

Notes on the herpetofauna of western Bas-Congo, Democratic Republic of the Congo

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Abstract. Data deficiency in tropical regions is still a major problem in herpetofaunistic research. During the last few years we conducted several field expeditions to Central Africa, including the Congo Basin. In 2012 we visited four sites in the westernmost part of the Democratic Republic of the Congo. These included the Mangroves National Park in the region of the Congo River estuary as well as the Mayombe region characterized by low mountains covered by rainforest, all north of the Congo River, and an additional site south of the Congo River with savannah habitats. Remarkably, no recent herpetological research was done in this part of the country. We surveyed a wide spectrum of habitats including mangroves, savannah, forests, village surroundings and agricultural sites. Approximately 22 species (or representatives of species complexes) of amphibian and 23 species of reptile have been recorded.

Key words. Anura, checklist, mangroves, Mayombe, Squamata, Testudines

Introduction

While we have fairly comprehensive knowledge on the herpetofauna of Europe, North America and some other temperate zones of the Earth, data deficiency in tropical regions is still a major problem in herpetofaunistic research. According to a recent global assessment on reptiles' conservation, "data deficiency was particularly pronounced in tropical regions, specifically in parts of the Indomalayan realm [...] and Central Africa" (Böhm

et al., 2013). We do think that this statement can very likely be extended to amphibians. In fact, very few recent faunistic surveys have been conducted in Central Africa, especially the Congo Basin, partly due to the lack of infrastructure and political instability (Kielgast and Lötters, 2011). **Since 2010, our team accomplished** herpetological field work in various parts of the Democratic Republic of the Congo (DRC). In 2012, we surveyed DRC's westernmost regions, in the province Bas-Congo. Biogeographically, this region is constituted by a mix of different vegetation zones and habitats. Among others it includes the southernmost part of the Atlantic Equatorial Coastal Forests, parts of the western Congolian Forest-Savannah Mosaic (following widely used definitions of ecoregions: Bailey, 1998; Burgess et al., 2004), DR Congo's only coastline and mangroves habitats (the ecoregion Central African Mangroves), and the mouth of the Congo River. The westernmost part is a protected area since 1992. The Mangroves National Park is also one of the three Ramsar sites in DRC. It has a surface of only 768 km², but includes unique aquatic and wetland habitats, and the brackish water hosts a unique fauna. On the other hand, however, Bas-Congo's human population is relatively large and keeps growing (currently > 4.5 million people living on ca. 54,000 km², www.congocentral.net), which fact is inevitably associated with an increasing surface of semi-disturbed and disturbed habitats. Remarkably, no herpetological

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survey has been conducted in this part of the country in recent times. In general, available literature relevant to the (western) Congolese herpetofauna is modest: beside 'classical' works of Schmidt (1919, 1923) and Noble (1924), a few recent books exist covering specific taxa or regions; e.g. Schiøtz (1999) about treefrogs, Chippaux (2006) about snakes, or Chirio and LeBreton (2007) and Pauwels and Vandeweghe (2008) about the reptiles of Cameroon and Gabon, respectively, or a very recent book by Frétey *et al.* (2012) on Central African amphibians with special focus on Gabon and continental Equatorial Guinea.

Material and methods

A two-week herpetological survey in the Democratic Republic of the Congo (DRC) was conducted between 8 and 24 June 2012 as part of a capacity building project, led by the first author and supported by the Global Taxonomy Initiative. We have visited and surveyed four main sites in the westernmost part of the country, in the province Bas-Congo. These included the Mangroves National Park, zone A (A) and zone B (B) in the region of the mouth of the Congo River as well as the Mayombe region (M), all north of the Congo River, and surroundings of Nkamuna village in the savannah south of the Congo River (N). We had base camps in Kimwabi (A; S06.002° E12.578°), Muanda, situated on the Atlantic coast (B; S05.926° E12.335°), Luango-Nzambi (B; S05.873° E12.813°), Tsumba-Kituti (M; S05.658° E13.194°), and in a forested site within the Luki Biosphere Reserve (M; S05.617° E13.159°). Some additional material was obtained from the Nkamuna village (N; S05.769° E13.919°). Regular visual and acoustic encounter surveys (Heyer *et al.*, 1994) were carried out during day and night in order to collect amphibian and reptile specimens. Collected specimens were photographed alive and afterwards euthanized. Subsequently, tissue samples were taken for molecular genetic studies. Voucher specimens were preserved in 70% ethanol and they are deposited in the Royal Belgian Institute of Natural Sciences (RBINS) in Brussels. Tissue samples were stored in absolute ethanol in 2D-barcode plastic vials (Abgene Smart Scan 2ml vials, Thermo Scientific).

