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An Updated Reptile List of Ivindo National Park, the Herpetofaunal Hotspot of Gabon

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Abstract

We provide an updated list of reptile species recorded so far from Ivindo National Park, Ogooué-Ivindo Province, northeastern Gabon, based on our new collections and literature survey. Including the 26 new species records presented here, the list comprises 62 species (4 chelonians, 2 crocodilians, 21 lacertilians and 35 ophidians) distributed among 43 genera and 17 families. New data are accompanied by biological observations. The park is of high herpetological and conservation interest, as it houses at least 48.4% of the 128 reptile species currently recorded from Gabon, including the rare gecko *Urocotyledon palmata* and an important population of the critically endangered crocodile *Mecistops cataphractus*. The park is home to five species of *Hemidactylus*, including *H. echinus*, here confirmed for Gabon, and to an undescribed species of *Lygodactylus*, possibly endemic to the park.

Keywords

Biodiversity, herpetofauna, Gekkonidae, Crocodylidae, protected areas, conservation, Equatorial Africa.

Introduction

Ivindo National Park, officially established in 2002 by the late Gabon President Omar Bongo Ondimba, is one of the most important sites in western Central Africa for biodiversity conservation (Anonymous, 2007; Vande weghe, 2009). It includes the Ipassa Reserve, protected since 1971, where the *Institut de Recherche en Ecologie Tropicale* (IRET) established a research station. The 3500 km^2 of the park are mostly covered by primary forest and traveled by numerous watercourses, the largest ones being the Ivindo, Djidji and Langoué rivers, all three affluents of the Ogooué River. Crossed by the Equator, the park includes the impressive Kongou and Djidji Falls and the Langoué Bai, one of the most important forest clearings in Africa. The highest peak, on Kinguié Mount, culminates at 749 m asl. The climate is typically equatorial with two wet seasons (a small one from February to April/May, and a longer one from August to November), a small dry season in December-January, and a longer dry season from May/June to July/August. In spite of the presence of a permanent research station since four decades and the high potential herpetological interest of such a huge, pristine and diverse forest park, its reptile fauna is still poorly known, and only 36 species have been recorded to date from the park and its buffer zone (Knoepffler, 1966, 1974; Christy et al., 2008; Pauwels, 2006; Pauwels and Maran, 2007; Pauwels et al., 2006). In order to contribute to fill this herpetological gap, the *Museo di Storia naturale del Salento* (MSNS) organized four expeditions in the park in 2010, 2011, 2012 and 2013, in collaboration with Gabon's *Centre National de la Recherche Scientifique et Technique* (CENAREST). The present work aims to present an updated, still preliminary, list of the herpetofauna of Ivindo National Park, based on reliable literature data and our new material and observations.

Material and Methods

New reptile material collected by us (PC) was deposited in the Natural History Museum of Salento in Calimera and in the Institut Royal des Sciences naturelles de Belgique in Brussels. Specimens not strictly found within the limits of the park and its buffer zone (see map in Anonymous, 2007: 148) are not included in the present study. Records from Loa Loa, Mayiga (= Mayika), Ntsibelong (= Ndzibelong) and Simintang (= Simingtang) are included, these localities being situated within the buffer zone of the park. Our first three field surveys (2010, 2011, 2012) were conducted from February to April, i.e., during the small rainy season. The 2013 survey took place in December, during the small dry season. Our base camp was located at 11 km from the town of Makokou, at Ipassa Research Station (0°30'44.14"N, 12°48'12.59"E), a few hundred meters from primary forest and at 200 meters from the Ivindo River (Figure 1). Sampling activities were conducted mainly around base-camp

Figure 1. View of the Ivindo River from Ipassa Research Station. Photograph by P. Carlino.

and up to 7 km southwest of the camp. Reptiles were sought visually, during day (examination of potential refuges, lifting of rocks and logs, tree bark peeling) and night, in the leaf litter and on vegetation up to 2 meters above ground. In 2010, in addition to visual search, we used funnel traps placed in forest-clearings ecotones around the research station and within the forest. The 60x30 cm traps (two funnel-shaped entrances narrowing to about 30 mm in diameter) were aligned along a fence of black polyethylene of 50 cm height and stapled vertically on thin wooden poles, with the basal part of the fence inserted in the ground and covered with leaves and soil, in order to avoid that reptiles pass under it. The funnels were placed at 10 meters from each other, with a total of 10 traps. Traps were checked every morning. Non-collected specimens were released at capture point. Location of funnel trap lines (FT): FT1-FT5 (0°30'36.11"N, 12°47'54.45"E); FT6-FT10 (0°30'37.52"N, 12°47'58.85"E); 4 to 12 April 2010, the first five funnels at the edge of a track along the forest, the latter five inside the forest along bushes and fallen trees. Collected specimens were injected with 90% ethanol then preserved in 70% ethanol. Ventral scales were counted according to Dowling's (1951) method. Dorsal scale rows were counted at one head length behind head, at midbody (above the ventral corresponding to half of the total number of ventrals), and at one head length before vent. Subcaudal counts exclude the terminal pointed scale. The sex of snakes was determined by dissection of the tail base. Specimens' main diagnostic morphological characters are provided in Table 1 (Lacertidae, Scincidae) and Table 2 (snakes) and within the species accounts. We examined all available literature on the reptiles of Gabon (see literature cited in Pauwels and Vande weghe, 2008; Pauwels et al., 2008, 2009, 2010; Pauwels and Sallé, 2009; Wagner et al., 2009; Pauwels and Vogel, 2011).

Abbreviations: CENAREST, Centre National de la Recherche Scientifique et Technique; FT, funnel trap; IRS: Ipassa Research Station; IRSNB: Institut Royal des Sciences naturelles de Belgique, Brussels, Belgium; MNHN, Muséum National d'Histoire Naturelle, Paris, France; MSNS, Natural History Museum of Salento, Calimera, Italy; SVL: snout–vent length; TaL: tail length.

Results

Chelonii
Pelomedusidae

Pelusios gabonensis (Duméril, 1856)
MSNS Rept 42: Ipassa, 08 Apr. 2010. Male, found in the leaf-litter in primary forest at 400 m SW of base camp. Five vertebral scales, slightly keeled; plastron hinge forming an obtuse angle; suture between anal scales slightly shorter than suture between femorals; carapace dark brown with mediodorsal black stripe, plastron totally black, no reticulated pattern on head; Y-shaped mark on head; straight length of carapace 93.2 mm. New record for the core zone of the park. Knoepffler (1974) recorded it from Loa Loa and Mayiga in the buffer zone of the park. Given the known localities of occurrence in Gabon, Pauwels and Maran (2007) regarded *Pelusios gabonensis* as most probably present within the core zone of the park.

Trionychidae

Trionyx triunguis (Forskål, 1775)
J. P. Vande weghe (pers. comm.) observed in Sept. 2005 nests of *Trionyx triunguis* on the banks of the Ivindo, a few km upstream Kongou Falls, as well as some adult specimens poached in the park.

Crocodylia
Crocodylidae

Mecistops cataphractus (Cuvier, 1824)
Sally Lahm (pers. comm.) observed individuals between Mingouli and Kongou Falls and between Mingouli Falls and Kouadjamongo. The numerous reports of the species from the park (Table 3) concur on the fact that it is locally abundant, especially in Djidji River.

Osteolaemus tetraspis Cope, 1861
Not collected. Dead specimen observed on 28 Feb. 2012 on sale at Makokou food market, captured in Ivindo National Park according to the seller. Its total length was about one meter; it showed a wound on the head, caused by a hunter machete. Knoepffler (1974) reported nine specimens from Loa Loa. Vande weghe (2006) reported that the species can be observed by day on the Djidji River.

