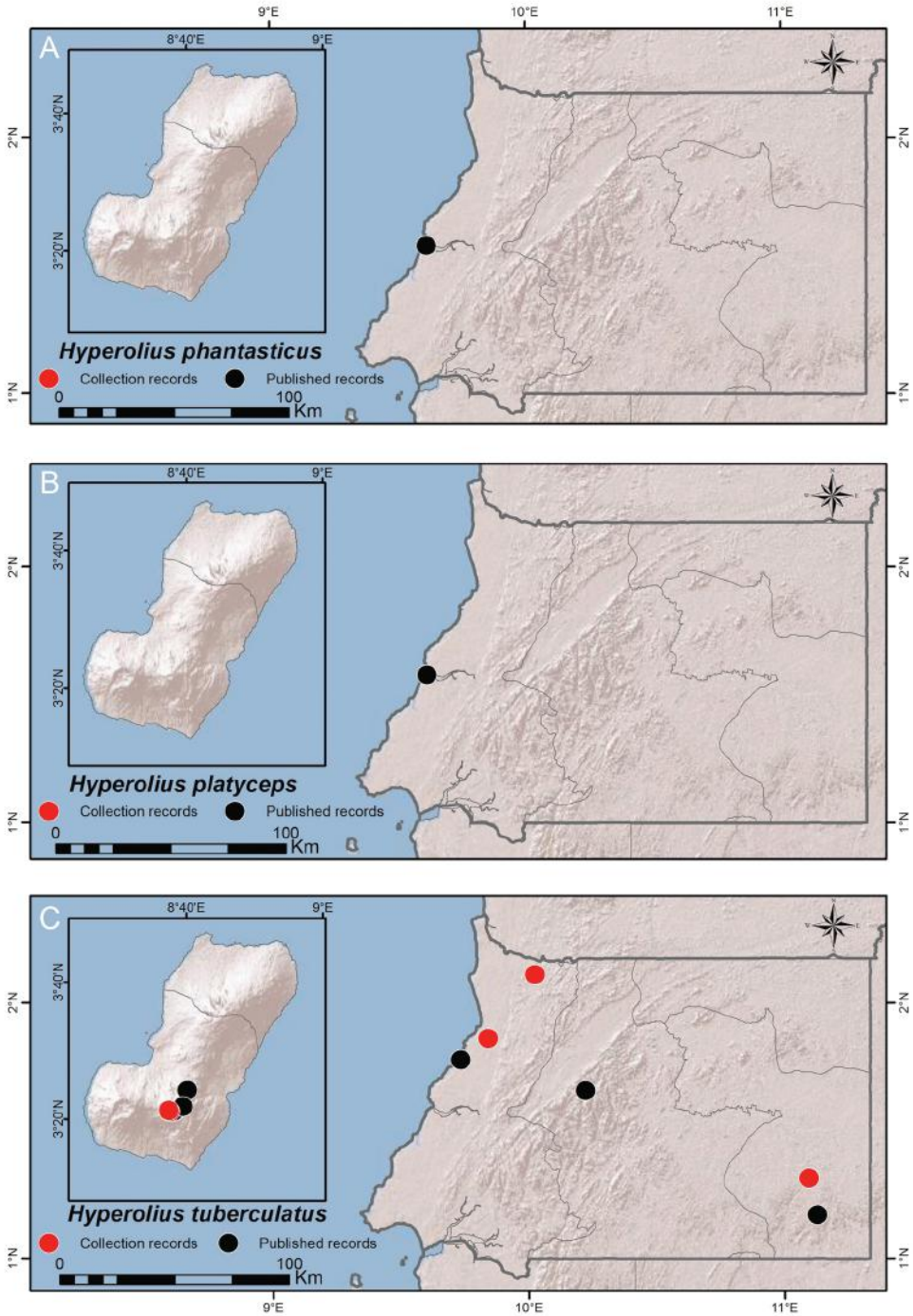
MAPS 15A–C. Distribution maps for Equatorial Guinean records of (A) *Afrixalus fulvovittatus*; (B) *Afrixalus laevis*; (C) *Afrixalus osorioi*.