Results and discussion

June 2012 in this region was characterized by unusually dry conditions. The rainy season unexpectedly ended over a month before our survey, hence the number and

water level of temporary water bodies had diminished in the meantime. Also, we spent a very short period in the field (ca. 10 field days), and therefore we had limited possibilities to conduct extensive surveys or work in remote areas. Nevertheless, we surveyed a wide spectrum of habitats including mangroves, streams, savannah, forests, village surroundings and agricultural sites (Fig. 1). Approximately 22 species or species complexes of amphibian and 23 species of reptile have been recorded (listed below; see examples in Figs. 2 and 3, respectively). Especially, snakes were found to be relatively diverse: during this short field survey 14 species of snake were observed. Most of the recorded specimens represented widespread species, such as both species complexes of the toad (*Amietophrynus maculatus*, *A. regularis*), *Hoplobatrachus occipitalis*, *Hyperolius cinnamomeiventris*, but also *Crotaphopeltis hotamboeia*, *Dendroaspis jamesoni*, *Hapsidophrys smaragdina*, *Bitis arietans*, *Causus maculatus* and *Naja melanoleuca*. Specimens and genetic samples of those will serve as important source for ongoing or future comparative analyses to better understand these amphibians and reptiles. We also found representatives of species with rather limited distribution range, for example *Panaspis cabindae*, a small-sized and less known skink species, that is the type species of its genus, and therefore crucial for any taxonomic work on its allies.

Although the below presented list of species is far from being complete, we think it may serve as a baseline for future studies. Species names are followed by a list of voucher specimens identified by field numbers. Specimens are grouped by localities.

ANURA

Arthroleptidae

Arthroleptis cf. sylvaticus (Laurent, 1954)

M: Luki: PM087, PM095-PM103, PM143, PM144

Bufonidae

Amietophrynus maculatus (Hallowell, 1854) complex

A: Kimwabi: PM002-PM006; B: Muanda: PM018, PM019, PM036, PM037, PM039-PM042; M: Tsumba-Kituti: PM120

Amietophrynus regularis (Reuss, 1833) complex

B: Luango-Nzambi: PM021, PM062, PM063; N: Nkamuna: PM128, PM129, PM141



Figure 1. Some habitat types visited in the Bas-Congo. A: Mangroves National Park, close to the mouth of the Congo River; B: Congo River in dry season; C: disturbed habitat on the margin of the Luki Biosphere Reserve, Mayombe; D: the village Tumba-Kituti village, surrounded by farmland bush and disturbed forests.

Dicroglossidae

Hoplobatrachus occipitalis (Günther, 1858)

B: Muanda: photo voucher; B: Luango-Nzambi: PM045

Hemisotidae

Hemisus cf. *guineensis* Cope, 1865

M: Tumba-Kituti: PM115; N: Nkamuna: PM135-PM137

Hyperoliidae

Afrixalus paradorsalis Perret, 1960

B: Luango-Nzambi: PM048, PM054

Hyperolius adspersus Peters, 1877

B: Luango-Nzambi: PM142

Hyperolius cf. *cinnamomeoventris* Bocage, 1866

B: Muanda: PM034, PM035, PM043, PM044; B: Luango-Nzambi: PM055-PM059; M: Tumba-Kituti: PM064

Hyperolius parallelus Günther, 1858

B: Luango-Nzambi: PM051

Hyperolius tuberculatus (Mocquard, 1897)

B: Luango-Nzambi: PM052, PM053

Phrynobatrachidae

Phrynobatrachus auritus Boulenger, 1900

M: Luki: PM082, PM093, PM094

Phrynobatrachus sp. aff. *cornutus*

M: Luki: PM083, PM084, PM088, PM090-PM092

Pipidae

Hymenochirus sp. aff. *feae*

M: Luki: PM089, PM111, PM112

Xenopus (*Silurana*) sp.