We regard the undocumented listing of *Crocodylus niloticus* Laurenti, 1768 from the park by Steel (1994) as dubious (see discussion in Pauwels et al., 2006). Knoepffler (1974) indicated that the species apparently does not live upstream of Mingouli Falls.

Squamata
Agamidae

Agama agama (Linnaeus, 1758)
MSNS Rept 41: Ipassa, 21 Feb. 2011 (0°30'43.80"N, 12°48'12.14"E). Found near base camp at 11:00; scarcely present in the investigated area, but abundant in the neighborhood of Makokou and Loa Loa village where it is anthropophilic and usually found on house walls. SVL 149 mm; TaL >168 mm; 54 midline vertebral scales from midpoint of pectoral region to midpoint of pelvic region; 60 dorsal scales from midpoint of pectoral area to a point above cloaca; dorsals and supracaudals strongly keeled; 12 enlarged, poreless precloacal scales. New record for the park. It is interesting to note that Knoepffler (1974) did not report the species from Makokou nor any other locality he visited in the province. This supports the hypothesis that *A. agama* was introduced to Gabon only a few decades ago, and that its distribution in the country is still extending, following the development of roads, agriculture and human settlements (Pauwels et al., 2004; Pauwels, 2008; Pauwels and Vande weghe, 2011).

Chamaeleonidae

Chamaeleo cristatus Stutchbury, 1837
MSNS Rept 44: Ipassa, Feb. 2011. Adult male found asleep on a tree branch at 22:30 about 1.5 m above ground (0°30'46.12"N, 12°47'57.68"E, altitude 541 m asl) on the trail to IRS water

Figure 2. Adult male *Chamaeleo cristatus* (MSNS Rept 44) in situ at Ipassa, Ivindo National Park. Photograph by P. Carlino.

tank, 800 m from base camp. No gular crest, no ventral crest; canthus rostralis not meeting above snout; casque flat and strongly elevated posteriorly; tip of the casque pointed; lateral crest of the casque well developed with enlarged tubercles; dorsal and caudal keels present, not separated; flank scales small, intermixed with enlarged, flat tubercles; SVL 139 mm; TaL 128 mm (Figure 2). New record for the park (Pauwels et al., 2007).

Rhampholeon spectrum Buchholz, 1874
MSNS Rept 45: Ipassa, Apr. 2010 at 23:00. Adult male found on a fallen branch on the trail to IRS water tank, about 500 m from base camp. It was hunting about 50 cm above ground. On the same branch we captured a *Hemidactylus echinus* (MSNS Rept 28); the reptiles were at 20 cm from each other, apparently contending for the same prey, a nocturnal moth. No gular crest, no ventral crest; SVL 45.2 mm; TaL 23.5 mm; dorsal scales small, intermixed with scattered pointed tubercles; nasal appendage well developed; claws of hands and feet bicuspid. We photographed a second individual at IRS (Figure 3). The species was recorded by Knoepffler (1974) from Mayiga in the buffer zone. It was mentioned from Kongou Falls by Pauwels and Vande weghe (2008: 88).

Gekkonidae

Hemidactylus echinus O'Shaugnessy, 1875
MSNS Rept 28: Ipassa, Apr. 2010. Male discovered at 23:00 on a fallen branch on the trail to IRS water tank, about 500 m from base camp. It was about 50 cm above ground and was hunting on the same branch as a *Rhampholeon spectrum* (MSNS Rept 45), see observations under that latter species' section. SVL 70 mm; TaL 42 mm, last 36 regenerated; pupil vertical with crenelated margins; rostral partly divided by a vertical suture; 12/13 supralabials; 10/10 infralabials; 20 rows of dorsal tubercles at midbody, dorsal tubercles pointed, typically separated by 5 granular scales; one pair of postmentals in slight contact; 37 rows of ventrals at midbody between lowest rows of tubercles on flanks; an irregular row of 8 enlarged precloacal, poreless, scales; no enlarged femoral scales; subcaudals scales of original part of tail not enlarged; two pointed tubercles on the undersurface of tail, just before the regenerated part; hands and feet with slight basal webbing (Figure 4). MSNS Rept 51: Ipassa, 2011. SVL 47 mm; TaL 44 mm, tail original; pupil vertical with crenelated margins; rostral partly divided by a vertical suture; 14/11 supralabials; 10/9 infralabials; 20 rows of dorsal tubercles at midbody, dorsal tubercles pointed, typically separated by 4 granular scales; one pair of postmentals in slight contact; 42 rows of ventrals at midbody between lowest rows of tubercles on flanks; one row of 9 enlarged precloacals, each bearing a pore except the extreme left enlarged scale, i.e. in total a continuous series of 8 precloacal pores; no enlarged femoral scales; subcaudals scales not enlarged; spiny tubercles on upper and lower surfaces of tail, generally by groups of 3; hands and feet with slight basal webbing. The presence of pointed tubercles on the tail undersurface allows to unambiguously identify these specimens as *H. echinus* (Bauer and Pauwels, 2002; Henle and Böhme, 2003; Bauer et al., 2006). The species was listed from Gabon by Frétey and Blanc (2004) but was not retained by Pauwels and Vande weghe (2008) because of the lack of voucher (see also Pauwels, 2004).

Hemidactylus fasciatus Gray, 1831
MSNS Rept 95: near the base camp, on the trail to the water tank of IRS (0°30'46.41"N, 12°47'57.75"E, alt. 543 m asl), 10 Dec. 2013, 22:30. Adult male (Figure 5). SVL 71 mm; TaL 86 mm (partly regenerated tail, autotomized during capture); pupil vertical; rostral partly divided by a vertical suture; a patch of poreless enlarged precloacal scales in contact with on each side a row of enlarged poreless femoral scales; subcaudals strongly widened; hands and feet with basal webbing. In addition, a dead

Figure 3. Adult *Rhampholeon spectrum* in situ at Ipassa Research Station, Ivindo National Park. Photograph by P. Carlino.

Figure 4. Adult *Hemidactylus echinus* (MSNS Rept 28) from Ipassa, Ivindo National Park. Photograph by P. Carlino.

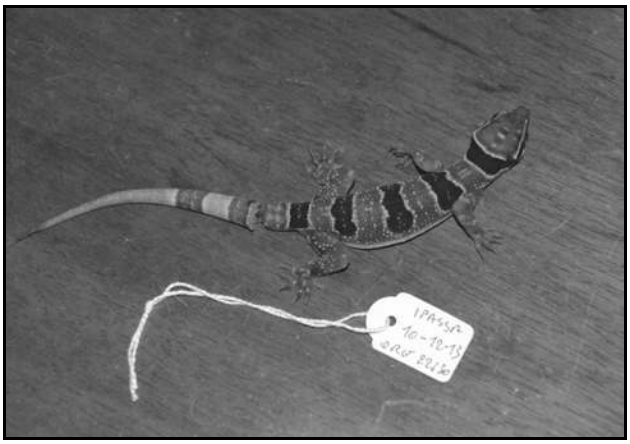

Figure 5. Adult *Hemidactylus fasciatus* (MSNS Rept 95) from Ipassa, Ivindo National Park. Photograph by P. Carlino.

