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Herpetological Survey of Cangandala National Park, with a Synoptic List of the Amphibians and Reptiles of Malanje Province, Central Angola

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Angola is one of the most poorly known sub-Saharan African countries in terms of its biodiversity, in large part due the violent armed conflicts that afflicted the country from 1961 to 2002. However, in recent years, several expeditions and ongoing studies have been carried out, uncovering previously unknown cryptic diversity, new country records, and expanding known distributions of species considerably (Conradie et al. 2012a,b; Conradie et al. 2013; Ceríaco et al. 2014a; Ernst et al. 2014; Branch and Conradie 2015; Ernst et al. 2015; Ceríaco et al. 2016a; Conradie et al. 2016; Stanley et al. 2016; Branch et al. 2017). Despite this new wave of studies on Angolan herpetology, data are limited, even within national conservation areas. Angola currently has 16 protected areas, scattered across 11 of its 18 provinces, and covering an area of 145,859 km^2, approximately 12% of the Angolan territory. Conservation areas in the country are divided into four major categories: National Parks, Regional Parks, Nature Reserves, and Coutadas (Game Parks). The majority of these areas were created during the first half of the 20th century and into the 1970s, during Portuguese colonial times. Many of these areas were mostly dedicated to hunting and tourism, and their delimitation was almost exclusively based on the presence of game species and iconic megafauna to the neglect of other biological groups (see Frade 1959a, b).

Located in Malanje Province, Cangandala National Park (CNP) is the smallest of all Angolan National Parks, at roughly 630 km^2. Situated about 50 km south of Malanje city in the Cangandala Municipality, the park is limited to the north by the Cuije River, to the west by the Maúbi River, and to the south by the Cuque River, all part of the Kwanza Basin (Fig. 1). The park lies

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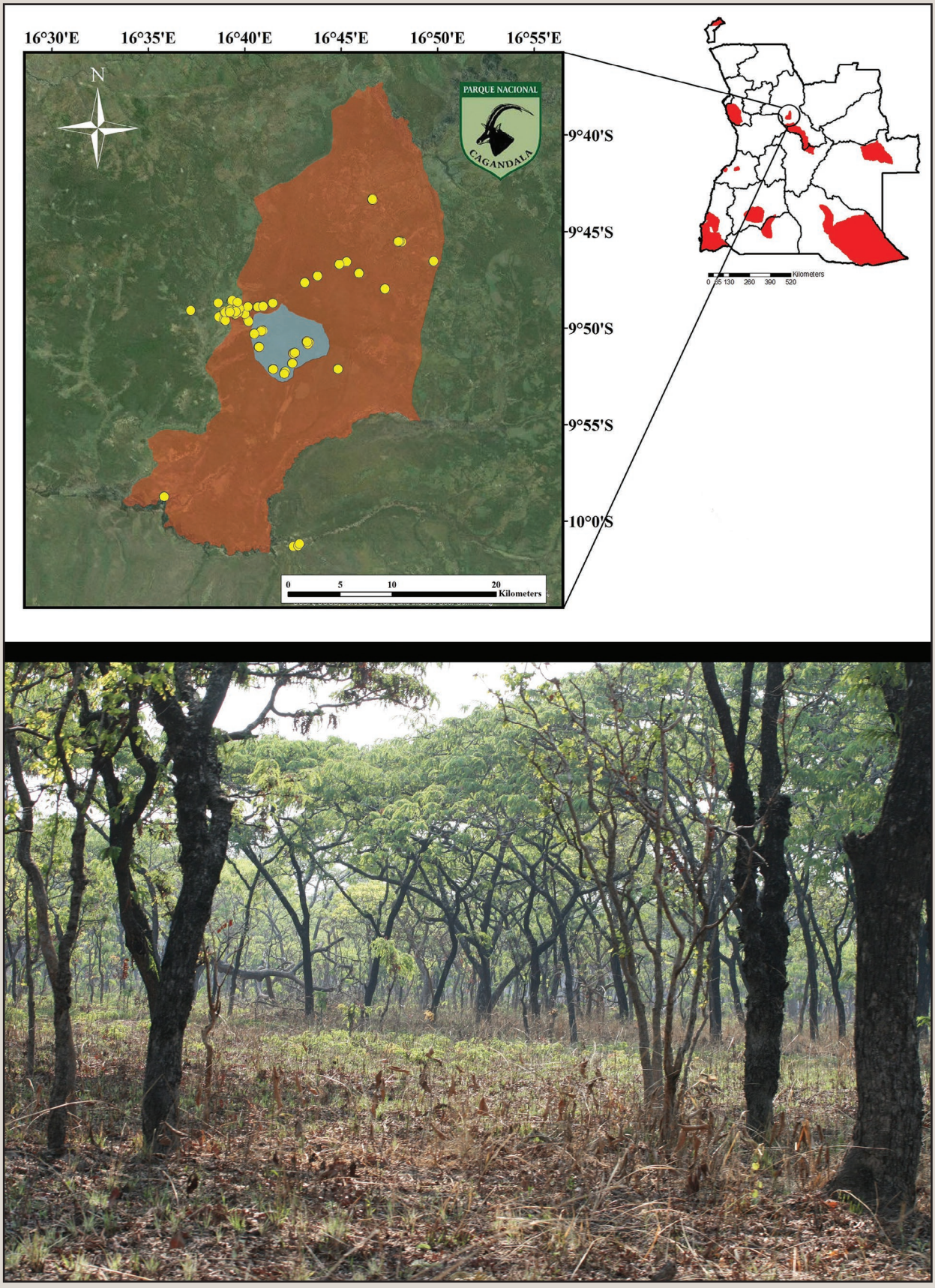

FIG. 1. Cangandala National Park map and collecting localities (yellow dots). The orange area represents the limits of the park, while the grey area represent the Giant Sable Special protection area, known as "Santuário." Below is a view of the Miombo Woodlands habitat, the dominant habitat in Cangandala National Park.

at an approximate elevation of 1000 m and its climate is similar to that of the Angolan central plateau. Its vegetation is mostly dominated by miombo woodlands (Fig. 1), with *Brachystegia wangermeeana*, *B. floribunda*, *Julbernardia paniculata*, *Erythrophleum africanum*, *Combretum* spp., and *Rhus* spp. growing on the red clay soils of the park (Grandvaux-Barbosa 1970). Some small riverine gallery forests also occur. The park was originally founded in 1963 as an "Integral Reserve," and only later, in June 1970, was reclassified as a National Park. The main objective of CNP since its foundation has been the protection to the Giant Sable Antelope, *Hippotragus niger variani* Thomas, 1916, one of Angola's most endangered endemic species, and now a national symbol. Despite CNP being one of the best-managed and funded conservation areas in the country, with the exception of reports on the Giant Sable and associated large mammals, the available published data on its biodiversity is limited to one checklist of the avifauna of the park (Mills et al. 2008). There are currently no available data regarding the diversity of amphibians and reptiles for CNP. However, Malanje Province is historically one of the most important provinces in terms of the development of current knowledge on Angolan herpetofauna (see section below). Approximately 35 species of amphibians and 68 species of reptiles are known from Malanje Province (Table 1), which represents approximately 30% and 25%, respectively, of the currently known numbers of these groups in Angola.

Biogeographically, the province represents one of the most obvious areas of faunal and habitat turnovers in the country (Crawford Cabral 1991; Marques et al., *in press*). Due to its boundaries and geographical position, the Province exhibits a north-south gradient of vegetation types, being dominated by Western Congolian Forest-Savannah Mosaic in the northern half, and by Angolan Miombo woodlands in the southern half (Romeiras et al. 2014; Rodrigues et al. 2015). This division is roughly associated with elevation, as the northern areas of the Province lie between 500–1000 m elevation, surrounded by higher ground (1000–1500 m) except along the Democratic Republic of Congo (DRC) border (Baixa de Cassanje), whereas the southern, Miombo-dominated half is on the Angolan plateau above 1000 m. This division also roughly corresponds to two different river drainage systems – the Congo-Casai in the north, and the Kwanza in the south. This contact zone is reflected in the associated faunal assemblies, particularly that of the herpetofauna.

This paper presents the results of an expedition conducted by a team from the California Academy of Sciences (CAS), San Francisco (USA), Villanova University (VU), Villanova (USA), Museu Nacional de História Natural e da Ciência (MUHNAC), Lisbon (Portugal) and the Instituto Nacional da Biodiversidade e Áreas de Conservação (INBAC), Kilamba-Kiaxi (Angola). A total of 33 herpetological taxa were collected, including putative new species, eight new provincial records, and new records for taxa rarely cited for the country. We provide a brief discussion of the present status and future prospects for the study of the herpetofauna of the province and the country. This was the second expedition to Angola under the memorandum of understanding signed by INBAC and international partners and has been included in the national biodiversity plan. The results of the first expedition to southwest Angola were published by Ceríaco et al. (2016a). Ceríaco et al. (2016b) published a booklet on the herpetofauna of CNP, written in Portuguese, chiefly for educational purposes and distributed almost exclusively in Angola, which presented preliminary results of the expedition but without taxonomic or specimen details. Thus, the current paper more fully presents the results of this expedition.

History of the Herpetological Exploration of the Province

Malanje Province can be considered the "birthplace" of Angolan herpetology. The Austrian naturalist Friedrich M. J. Welwitsch (1806–1872), appointed by the Portuguese Government to conduct a botanical expedition to Angola between 1853 and 1860, was the first to collect some herpetological material in the province. This material was sent to the British Museum where it was studied by Albert Günther (1830–1914), John Edward Gray (1800–1875), and George Albert Boulenger (1858–1937). One of the first herpetological species to be described from the country, *Dalophia* [currently *Monopeltis*] *welwitschii* Gray, 1865, was from Pungo Andongo in Malanje Province. Later, Günther (1888) described *Psammophis* [currently *Psammophylax*] *acutus* based on Welwitsch's material from this locality, and Boulenger described *Mabouia* [currently *Trachylepis*] *bocagii* (Boulenger, 1887) based on two specimens, one collected by Pinheiro Bayão in Duque de Brangança (currently Kalandula) and the other by Welwitsch collected at Pungo Andongo.

The Portuguese zoologist and director of the zoological section of the Natural History Museum in Lisbon, José Vicente Barbosa du Bocage (1823–1907), worked extensively with collections from the Portuguese colonial officer Captain Francisco António Pinheiro Bayão (birth and death dates unknown), who was based in Malanje Province between 1863 and 1866. Pinheiro Bayão sent Bocage some of the first shipments of Angola specimen received in the Lisbon Museum, mostly from Duque de Bragança (Malanje), Dondo (Kwanza-Norte Province) and Luanda (Luanda Province). Initially Bocage allowed foreign naturalists to study and help identify the Angolan herpetofauna, as in the case of Günther (1865a, b) who described *Hylambates Bocagii* (currently *Leptopelis bocagii*), *Rappia microps, Rappia nasuta* (currently *Hyperolius nasutus*) and *Limnophis bicolor*, and the Austrian zoologist Franz Steindachner (1834–1919), who named *Hyperolius angolensis* (described as *Hyperolius marmoratus* var. *angolensis*) and *Hyperolius bocagei* (Steindachner 1867). The first Angolan species described by Bocage himself was *Rana bragantina* (currently a synonym of *Hoplobatrachus occipitalis* (Günther 1858)) based on a specimen sent by Bayão from Duque de Bragança (Bocage 1864), and eventually he described 11 new amphibian taxa and 12 new reptile taxa based on Bayão's material, as well as adding several previously described taxa to the list of Angolan herpetofauna.

Wilhelm Peters (1815–1883), curator and director of the Berlin Museum also contributed to the study of the Malanje Province herpetofauna. This was largely based on the material collected during two German expeditions to Angola—one from 1873 to 1876 to the "Kingdom of Loango" Chinchoxo (Cabinda Province) and Loango (Malanje Province)—made by the *Afrikanischen Gesellschaft*, led by Paul Gussfeldt (1840–1920), in the company of Dr. Julius Falkenstein (1842–1917), Max Buchner (1846–1921) and Major Friedrich Wilhelm A. von Mechow (1831–1904); and the expedition of von Mechow and Major A. V. Homeyer to Malanje (Kwango River) and Pungo Andongo between 1879 and 1882. From the first expedition he described *Euprepes notabilis* Peters, 1879, currently considered as a synonym of *Trachylepis maculilabris* (Gray, 1845), based in part on a specimen from Pungo Andongo and, from the Malanje collection of Mechow,

TABLE 1. Amphibians and reptiles known to occur in Malanje Province. Only published records are included. Additional species known from the Province based on unpublished museum records are not included unless also supported by published records. For details on the specific localities of the records check the original reference or Marques et al. (*in press*).