M: Luki: PM106; M: Tumba-Kituti: PM119

Xenopus cf. *fraseri* Boulenger, 1905

M: Luki: PM107, PM110, PM113, PM114

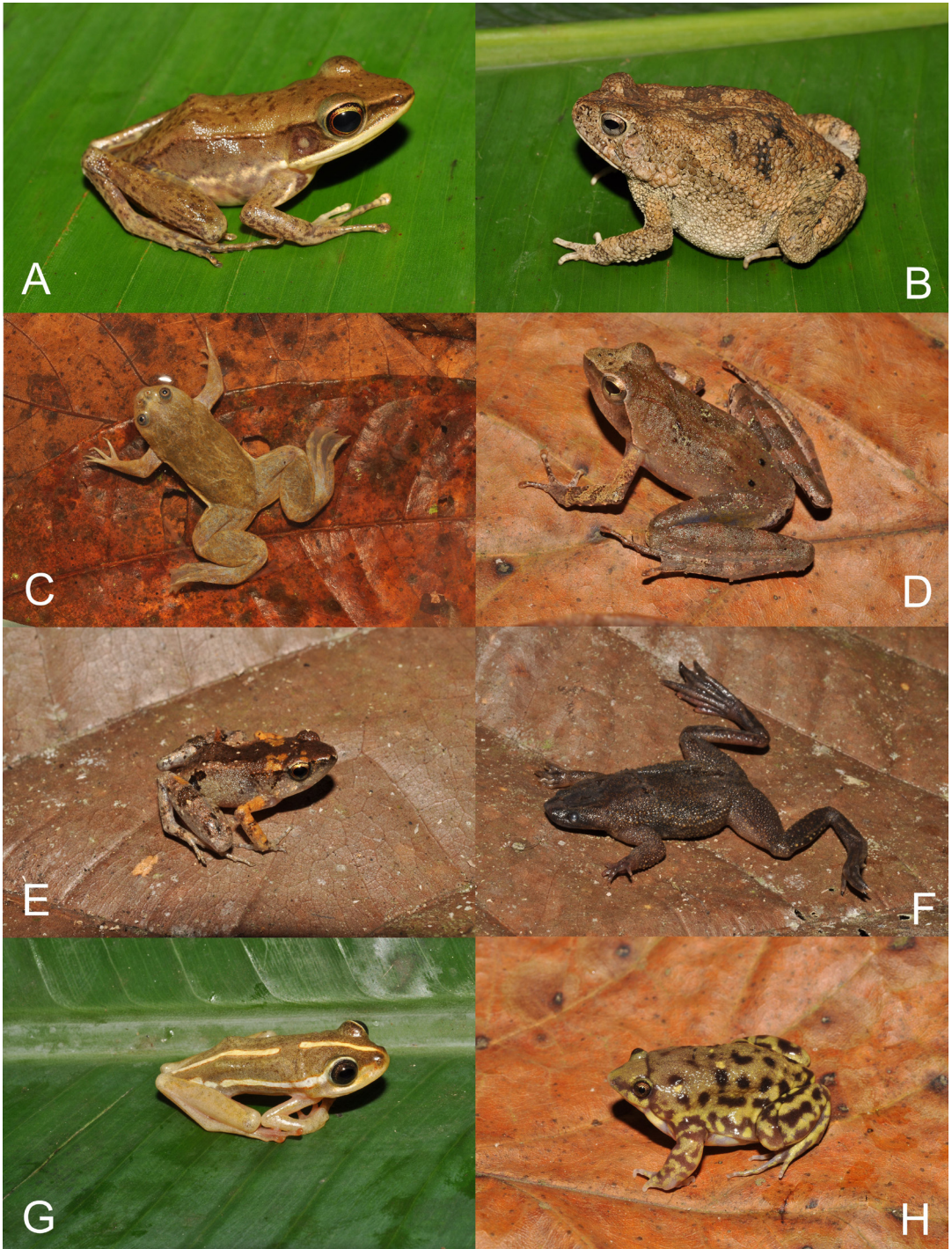


Figure 2. Some amphibians collected in the Bas-Congo. A: *Hylarana albolabris* (PM023) B: *Amietophrynus maculatus* (PM041); C: *Xenopus laevis* (PM086); D: *Phrynobatrachus auritus* (PM094); E: *Arthroleptis* cf. *sylvaticus* (PM087); F: *Hymenochirus* sp. aff. *feae* (PM089); G: *Hyperolius parallelus* (PM051); H: *Hemisus* cf. *guineensis* (PM115).