Figure 6. Adult *Hemidactylus muriceus* (MSNS Rept 16) in situ at Ipassa, Ivindo National Park. Photograph by P. Carlino.

adult individual was found on 22 Feb. 2012 at 18:20 on the access road to the IRS, about 1 km from the entrance (0°31'16.07"N , 12°48'00.03"E, altitude 488 m asl). The latter specimen, which was being eaten by ants, was in very bad condition and was not collected; its dorsal color pattern was similar to that of MSNS Rept 95. Wagner et al. (2014) reviewed *Hemidactylus fasciatus* and assigned the mainland Gabonese, southern Cameroonian and Congolese populations to *H. coalescens* Wagner, Leaché & Fujita, 2014. Their diagnosis mentioned that this latter species is distinguished from the other species they described or recognized within the *H. fasciatus* complex by its more elongated head and by its coloration. Unfortunately they did not provide any morphometric data for the head among populations, hence not allowing comparisons. They mentioned that *H. coalescens* is "unique in coloration by possessing body crossbands which are more narrow than the pale interspaces; the interspaces contain indistinct dark bands which are not connected at the vertebrate [sic]; by having the first body crossband restricted to the neck (vs. reaching the cranium as in the other species); by having the last crossband on the body between the legs not in contact with the hindlimbs (vs. in contact); and by having a distinctly fine narrow dark stripe on the side of the head between eye and ear, as the extension of the crossband on the neck (vs. a band slightly narrower or as broad as the crossband in the other species)." While this description applies to their holotype, it does not at all take into account the variation found in populations in Gabon and surrounding mainland areas. As an example, MSNS Rept 95 and the individuals illustrated by Pauwels and Vande weghe (2008: 96-97, one from Loango National Park in southwestern Gabon and the other from Ivindo National Park), show body crossbands which are not narrower than the pale interspaces, no indistinct dark bands within interspaces, a first body crossband that is not restricted to the neck, a last body crossband in contact with the hindlimbs, and no distinctly narrow dark stripe between eye and ear. There is thus not a single diagnostic coloration character of *H. coalescens* that is applicable to these specimens. Wagner et al. (2014) mentioned only one character to separate *H. fasciatus* from *H. coalescens*, i.e., a broad dark band between the eyes and the neck, vs. a narrow stripe in *H. coalescens*. In the three Gabonese specimens mentioned above the band is as broad as in the *H. fasciatus* specimen illustrated by Wagner et al. (2014). Pending the hypothetical discovery of characters that will allow separating the populations named by Wagner et al. (2014) we adopt a conservative approach and regard them as synonyms.

Hemidactylus mabouia (Moreau de Jonnès, 1818)
MSNS Rept 7: Ipassa, Feb. 2012. Found at night on the wall of a house at IRS. SVL 57 mm; TaL 77 mm, including last 23 mm regenerated; pupil vertical with crenelated margins; rostral surrounded by 1st supralabials, nasals, and 3 small scales separating the nasals; rostral partly divided by a vertical suture; rostral in contact with first supralabials, nasals, internasals, and one scale separating the internasals; 10/10 supralabials; 10/9 infralabials; 17 rows of dorsal tubercles at midbody; dorsal tubercles typically separated from each other by 6 small dorsal scales; tubercles of the lowest row similar to others, i.e., not spine-like; 50 rows of ventral scales at midbody between lowest rows of flank tubercles; a continuous row of 32 femoro-precloacal pores; subcaudals strongly widened; all fingers and toes clawed. Christy et al. (2008) first reported the species from the park based on observations made by J. P. Vande weghe (pers. comm.) in 2007 on the walls of IRS. It is possible that this species only recently reached Ivindo NP, following the development of roads and human infrastructures (Pauwels and Vande weghe, 2011).

Hemidactylus muriceus Peters,1870
MSNS Rept 16: Ipassa, Feb. 2012 (0°30'37.01"N , 12°47'57.52"E, altitude 548 m asl). Adult male found active at night on a bush with thin branches just above the ground. SVL 43; tail complete, TaL 37 mm; pupil vertical with crenelated margins; rostral surrounded by 1st supralabials, nasals, and 4 small scales separating the nasals; rostral partly divided by a vertical suture; 10/11 supralabials; 10/9 infralabials; 15 rows of dorsal tubercles at midbody; 33 rows of ventral scales at midbody between lowest rows of tubercles; tubercles of the lowest row spine-like; a continuous series of 8 precloacal pores; no femoral pores; subcaudals not enlarged; fingers and toes unwebbed; all digits and toes clawed (Figure 6). New record for the core zone of the park. Knoepffler (1974) recorded it from Mayiga in the buffer zone. Besides our voucher material, we observed several individuals at Ipassa, where the species is common.

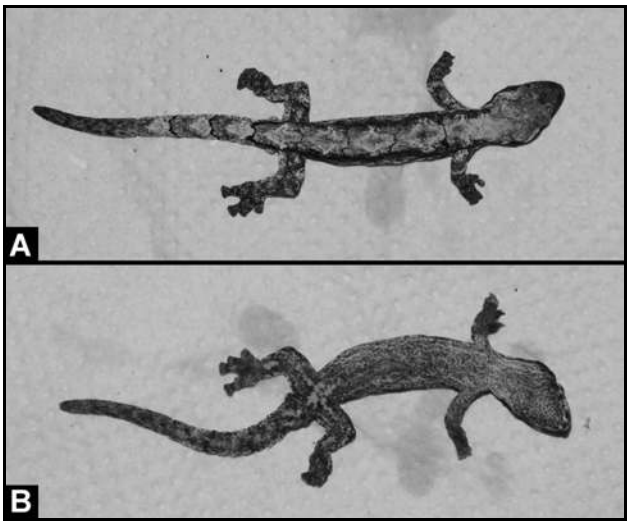

Figure 7. Adult *Urocotyledon palmata* (MSNS Rept 22) from Ipassa, Ivindo National Park. **A**) general dorsal view; **B**) general ventral view. Photograph by P. Carlino.

Hemidactylus richardsonii (Gray, 1845)
MSNS Rept 27: Ipassa, 22 Feb. 2012. Adult male found at 23:00 near base camp, on the road to IRS. SVL 47 mm; TaL >5 mm (tail autotomized, lost during capture); pupil vertical with crenelated margin; incomplete vertical suture on rostral; rostral bordered by 1st supralabials, nasals, and 3 scales that separate the nasals; 12/13 supralabials; 4 rows of small dorsal tubercles at midbody; a continuous row of 42 enlarged femoro-precloacal scales, with 5 (left) + 4 (right) cloacal pores separated by a diastema of 2 poreless scales; fingers and toes strongly webbed; claws on each finger and toe. Two distinct adult individuals from Langoué rocky clearing were illustrated by Vande weghe (2006: 204) and Pauwels and Vande weghe (2008: 101), respectively. The mention of *H. richardsonii* by Trape et al. (2012: 81, 243) from "Ivindo" is actually based on a specimen from Gamba, Ogooué-Maritime Province, southwestern Gabon (Pauwels and Kok, 2013).

Urocotyledon palmata (Mocquard, 1902)
MSNS Rept 22: Ipassa, 21 Feb. 2012 (0°30'45.92"N, 12°48'14.78"E, alt. 510 m asl). Male, found hunting at 1:20 AM on a wall house in IRS peripheral area, near secondary forest and Ivindo River. It was found in syntopy with *Hemidactylus mabouia*. SVL 50 mm; tail complete, TaL 47 mm; pupil vertical with crenelated margin; rostral surrounded by 1st supralabials, nasals, and 5 small scales separating the nasals; no suture dividing the rostral; 12/10 supralabials; 9/9 infralabials; mental small, slightly smaller than 1st infralabials, bordered posteriorly by 2 scales separating the 1st infralabials; no dorsal tubercles; tail dorsoventrally flattened, with apical adhesive pad; subcaudals larger than supracaudals but not transversely widened; no precloacal pores, no femoral pores, no enlarged femoral or precloacal scales; distal part of fingers and toes bearing a divided, widened lamella; all digits and toes clawed; hands and feet strongly webbed (Figure 7). New record for the park and for the province. In Gabon this very rare species was recorded so far only from its type material at the type-locality, about 50 km SW of Lambaréné, in Moyen-Ogooué Province. This discrete canopy-dweller is probably widespread in Gabon.