Taxon	References
AMPHIBIANS	
ANURA	
Pipidae	
Genus *Xenopus* Wagler, 1827	
Xenopus petersii Bocage, 1895	Boulenger (1905); Monard (1938); Schmidt and Inger (1959); Loumont (1983); Ruas (1996); Ruas (2002); Ceríaco et al. (2014a); Ceríaco et al. (2014a, 2016a,b); This study.
Bufonidae	
Genus *Sclerophrys* Tschudi, 1838	
Sclerophrys funerea (Bocage, 1866)	Bocage (1866a, 1866b, 1882b, 1895, 1897); Loveridge (1957); Perret (1976a); Frost (1985, 2017); Ruas (1996, 2002).
Sclerophrys gutturalis (Power, 1927)	Ruas (1996, 2002).
Sclerophrys pusilla (Mertens, 1937)	Bocage (1866a, 1895); Boulenger (1882, 1905); Poynton and Haacke (1993); Ruas (1996, 2002); Ceríaco et al. (2014a, 2016b); this study.
Hyperoliidae	
Genus *Afrixalus* Laurent, 1944	
Afrixalus fulvovittatus (Cope, 1861)	Boulenger (1882).
Afrixalus wittei (Laurent, 1941)	Bocage (1866a, 1895); Perret (1976b); Ceríaco et al. (2016b); This study.
Genus *Hyperolius* Rapp, 1842	
Hyperolius angolensis Steindachner, 1867	Bocage (1866a, 1866b, 1893, 1895, 1897); Peters (1882b); Boulenger (1882, 1905); Laurent (1961); Ceríaco et al. (2014a, 2016b); This study.
Hyperolius bocagei Steindachner, 1867	Bocage (1873, 1895, 1897); Boulenger (1905); Ferreira (1906); Ceríaco et al. (2014b).
Hyperolius cinnamomeoventris Bocage, 1866	Bocage (1866a, 1866b, 1895, 1897); Laurent (1961); Schiøtz (1975), Perret (1976a); Frost (1985, 2017); Conradie et al. (2013); Ceríaco et al. (2016b); This study.
Hyperolius concolor (Hallowell, 1844)	Bocage (1866a, 1866b).
Hyperolius fuscigula Bocage, 1866	Bocage (1866a, 1866b, 1895, 1897); Perret (1976a).
Hyperolius glandicolor Peters, 1878	Bocage (1866a).
Hyperolius nasutus Günther 1865	Günther (1865b); Bocage (1866a, 1895, 1897); Boulenger (1882); Loveridge (1936a, 1936b, 1953, 1957); Schiøtz (1975); Frost (1985, 2017); Amiet (2005); Channing et al. (2013); Channing et al. (2013); Ceríaco et al. (2016b); This study.
Hyperolius pusillus (Cope, 1862)	Bocage (1866a, 1866b, 1895, 1897a); Boulenger (1905).
Hyperolius quinquevittatus Bocage, 1866	Bocage (1866a, 1866b, 1895); Schiøtz (1975); Perret (1976a); Frost (1985, 2014); Poynton and Broadley (1987); Pickersgill (2007a).
Hyperolius steindachneri Bocage, 1866	Bocage (1866a, 1866b, 1895, 1897); Loveridge (1936a); Perret (1976a); Frost (1985, 2017); Poynton and Haacke (1993).
Genus *Kassina* Girard, 1853	
Kassina cf. *maculosa* (Sternfeld, 1917)	Ceríaco et al. (2014a).
Arthroleptidae	
Genus *Arthroleptis* Smith, 1849	
Arthroleptis xenochirus Boulenger, 1905	Boulenger (1905); Laurent (1954b); Frost (1985, 2017); Ceríaco et al. 2016b); This study.
Genus *Leptopelis* Günther, 1859	
Leptopelis bocagii (Günther, 1864)	Günther (1865b); Bocage (1866a, 1895, 1897); Loveridge (1933, 1953, 1957); Schiøtz (1975); Perret (1976a); Frost (1985, 2017); Poynton and Broadley (1987); Largen (2001); Ceríaco et al. (2014b, 2016b); This study.
Leptopelis viridis (Günther, 1869)	Bocage (1873, 1895, 1897).
Ptychadenidae	
Genus *Ptychadena* Boulenger, 1917	
Ptychadena anchietae (Bocage, 1867)	Ceríaco et al. (2016b); This study.

Table 1. Continued.

Taxon	References
Ptychadena guibei Laurent, 1954	Ceríaco et al. (2016b); This study.
Ptychadena oxyrhynchus (Smith, 1849)	Bocage (1866a, 1895); Boulenger (1882, 1905); Ruas (1996); Ceríaco et al. (2016b); This study.
*Ptychadena porossisim*a (Steindachner 1867)	Bocage (1866a, 1895); Boulenger (1882); Ruas (1996).
Ptychadena subpunctata (Bocage 1866)	Bocage (1886a, 1886b, 1895, 1897); Schmidt and Inger (1959); Perret (1976a); Poynton and Broadley (1985b); Frost (1985, 2017); Ruas (1996).
Ptychadena taenioscelis Laurent, 1954	Poynton and Haacke (1993); Ruas (1996).
Ptychadena uzungwensis (Loveridge, 1932)	Poynton and Haacke (1993).
Phrynobatrachidae Genus *Phrynobatrachus* Günther, 1862 *Phrynobatrachus parvulus* (Boulenger, 1905)	Boulenger (1905); Loveridge (1933); Marx (1958); Schmidt and Inger (1959); Poynton and Broadley (1985b); Frost (1985, 2017); Ruas (1996).
Phrynobatrachus natalensis (Smith,1849)	Bocage (1866a, 1895); Günther (1865a); Boulenger (1882, 1905); De Witte (1919); Poynton and Haacke (1993); Ruas (1996, 2002); Ceríaco et al. (2014b, 2016b); This study.
Pyxicephalidae Genus *Amietia* Dubois, 1987 *Amietia angolensis* (Bocage, 1866)	Bocage (1866a, 1866b, 1895, 1897); Loveridge (1933, 1936b; 1953, 1957); Perret (1976a); Poynton and Broadley (1985b); Frost (1985, 2017); Ruas (1996); Largen (2001); Pickersgill (2007), Channing and Baptista (2013); Channing et al. (2016); Bocage (1895); Boulenger (1905); Ruas (1996).
Genus *Tomopterna* Duméril and Bibron, 1841 *Tomopterna tuberculosa* (Boulenger, 1882)	Günther (1865a, 1869); Boulenger (1882); Bocage (1895); Loveridge (1957); Schmidt and Inger (1959); Poynton and Broadley (1985b); Ruas (1996).
Dicroglossidae Genus *Hoplobatrachus* Peters, 1863 *Hoplobatrachus occipitalis* (Günther, 1858)	Bocage (1864, 1866a, 1895); Perret (1976a); Ruas (1996).
Ranidae Genus *Amnirana* Dubois, 1992 *Amnirana* cf. *darlingi* (Boulenger, 1902)	Ceríaco et al. (2016b); This study.
REPTILES TESTUDINES Testudinidae Genus *Pelomedusa* Cope, 1868 *Pelomedusa subrufa* (Bonnaterre, 1789)	Bocage (1895); Monard (1937b); Loveridge (1941a).
Genus *Pelusios* Wagler, 1830 *Pelusios nanus* Laurent, 1956	Ceríaco et al. (2004a).
Pelusios rhodesianus Hewitt, 1927	Bocage (1866a, 1866b, 1895); Loveridge (1941b); Broadley (1981); Ceríaco et al. (2014a).
Genus *Kinixys* Bell, 1827 *Kinixys belliana* Gray, 1831	Bocage (1866a, 1895); Loveridge and Williams (1957); Ceríaco et al. (2014a, 2016b); This study.
CROCODYLIA Crocodylidae Genus *Crocodylus* Laurenti, 1768 *Crocodylus niloticus* Laurenti, 1768	Günther (1865a); Ferreira (1903); Ceríaco et al. (2014a).
SQUAMATA Gekkonidae Genus *Chondrodactylus* Peters, 1870 *Chondrodactylus pulitzerae* (Schmidt, 1933)	Ceríaco et al. (2014a).
Genus *Hemidactylus* Oken, 1817 *Hemidactylus longicephalus* Bocage, 1873	Bocage (1895, 1897); Loveridge (1947); Boulenger (1885); Loveridge (1947); Ceríaco et al. (2014a).
Hemidactylus mabouia (Moreau De Jonnés, 1818)	Bocage (1895); Boulenger (1905); Loveridge (1947); Ceríaco et al. (2016b); This study.

Table 1. Continued.

Taxon	References
Hemidactylus cf. *muriceus* Peters, 1870	Ceríaco et al. (2016b); This study.
Genus *Lygodactylus* Gray, 1864	
Lygodactylus angolensis Bocage, 1896	Ceríaco et al. (2016b); This study.
Amphisbaenidae	
Genus *Monopeltis* A. Smith, 1848	
Monopeltis welwitschii (Gray, 1865)	Gray (1865a, 1865b); Bocage (1895, 1897); Loveridge (1941b); Gans (1967, 2005); Broadley et al. (1976).
Lacertidae	
Genus *Ichnotropis* Peters, 1854	
Ichnotropis bivittata Bocage, 1866	Bocage (1866a, 1895), Boulenger (1887, 1905, 1921); Ferreira (1903); Loveridge (1933, 1957); Bauer et al. (1995); Ceríaco et al. (2016b); This study.
Gerrhosauridae	
Genus *Gerrhosaurus* Wiegmann, 1828	
Gerrhosaurus multilineatus Bocage, 1866	Bocage (1866a, 1866b); Peters (1881); Ceríaco et al. (2016b); This study.
Gerrhosaurus cf. *nigrolineatus* Hallowell, 1857	Bocage (1895); Ferreira (1903); Boulenger (1905); Bocage (1895); Ceríaco et al. (2014b).
Scincidae	
Genus *Lubuya* Horton, 1972	
Lubuya ivensii (Bocage, 1879)	Bocage (1879a); Laurent (1964a); Branch and Haagner (1993); Wagner et al. (2012).
Genus *Panaspis* Cope, 1868	
Panaspis cabindae (Bocage, 1866)	Ceríaco et al. (2016b); This study.
Genus *Sepsina* Bocage, 1866	
Sepsina angolensis Bocage, 1866	Bocage (1866a,b, 1867, 1895, 1897); Boulenger (1905).
Genus *Trachylepis* Fitzinger, 1843	
Trachylepis acutilabris (Peters,1862)	Bocage (1895).
Trachylepis affinis (Gray, 1838)	Ferreira (1903).
Trachylepis bayonii (Bocage, 1872)	Bocage (1866a, 1872, 1895, 1897); Boulenger (1887, 1905); Bauer et al. (2003); This study.
Trachylepis bocagii (Boulenger, 1887)	Bocage (1866a, 1872, 1895); Boulenger (1887); Brygoo (1895); Bauer et al. (2003).
Trachylepis maculilabris (Gray, 1845)	Peters (1879); Bocage (1895); Loveridge (1957); Bauer et al. (2003); Ceríaco et al. (2014a).
Trachylepis cf. *megalura* (Peters, 1878)	Ceríaco et al. (2016b); This study.
Trachylepis quinquetaeniata (Lichtenstein, 1823)	Boulenger (1905).
Trachylepis wahlbergii (Peters, 1870)	Bocage (1866a, 1895); Ceríaco et al. (2016b); This study.
Trachylepis cf. *varia* (Peters, 1867)	Boulenger (1905); Ceríaco et al. (2016b); This study.
Varanidae	
Genus *Varanus* Merrem, 1820	
Varanus niloticus (Linnaeus, 1758)	Bocage (Bocage 1879b, 1895); Mertens (1942); Manaças (1955); Bayles (2002); Ceríaco et al. 2014a, 2016b); This study.
Chamaeleonidae	
Genus *Chamaeleo* Laurenti, 1768	
Chamaeleo dilepis Leach, 1819	Bocage (1895); Ceríaco et al. (2016b); This study.
Chamaeleo gracilis etiennei Schmidt, 1919	Bocage (1866a, 1895), Boulenger (1887, 1905); Ferreira (1904); Parker (1936); Ceríaco et al. (2014b).
Agamidae	
Genus *Agama* Daudin, 1802	
Agama aculeata Merrem, 1820	Bocage (1866a; 1895; 1896).
Agama congica Peters, 1877	Bocage (1895); Hellmich (1957a); Ceríaco et al. (2014a).
Agama planiceps schacki Mertens, 1938	Boulenger (1885); Ferreira (1903); Boulenger (1905); Manaças (1963).