Xenopus laevis (Daudin, 1802)

M: Luki: PM085, PM086, PM108, PM109; M: Tsumba-Kituti: PM118

Pyxicephalidae

Amietia angolensis (Bocage, 1866)

M: Tsumba-Kituti: PM065, PM122

Ptychadenidae

Ptychadena cf. *aequiplicata* (Werner, 1898)

B: Luango-Nzambi: PM047

Ptychadena cf. *oxyrhynchus* (Smith, 1849)

B: Muanda: PM029

Ptychadena sp.

N: Nkamuna: PM138

Ptychadena cf. *perreti* Guibé & Lamotte, 1958

N: Nkamuna: PM139, PM140

Ranidae

Hylarana albolabris (Hallowell, 1856)

B: Muanda: PM022-PM027; B: Luango-Nzambi: PM046; M: Luki: PM081; M: Tsumba-Kituti: PM121

SQUAMATA

Agamidae

Agama cf. *agama* (Linnaeus, 1758)

B: Luango-Nzambi: PM031; M: Sosepi (S05.658° E13.183°): PM060, PM061; M: Tsumba-Kituti: PM075

Chamaeleonidae

Chamaeleo cf. *dilepis* Leach, 1819

M: Tsumba-Kituti: photo voucher

Gekkonidae

Hemidactylus mabouia (Moreau de Jonnés, 1818)

B: Muanda: PM009, PM010, PM017, PM028; M: Tsumba-Kituti: PM069-PM072; N: Nkamuna: PM130, PM131

Hemidactylus muriceus Peters, 1870

M: Luki: PM105

Gerrhosauridae

Gerrhosaurus nigrolineatus Hallowell, 1857

B: Luango-Nzambi: PM013; N: Nkamuna: PM127

Lacertidae

Poromera fordii (Hallowell, 1857)

M: Luki: PM104

Scincidae

Feylinia currori Grey, 1845

M: Tsumba-Kituti: PM077, PM116

Panaspis cabindae (Bocage, 1866)

B: Luango-Nzambi: PM049, PM050, PM066, PM067; N: Nkamuna: PM132

Colubridae

Crotaphopeltis hotamboeia (Laurenti, 1768)

B: Numero (S05.81° E12.81°): PM073; M: Tsumba-Kituti: PM074

Hapsidophrys smaragdina (Schlegel, 1837)

A: Kimwabi: PM001

Natriciteres olivacea (Peters, 1854)

B: Kanzi (S05.82° E12.77°): PM020

Philothamnus dorsalis (Bocage, 1866)

B: Luango-Nzambi: PM124

Elapidae

Dendroaspis jamesoni (Traill, 1843)

A: unnamed island (S05.997° E12.612°): not collected; M: Sosepi (S05.657° E13.185°): PM068

Elapsoidea sp.

B: Luango-Nzambi: PM038

Naja melanoleuca Hallowell, 1857

A: Kimwabi: PM030

Lamprophiidae

Gonionotophis brussaui (Mocquard, 1889)

M: Tsumba-Kituti: PM080

Boaedon sp.