Lacertidae

Poromera fordii (Hallowell, 1857)
MSNS Rept 41: Ipassa, 8 Apr. 2010. Adult individual found in FT2. Supranasals widely in contact; prefrontals widely in contact; lower eyelid scaly without transparent disc; 3/3 supraoculars; 6/7 supraciliaries; 3 pairs of sublinguals in median contact followed by a pair not in contact; 32 dorsal scales between interparietal and a point above the cloaca; enlarged mediodorsal rows; 10/11 femoral pores separated by 3 precloacal scales; ventrals and subcaudals keeled. First record for the core zone of the park. Knoepffler (1974) recorded it from Mayiga in the buffer zone.

Scincidae

Feylinia currori Gray, 1845
MSNS Rept 19: Ipassa, Feb. 2012. Found at midday in IRS, under a wood debris pile near the car garage. Two internasals; 3rd/3rd supralabial in contact with ocular; smooth dorsals; 122 ventrals between post-mental and the 2 precloacals; one postmental, in contact with the 1st infralabial on each side. First record for the park.

Lepidothyris striatus (Hallowell, 1854)
MSNS Rept 37: Ipassa, Feb. 2011. Nostril pierced in the nasal; tympanum deeply sunk, visible; lower eyelid scaly, lacking a transparent disc; round pupil; five thin toes; dorsalmost dorsum scales bearing 5 keels; flank scales bearing 3 to 5 keels; 58 rows of ventral scales between throat and cloaca; throat with black longitudinal stripes laterally; no distinct dark bars or stripes on flanks; belly white; head not distinct from body; 4/4 supraoculars; 8/8 supraciliaries; 2 very weakly developed ear lobules; supranasals in contact, prefrontals separated. A very elusive individual, observed at the same spot several times without the possibility of capture; it was caught with difficulty after about a week, into a pile of debris. First record for the park and the province.

Panaspis breviceps (Peters, 1873)
MSNS Rept 40: Ipassa, Apr. 2010. This individual was running in sunny weather on a dead branch about a meter above the ground, near FT4. Lower eyelid with transparent disc; no supranasals; prefrontals separated; tympanum slightly sunk, visible; 4/4 supraoculars; 8/8 supraciliaries; dorsals and ventrals smooth; vertebral rows not enlarged; 51 scales between postparietals and a point above cloaca; >69 subcaudals. First record for the park.

Trachylepis affinis (Gray, 1839)
We regard the individual from Langoué rock clearing illustrated and identified as *Mabuya* sp. by Vande weghe (2006: 249) as *T. affinis*. First record for the park.

Trachylepis albilabris (Hallowell, 1857)
IRSNB 18340: IRS, Feb. 2012. Head partly damaged by ants; lower eyelid with a transparent disc; dorsals with 3, sometimes 5, keels; prefrontals widely in contact; 4/4 supraoculars; 5/5 supraciliaries; 58 scales between throat and cloacal scales; 95 subcaudals. MSNS Rept 39: Ipassa, 11 Apr. 2010. Found in

FT9. Lower eyelid with a transparent disc; internasals slightly separated; prefrontals widely in contact; 4/4 supraoculars; 8/6 supraciliaries; dorsals with 3 keels; 49 scales between throat and cloacal scales; 50 scales between post-parietals and a point above cloaca; 95 subcaudals. First record for the park and for the province.

Trachylepis maculilabris (Gray, 1845)
IRSNB 18331: IRS, Feb. 2011. Found at 11:30 basking on a rock near a house. Internasals just separated; prefrontals separated; dorsals with 6, sometimes 5 or 7, keels; ventrals smooth; 59 ventral rows between throat and precloacal scales; 54 scales between post-parietals and a point above cloaca; >44 subcaudals. IRSNB 18332: IRS, Feb. 2011. Internasals just separated; prefrontals only just separated; dorsals with 5 keels; ventrals smooth; 60 ventral rows between throat and precloacal scales; 53 scales between post-parietals and a point above cloaca; 95 subcaudals. IRSNB 18333: IRS, Feb. 2011 (0°30'47.35"N, 12°48'3.58"E). Found at 9:30 active on a forest trail. Internasals separated; prefrontals in contact by a point; dorsals with 5, sometimes 6 or 7, keels; 57 ventral rows between throat and precloacal scales; 53 scales between post-parietals and a point above cloaca; 77 subcaudals. MSNS Rept 38: Ipassa, Apr. 2010. Narrow contact between internasal and rostral; prefrontals in contact; dorsals with 5 keels; ventrals smooth; 58 ventral rows between throat and precloacal scales; 56 scales between post-parietals and a point above cloaca; 97 subcaudals. All specimens show a round pupil; lower eyelid with a transparent disc; 4/4 supraoculars; 5/5 supraciliaries; mediodorsal row not enlarged. First record for the park.

Varanidae

Varanus ornatus (Daudin, 1803)
MSNS Rept 46: Ipassa, Feb. 2011. Young specimen found basking in the morning on the edge of the entrance road to the IRS. SVL 218 mm; TaL 374 mm, complete; 158 scale rows at midbody; 70 scales between mental scale and neck collar; 101 scales between neck collar and cloaca; 270 subcaudals; 5 yellow dorsal bars between limb insertions; tongue yellowish. Vande weghe (2006) indicated that it was the most commonly observed reptile in the park. The individual illustrated by Vande weghe (2006: 83) was photographed at Massouna 2000 site.

Boidae

Calabaria reinhardtii (Schlegel, 1851)
IRS Collection, unnumbered (Figure 8), Feb. 2012. Found dead in the forest near the base camp. First record for the park.

Colubridae

Boiga blandingii (Hallowell, 1844)
MSNS Rept 15: Ipassa, Jan. 2011. Caught at 21:00 on top of a small tree near base camp in secondary forest. First record for the park.

Boiga pulverulenta (Fischer, 1856)
MSNS Rept 14: Ipassa, Feb. 2012. Found at 22:30 in primary forest at 4 km west of the base camp, coiled on a tree branch about 2 meters above ground, near a small stream. First record for the park.

Dasypeltis fasciata Smith, 1849
MSNS Rept 12: Ipassa, Feb. 2012. Found basking at 10:00 on a fallen branch on the ground. First record for the core area of the park. Knoepffler (1966) recorded it from Loa Loa in the buffer zone.

Dipsadoboa duchesnii (Boulenger, 1901)
MSNS Rept 92, 4 Dec. 2013. Found at 23:00 inside a flooded boat in the base camp garage. Not aggressive at all when caught. First record for the park and for Ogooué-Ivindo Province.

Dipsadoboa underwoodi Rasmussen, 1993
MSNS Rept 3: Ipassa, Dec. 2010. Found within IRS perimeter. MSNS Rept 04: Ipassa, Mar. 2011. Caught at 1:30 AM on a big tree along an elephant trail and a small stream. In both specimens vertebral row slightly widened; pupil vertically elliptical; frontal distinctly longer than wide; abdominal coloration not contrasting with subcaudal coloration. First record for the park and for the province.