Table 1. Continued.

Taxon	References
Genus *Acanthocercus* Fitzinger, 1843	
Acanthocercus cyanocephalus (Falk, 1925)	Peters (1881); Bocage (1866a, 1895); Boulenger (1885; 1905); Ferreira (1903); Monard (1937b); Ceríaco et al. (2014a, 2016b); This study.
Typhlopidae	
Genus *Afrotyphlops* Broadley and Wallach, 2009	
Afrotyphlops angolensis (Bocage, 1866)	Bocage (1866a, 1866b, 1873, 1879b); Loveridge (1957); Laurent (1964b); Roux-Estève (1974a,b); Broadley and Wallach (2009); Wallach et al. (2014).
Afrotyphlops lineolatus (Jan, 1864)	Bocage (1873, 1895); Peters (1881); Monard (1937b); Bocage (1895); Monard (1937b).
Leptotyphlopidae	
Genus *Leptotyphlops* Fitzinger, 1843	
Leptotyphlops scutifrons (Peters, 1854)	Bocage (1866a, 1873, 1895); Monard (1937b).
Genus *Namibiana* Hedges, Adalsteinsson and Branch, 2009	
Namibiana rostrata (Bocage, 1886)	Broadley and Broadley (1999).
Viperidae	
Genus *Bitis* Gray, 1842	
Bitis arietans (Merrem, 1820)	Bocage (1866a, 1895); Monard (1937b); Manaças (1981); Ceríaco et al. (2016b).
Genus *Causus* Wagler, 1830	
Causus bilineatus Boulenger, 1905	Bocage (1866a, 1895); Monard (1937b); Manaças (1981); Rasmussen (2005).
Causus rhombeatus (Lichtenstein, 1823)	Günther (1865b); Peters (1881); Bocage (1895); Boulenger 1905; Monard (1937b); Manaças (1982); Rasmussen (2005); Ceríaco et al. (2016b).
Pythonidae	
Genus *Python* Daudin, 1803	
Python sebae (Gmelin, 1789)	Ceríaco et al. (2016b).
Atractaspidae	
Genus *Atractaspis* Smith, 1849	
Atractaspis congica Peters, 1877	Boulenger (1905); Laurent (1950b); Manaças (1982).
Atractaspis irregularis (Reinhardt, 1834)	Günther (1865b).
Genus *Polemon* Jan, 1858	
Polemon collaris (Peters, 1881)	Peters (1881); De Witte and Laurent (1947); Hellmich (1957a); Chippaux (2006); Chirio and LeBreton (2007); Wallach et al. (2014).
Genus *Xenocalamus* Günther, 1868	
Xenocalamus mechowii Peters, 1881	Peters (1881); De Witte and Laurent (1947); Chippaux (2006).
Lamprophiidae	
Genus *Boaedon* Duméril, Bibron and Duméril, 1854	
Boaedon cf. *angolensis*	Bocage (1866a, 1895); Monard (1937b); Günther (1865b); Boulenger (1893, 1905); Monard (1937b); Ceríaco et al. (2016); This study.
Genus *Lycophidion* Fitzinger, 1843	
Lycophidion multimaculatum Boettger, 1888	Bocage (1866a, 1895); Boulenger (1893); Broadley (1996b).
Genus *Psammophis* Boie, 1825	
Psammophis angolensis (Bocage, 1872)	Peters (1877, 1881); Bocage (1895, 1897); Loveridge (1940, 1957);; Broadley (1977b, 2002).
Psammophis mossambicus Peters, 1882	Boulenger (1905); Loveridge (1940); Broadley (2002); Ceríaco et al. (2016b).
Genus *Psammophylax* Fitzinger, 1843	
Psammophylax acutus (Günther, 1888)	Günther (1865b; 1888, 1895); Bocage (1895); Boulenger (1896); Loveridge (1933); Monard (1937b); Broadley (1971); Chirio and Ineich (1991); Chippaux (2006); Wallach et al. (2014).
Genus *Prosymna* Gray, 1849	
Prosymna ambigua (Bocage, 1873)	Bocage (1866a, 1873, 1895); Loveridge (1933, 1958); Monard (1937b); Broadley (1980); Chippaux (2006); Wallach et al. (2014); Ceríaco et al. (2016b); This study.
Elapidae	
Genus *Dendroaspis* Schlegel, 1848	
Dendroaspis jamesoni (Traill, 1843)	Bocage (1895).
Dendroaspis polylepis Günther, 1864	Peters (1881); Ceríaco et al (2016b).

Table 1. Continued.

Taxon	References
Genus *Naja* Laurenti, 1768	
Naja (*Afronaja*) *nigricollis* Reinhardt, 1843	Peters (1881); Bocage (1895); Manaças (1981).
Naja (*Boulengerina*) *melanoleuca* Hallowell, 1857	Bocage (1866a, 1895); Ferreira (1900); Boulenger (1905); Manaças (1982).
Naja (*Uraeus*) *anchietae* Bocage, 1879	Ceríaco et al. (2014a, 2016b).
Colubridae	
Genus *Crotaphopeltis* Fitzinger, 1843	
Crotaphopeltis hotamboeia (Laurenti, 1768)	Bocage (1866a); Boulenger (1906); Ceríaco et al. (2016b); This study.
Genus *Dasypeltis* Wagler, 1830	
Dasypeltis palmarum (Leach, 1818)	Günther (1865b); Boulenger (1905); Monard (1937b); Gans (1959); Manaças (1973).
Dasypeltis scabra (Linnaeus, 1758)	Ceríaco et al. (2016b); This study.
Genus *Dispholidus* Duvernoy, 1832	
Dispholidus typus (Smith, 1828)	Bocage (1866a, 1895); Peters (1881); Monard (1937b); Ceríaco et al. (2016b); This study.
Genus *Grayia* Günther, 1858	
Grayia ornata (Bocage, 1866)	Bocage (1866a, 1866b, 1895, 1897); Loveridge (1936a); Broadley (1983); Chippaux (2006); Chirio and LeBreton (2007); Wallach et al. (2014).
Genus *Philothamnus* Smith, 1840	
Philothamnus dorsalis (Bocage, 1866)	Bocage (1866b, 1882, 1895); Loveridge (1933)..
Philothamnus heterolepidotus (Günther, 1863)	Bocage (1866a, 1866b, 1882a, 1895); Boulenger (1905); Monard (1937b).
Philothamnus irregularis (Leach, 1819)	Günther (1865b); Bocage (1866a, 1882, 1895); Ferreira (1906); Monard (1937b).
Genus *Thelotornis* A. Smith, 1849	
Thelotornis kirtlandii (Hallowell, 1844)	Bocage (1866a, 1895); Loveridge (1944).
Natricidae	
Genus *Limnophis* Günther, 1865	
Limnophis bicolor Günther, 1865	Günther (1865a); Bocage (1866a, 1866b, 1895, 1897a, 1879a); Mertens (1963).
Genus *Natriciteres* Loveridge, 1953	
Natriciteres bipostocularis Broadley, 1962	Peters (1882); Peters (1895); Broadley (1966).
Natriciteres olivacea (Peters, 1854)	Bocage (1895); Boulenger (1905); Broadley (1966).

Peters (1881) described *Xenocalamus mechowii* and *Microsoma collare,* and later (Peters 1882a) *Hyperolius vermiculatus* (currently considered a member of the *Hyperolius angolensis* species complex) from Malanje.

At the beginning of the 20th century, the Portuguese explorer Francisco Newton (1864–1909) was hired by the Polytechnic Academy of Porto to lead an expedition to Angola, and from 1903 to 1905 he explored several provinces of Angola, including certain areas in Malanje. His collections were studied and partially published by Portuguese naturalist José Júlio Bettencourt Ferreira (1866–1948) in two papers (Ferreira 1904, 1906) resulting in the description of nine amphibians and one reptile, some of them particularly problematic (Ceríaco et al. 2014b). At about the same time, William John Ansorge (1850–1913), who explored the Congo Basin, also collected extensively in Angola, including in Malanje Province, from 1903 to 1905. Ansorge's collections were sent to the British Museum (Natural History) where they were studied and published on by Boulenger (Boulenger 1905, 1907a,b, 1915), although only the 1905 paper mentioned Malanje specimens.

After the discovery and description of the endemic Giant Sable (Thomas 1916), the Province became of great interest to foreign museums and institutions that planned expeditions to Malanje to collect specimens of the sable. Surprisingly, however, almost no published herpetological records exist for the province during the rest of the 20th century. In 1925, Arthur S. Vernay (1877–1960) organized an expedition to Angola to collect zoological specimens for the AMNH, with the special aim of collecting specimens of Giant Sable. A large collection of amphibians and reptiles resulted from this expedition, of which only the snakes were studied and published on by Charles M. Bogert (1908–1992) (Bogert 1940). Although the expedition explored Malanje, no data regarding amphibians or reptiles of the province were ever published, and Bogert's (1940) paper on the snakes did not include any material from Malanje. In August 1930, Harold T. Green (1896–1967) led a three-month expedition to Malanje Province promoted by the Academy of Natural Sciences of Philadelphia (ANSP), again to collect Giant Sable, and some reptiles and amphibians were collected. This small

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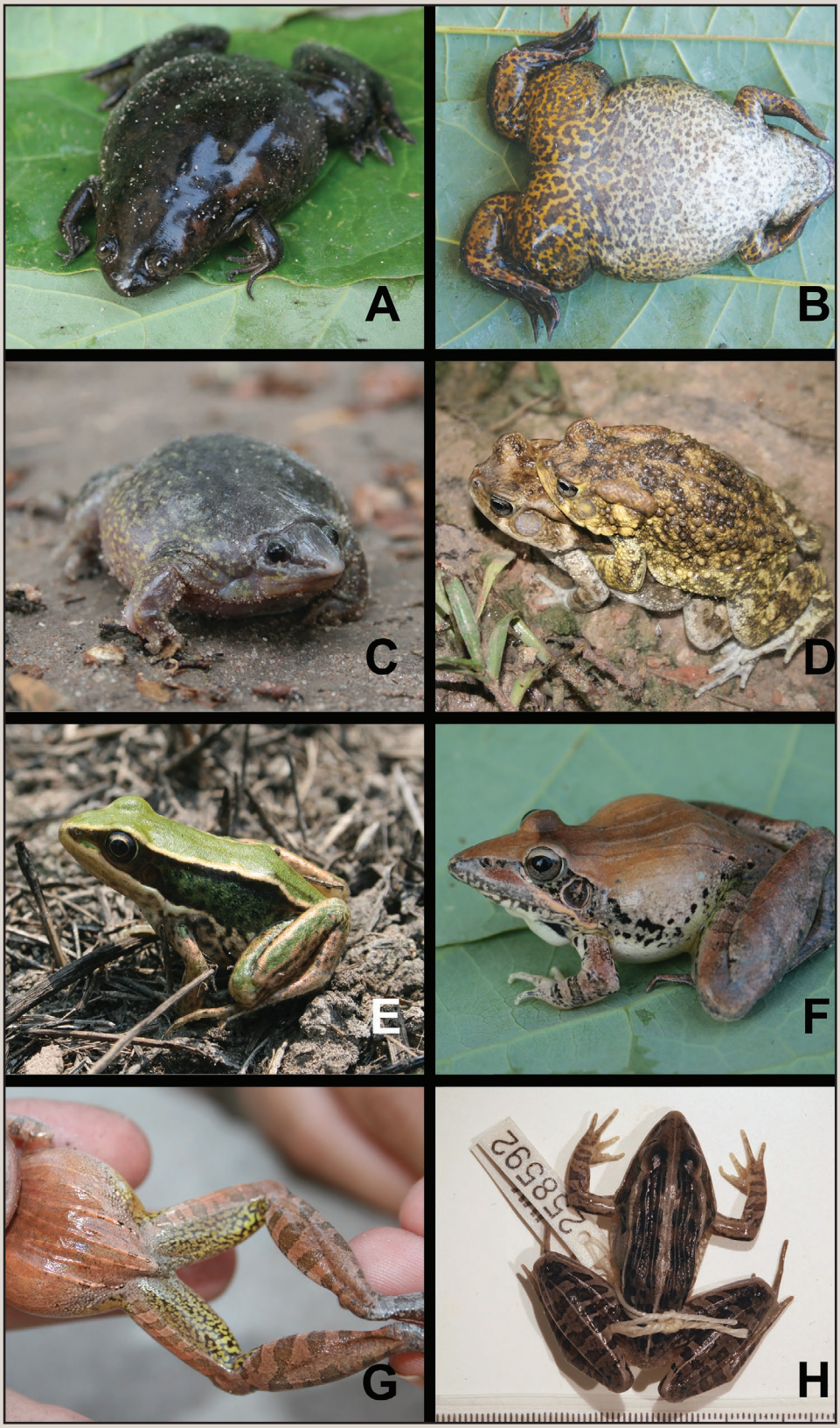