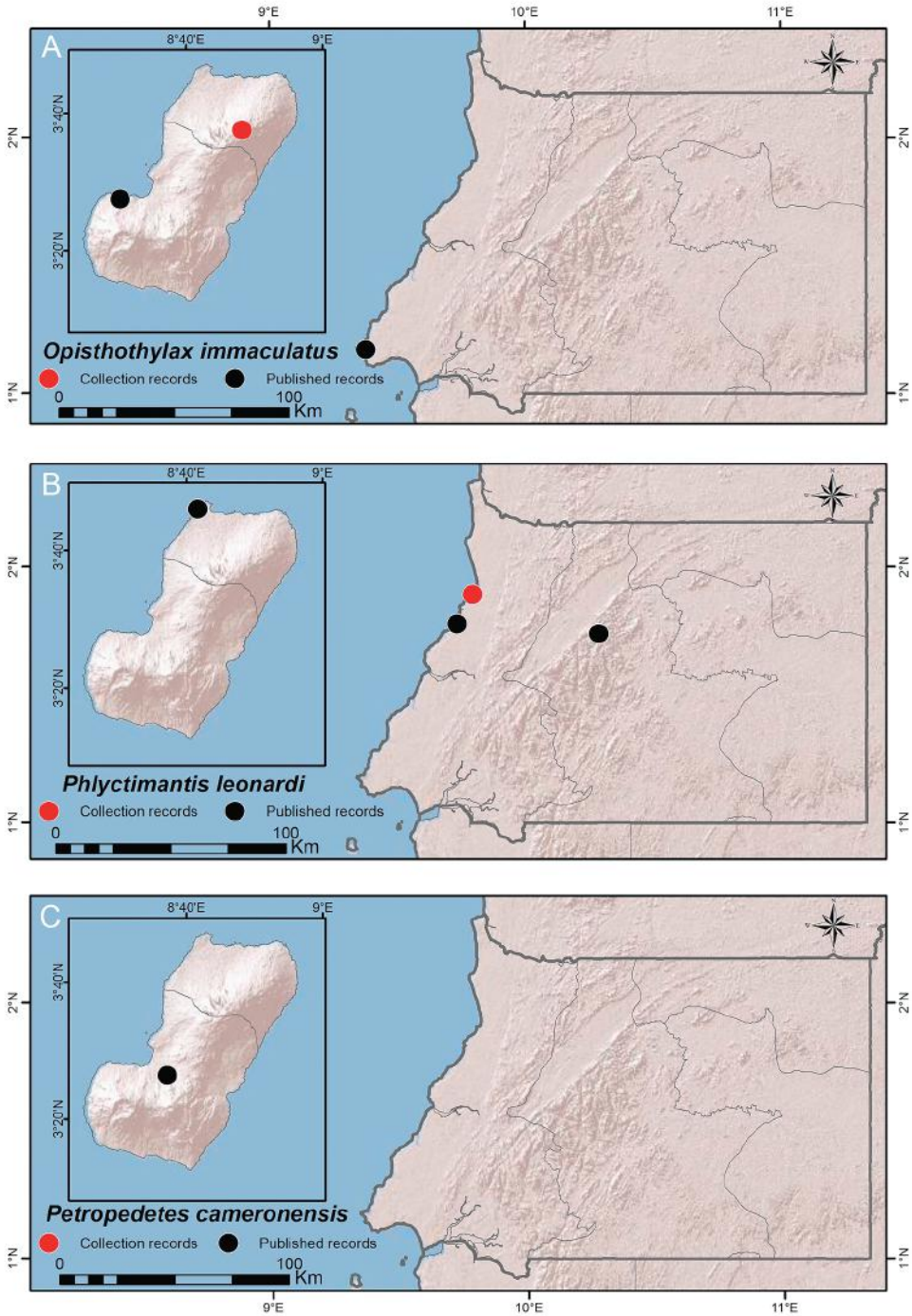
MAPS 16A–C. Distribution maps for Equatorial Guinean records of (A) *Afrixalus paradorsalis*; (B) *Alexteroon obstetricans*; (C) *Cryptophylax greshoffii*.



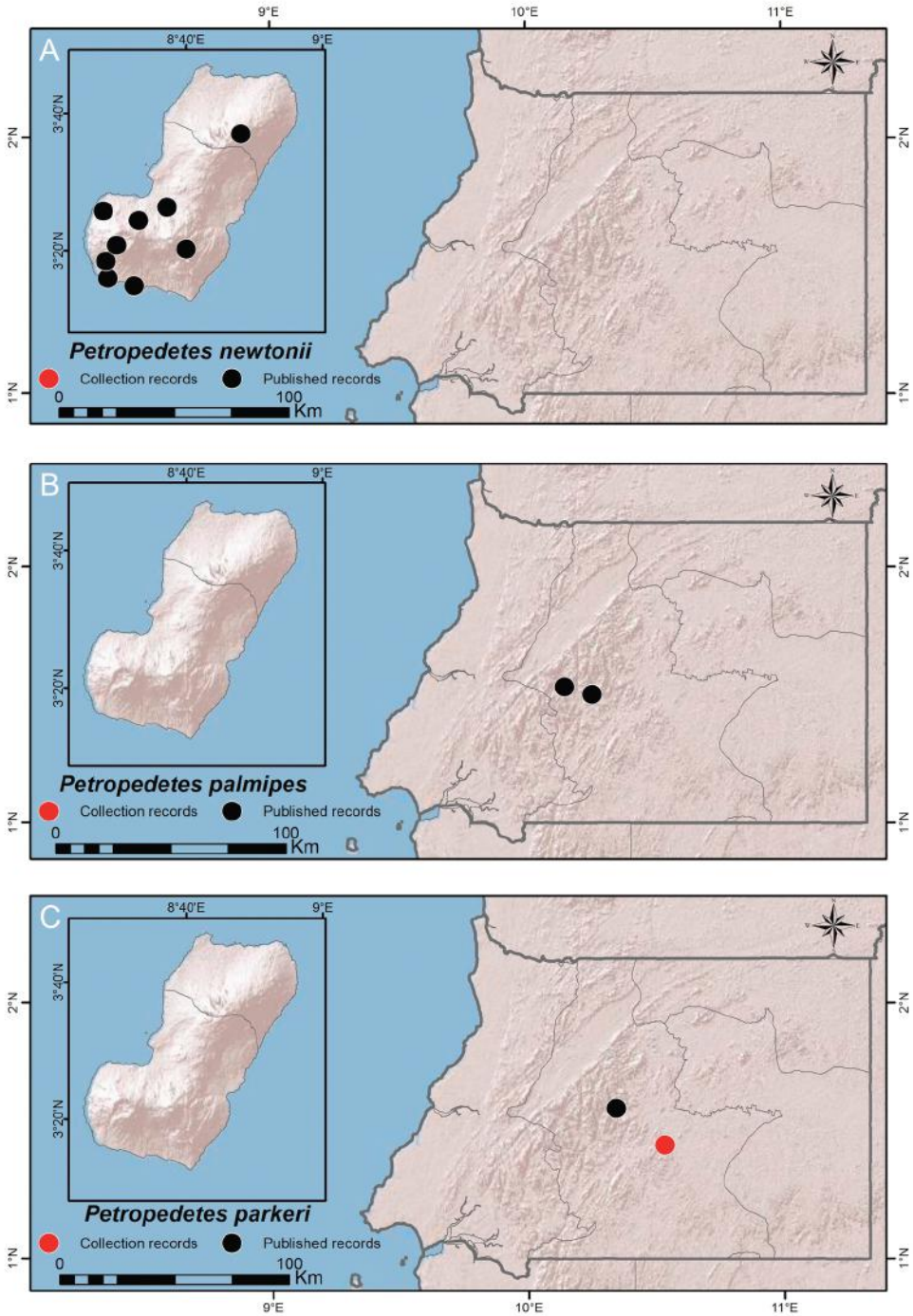
MAPS 17A–C. Distribution maps for Equatorial Guinean records of (A) *Hyperolius ocellatus*; (B) *Hyperolius olivaceus*; (C) *Hyperolius pardalis*.