Dipsadoboa viridis (Peters, 1869)
MSNS Rept 2: Ipassa, 28 Feb. 2012. Found at 22:50 along a trail in secondary forest at 600 m from the base camp towards the water tank. It was moving on a branch about 70 cm above the ground. Vertebral row slightly widened; pupil vertically elliptical; abdominal coloration not contrasting with subcaudal coloration. First record for the core part of the park. Knoepffler (1966, under the name *Dipsadoboa u. unicolor*) and Rasmussen (1993) recorded it from Loa Loa in the buffer zone.

Dipsadoboa weileri (Lindholm, 1905)
MSNS Rept 1: Ipassa, 28 Feb. 2012. Found at 23:00 in primary forest at 4 km west of base camp. It was coiled on a tree branch at one meter above ground, at 300 meters from a small stream. Vertebral row slightly widened; pupil vertically elliptical; abdominal color strongly contrasting with subcaudal color. First record for the park.

Figure 8. Preserved adult *Calabaria reinhardtii* from Ipassa Research Station Collection (specimen unnumbered). Photograph by P. Carlino.

Grayia ornata (Barboza du Bocage, 1866)
MSNS Rept 43: Ipassa, Feb. 2011. Found at 21:00 on floating vegetation in a small *bai* [a natural, swampy forest clearing]; not aggressive when caught. Round pupil; as is typical for the species, presence of an extralabial (in the present individual between the 5th and 6th supralabials on each side). The individual MNHN 1997.6517 used by Vidal and Hedges (2002) for their caenophidian snake phylogeny, indicated as originating from "Ivindo River, Ogooué, Gabon," was in fact collected by fish net by the French ichthyologist Sébastien Lavoué in the Ivindo River near IRS (Lavoué, pers. comm.). First records for the core zone of the park. Knoepffler (1966) recorded it from Loa Loa in the buffer zone.

Hapsidophrys smaragdina (Schlegel, 1837)
IRSNB 18338-18339: IRS, Feb. 2011, Feb. 2012, resp. MSNS Rept 24: Ipassa, Feb. 2012. Found by day crossing the Ipassa-Makokou road. Both specimens show a round pupil; vertebral row not widened; anterior sublinguals shorter and wider than the posterior ones. They were fast, aggressive and repeatedly bit when handled. The individual (MNHN 1997.6516) used in the snake phylogeny by Vidal and Hedges (2002) and said to originate from "Ivindo River, Ogooué, Gabon" was actually collected by S. Lavoué on the river bank facing Loa Loa Falls (Lavoué, pers. comm.). First records for the park and its buffer zone.

Philothamnus carinatus (Andersson, 1901)
MSNS Rept 21: Ipassa, Apr. 2010. Found at 10:00 at 3 km west of the base camp, in secondary forest; it was moving between branches about 2 meters above ground, by cloudy weather. MSNS Rept 50: Ipassa, 2012. Found in the evening in secondary forest about 1 m above the ground. In both specimens, round pupil; vertebral row not enlarged; anterior sublinguals longer and slightly wider than posterior ones; subcaudals only slightly keeled. First record for the park.

Philothamnus heterodermus (Hallowell, 1857)
MSNS Rept 20: Ipassa, 25 Feb. 2012. Round pupil. First record for the core area of the park. Knoepffler (1966) recorded the species from Loa Loa and Mayiga in the buffer zone.

Elapidae

Dendroaspis jamesoni jamesoni (Traill, 1843)
MSNS Rept 94, 6 Dec. 2013. Found on the road near Ipassa barrier at 18:00 during heavy rain. First record for the core area of the park. Knoepffler (1966) recorded it from Loa Loa in the buffer zone.

Naja annulata annulata Buchholz & Peters *in* Peters, 1876
MSNS Rept 10: Ipassa, 9 Dec. 2010. Caught at 15:30 while it was swimming in Ivindo River near the pirogue pier. Round pupil. The individual illustrated by Vande weghe (2006: 84) was photographed in the park's southernmost part. The Ivindo National Park records confirm syntopical occurrence of *Naja a. annulata* and the similar but harmless colubrid *Grayia ornata* in Ivindo River; documented co-occurrences of these two species are uncommon (Pauwels et al., 2002c).

Naja melanoleuca Hallowell, 1857
MSNS Rept 9: Ipassa, Jan. 2011. Found at midday on the ground near a cultivated field. This individual shows one more ventral than the maximum (228) given by Chippaux (2006) for the species. Knoepffler (1966) recorded the species from Loa Loa, Mayiga and Ntsibelong in the buffer zone. J. P. Vande weghe (pers. comm.) observed one individual in late 2005 at IRS.

Lamprophiidae

Aparallactus modestus (Günther, 1859)
MSNS Rept 34: Ipassa, Feb. 2012. Found dead on road. Round pupil; vertebral row not enlarged; 6th/6th supralabial in contact with parietal; anterior sublinguals longer and wider than posterior ones. First record for the park.

Bothrophthalmus brunneus Günther, 1863
IRS collection, unnumbered. First record for the park and for the province. This specimen does not show dorsal stripes (Figure 9), similarly to the specimens listed by Knoepffler (1966) under *B. lineatus lineatus*, that we re-examined and re-identified as *B. brunneus* (Pauwels and David, 2008). We confirm here the lack of record, and the probable absence, of the lineated form from Gabon.

Gonionotophis brussauxi (Mocquard, 1889)
MSNS Rept 36: Ipassa 23 Feb. 2012. Found at 23:30 on a fallen tree at the edge of the trail to the water tank of IRS, about 500 m from the base camp. Round pupil; anterior sublinguals much longer than the posterior ones. First record for the park.

Figure 9. Preserved adult *Bothrophthalmus brunneus* from Ipassa Research Station Collection (specimen unnumbered), showing the typical whitish head with black stripes and the absence of red stripes on the body. Photograph by P. Carlino.

Gonionotophis poensis (Smith, 1847)
IRSNB 18334: IRS, Feb. 2011. MSNS Rept 5: Ipassa, Feb. 2012. MSNS Rept 25: Loa Loa, 26 Feb. 2011. MSNS Rept 26: Loa Loa, 25 Feb. 2011. MSNS Rept 47: Ipassa, Feb. 2012. MSNS Rept 25 and 26 found active at 18:30 and 21:00 respectively. All show a slightly vertically elliptic pupil; widened vertebral row with two keels. MSNS Rept 5 has a total length of 1405 mm, while Pauwels and Vande weghe (2008) indicated a maximum total length of 1400 mm and Chippaux (2006) and Chirio and LeBreton (2007) a maximum total length of 1200 mm. First record for the park.

Gonionotophis stenophthalmus (Mocquard, 1887)
MSNS Rept 18: Ipassa, Feb. 2012. Found active at midnight in primary forest, it tried to escape by going under a fallen tree. Pupil roundish; vertebral row widened, bearing two keels; anterior sublinguals distinctly longer and wider than the posterior ones. First record for the park.

Lamprophis olivaceus (Duméril, 1856)
MSNS Rept 23: IRS, Jan. 2011. Found at 19:00 within IRS perimeter, at the foot of a big tree. On the right side slight contact between loreal scale and orbit. First record for the core zone of the park. Knoepffler (1974) recorded the species from Loa Loa, Mayiga and Ntsibelong in the buffer zone.