B: Kanzi (S05.82° E12.77°): PM123; C: Tsumba-Kituti: PM078

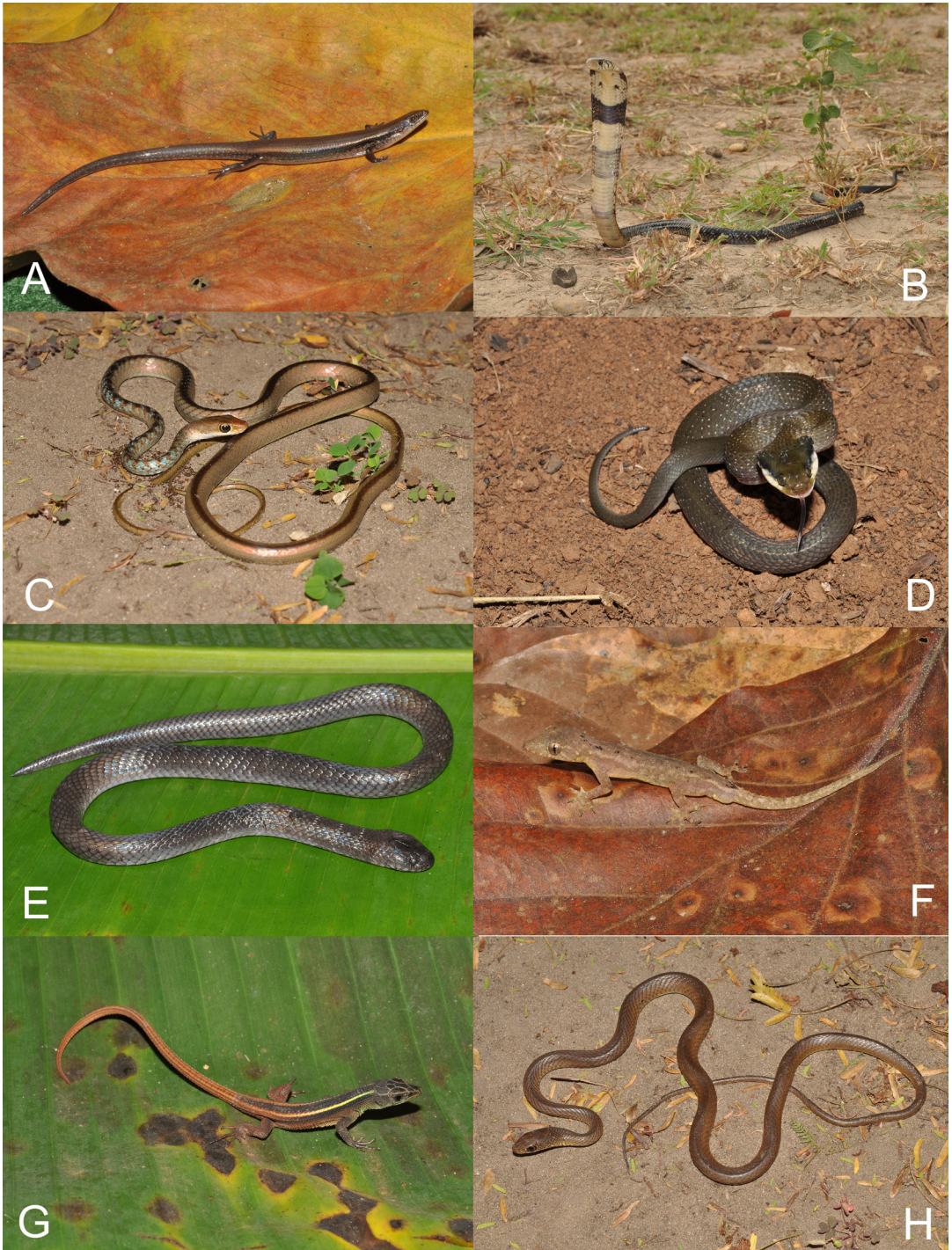


Figure 3. Examples of reptile specimens recorded and collected in the Bas-Congo. A: *Panaspis cabindae* (PM050); B: *Naja melanoleuca* (PM030); C: *Philothamnus dorsalis* (PM124); D: *Crotaphopeltis hotamboeia* (PM074); E: *Elapsoidea* sp. (PM038); F: *Hemidactylus muriceus* (PM105); G: *Poromera fordii* (PM104); H: *Psammophis phillipsi* (PM126).

Psammodromus phillipsi (Hallowell, 1844)

N: Nkamuna: PM126

Leptotyphlopidae

Leptotyphlops sp.

M: Tsumba-Kituti: PM079

Pythonidae

Python sebae (Gmelin, 1789)

A: Malela (S05.98° E12.61°): **photo voucher**

Viperidae

Bitis arietans (Merrem, 1820)

B: Numero (S05.81° E12.81°): PM033

Causus maculatus (Hallowell, 1842)

B: Numero (S05.81° E12.81°): PM032, PM125

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Cheloniidae

Chelonia mydas (Linnaeus, 1758)

B: Muanda (photo voucher)

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