Fig. 2. A) Peters' Platanna, *Xenopus petersii* Bocage, 1895; B) Ventral pattern of Peters' Platanna, *Xenopus petersii* Bocage, 1895; C) Guinean Snout-Burrower, *Hemisus guineensis* Cope, 1865; D) Mertens' Striped Toad, *Sclerophrys pusilla* (Mertens, 1937); E) Darling's Frog, *Amnirana* cf. *darlingi* (Boulenger, 1902); F) Anchieta's Ridged Frog, *Ptychadena anchietae* (Bocage, 1868); G) Thigh coloration and pattern of Anchieta's Ridged Frog, *Ptychadena anchietae* (Bocage, 1868); H) Guibe's Ridged Frog, *Ptychadena guibei* Laurent, 1954. All photos from Cangandala National Park.

collection, still extant in the ANSP, was likewise never published upon. Gert Hermann Heinrich (1896–1984), led the Conover Angola Expedition sponsored by the Chicago Natural History Museum (now Field Museum of Natural History, FMNH), which explored different areas in Angola, including Malanje, from 1953 to 1955. A total of 560 herpetological specimens were collected but, with the exception of some lacertids studied by Marx (1956), the collection was never properly studied.

Possibly the first herpetological collection made in Malanje following the end of the Angolan Civil War was that based on an Environmental Impact Assessment (EIA) associated with the construction of the Capanda Dam. From January to April 2003, a team comprising researchers from the Museu Nacional de História Natural of Luanda (MNHNL), the Gabinete de Aproveitamento do Médio Kwanza (GAMEK), and private EIA contractors, collected material in the area to be flooded by the dam. Those specimens were deposited in the collections of the MNHNL and studied by Ceríaco et al. (2014a), resulting in considerable range extensions for several species. Recent surveys (July 2016, March 2017) in the area influenced by the Laúca Hydroelectric Dam, on the Kwanza River, in the southwest of the Province, have also resulted in important new collections, with additions of species new to the Province, the country and for science (Marques et al., unpubl.).

Materials and Methods

We conducted herpetological surveys in Malanje Province from 12–30 September 2015 in Cangandala National Park and nearby areas. In each area, we attempted to opportunistically sample a diversity of habitat types, during both day and night. We captured specimens using nooses and rubber bands, or by hand during both diurnal and nocturnal surveys. All specimens were euthanized following an approved IACUC protocol (CAS #2014-2), preserved in 10% buffered formalin in the field, and then transferred to 70% ethanol for storage. Liver tissues were preserved in 95% ethanol and RNALater. Voucher specimens and tissue samples are deposited in the herpetological collection of the California Academy of Sciences, with a subset of specimens housed at INBAC in Kilamba, Angola (pending cataloging and accession numbers). In some cases, we further confirmed species identifications by sequencing the mitochondrial 16S ribosomal RNA gene. A complete list of all amphibian and reptile species reported from Malanje Province was also assembled (Table 1). This list, including localities and associated bibliographic references was based on the ongoing project for the first atlas of the Angolan amphibians and reptiles (Marques et al., *in press*. These, however, include only published records and do not take into account specimens housed in different museums that have not been published upon.

Results

A total of 460 specimens were collected during the expedition, representing 10 amphibian genera and 14 reptile genera. Many of the species collected likely represent complexes of species, including undescribed taxa. Molecular phylogenetic and systematic studies that are in progress will likely result in taxonomic revisions and description of new species. In the following species accounts, we provide information on CAS voucher specimens, localities, and natural history. Latitude, longitude (in decimal degrees) and elevation (in meters) of the collection site are provided in each species account. In addition, when appropriate, we provide brief taxonomic or geographic notes.

SPECIES ACCOUNTS

Amphibia

Anura

Pipidae

***Xenopus petersii* Bocage, 1895**

PETERS' PLATANNA – Fig. 2A,B

Material.—**53 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258438–40; CNP**,** along park entrance road, 200 m W of park headquarters [-9.81978°, 16.65197°, 1085 m]: CAS 258441; CNP**,** along park entrance road [-9.81894°, 16.64906°, 1088 m]: CAS 258442–52; 1.4 km NW (by air) of CPN, Park Headquarters [-9.81161°, 16.64381°, 1082 m]: CAS 258453–57, 258477; CNP, pond along entrance road [-9.81944°, 16.64942°, 1100 m]: CAS 258458–76; CNP [9.82689°, 16.65003°, 1100 m]: CAS 258477–83, [-9.81986°, 16.65267°, 1079 m]: CAS 258484–88, 260965.

Comments.—A recent molecular phylogeny by Furman et al. (2015) clarified the distribution of the various lineages presented within the *X. laevis* group. This led to the recognition of *X. laevis* sensu stricto, *X. petersii*, *X. victorianus* Ahl, 1924 and *X. poweri* Hewitt, 1927 as full species, and the western Central African populations (including the central and western Angolan populations) as *X. petersii*. All of our specimens were collected in natural and artificial ponds, where they occurred in high densities. The species is already known from several localities in Malanje Province (see Marques et al., *in press*).

Hemisotidae

***Hemisus guineensis* Cope, 1865**

GUINEAN SNOUT-BURROWER – Fig. 2C

Material.—**17 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258489–12; CNP [-9.81867°, 16.65511°, 1091 m]: CAS 258513–28, [-9.81783°, 16.65747°, 1097 m]: CAS 258529–32, [-9.81864°, 16.65536°, 1082 m]: CAS 258533–36, [-9.81914°, 16.65453°, 1084 m]: CAS 258537-39, [-9.81914°, 16.65453°, 1084 m]: CAS 258540–41.

Comments.—*Hemisus guineensis* is part of a larger complex of cryptic species and the patterns of variation across Africa remain poorly documented (Onadeko and Rödel 2009; Rödel and Ernst 2003). We identify CNP material as *H. guineensis* based on the speckled dorsal pattern (marbled in *marmoratus*, see Channing 2001). This is the first report of the genus for Malanje Province, although records of both *H. guineensis* and *H. marmoratus* exist for the neighboring provinces and generally across Angola (Marques et al., *in press*).

Bufonidae

***Sclerophrys pusilla* (Mertens, 1937)**

MERTENS' STRIPED TOAD – Fig. 2D

Material.—**18 specimens:** CNP [-9.82828°, 16.64381°, 1082 m]: CAS 258571, [-9.81936°, 16.65439°, 1089 m]: CAS 258572–74, [-9.86900°, 16.69131°, 1092 m]: CAS 258575, [-9.81758°, 16.65878°, 1099 m]: CAS 258576, [-9.81914°, 16.65453°, 1084 m]: CAS 258577, [-9.81961°, 16.64908°, 1075 m]: CAS 258578, [-9.81865°, 16.65536°, 1082 m]: CAS 258579, [-9.81933°, 16.65403°, 1097 m]: CAS 258580-82, [-9.73281°, 16.78794°, 1143 m]: CAS 258583, [-9.72261°, 16.77703°, 1117 m]: CAS 258584; CNP, Vicinity of

Park Headquarters [-9.81917°, 16.65436°, 1089 m]: CAS 258585; Right bank of Kwanza River [-9.88478°, 16.28628°, 1013 m]: CAS 258586; Camassa west side of the highway, near the road to Kwanza bridge [-9.87622°, 16.28694°, 1058 m]: CAS 258587.

Comments.—Poynton et al. (2016) restricted *S. maculata* (Hallowell, 1854) to western African from Senegal to western Cameroon, and suggested that *S. pusilla* represents other populations previously assigned to *S. maculata* found in eastern and southern Africa, including Angola. The species is already known from Malanje Province (see Table 1) and has a wide distribution across the central-south regions of the country (Marques et al., *in press*).

Ranidae

***Amnirana* cf. *darlingi* (Boulenger, 1902)**

DARLING'S FROG – Fig. 2E

Material.—**4 specimens:** CNP [-9.72133°, 16.77725°, 1013 m]: CAS 258627, [-9.72161°, 16.77719°, 1126 m]: CAS 258630–32.

Comments.—*Amnirana darlingi* was originally described by Boulenger (1902) based on material from Zimbabwe. The taxonomy of this species has been mostly stable since its description (apart from generic allocation, see Olivier et al. 2015), but Channing (2001) suggested that specimens from northeast Zambia, morphologically similar to our material, may represent a different species based on differences in coloration and size. While molecular studies are currently assessing the specific identity of the Angolan populations of *A. darlingi* (G. Jongsma, pers. comm.), it is possible that the name *Rana albolabris adiscifera* may be available for it. This taxon was erected by Schmidt and Inger (1959) based on specimens from Chitau (Bié Province, less than 200 km south of Cangandala) and later synonymized with *Rana darlingi* (Boulenger, 1902) by Laurent (1964a). This is the first record of this species for Malanje Province.

Ptychadenidae

***Ptychadena anchietae* (Bocage, 1868 "1867")**

ANCHIETA'S RIDGED FROG – Fig. 2F,G

Material.—**5 specimens:** CNP, along park entrance road, ca 200 m W of park headquarters [-9.81978°, 16.65197°, 1085 m]: CAS 258588; road from Cangandala to CNP [-9.81814°, 16.61989°, 1077 m]: CAS 258591; CNP, pond along entrance road [-9.81944°, 16.64942°, 1100 m]: CAS 258597–99.

Comments.—Originally described based on specimens from "Benguella," and sometimes confused with *P. oxyrhyncus* and *P. mascarienensis*, its validity was established by Perret (1976a) and Poynton and Broadley (1985b). As currently recognized, the species extends through central and southern Africa to Kenya and Somalia and may contain cryptic species diversity (Bwong et al. 2009; Dehling and Sinsch 2013). The specimens collected in Cangandala National Park, represent the first record for Malanje Province, although specimens are known from other localities in Angola (see Marques et al., *in press*). Our material was found in syntopy with *P. oxyrhynchus* (Smith, 1849) (see below) in small natural and artificial ponds.

***Ptychadena guibei* Laurent, 1954**

GUIBE'S RIDGED FROG – Fig. 2H

Material.—**2 specimens:** CNP, Cuqui River [-10.02128°, 16.71292°, 1047 m]: CAS 258592; CNP [-9.72133°, 16.71058°, 1013 m]: CAS 258626.

Comments.—Originally described as *Ptychadena chrysogaster guibei* by Laurent (1954a) from "Muita (Luembe E)" in Lunda Norte Province, Angola, it was later elevated to full species by Poynton and Broadley (1985b). The two specimens collected in this survey represent the first record for the province and the westernmost records of the species in the country. To date, the species is otherwise only known from two localities in Lunda Norte Province, and one locality in Moxico Province (Laurent 1950a, 1954a, 1964a; Poynton and Broadley 1985b; Ruas 1996; Schmidt and Inger 1959; and see also Marques et al., *in press*).

***Ptychadena oxyrhynchus* (Smith, 1849)**

SHARP-NOSED RIDGED FROG – Fig. 3A

Material.—**8 specimens:** Road from Cangandala to CNP [-9.81814°, 16.61989°, 1077 m]: CAS 258589; CNP, pond along entrance road [-9.81944°, 16.64942°, 1100 m]: CAS 258600–02; CNP [-9.82689°, 16.65003°, 1089 m]: CAS 2586005, [-9.81956°, 16.64925°, 1013 m]: CAS 2586023–25.