Lycophidion laterale Hallowell, 1857
MSNS Rept 11: Ipassa, Jan. 2011. Round pupil; an additional half ventral on right side between last ventral and cloacal scale, not included in the ventral scales count; 2 to 4 apical pits per dorsal. MSNS Rept 30: Barrière d'Ipassa, Feb. 2011. Round pupil; 1 to 5 apical pits per dorsal. Both specimens found dead on road. The stomach of MSNS Rept 30 contains the remains of a *Trachylepis* sp. First record for the park and for the province.

Polemon collaris (Peters, 1881)
MSNS Rept. 31: Ipassa, Apr. 2010. Head damaged by ants. Round pupil; contact between prefrontals 1.40 mm; frontal distinctly longer (2.78) than wide (1.77); contact between parietals 2.92 mm; no contact between supralabials and parietals; parietals white, without black spot; dorsum uniformly black; dorsum coloration reaching ventrals' lateral tips; venter uniformly white. MSNS Rept. 32: Ipassa, Feb. 2011. Round pupil; prefrontals distinctly longer and wider than internasals; contact between internasals 1.44 mm; contact between prefrontals 2.46 mm; frontal distinctly longer (4.60 mm) than wide (3.41 mm); 1+1 / 1+1 temporals; contact between parietals 5.16 mm; no contact between supralabials and parietals; anterior sublinguals wider and slightly longer than the posterior ones; a black spot on the anterior part of each parietal. Both specimens found dead on road. The use of Meirte's (1992) and Chirio and LeBreton's (2007) keys for these specimens leads to an identification as *Polemon collaris*. The use of the key provided by Branch in Pauwels and Vande weghe (2008) does not conclude to any species, since it leads to an alternative between no contact between supralabials and parietals and one supralabial in contact with the eye (*P. fulvicollis*), and contact between one supralabial and parietal and two supralabials in contact with eye (while our specimens shows no contact between supralabials and parietals and two supralabials in contact with eye); if one chooses the second alternative, it leads to *P. notatus* with a black head with white spots and a spotted dorsum, or *P. collaris* with more than 230 ventrals (vs. a uniformly-colored dorsum and 205 ventrals in our specimens); however Branch underestimated the variation in ventral scales, given as 195–236 for *P. c. collaris* by de Witte and Laurent (1947). Idem, Chippaux's (2006) key does not lead to any species, since at point 4 there is a choice between a contact between supralabials and parietals and two supralabials contacting the eye, and no contact between supralabials and parietals and one supralabial contacting the eye, while our specimens show no contact between supralabials and parietals and one supralabial in contact with the eye. De Witte and Laurent (1947: 71) illustrated a specimen of *P. collaris* showing no contact between supralabials and parietals. Our specimens agree in most respects with the definition of *P. c. collaris* provided by de Witte and Laurent (1947), that we follow here. First record for the park.

Polemon cf. collaris (Peters, 1881)
MSNS Rept. 33: Ipassa, Dec. 2011. Found dead on road. Round pupil; no contact between supralabials and parietals; contact between internasals 1.56 mm; contact between prefrontals 2.20 mm; frontal length 3.34 mm; frontal width 2.03 mm; contact between parietals 4.25 mm; anterior sublinguals much longer than the posterior ones; dorsum uniformly black, dorsal coloration also occupying sides of ventrals, which are heavily speckled with black. This specimen shows much less ventrals and more subcaudals than the two specimens above, a dark grey-olive head, and a much more extensive black coloration on ventrum than in the two specimens above. Meirte's (1992) key leads to an alternative between *P. neuwiedi* with three black dorsal longitudinal bands and *P. notatus* with 2 dorsal lines of black spots, while our specimen shows neither bands nor spots. Chippaux's (2006) key cannot be used, for the same reason as explained in the former species' account. Branch's key in Pauwels and Vande weghe (2008) does not lead to any species, since it leads to an alternative between no contact between supralabials and parietals and one supralabial in contact with the eye (*P. fulvicollis*), and contact between one supralabial and parietal and two supralabials in contact with eye (while our specimen shows no contact between supralabials and parietals and two supralabials in contact with eye); if one chooses the second alternative, it leads to a choice between *P. notatus* with a black head with white spots and a spotted dorsum, or *P. collaris* with more than 230 ventrals (vs. a uniformly-colored dorsum and only 179 ventrals in our specimen); however Branch included in his key only *Polemon* species that were confirmed for Gabon, excluding species which, although probably present based on zoogeography, were not confirmed, such as *P. gabonensis*, *P. gracilis* and *P. griseiceps*. Chirio and LeBreton's (2007) key leads to *P. gracilis*, which can however be excluded based on its much higher number of ventrals (247 to 296 cf. Chippaux, 2006). Among the species currently confirmed for Gabon (*P. bocourti*, *P. collaris*, *P. fulvicollis* and *P. notatus*, see Pauwels and Vande weghe, 2008), our specimen can be distinguished by its 179 ventrals (vs. 242-297 in *P. fulvicollis*, cf. Chippaux, 2006), its divided cloacal and subcaudals (vs. single in *P. bocourti*) and its uniform black dorsum (vs. brown with

two series of points in *P. notatus*, cf. de Witte and Laurent, 1947) and its heavily black-speckled ventrum (vs. all except *P. collaris*). It can also be distinguished from *P. gabonensis* based on its 179 ventrals and its heavily speckled venter (vs. 208-252 and a uniform white venter in *P. gabonensis*, cf. Chippaux, 2006). With its 179 ventrals and 25 subcaudals, this individual agrees in most respects with the definition of *P. griseiceps* (Laurent, 1947) by de Witte and Laurent (1947), said to show 178 ventrals and 25 subcaudals in males. Pending the availability of a revision of the western Central African *Polemon*, including a re-evaluation of the taxonomic status of *P. griseiceps*, we provisionally refer this specimen to *P. collaris*, with doubt. *Polemon* material from the Monts de Cristal was also identified with doubt (Pauwels et al., 2002b).

Natricidae

Hydraethiops melanogaster Günther, 1872
IRSNB 18335: IRS, Feb. 2012. Internasal single; tubercles on the infralabials and first sublinguals. IRSNB 18336: IRS, Feb. 2011. Internasal single. MSNS Rept 35: Ipassa, Feb. 2012. Anterior sublinguals much longer and slightly wider than the posterior ones. All specimens show a round pupil. First record for the core area of the park. Knoepffler (1966) recorded the species from Ntsibelong and Simintang in the buffer area.

Natriciteres fuliginoides (Günther, 1858)
IRSNB 18337: IRS, Feb. 2011. MSNS Rept 8: Ipassa, Jan. 2011. MSNS Rept. 48: Ipassa, Feb. 2012. All show a round pupil. In MSNS Rept. 48 on both sides the anterior upper corner of the 7th supralabial is separated by a suture. Knoepffler (1966) recorded the species from Simintang in the buffer area. Pauwels and Vande weghe (2008: 226) illustrated an adult individual eating a *Cardioglossa* sp. (Anura: Arthroleptidae); here we identify it as *C. gracilis* Boulenger, 1900, a frog species already recorded from the park (Pauwels and Rödel, 2007).

Pythonidae

Python sebae (Gmelin, 1789)
MSNS Rept 29: Ipassa, 10 Sept. 2010. Found dead on road. Sensory pits on two anterior supralabials on each side; a divided ventral before last ventral and cloacal scale, not included in the ventral count; 1/1 subocular; 2/2 supraoculars. The individual illustrated by Vande weghe (2006: 84) was photographed on Djidji River. Knoepffler (1966) recorded the species from Loa Loa in the buffer zone based on a 4.9 m long individual.