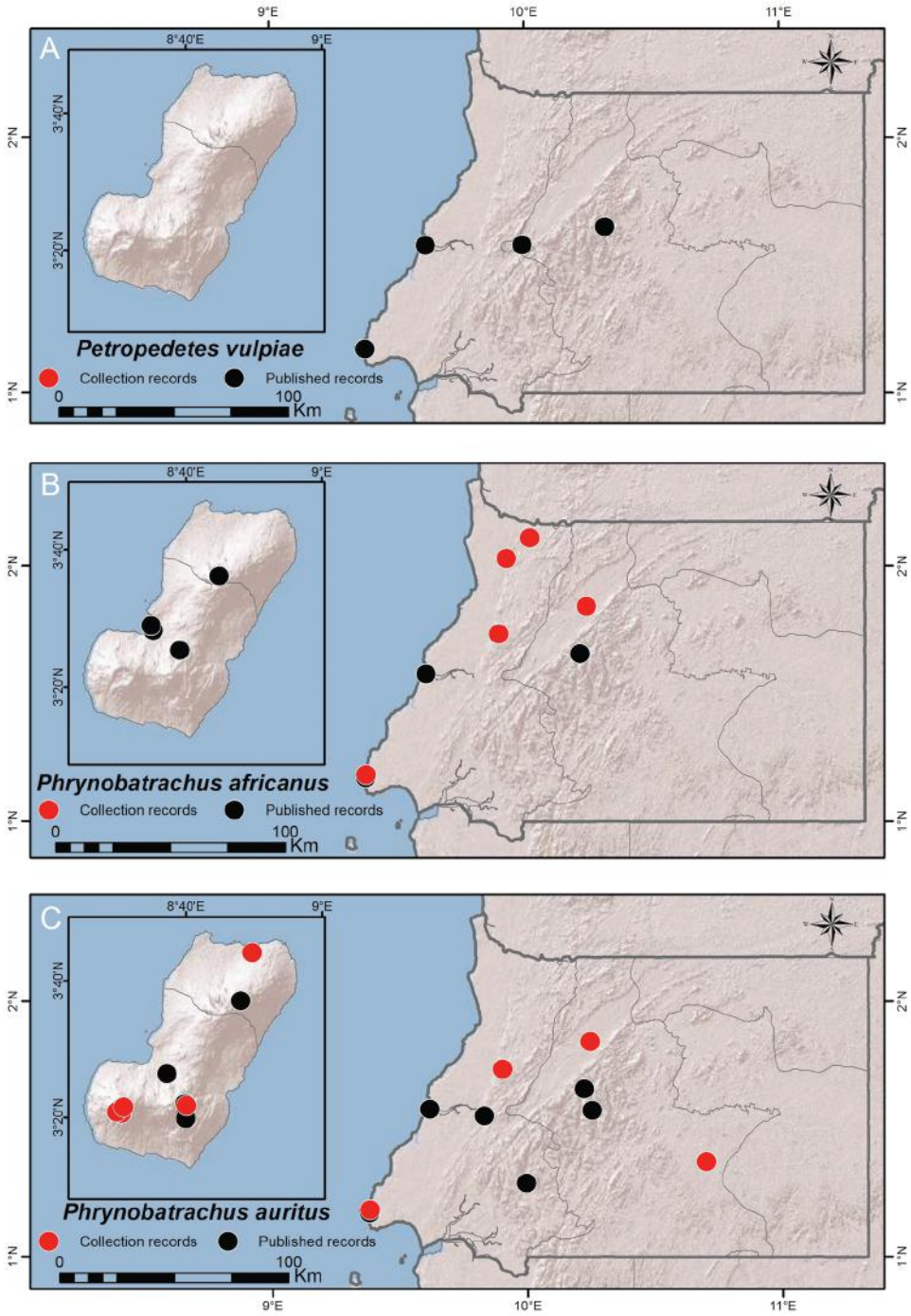
MAPS 18A–C. Distribution maps for Equatorial Guinean records of (A) *Hyperolius phantasticus*; (B) *Hyperolius platyceps*; (C) *Hyperolius tuberculatus*.



MAPS 19A–C. Distribution maps for Equatorial Guinean records of (A) *Opisthothylax immaculatus*; (B) *Phlyctimantis* cf. *leonardi*; (C) *Petropedetes cameronensis*.