Comments.—This species is widely distributed across sub-Saharan Africa in areas of moist savanna, circum-forest savana, in secondary vegetation with tall herbaceous vegetation, and in marshy and agricultural areas (Ruas 1996; Schmidt and Inger 1959). It is relatively common in Angola, except in the arid and semiarid areas in southern regions of the country, and it is known from Pungo Andongo and Duque de Bragança (currently Kalandula) in Malanje Province (see Marques et al., *in press.*). The species strongly resembles *P. anchietae* and *P. mascarienensis* (Duméril and Bibron, 1841) with which it has been confused in the past but can be distinguished from those species by its distinct coloration and the lack of markings along the jaw and thigh (Perret 1976a).

Hyperoliidae

***Afrixalus wittei* (Laurent, 1941)**

DE WITTE'S SPINY REED FROG

Material.—**1 specimen:** CNP, Cuqui River [-10.02183°, 16.70869°, 1055 m]: CAS 258644.

Comments.—A single specimen collected in a floodplain near the Cuqui River represents the second record for Angola. The only previous record is based on a specimen from "Duque de Bragança" (currently Kalandula) in Malanje Province that was originally identified as *Hyperolius fulvovittatus* by Bocage (1866a) and later corrected to *Afrixalus wittei* by Perret (1976b). The species is known from tropical lowland savannas from the southern DRC east to Zambia and is also expected to occur in eastern Angola (Channing 2001).

***Hyperolius angolensis* Steindachner, 1867**

ANGOLAN REED FROG – Fig. 3B

Material.—**4 specimens:** CNP, vicinity of park headquarters [-9.81810°, 16.65535°, 1092 m]: CAS 258645–48.

Comments.—This species was initially described by Steindachner (1867) based on a single specimen from "Angola," restricted to "Duque de Bragança" (currently Kalandula), in Malanje Province by Ceríaco et al. (2014a). The Angolan Reed Frogs have a complex taxonomic and nomenclatural history, being identified by dozens of names and combinations during the last 150 years (see Marques et al., *in press* for a complete list of the chrysonyms used for Angolan material). Although *Hyperolius parallelus* Günther, 1858 appears to be an earlier name for this taxon, the type series contains material from both South Africa and Angola (see Günther 1859 "1858"). It is unlikely that the material from South Africa is conspecific with that from Angola. Instead, it may belong to *Hyperolius marmoratus* Rapp,

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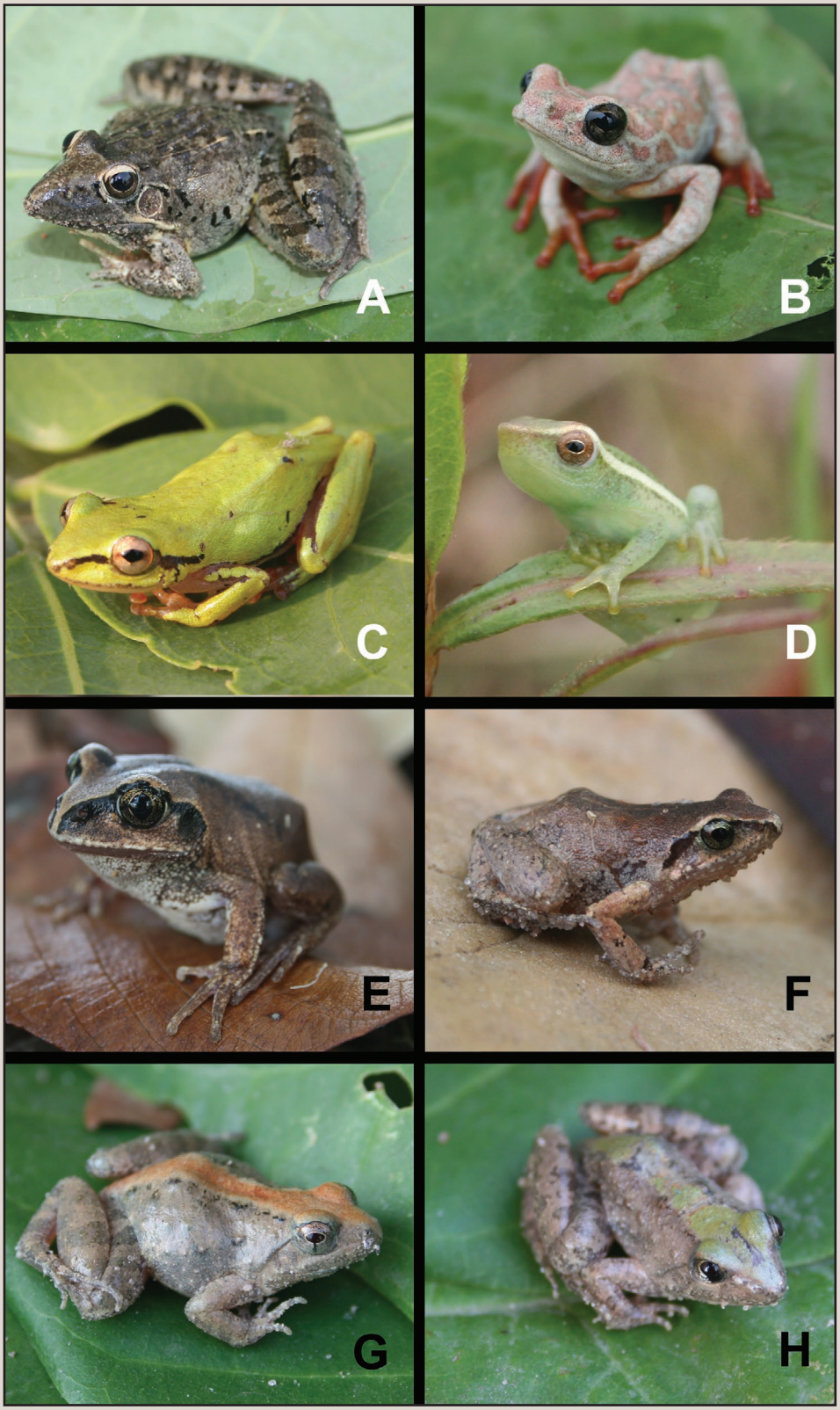

FIG. 3. A) Sharp-nosed Ridged Frog, *Ptychadena oxyrhynchus* (Smith, 1849); B) Angolan Reed Frog, *Hyperolius angolensis* Steindachner, 1867; C) Cinnamon-bellied Reed Frog, *Hyperolius cinnamomeoventris* Bocage, 1866; D) Long-Nosed Reed Frog, *Hyperolius nasutus* Günther, 1865; E) Bocage's Tree Frog, *Leptopelis bocagii* (Günther, 1865); F) Plain Squeaker, *Arthroleptis xenochirus* Boulenger, 1905; G) Orange morph of Natal Dwarf Puddle Frog, *Phrynobatrachus natalensis* (Smith, 1849); H) Green morph of Natal Dwarf Puddle Frog, *Phrynobatrachus natalensis* (Smith, 1849). All photos from Cangandala National Park.

1842, which suggests that a review of the original type material is necessary. We follow our previous interpretations (Ceríaco et al. 2014a, Marques et al., *in press*) by continuing to recognize *H. angolensis*.

***Hyperolius cinnamomeoventris* Bocage, 1866**
CINNAMON-BELLIED REED FROG – Fig. 3C

Material.—**2 specimens:** CNP [-9.72242°, 16.77778°, 1140 m]: CAS 258631, [-9.81161°, 16.64381°, 1082 m]: CAS 258636.

Comments.—Long known to refer to a species complex (Bell et al. 2015, 2017; Lötters et al. 2004; Schick et al. 2010), *H. cinnamomeoventris* was originally described from "Duque de Bragança," (currently Kalandula) in Malanje Province (Bocage 1866b). This is the same locality from which Bocage (1866b) described *Rappia* [=*Hyperolius*] *tristis,* considered a synonym by Laurent (1943, 1947) and Perret (1976). Our material agrees entirely with the original description. The species is widespread throughout the neighboring provinces of Lunda Norte, Kwanza-Norte, Kwanza-Sul, and Benguela, and other records for the province exist (see Marques et al., *in press*). Recent work by Bell et al. (2017) suggests that further revision of this species complex may be necessary.

***Hyperolius nasutus* Günther, 1865**
LONG-NOSED REED FROG – Fig. 3D

Material.—**20 specimens:** Cangandala National Park, along park entrance road, ca 200 m W of park headquarters,[-9.81978°, 16.65197°, 1084 m]: CAS 258649–67; Cangandala National Park, along park entrance road [-9.81894°, 16.66558°, 1088 m]: CAS 258669.

Comments.—Originally described by Günther (1865a) based on one specimen from "Duque de Bragança" (currently Kalandula) in Malanje Province, these small frogs form a species complex with several associated names (see Amiet 2005 and Channing et al. 2002). A recent revision of the complex by Channing et al. (2013) based on molecular and morphological data and advertisement calls, included specimens of the nominotypical form collected previously in the CNP, and suggested that nominotypical *nasutus* is mostly confined to northern Botswana and northern Angola. Some of the specimens collected were young juveniles and were mostly collected in swampy areas. The species is known from the surrounding provinces, but also from Huambo, Benguela, Huíla, Cunene, and Cuando-Cubango (see Marques et al., *in press*).

Arthroleptidae
***Leptopelis bocagii* (Günther, 1865)**
BOCAGE'S TREE FROG – Fig. 3E

Material.—**43 specimens:** CNP [-9.81850°, 16.65556°, 1105 m]: CAS 258542–47, [-9.81783°, 16.65747°, 1097 m] – CAS 258543–44, [-9.81956°, 16.66594°, 1073 m]:CAS 258548–52, [-9.81928°, 16.65403°, 1101 m]: CAS 258553–54, 258558, [-9.81864°, 16.65536°, 1082 m]:CAS 258555–57, [-9.81889°, 16.65369°, 1084 m]: CAS 258559–61, [-9.81942°, 16.65492°, 1101 m]: CAS 258562–64, [-9.81933°, 16.65403°, 1097 m]: CAS 258565–67, [-9.81969°, 16.65206°, 1092 m]: CAS 25856–70.

Comments.—*Leptopelis bocagii* was described by Günther (1865a) based on a specimen from "Duque de Bragance" [= Duque de Bragança] (currently Kalandula) in Malanje Province. This species is widespread in southern and central Africa (Channing 2001), but may comprise several cryptic species (Amiet 2012; Largen 1977). Poynton and Broadley (1987) described a similar species, *Leptopelis parbocagii* based on five specimens collected at Mabwe on the eastern shore of Lake Upemba, Zaire, currently the DRC. The distribution of *L. parbocagii* overlaps that of *L. bocagii,* which extends east from Angola and DRC to Malawi, Zambia, and Mozambique, although doubts remain as to differentiating these species (Schiøtz 1999; Schiøtz and Van Daele 2003).

Ceríaco et al. (2014b) reviewed the complex history regarding the original description of *Leptopelis bocagii* and the uncertainties regarding the number and whereabouts of the type material. We subsequently located a specimen of *Leptopelis bocagii* from "Angola" in the collection of the Museé d'Histoire Naturelle de la Ville de Genéve (MHNG), Switzerland, that might be one of the three syntypes of the species, or at least, the second specimen mentioned by Günther in his letters to Bocage (see Ceríaco et al. 2014b). This specimen is morphologically similar to our material from CNP. As already noted by Parker (1936) and Poynton and Broadley (1987), the dorsal pattern is highly variable, even within the specimens collected in Cangandala, and this trait is not sufficient for diagnosis on its own. The species was abundant just after rain on the ground and in vegetation.

***Arthroleptis xenochirus* Boulenger, 1905**
PLAIN SQUEAKER – Fig. 3F

Material.—**12 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258612–16; CNP [-9.81942°, 16.65386°, 1089 m]: CAS 258617–22, [-9.81894°, 16.65489°, 1088 m]: CAS 258643.

Comments.—This species is well documented from northeastern Angola (Channing 2001). It is possible that more than one species may occur within the currently recognized range (see Marques et al., *in press*). This species was commonly found on the ground during rains.

Phrynobatrachidae
***Phrynobatrachus natalensis* (Smith, 1849)**
NATAL DWARF PUDDLE FROG – Fig. 3G,H

Material.—**20 specimens:** CNP, Cuqui River [-10.02128°, 16.71292°, 1047 m]: CAS 258593, 258637, [-9.97906°, 16.59694°, 1065 m]: CAS 258594–96; Right bank of Kwanza River [-9.88478°, 16.28628°, 1013 m]: CAS 258606–10; CNP [-9.72133°, 16.71058°, 1013 m]: CAS 258628–29, [-9.81814°, 16.61989°, 1077 m]: CAS 258633–35, [-9.82517°, 16.79942°, 1102 m]: CAS 258640, [-9.72261°, 16.77703°, 1117 m]: CAS 258641–42.