Viperidae

Atheris squamigera (Hallowell, 1856)
MSNS Rept 17: Ipassa, Feb. 2012 (0°30'31.28"N, 12°47'38.56"E, altitude 548 m asl). Found at 22:30 at the edge of a trail in secondary forest about 1.1 km from the base camp towards the water tank. It was moving on a tree branch 1.5 m above ground (Figure 10). The precloacal scale is preceded by a divided ventral, not included in the ventral count. Rostral surrounded by 5 scales; one or two rows of scales between SL and orbit; 3/3 suboculars; 5/7 supraoculars. J. P. Vande weghe (pers. comm.) photographed in late 2005 an adult individual in forest near IRS.

Figure 10. Adult *Atheris squamigera* (MSNS Rept 17) from Ipassa, Ivindo National Park. Photograph by P. Carlino.

Causus lichtensteinii (Jan, 1859)
MSNS Rept 6: Ipassa (0°30'43.80"N , 12°48'12.14"E), 25 Jan. 2011. Found at 9:30 at the entrance road to IRS, about 600 meters from the access barrier, by sunny weather; the site is located in secondary forest. Five dorsalmost dorsal scale rows slightly keeled; 2/3 suboculars. MSNS Rept 49: Ipassa (0°30'43.80"N, 12°48'12.14"E), Feb. 2012. Five dorsalmost dorsal scale rows slightly keeled; 2/2 suboculars. First record for the park.

Discussion

Before the present work 36 reptile species were listed and documented for Ivindo National Park and its buffer zone (Knoepffler, 1966, 1974; Pauwels, 2006; Christy et al., 2008; Pauwels and Vande weghe, 2008; Vande weghe, 2009), to which we presently add 26 new records. Among them, eight are newly recorded from Ogooué-Ivindo Province (see Table 3). Except *Hemidactylus echinus*, which is here newly confirmed for Gabon, all species newly recorded from Ivindo National Park had already been recorded from a national park in Gabon (Christy et al., 2008). Currently available data show that the park houses alone more reptile species than the whole Massif du Chaillu in southern-central Gabon or the whole Monts de Cristal in northwestern Gabon (Pauwels et al., 2002a-b). Remarkably, the park houses five of the seven *Hemidactylus* species recorded for Gabon. The IUCN conservation status of most of the reptile species recorded in the park has not been assessed yet (Table 3), but among those already assessed are *Mecistops cataphractus* (Critically Endangered) and *Osteolaemus tetraspis* (Vulnerable),

both well represented.

Among the reptile species recorded from Ogooué-Ivindo Province (Pauwels and Vande weghe, 2008), the following sylvicolous species are most certainly occurring in Ivindo NP: *Chamaeleo chapini* de Witte, 1964 (Chamaeleonidae), *Gastropholis echinata* (Cope, 1862), *Melanoseps occidentalis occidentalis* (Peters, 1898) (Scincidae), *Thrasops flavigularis* (Hallowell, 1852) (Colubridae), *Naja multifasciata* (Werner, 1902) (Elapidae), *Atractaspis reticulata* Sjöstedt, 1896, *Buhoma depressiceps* (Werner, 1897), *Chamaelycus fasciatus* (Günther, 1858), *Polemon fulvicollis* (Lamprophiidae), *Afrotyphlops angolensis* (Barboza du Bocage, 1866) and *A. congestus* (Duméril & Bibron, 1844). In fact, except the Nile crocodile, the sea turtles, the pelomedusids and amphisbaenids with a coastal plain distribution and the strict savanna-dwellers, all species currently recorded from Gabon can be expected to occur in Ivindo NP. The highest summit of the park, Mount Kinguié, has never been herpetologically surveyed, and might house altitudinal taxa or endemics. Ivindo NP is currently known to house with certainty 48.4% of the 128 reptile species currently recorded from Gabon, but is thus expected to house more than 80%. Ivindo National Park is moreover the second richest park in Gabon in terms of amphibian diversity with 48 species currently recorded, and houses half of the amphibian species recorded from the whole country (Pauwels and Rödel, 2007; Christy et al., 2008; Carlino and Pauwels, 2012).

Ivindo NP thus plays a major role in herpetological conservation, and future surveys will undoubtedly still increase its value. However, some reptiles are threatened within the park. Historical threats include intensive crocodile hunting that happened in 1949–1950, when French and Congolese merchants settled in Makokou and employed local hunters who collected crocodiles southwards till Kongou Falls (Sally Lahm, pers. comm.). Today, as we reported above, *Osteolaemus* and *Trionyx* are still being hunted within the park limits, and Sassen and Wan (2006) reported hunting of *Mecistops* and *Osteolaemus* in Kongou, and of *Varanus* in Loa Loa. Future herpetological surveys in Ivindo NP should focus on both increasing the species list and studying the impact of hunting.

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Table 1. Diagnostic morphometric and meristic data for lacertids and scincids collected in Ivindo National Park, Gabon. **SVL** = snout–vent length; **TaL** = tail length; **MSR** = number of midbody scale rows; **SL** = number of supralabials; **IL** = number of infralabials.

Species and collection number	SVL (mm)	TaL (mm)	MSR	SL	IL
Lacertidae					
Poromera fordii					
MSNS Rept 41	42	91	33	7/7	6/6
Scincidae					
Feylinia currori					
MSNS Rept 19	127	>23	22	4/4	3/3
Lepidothyris striatus					
MSNS Rept 37	122	>117	35	8/8	8/8
Panaspis breviceps					
MSNS Rept 40	38	>48	36	8/7	Poor condition
Trachylepis albilabris					
IRSNB 18340	51	96	32	7/7	Poor condition
MSNS Rept 39	73	127	30	7/7	8/8
Trachylepis maculilabris					
IRSNB 18331	77	>64	32	7/7	7/8
IRSNB 18332	75	157	34	7/7	7/7
IRSNB 18333	77	123	32	7/7	7/7
MSNS Rept 38	77	149	33	7/7	8/8

Table 2. Diagnostic morphometric and meristic data for snake vouchers collected in Ivindo National Park, Gabon. **A** = anal scale; **AT** = anterior temporals; D = divided; **DSR** = number of dorsal scale rows; F = female; **IL** = number of infralabials, followed in brackets by the number of IL in contact with the first pair of sublinguals; J = juvenile; K = keeled; M = male; NA = not applicable; **PoO** = number of postoculars; **PreO** = number of preoculars; **PV** = number of preventrals; S = single; **SC** = number of subcaudals; **SL** = supralabials, followed in brackets by the SL in contact with orbit; **SVL** = snout–vent length; **TaL** = tail length; U = unkeeled; **VEN** = number of ventrals; X = damaged, character unavailable.