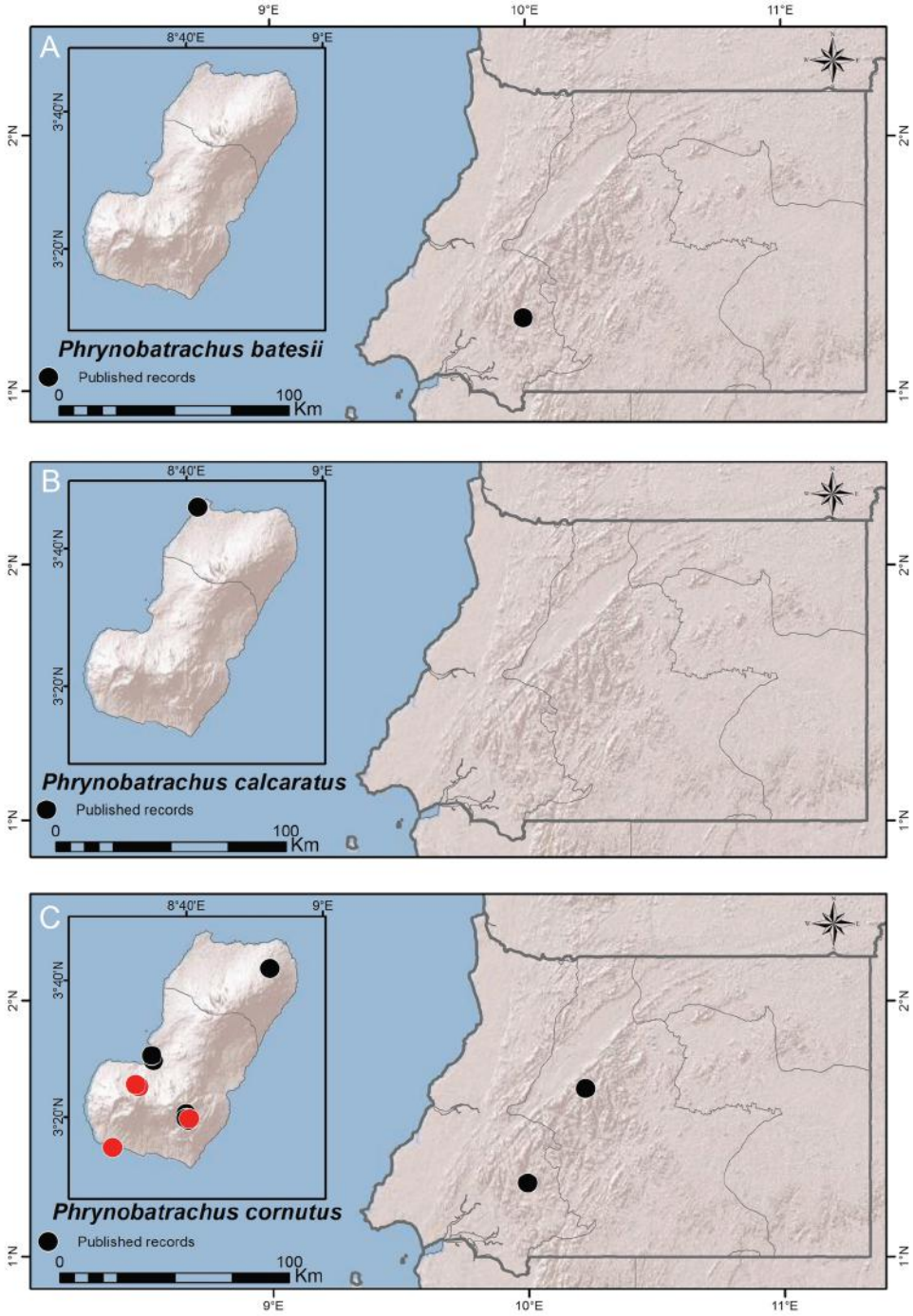


MAPS 20A–C. Distribution maps for Equatorial Guinean records of (A) *Petropedetes newtonii*; (B) *Petropedetes palmipes*; (C) *Petropedetes parkeri*.