Comments.—*Phrynobatrachus natalensis* is a widespread species in the savanna and grassland regions of sub-Saharan Africa extending across much of southern Africa. Zimkus et al. (2010) and Zikmus and Schick (2010) discussed the nature of nominal *P. natalensis* as a species complex and indicated that this taxon contains multiple undescribed species (Lara 2016). The species was commonly found near the margins of small ponds and river margins, as well on the moist ground after rain.

Reptilia
Testudinidae
***Kinixys belliana* Gray, 1830**
BELL'S HINGE-BACK TORTOISE – Fig. 4A

Material.—**1 specimen:** 13.67 km SW (by road) of Cangandala [-9.84233°, 16.31733°, 1086 m]: CAS 258437.

Comments.—The precise delineation of the distribution of *Kinixys* species in Angola remains unclear, and genetic data will be necessary to establish species boundaries (U. Fritz, pers.

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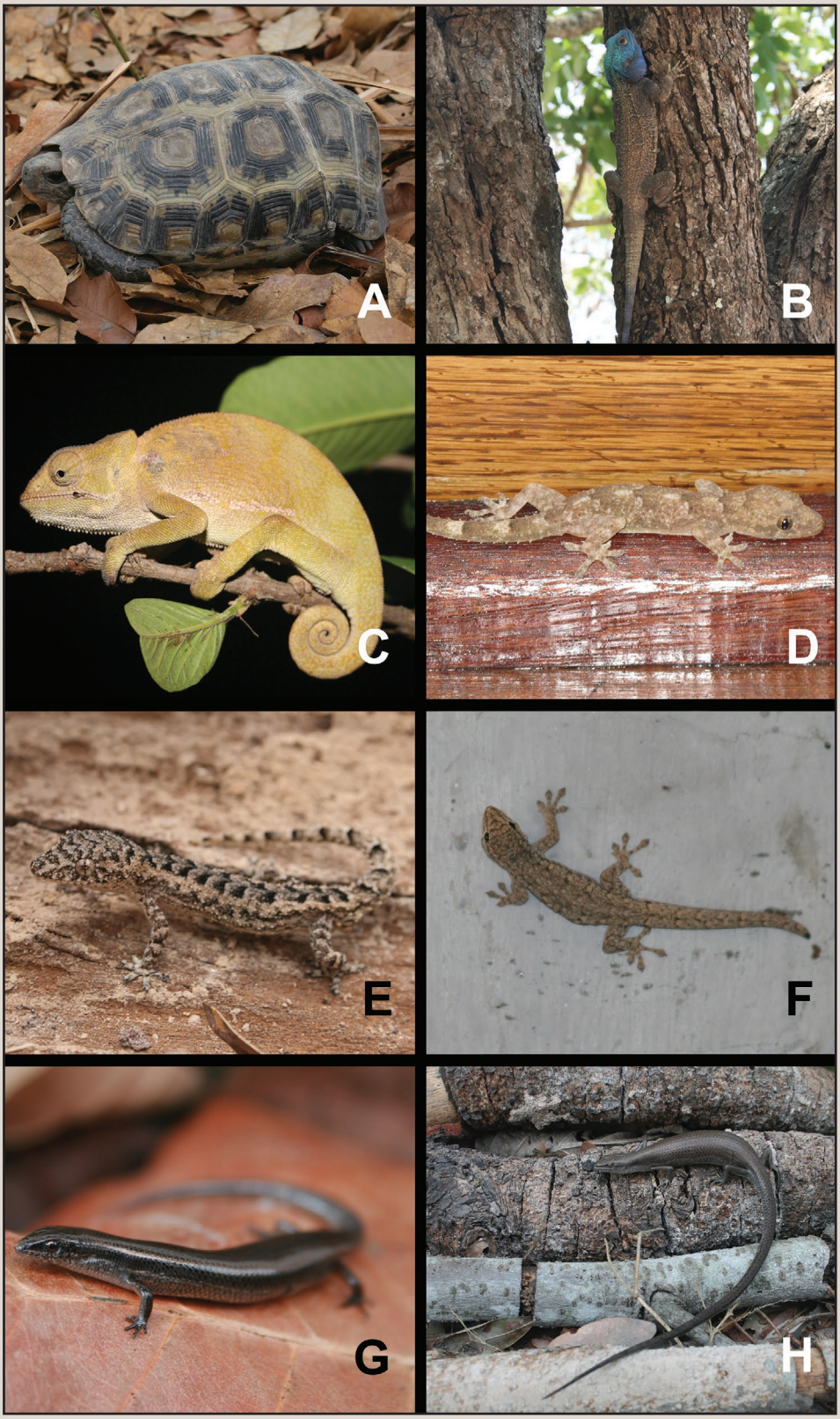

FIG. 4. A) Bell's Hinge-back Tortoise, *Kinixys belliana* Gray, 1830; B) Male Blue-headed Ridgeback Agama, *Acanthocercus cyanocephalus* (Falk, 1925); C) Common African Flap-necked Chameleon, *Chamaeleo dilepis* (Leach, 1819); D) Tropical House Gecko, *Hemidactylus mabouia* (Moreau de Jonnés, 1818); E) Guinea Split-toed Gecko, *Hemidactylus* cf. *muriceus* Peters, 1870; F) Angolan Dwarf Gecko, *Lygodactylus angolensis* Bocage, 1896; G) Cabinda Snake-eyed Skink, *Panaspis cabindae* (Bocage, 1866); H) Long Tailed Skink, *Trachylepis* cf. *megalura* (Peters, 1878). All photos from Cangandala National Park.

comm.). Doubts have existed regarding how many species of this genus occur in the country and which is their distribution within Angolan borders, with several authors presenting contradictory interpretations (Branch 2008; Fritz and Havaš 2007; Mifsud and Stapleton 2014; Turtle Taxonomy Working Group 2017; Vetter 2011); for a more detailed review on the topic, see Marques et al., *in press*). However, Kindler et al. (2012) provided molecular evidence that *K. belliana* comprises at least three deeply divergent lineages and considered the Angolan populations to represent the nominotypic form.

Ceríaco et al. (2016a) considered the Cangandala *Kinixys* to belong to *K. spekii*. However, we now tentatively assign the Cangandala population to *K. belliana* (U. Fritz, pers. comm.). Genetic analyses will facilitate comparison of this material to other known lineages (Fritz et al., unpubl.). During our field survey, we encountered poachers with a live specimen intended for the local bush meat market.

Squamata

Agamidae

***Acanthocercus cyanocephalus* (Falk, 1925)**

BLUE-HEADED RIDGEBACK AGAMA – Fig. 4B

Material.—**9 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258430–31; CNP, vicinity of park headquarters [-9.81887°, 16.65415°, 1096 m]: CAS 258428, [-9.81892°, 16.65410°, 1106 m]: CAS 258429, [-9.81858°, 16.65403°, 1089 m]: CAS 258433–34, [-9.81922°, 16.65414°, 1094 m]: CAS 258435; CNP [-9.86869°, 16.74736°, 1094 m]: CAS 258432; 13.67 km SW (by road) of Cangandala [-9.84233°, 16.31733°, 1086 m]: CAS 258436.

Comments.—Wagner et al. (2018) revised the Angolan *Acanthocercus* and presented evidence that most Angolan populations may be referable to the forgotten name *A. cyanocephalus* proposed by Falk (1925) based on Angolan material. This arboreal species occurs throughout most of the country with exception of the arid southwest and the northwestern regions, as well as in portions of neighboring countries (Marques et al., *in press*).

Chamaeleonidae

***Chamaeleo dilepis* (Leach, 1819)**

COMMON AFRICAN FLAP-NECKED CHAMELEON – Fig. 4C

Material.—**12 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258363–65; CPN, 0.25 km ENE (by rd) of park headquarters [-9.81836°, 16.65606°, 1116 m]: CAS 258371; CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258366–67, [-9.81942°, 16.65386°, 1089 m]: CAS 258368, [-9.81942°, 16.65386°, 1089 m]: CAS 258369–70; CNP [-9.82358°, 16.64431°, 1085 m]: CAS 258372, [-9.81450°, 16.68267°, 1093 m]: CAS 258373, [-9.78831°, 16.72969°, 1106 m]: CAS 258374.

Comments.—In Angola, *C. dilepis* is widely distributed across most of the country. Despite its wide range this is only the second recorded locality for the species in the Malanje Province (Table 1), but localities are known from many other provinces (Marques et al., *in press*). The species is locally feared and erroneously believed to be highly venomous by the locals.

Gekkonidae

***Hemidactylus mabouia* (Moreau de Jonnès, 1818)**

TROPICAL HOUSE GECKO – Fig. 4D

Material.—**1 specimen:** CNP, vicinity of park headquarters [-9.81810°, 16.65535°, 1092 m]: CAS 258427.

Comments.—As currently recognized, the widespread and human commensal *Hemidactylus mabouia* is part of a complex of many species (Vences et al. 2004). Several names are currently in the synonymy of *H. mabouia*, but ongoing work will likely elevate some of these to full species (I. Agarwal et al., unpubl.). Cangandala specimens, similar to Angola populations in general, appear to belong to *H. mabouia* sensu stricto (I. Agarwal, pers. comm.). The species is widespread in Africa and is commonly found around human settlements in both natural and altered habitats and its range is known to have expanded accordingly (Kluge 1969). In Angola, it occurs mainly in the north of the country, but also along the coast, including the Cabinda enclave. It is broadly sympatric with *Hemidactylus longicephalus* Bocage, 1873 throughout much of its range (see Marques et al., *in press*).

***Hemidactylus* cf. *muriceus* Peters, 1870**

GUINEA SPLIT-TOED GECKO – Fig. 4E

Material.—**17 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258410; CNP [-9.85464°, 16.70978°, 1096 m]: CAS 258411; [-9.85547°, 16.70892°, 1101 m]: CAS 258412, [-9.81161°, 16.64381°, 1085 m]: CAS 258413, [-9.84581°, 16.72036°, 1106 m]: CAS 258414, [-9.84703°, 16.72125°, 1121 m]: CAS 258415, [-9.83558°, 16.72125°, 1067 m]: CAS 258416, [-9.83600°, 16.68108°, 1102 m]: CAS 258417, [-09° 50' 09.6" S, 16° 40' 51.9" E, 1102 m]: CAS 258418, [-9.83831°, 16.67494°, 1113 m]: CAS 258419, [-9.78608°, 16.73211°, 1122 m]: CAS 258420, [-9.80961°, 16.65533°, 1082 m]: CAS 258421, [-9.81011°, 16.65564°, 1059 m]: CAS 258422, [-9.81653°, 16.66208°, 1108 m]: CAS 258423, [-9.80972°, 16.65631°, 1090 m]: CAS 258424; CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258425–25826.

Comments.—The identity of *H. muriceus* and its taxonomic relationships with other members of the genus have long been problematic (Bauer et al. 2006; Henle and Böhme 2003; Perret 1975). Preliminary molecular data reveals that within the *muriceus* group there are several deeply divergent lineages, and that the Angolan specimens do not belong to the nominotypic form that occurs in Guinea. The only other known Angolan records of this "*muriceus*-like" species are from Malanje Province, from the "Cuango = Quango river" (Bocage 1895; Peters 1881). Our specimens were collected in and under fallen logs, under bark and on the ground, which suggests a chiefly terrestrial lifestyle for the species.

***Lygodactylus angolensis* Bocage, 1896**

ANGOLAN DWARF GECKO – Fig. 4F

Material.—**9 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258354–56, [-9.81942°, 16.65386°, 1089 m]: CAS 258357, [-9.81942°, 16.65386°, 1089 m]: CAS 258358, [-9.81942°, 16.65386°, 1089 m]: CAS 258359, [-9.81942°, 16.65386°, 1089 m]: CAS 258360, [-9.81942°, 16.65386°, 1089 m]: CAS 258361; CNP [-9.81011°, 16.65564°, 1059 m]: CAS 258362.