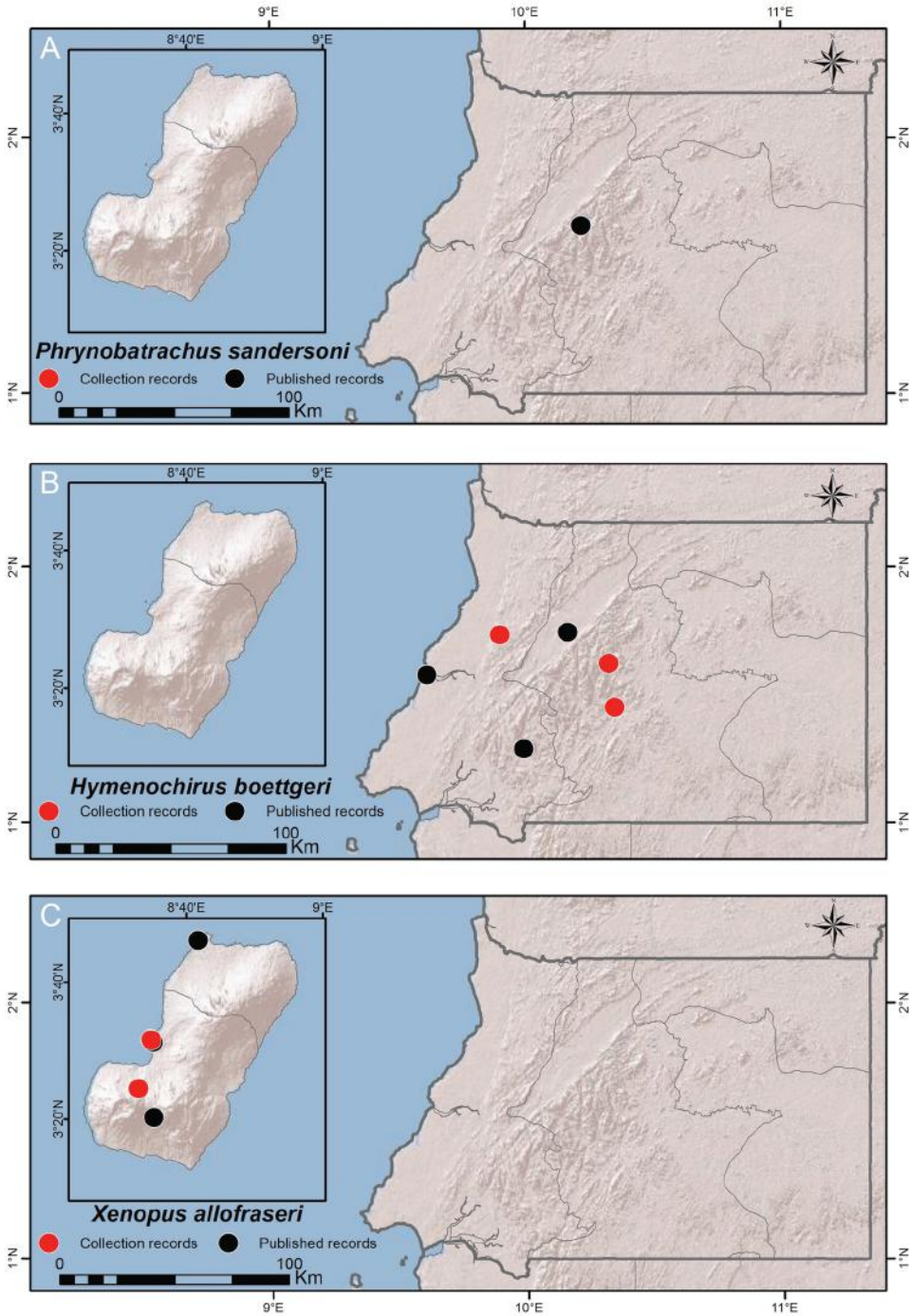


MAPS 21A–C. Distribution maps for Equatorial Guinean records of (A) *Petropedetes vulpiae*; (B) *Phrynobatrachus africanus*; (C) *Phrynobatrachus auritus*.

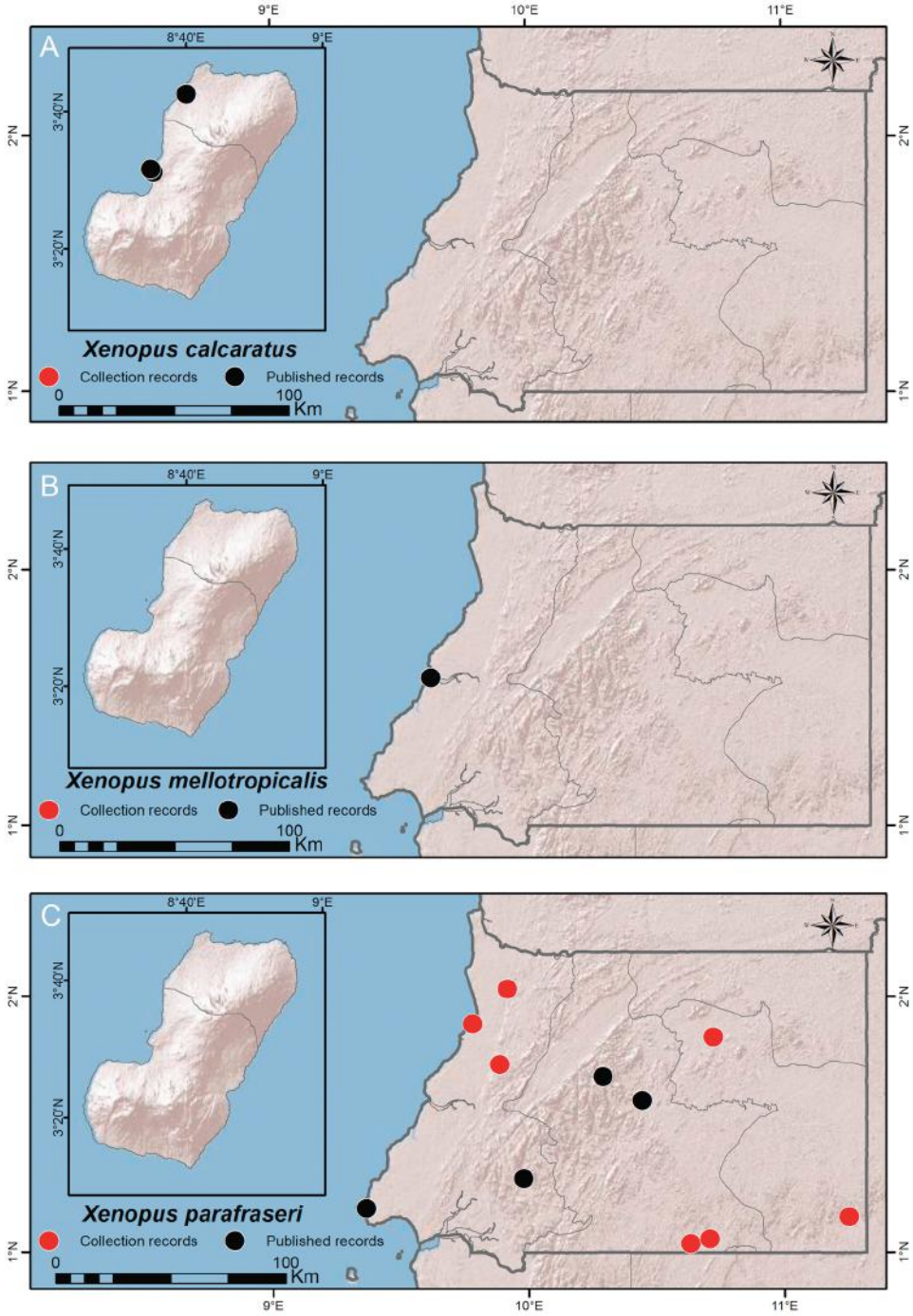




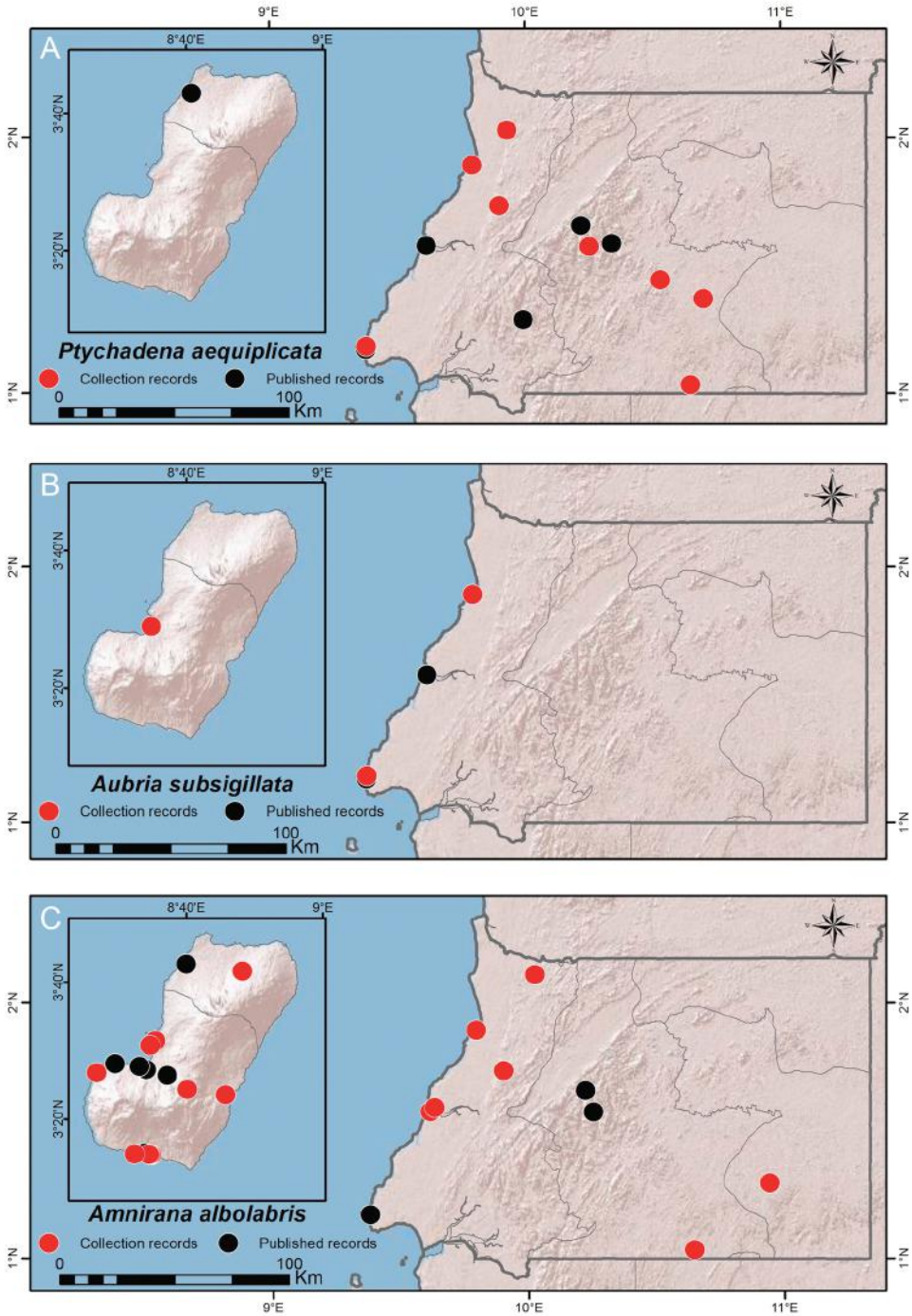
MAPS 22A–C. Distribution maps for Equatorial Guinean records of (A) *Phrynobatrachus batesii*; (B) *Phrynobatrachus calcaratus*; (C) *Phrynobatrachus cornutus*.