Comments.—The distribution of *Lygodactylus angolensis* is poorly known in much of its range. Pasteur (1964) provided a map indicating that *L. angolensis* occupies a wide range from eastern to south-central regions of Angola where it might be sympatric with *Lygodactylus capensis* (Smith, 1849). The specimens collected in Cangandala National Park represent the first record of the species in Malanje Province and a northern range extension for the species in Angola. The species was relatively common basking in human dwellings and individuals were observed preying on stingless bees of the genus *Trigona*, waiting close to the tube-shaped hive and quickly attacking when the bees entered or left.

Scincidae

***Panaspis cabindae* (Bocage, 1866)**

CABINDA SNAKE-EYED SKINK – Fig. 4G

Material.—**5 specimens:** CNP [-9.85464°, 16.71003°, 1104 m]: CAS 258403–04, [-9.83497°, 16.68150°, 1052 m]: CAS 258405, [-9.75842°, 16.80061°, 1102 m]: CAS 258406, [-9.81500°, 16.67800°, 1122 m]: CAS 258407.

Comments.—A recent molecular phylogeny by Medina et al. (2016) shows that *P. cabindae* has an extensive distribution from the DRC to southern Angola. However, our preliminary molecular analyses based on the mitochondrial 16S and ND2 genes on several populations of *P.* cf. *cabindae* in Angola show a considerable degree of structure, potentially comparable to that found within the *P. wahlbergi* species complex by Medina et al. (2016). Further investigation is needed to assess the existence of putative cryptic species within *P. cabindae*. The newly collected material represents the first record of the species for Malanje Province, although the species has been recorded from several locations in the neighboring provinces of Bengo, Kwanza-Norte, and Kwanza-Sul (Marques et al., *in press*). Elsewhere in Angola, this species occurs along the coastal provinces from Cabinda to Namibe Province. The species was commonly found on the ground under leaves or logs.

***Trachylepis bayonii* (Bocage, 1872)**

BAYÃO'S SKINK

Material.—**3 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258357; CNP [-9.82689°, 16.65003°, 1089 m]: CAS 258387; right bank of the Kwanza River [-9.88525°, 16.28722°, 1005 m]: CAS 258388.

Comments.—This species, originally described by Bocage (1870) from "Duque de Bragança" (currently Kalandula) in Malanje Province, was later (Bocage 1895) split into two different varieties – variety *A*, from around the type locality, and variety *B*, from the highlands of Huíla in southwestern Angola. Variety *B* was later described by Laurent (1964a), as a subspecies, *Mabuya bayoni huilensis*. A third extralimital subspecies – *Trachylepis bayoni keniensis* (Loveridge, 1956) – is recognized by some authors (Menegon and Spawls 2013; Spawls et al. 2004). Our material is referable to the nominotypical form, and our records lie approximately 120 km southeast of the type locality. In Angola, this species mainly occurs in the central and southwestern regions of the country. This is the second locality for this species in Malanje Province, but localities are known from many other provinces (Marques et al., *in press*). Our specimens were initially confounded with *Trachylepis striata* and thus not included in Ceríaco et al. (2016b).

***Trachylepis* cf. *megalura* (Peters, 1878)**

LONG-TAILED SKINK – Fig. 4H

Material.—**1 specimen:** CNP [-9.84606°, 16.72233°, 1101 m]: CAS 258401.

Comments.—This slender, long-tailed skink is apparently related to the morphologically similar *Trachylepis megalura*. The presence of a *megalura*-group skink in Angola was previously reported by Laurent (1964a). According to Laurent (1964a), the specimens from "Alto Cuílo" differed from typical *T. megalura* by lacking the distinctive lateral line and having separated supranasal scales. The author assumed that the specimen from Alto Cuílo, together with some specimens from the Upemba National Park cited by de Witte (1953, not 1933, as wrongly cited by Laurent) belonged to a new and undescribed "angolo-katangaise" form. Based on a combination of study of Laurent's (1964a) and De Witte's (1953) specimens, a review of available museum specimens including the *megalura* holotype, as well as new analyses of mitochondrial 16S and ND2 genes, we support Laurent's (1964a) suggestion that the Angolan and Katanga specimens represent different taxon. These are closely related to topotypical *T. megalura*, and this species will be formally described elsewhere (Marques et al., unpubl.). The specimen was collected foraging under a shrub and contained 10 well-developed embryos.

***Trachylepis wahlbergii* (Peters, 1870)**

WAHLBERG'S STRIPPED SKINK – Fig. 5A

Material.—**7 specimens:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258394; CNP, vicinity of park headquarters [-9.81810°, 16.65535°, 1092 m]: CAS 258395, [-9.81810°, 16.65535°, 1092 m]: CAS 258396, [-9.81939°, 16.65383°, 1097 m]: CAS 258397, [-9.81772°, 16.65464°, 1088 m]: CAS 258398–99, [-9.81908°, 16.65469°, 1102 m]: CAS 258400.

Comments.—The validity of *T. wahlbergii* as a full species (as opposed to a synonym or subspecies of *T. striata*) is disputed (Branch 1998; Broadley 1977a, 2000; Castigilia et al. 2006; see Marques et al., *in press*). In their booklet, Ceríaco et al. (2016b) referred to this material as *T. striata*. These animals are widely distributed across Angola, although apparently absent from the forested far north and the arid far southwest. All records in the *T. striata* complex from across Namibia are potentially assignable to *T. wahlbergii* as are all records from western Zambia. It would seem likely, therefore that members in this group in Angola would also be assignable to this taxon. Color patterns of Angolan members of the group are variable and some specimens do at least superficially resemble true *T. striata*. However, it is probable on biogeographic grounds that most or all older Angolan literature records of "*T. striata*" are, in fact, referable to *T. wahlbergii*, or perhaps to another species, but not to *T. striata* sensu stricto. The species was commonly seen basking near human settlements and in areas with sparse vegetation.

***Trachylepis* cf. *varia* (Peters, 1867)**

VARIABLE SKINK – Fig. 5B

Material.—**58 specimens:** CNP, Park Headquarters [-9.81858°, 16.65403°, 1089 m]: CAS 258376; CNP [-9.86900°, 16.69131°, 1092 m]: CAS 258377, [-9.85464°, 16.71003°, 1104 m]: CAS 258378–79, [-9.84489°, 16.72103°, 1102 m]: CAS 25838–81, [-9.84461°, 16.72058°, 1118 m]: CAS 258382, [-9.86383°, 16.70797°, 1103 m]: CAS 258383, [-9.84539°, 16.72061°, 1096 m]: CAS 258384–85, [-9.84969°, 16.67908°, 1108 m]: CAS 258386, [-9.82756°, 16.66997°, 1097 m]: CAS 258389, [-9.75881°, 16.80233°, 1163 m]: CAS 258390–91, [-9.81175°, 16.69094°, 1084 m]: CAS 258392, [-9.77611°, 16.75472°, 1197 m]: CAS 258393.

Comments.—There are several cryptic species within the taxon currently known as *Trachylepis varia*, and the Angolan material is not referable to true *varia* (Weinell and Bauer, 2018). The name *albopunctata* may represent the Angolan population, although confusion with other available names and limited data on the distribution of different lineages precludes definitive conclusions at this time (see Marques et al., *in press*). In Angola, the species has a large distribution (Marques et al., *in press*), being known in Malanje from Pungo-Andongo (Boulenger 1905) and in the Kwanza River (Marques et al., *in press*).

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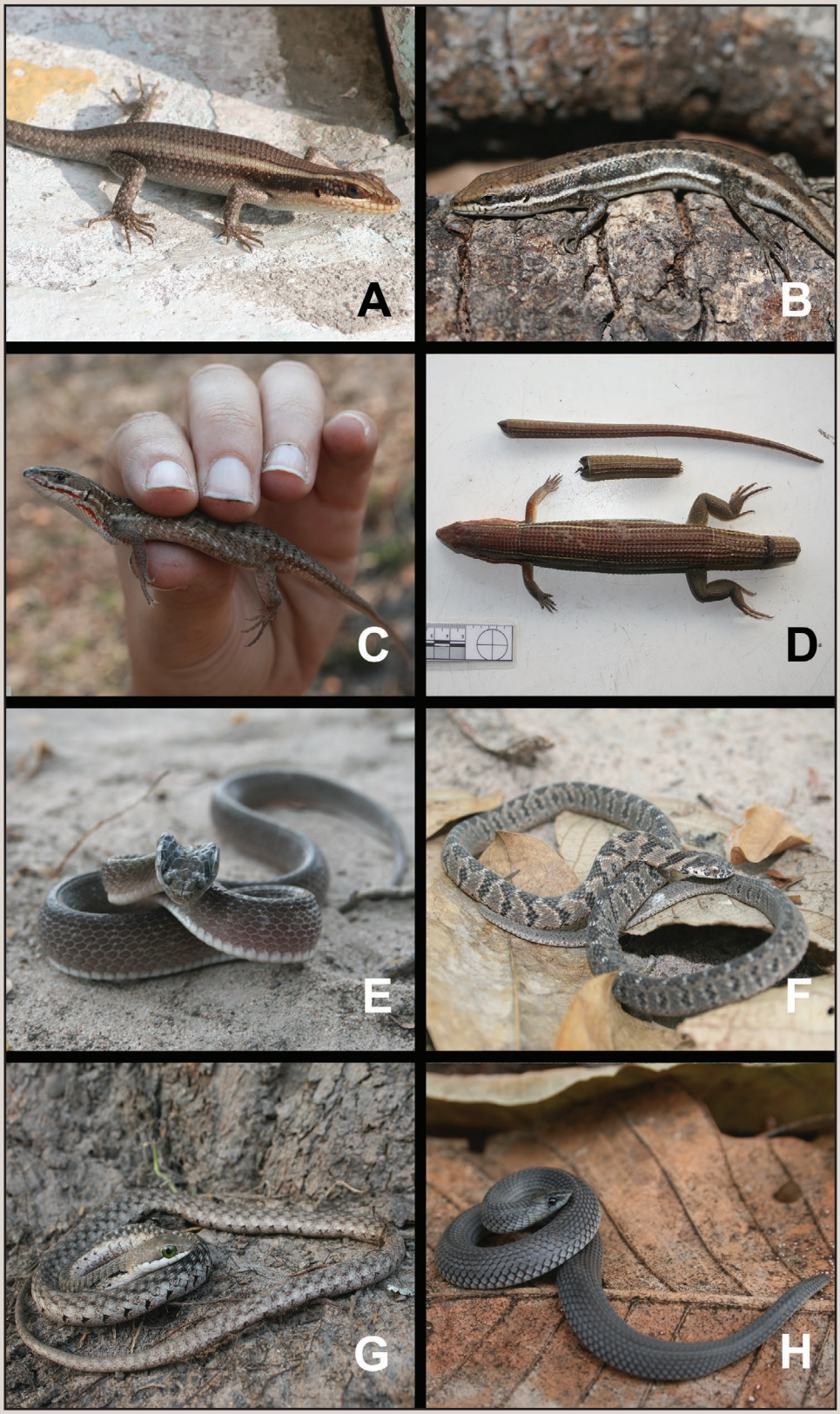

FIG. 5. A) Wahlberg's Striped Skink, *Trachylepis wahlbergii* (Peters, 1870); B) Variable Skink, *Trachylepis* cf. *varia* (Peters, 1867); C) Angolan Rough-scaled Lizard, *Ichnotropis bivittata* (Bocage, 1866); D) Keeled Plated Lizard, *Gerrhosaurus multilineatus* (Bocage, 1866); E) Red-lipped Snake, *Crotaphopeltis hotamboeia* (Laurenti, 1768); F) Common Egg Eater, *Dasypeltis scabra* (Linnaeus, 1758); G) Juvenile Boomslang, *Dispholidus typus typus* (Smith, 1829); H) Angolan Shovel Snout, *Prosymna ambigua* Bocage, 1873. All photos from Cangandala National Park.

Lacertidae

***Ichnotropis bivittata* (Bocage, 1866)**

ANGOLAN ROUGH-SCALED LIZARD – Fig. 5C

Material.—**2 specimens:** CNP [-9.85464°, 16.71003°, 1104 m]: CAS 258402; right bank of Kwanza River [-9.88439°, 16.28583°, 1041 m]: CAS 258409.

Comments.—Described from "Duque de Bragança" (currently Kalandula) in Malanje Province, *I. bivittata* was for some time misidentified with *Ichnotropis capensis* (A. Smith, 1838) (see Marques et al., *in press*). No modern revisions of the genus are available (Edwards et al. 2013). Our material agrees with the original description and is from close to the type locality. Records for the species are known for many provinces of Angola (see Marques et al., *in press*), and a subspecies, *I. b. pallida,* is recognized from Huíla Province. Recently, Ineich and Le Garff (2015) reported the species for Gabon, a northern record for the species.