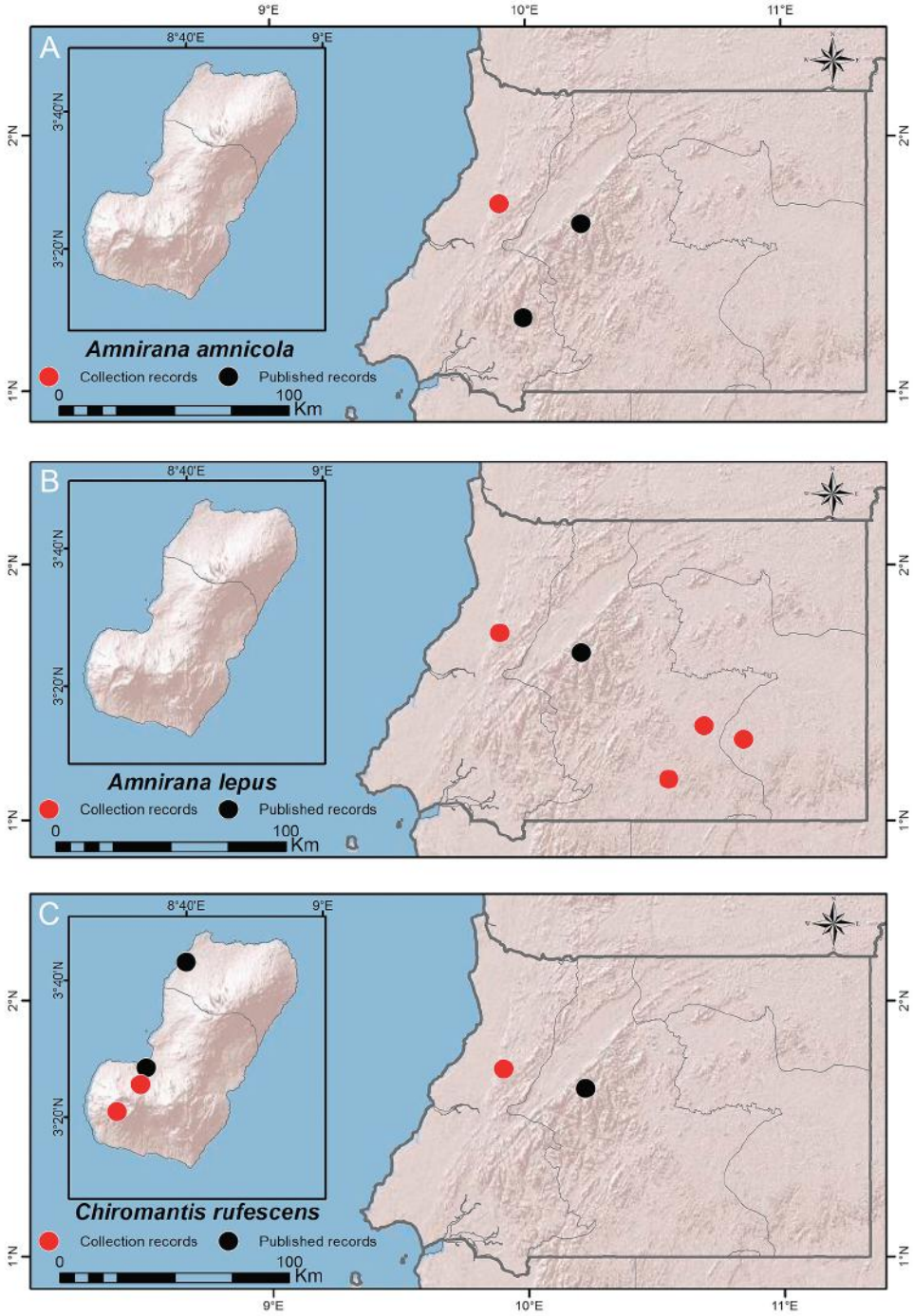
MAPS 23A–C. Distribution maps for Equatorial Guinean records of (A) *Phrynobatrachus sandersoni*; (B) *Hymenochirus boettgeri*; (C) *Xenopus allofraseri*.



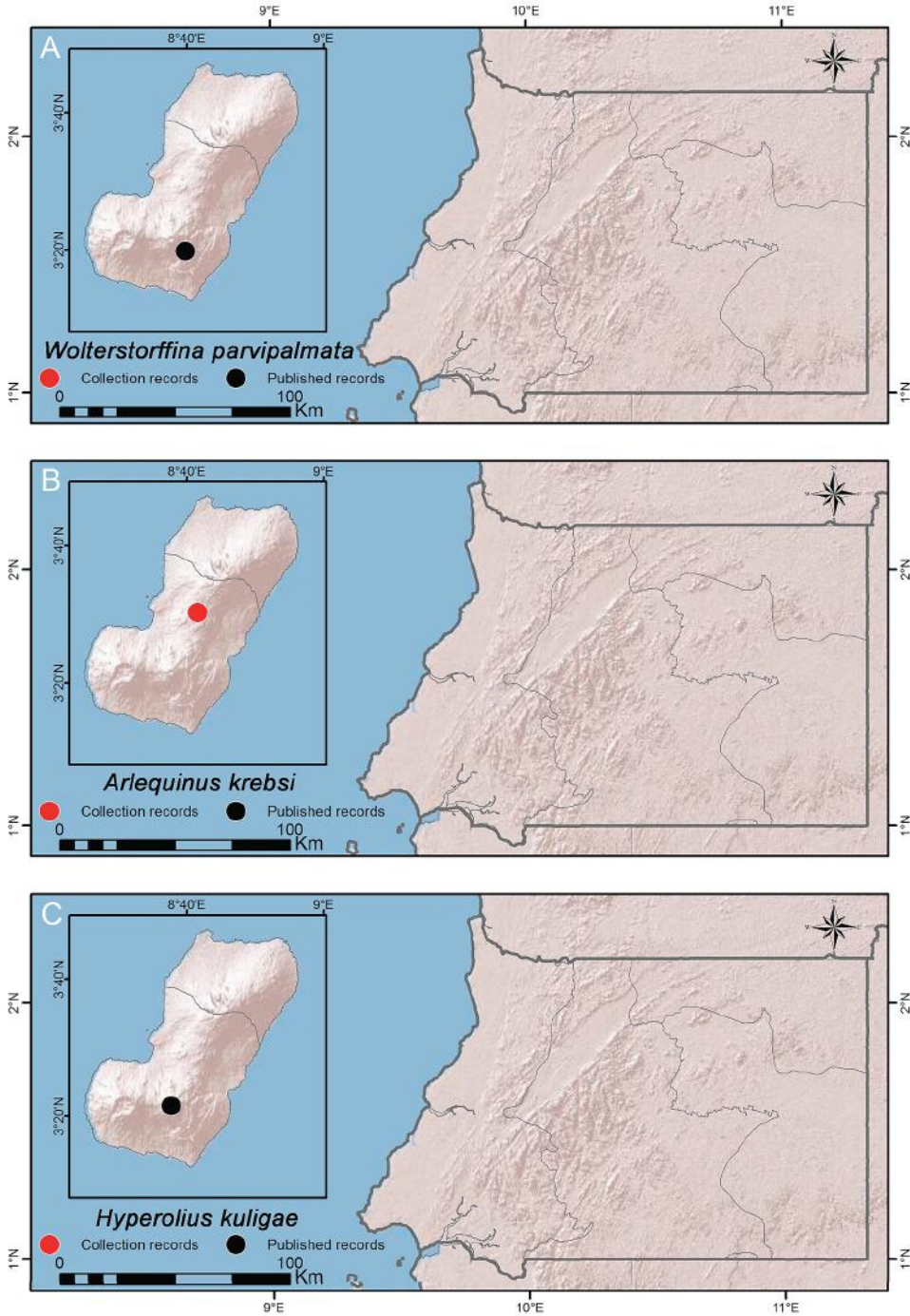
MAPS 24A–C. Distribution maps for Equatorial Guinean records of (A) *Xenopus calcaratus*; (B) *Xenopus mellotropicalis*; (C) *Xenopus parafraseri*.



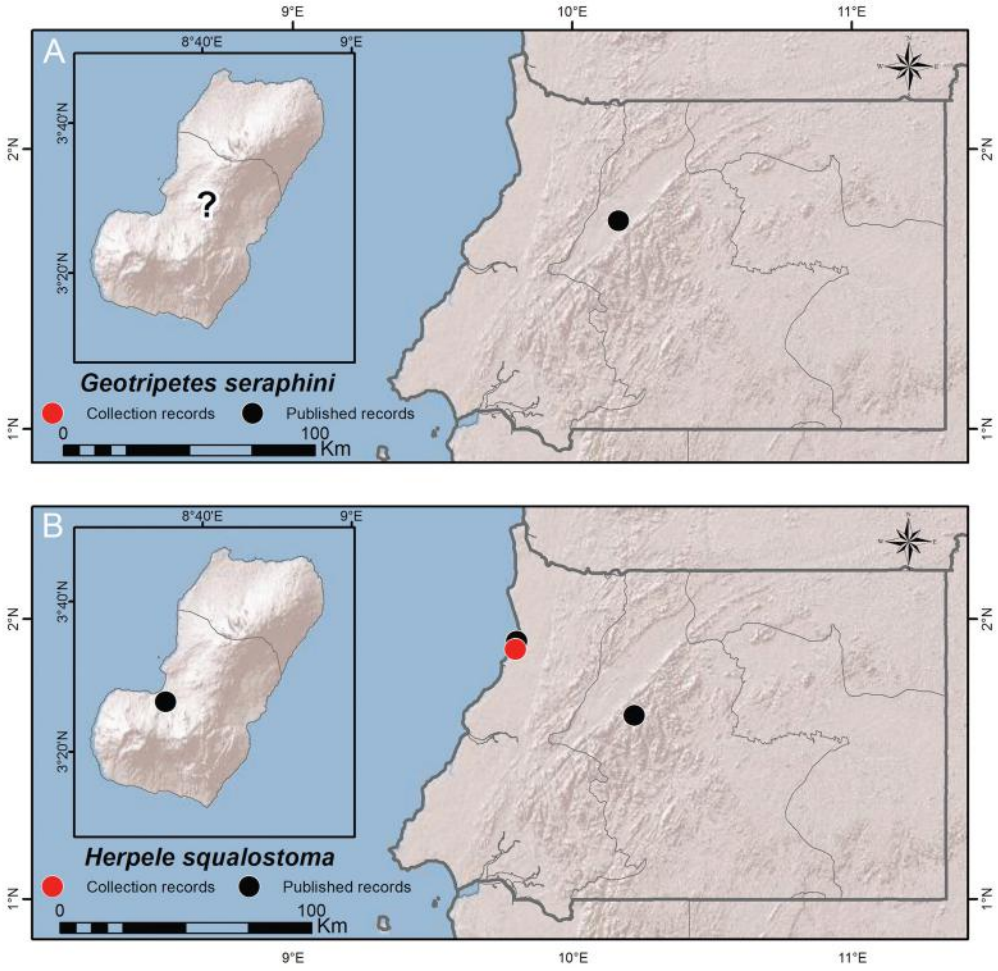
MAPS 25A–C. Distribution maps for Equatorial Guinean records of (A) *Ptychadena aequiplicata*; (B) *Aubria subsigillata*; (C) *Ammirana albolabris*.



MAPS 26A–C. Distribution maps for Equatorial Guinean records of (A) *Amnirana amnicola*; (B) *Amnirana lepus*; (C) *Chiromantis rufescens*.



MAPS 27A–C. Distribution maps for Equatorial Guinean records of (A) *Wolterstorffina parvipalmata*; (B) *Arlequinus krebsi*; (C) *Hyperolius kuligae*.



MAPS 28A–C. Distribution maps for Equatorial Guinean records of (A) *Geotripetes seraphini*; (B) *Herpele squalostoma* (the insular record of Elobey Island is not shown).