Gerrhosauridae

***Gerrhosaurus multilineatus* (Bocage, 1866)**

KEELED PLATED LIZARD – Fig. 5D

Material.—**1 specimen:** CNP, park headquarters [-9.82078°, 16.60625°, 1101 m]: CAS 262312.

Comments.—The taxonomic and nomenclaturally problematic *G. multilineatus* was described based on a juvenile specimen from "Duque de Brangaça" (currently Kalandula) in Malanje Province, 120km northwest of CNP. Bates et al. (2013) described in great detail the issues surrounding the identity of *G. multilineatus* and type material which is now lost. For a long time *G. multilineatus* was considered a synonym of *G. nigrolineatus*, and it is likely that some Angolan records referred to *nigrolineatus* represent *multilineatus* (see Marques et al., *in press*). A new revision of the *Gerrhosaurus nigrolineatus* group (which includes *G. multilineatus, G. nigrolineatus, G. bulsi, G. flavigularis* and *G. intermedius*) is being prepared (M. Bates et al., unpubl.). Based on preliminary genetic analyses, our specimens, together with other specimens from Kissama National Park and the Kwanza River Basin, form a well-supported clade that likely represents nominotypical *multilineatus*. The species is abundant in CNP but extremely difficult to catch, as they rapidly flee into deep holes in the ground at first approach.

Varanidae

***Varanus niloticus* (Linnaeus, 1758)**

NILE MONITOR

Material.—**Observation:** CNP [-9.75889°, 16.79914°, 1142 m]: Specimen not collected.

Comments.—Angolan populations appear to fit within the southern group of nominotypical *V. niloticus* (Dowell et al. 2016). A single individual was observed in a flooded area in CNP.

Colubridae

***Crotaphopeltis hotamboeia* (Laurenti, 1768)**

RED-LIPPED SNAKE – Fig. 5E

Material.—**5 specimens:** CNP [-9.81942°, 16.65386°, 1089 m]: CAS 258671, [-9.81894°, 16.65489°, 1088 m]: CAS 258672, [-9.81810°, 16.65535°, 1092 m]: CAS 258673–74; CNP, park headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 258675.

Comments.—This species has a wide distribution in sub-Saharan Africa (Broadley and Cotterill 2004) and a phylogeographic analysis is therefore desirable to investigate the possibility of cryptic species (Bates et al. 2014). It is widespread throughout Angola, with exception of the desert of the far southwestern regions. It mainly occurs in savanna but also in wooded areas including miombo forest. Several specimens were found after rain feeding on *Sclerophrys pusilla*, *Hemisus guineensis*, and *Leptopelis bocagii*.

***Dasypeltis scabra* (Linnaeus, 1758)**

COMMON EGG EATER – Fig. 5F

Material.—**1 specimen:** CNP [-9.75889°, 16.79914°, 1142 m]: CAS 258669.

Comments.—The taxonomy of this species in southern Africa is being investigated, and the presence of cryptic taxa has been suggested (Bates and Broadley 2018). The species occurs in the entire country (including Cabinda Enclave), with exception of the desert regions of the far southwestern Angola. The collected material represents the first record of the species for Malanje Province, although the species has been recorded from several locations in the neighboring provinces of Kwanza-Norte, Lunda-Norte, and Lunda-Sul (Marques et al., *in press*).

***Dispholidus typus typus* (Smith, 1829)**

BOOMSLANG – Fig. 5G

Material.—**1 specimen:** CNP, Park Headquarters [-9.81942°, 16.65386°, 1089 m]: CAS 262313.

Comments.—An extensive review of the genus *Dispholidus* is currently in preparation by Eimermacher and Broadley (in prep.), after initial works suggesting the existence of multiple distinct lineages with potential taxonomic and nomenclatural implications (Eimermacher 2012). Of the four recognized subspecies, only two have been cited for Angola, the nominotypical form and *D. t. punctatus*, which Laurent (1955) reported for Dundo in northeastern Angola. However, despite limited sampling, Eimermacher (2012) suggested that the available name for specimens from northern Namibia is *D. t. viridis*, which might imply that the Angolan population not referable to the conspicuous *punctatus* (and currently identified as *typus*) may belong to this taxon. While *D. punctatus* is only known from northeastern Angola, the animals currently identified as *D. typus* are recorded across the country (see Marques et al., *in press*). For now, we regard the Angolan non-*punctatus* boomslang as the nominotypical form. Our juvenile specimen was collected after falling from a tree while preying on an adult *Chamaeleo dilepis*. Known locally as being venomous, locals believe that boomslangs derive their venom through predation on chamaeleons, through which they "receive" the venom (see *Chamaeleo dilepis* account above).

Lamprophiidae

***Boaedon* cf. *angolensis* Bocage, 1895**

ANGOLAN BROWN HOUSE SNAKE

Material.—**1 specimen:** CNP, village Bola-Cassaxi [-9.77363°, 16.82283°, 1089 m]: CAS 262315.

Comments.—Recent molecular genetic analyses conducted by Kelly et al. (2011) demonstrated extensive genetic variation in the widespread *B. "fuliginosus,"* suggesting several cryptic species are present. Wallach et al. (2014) assigned the Angolan records to *B. fuliginosus*. However, Marques et al. (*in press*) noted that some literature references to the *B. fuliginosus* complex may belong to *B. angolensis* or *B. variegatus*. Hallerman et al. (unpubl.) are evaluating species boundaries in this group.

***Prosymna ambigua* Bocage, 1873**
ANGOLAN SHOVEL-SNOUT – Fig. 5H

Material.—**1 specimen:** CNP [-9.81800°, 16.65697°, 1091 m]: CAS 258670.

Comments.—Described by Bocage (1873) based on one specimen from "Duque de Bragança" (currently Kalandula) in Malanje Province, 120 northwest of CNP. The specimen was collected during the night on a sandy road. All earlier records from Malanje are from the type locality in Duque de Bragança, thus this specimen is only the second locality for the province.

Discussion

Malanje Province is topographically and ecologically diverse and is dominated by two different river basins – the Congo-Casai, reaching Angola from the Republic of the Congo and the DRC, and the entirely Angolan Kwanza. Because of this hetereogeneity, Malanje is one of the provinces in which the turnover between Central and Southern African faunas is most evident. Bocage (1895) was the first to propose two main biogeographic zones in Angola—a northern region and a southern region—with the Kwanza River being the main divider between these. Within these regions, Bocage (1895) proposed a subsequent division—the coastal zone, the intermediate zone, and finally the high plateaus zone. Recent studies show that this biogeographic pattern is more complex than a simple north vs. south regionalization (Rodrigues et al. 2015). While it is evident that current knowledge regarding the zoogeography of Angola is incomplete, it is possible to make some biogeographic inferences. Malanje Province, and especially the area of CNP, corresponds to the border between the north-south regions proposed by Bocage (1895) and Frade (1963), and the intergradation between the northern "Zaire-Lunda-Cuanza" region and the more central "Central Plateau" region, and some of the taxa presented here support this pattern.

Additional faunal surveys are needed for Malanje Province. Currently, the northern half of the Province is almost virgin territory in terms of herpetological knowledge. Given its similarity in habitat and proximity to the DRC, we expect to discover many new records of species unknown to occur in Angola (and possibly even some that are new to science). The discovery of several frog species in neighboring Uíge Province by Ernst in Lautenschläger and Neinhuis (2014) suggests that species diversity of the northern areas of Malanje and Angola, in general, are underestimated. Besides these new areas of exploration, Malanje Province includes some of the most important type localities for many taxa, such as Duque de Bragança (currently Kalandula) and Pungo Andongo. Duque de Bragança alone is the type locality of 16 taxa of amphibians and 12 taxa of reptiles, whereas five taxa were described based on material for Pungo Andongo. The Duque de Bragança type material (with all of Bocage's Angolan collections housed in Lisbon) were destroyed in the 1978 fire that destroyed Museu Bocage. Although topotypical material was offered by Bocage to other museums across the world, the age and preservation of these specimens may preclude extraction of DNA from these. Fresh topotypical material for these taxa will be important to address outstanding taxonomic and nomenclatural uncertainties of different groups known to represent species complexes, including *Hyperolius angolensis*, *H. cinnamomeoventris*, *Leptopelis bocagii* and *Gerrhosaurus multilineatus*. Some specimens reported here are representatives of taxa for which Duque de Brangaça and Pungo Andongo are type localities, including *Hyperolius angolensis*, *H. cinnamomeoventris*, *H. nasutus*, *Leptopelis bocagii*, *Ichnotropis bivittata*, *Trachylepis bayonii*, *Gerrhosaurus multilineatus*, and *Prosymna ambigua*. Despite not being truly topotypical, the close proximity of CNP to these type localities provides an initial approximation to solve some of the taxonomic and nomenclatural uncertainties regarding these taxa and are likely to be of importance to several ongoing reviews and phylogenetic and phylogeographic studies.

PHOTOS BY L. M. P. CERÍACO

Fig. 6. A) General view of a recently burned area in Cangandala National Park; B) Live specimens of Bell's Hinge-back Tortoise, *Kinixys* cf. *belliana* Gray, 1830, together with other bush meat, collected by poachers in the park premises. Both photos from Cangandala National Park.

We have identified a total of 14 and 19 species of amphibians and reptiles, respectively, from CNP. Of these, *Hemisus guineensis*, *Ptychadena anchietae*, *Ptychadena guibei*, *Amnirana* cf. *darlingi*, *Lygodactylus angolensis*, *Hemidactylus* cf. *muriceus*, *Panaspis cabindae*, *Trachylepis* cf. *megalura* and *Dasypeltis scabra* are recorded for the first time for Malanje Province, whereas several taxa (*Amnirana* cf. *darlingi*, *Hemidactylus* cf. *muriceus* and *Trachylepis* cf. *megalura*) may represent species new to science. It is likely that many additional species will still be found in CNP. We were fortuitous in finding several snake species during our survey of the park. CNP rangers attributed the relatively small number of snakes found to the climatic conditions, noting that snakes were generally more abundant during and after the rains. In fact, a good number of the snakes collected (*Crotapholpeltis hotamboeia* and *Boaedon* cf. *angolensis*) were collected during the last days of work, after the rains had started. Other snake species, e.g., *Python sebae*, *Causus rhombeatus*,

Bitis arietans, *Naja anchietae* and *Dendroaspis polylepis*, are known to occur in the park but were not encountered in our survey (P. Vaz Pinto, pers. comm.; see Ceríaco et al. 2016b). Other species of snakes, including *Afrotyphlops angolensis, A. lineolatus, Letheobia scutifrons, Lycophidion multimaculatum, Philothamnus dorsalis, P. heterodermus, P. heterolepidotus, P. irregualris, Psammophis angolensis, Thelotornnis kirtlandi*, *Naja subfulva*, *Naja nigricollis*, and *Causus bilineatus* occur in nearby regions and in similar habitats, and their presence in the park may also be expected. Further field surveys in CNP as well as opportunistic observations will certainly find some of the above-mentioned taxa within the borders of the park, and possibly new species for Angola and to science.

Due to its limited size and the presence of the iconic Giant Sable, CNP is probably the most heavily guarded conservation area in the country, with a considerable number of local rangers, continuous monitoring and a large fenced area. However, these facilities do not entirely prevent events like wildfires or bush meat hunting. The presence of human communities in close proximity to the park results in regular wild fires in the context of traditional slash and burn agriculture, as well as the harvest of specific reptiles for human consumption. We observed both of these events during the short field survey made in the park. On the night of our arrival a large wildfire engulfed the east side of the park, and other burned areas were located in the interior of the park in the following days (Fig. 6A). Fires are known to have a detrimental effect on herpetological communities in Africa (Kennedy et al. 2012; Masterson et al. 2008), and a low number of specimens were indeed located and collected in these post-burn areas.

During our stay CNP guards retrieved eight live *Kinixys* cf. *belliana* from poachers inside the park limits, apparently intended to the local bush meat market (Fig. 6B). This is the first recorded event of *Kinixys* poaching in the country, but although bush meat is recognized as a conservation problem by the authorities and already mentioned by Bersacola et al. (2014), data regarding this practice in the country are lacking. Local persecution and killing of some reptiles, especially chamaeleons and snakes, may also be a potential threat to CNP reptile populations.

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