Species and collection number	Sex	SVL (mm)	TaL (mm)	DSR	PV + VEN	A	SC	SL	IL	Lor	PreO	PoO	AT
Colubridae													
Boiga blandingii													
MSNS Rept 15	F	558	153	22-23-15, U	1+262, K	D	124, D, K	9(4-6)/9(4-6)	13(5)/13(5)	1/1	2/2	2/2	2/2
B. pulverulenta													
MSNS Rept 14	F	474	142	21-19-15, U	1+246, K	S	120, D, K	8(3-5)/8(3-5)	12(4)/12(4)	1/1	1/1	2/2	2/2
Dasypeltis fasciata													
MSNS Rept 12	F	752	135	?-21-17, K	0+242, U	S	76, D, U	7(3-4)/7(3-4)	7(3)/7(3)	0/0	2/2	2/2	3/3
Dipsadoboa duchesnii													
MSNS Rept 92	F	910	320	17-17-13, U	2+213, U	S	111, D, U	8(3-5)/8(3-5)	10(5)/10(5)	1/1	2/2	2/2	1/1
D. underwoodi													
MSNS Rept 3	J	308	98	17-17-13, U	1+191, U	S	83, S, U	X	X	1/1	1/1	2/2	2/1
MSNS Rept 4	M	499	>98	17-17-13, U	1+192, U	S	>46, S, U	8(3-5)/8(3-5)	9(4)/9(5)	1/1	1/1	2/2	1/1
D. viridis													
MSNS Rept 2	M	483	163	17-17-13, U	2+221, slightly K	S	100, S, U	8(4-5)/9(5-6)	10(5)/10(6)	1/1	1/1	2/2	1/1
D. weileri													
MSNS Rept 1	M	375	91	17-17-13, U	2+194, U	S	70, S, U	9(4-6)/8(3-5)	11(5)/11(5)	1/1	1/1	2/2	1/1
Grayia ornata													
MSNS Rept 43	M	770	358	19-17-16, U	1+149, U	D	81, D, U	8(4)/8(4)	11(5)/11(5)	1/1	1/1	2/2	2/2
Hapsidophrys smaragdina													
IRSNB 18338	F	480	303	14-15-11, K	2+159, K	D	146, D, K	9(5-6)/9(5-6)	10(5)/10(5)	1/1	1/1	2/2	1/1
IRSNB 18339	F	301	192	15-15-11, K	2+155, K	D	150, D, K	9(5-6)/9(5-6)	10(5)/11(6)	1/1	1/1	2/2	1/1
MSNS Rept 24	M	572	389	15-15-11, K	1+158, K	D	153, D, K	9(5-6)/10(5-6)	10(5)/10(5)	1/1	1/1	2/2	1/1
Philothamnus carinatus													
MSNS Rept 21	F	409	138	13-13-11, U	1+155, K	S	73, D, K	9(4-6)/9(4-6)	9(5)/8(4)	1/1	1/1	2/2	2/2
MSNS Rept 50	M	393	151	13-13-11, U	0+153, K	S	86, D, K	9(4-6)/9(4-6)	9(5)/9(5)	1/1	1/1	2/3	2/2
P. heterodermus													
MSNS Rept 20	M	370	168	15-15-11, U	1+155, K	S	91, D, U	9(4-6)/10(4-6)	10(5)/10(5)	1/1	1/1	2/2	2/2
Elapidae													
Dendroaspis j. jamesoni													
MSNS Rept 94	M	1260	440	17-17-15, U	2+214, U	D	114, D, U	7(4)/7(4)	8(4)/9(4)	0/0	4/4	3/3	1/2
Naja a. annulata													
MSNS Rept 10	F	382	86	23-23-17, U	2+222, U	S	73, D, U	8(3-4)/8(3-4)	9(4)/9(4)	0/0	1/1	2/2	1/1
N. melanoleuca													
MSNS Rept 9	F	513	101	24-17-13, U	2+229, U	S	66, D, U	7(3-4)/7(3-4)	9(4)/9(4)	0/0	1/1	3/3	1/1
Lamprophiidae													
Aparallactus modestus													
MSNS Rept 34	F	468	62	15-15-15, U	1+155, U	S	32, S, U	7(3-4)/7(3-4)	7(4)/7(4)	0/0	1/1	2/2	0/0
Gonionotophis brussauxi													
MSNS Rept 36	M	278	102	23-21-21, K	2+177, U	S	92, D, U	8(4-5)/9(5-6)	9(5)/9(5)	0/0	1/1	2/2	2/2
G. poensis													
IRSNB 18334	M	678	224	17-15-15, K	2+250, K	S	113, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	2/2	1/1
MSNS Rept 5	F	1180	225	17-15-15, K	2+252, K	S	84, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	2/2	1/1
MSNS Rept 25	M	706	223	17-15-15, K	2+250, K	S	112, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	2/2	1/1
MSNS Rept 26	M	728	215	17-15-15, K	2+251, K	S	107, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	2/2	1/1
MSNS Rept 47	M	798	212	19-15-15, K	2+251, K	S	106, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	2/2	1/1
G. stenophthalmus													
MSNS Rept 18	F	396	79	15-15-15, K	2+197	S	53, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	?/2	1/1
Lamprophis olivaceus													
MSNS Rept 23	M	458	>40	24-29-23, U	2+190, U	S	>21, S, U	8(3-5)/8(3-5)	9(4)/9(4)	1/1	1/1	2/2	1/1
Lycophidion laterale													
MSNS Rept 11	F	384	>39	17-17-17, U	2+181, U	S	>24, D, U	8(3-4)/8(3-4)	9(5)/9(5)	1/1	1/1	2/2	1/1
MSNS Rept 30	J	185	28	17-17-17, U	2+183, U	S	43, D, U	9(4-5)/9(4-5)	9(5)/9(5)	1/1	1/1	2/2	1/1

Table 2. (cont'd)

Species and collection number	Sex	SVL (mm)	TaL (mm)	DSR	PV + VEN	A	SC	SL	IL	Lor	PreO	PoO	AT
Polemon collaris													
MSNS Rept 31	F	330	20	15-15-15, U	X+205, U	D	20, D, U	7(3-4)/X	7(4)/7(4)	X	1/X	2/X	1/X
MSNS Rept 32	M	553	38	15-15-15, U	0+205, U	D	20, D, U	7(3-4)/7(3-4)	7(4)/6(3)	0/0	1/1	2/2	1/1
Polemon cf. collaris													
MSNS Rept 33	M	445	48	15-15-15, U	1+179, U	D	25, D, U	7(3-4)/7(3-4)	6(3)/6(3)	0/0	1/1	2/2	1/1
Natricidae													
Hydraethiops melanogaster													
IRSNB 18335	M	357	>28	23-23-21, K	2+157, U	D	>18, D, U	9(4-5)/9(4-5)	12(5)/12(5)	1/1	1/1	1/1	1/1
IRSNB 18336	J	213	52	23-21-18, K	1+151, U	D	51, D, U	10(5-6)/10(5-6)	11(5)/10(5)	1/1	1/1	1/1	1/1
MSNS Rept 35	F	498	109	23-23-21, K	2+148, U	D	3S + 45D, U	10(5-6)/10(5-6)	11(5)/11(5)	1/1	1/1	2/2	1/1
Natriciteres fuliginoides													
IRSNB 18337	M	197	>25	17-17-15, U	2+116, U	S	>17, D, U	8(4-5)/8(4-5)	9(4)/9(4)	1/1	1/1	3/3	1/1
MSNS Rept 8	F	255	>94	17-17-15, U	1+123, U	S	>51, D, U	9(5-6)/8(4-5)	10(5)/10(5)	1/1	1/1	3/3	1/1
MSNS Rept 48	F	259	>19	17-17-15, U	1+125, U	S	>11, D, U	8(4-5)/8(4-5)	9(5)/10(5)	1/1	1/1	3/3	1/1
Pythonidae													
Python sebae													
MSNS Rept 29	F	534	83	67-92-?, U	1+288, U	S	65, D, U	16(0)/16(0)	22(2)/22(2)	NA	3/3	3/3	4/4
Viperidae													
Atheris squamigera													
MSNS Rept 17	F	583	118	20-20-16, K	0+164, U	S	53, S, U	10(0)/11(0)	11(4)/11(3)	NA	1/1	3/3	NA
Causus lichtensteinii													
MSNS Rept 6	F	355	34	15-15-10	3+138, U	S	17, S, U	7(0)/7(0)	9(4)/9(4)	1/1	3/2	2/2	2/2
MSNS Rept 49	M	482	44	15-15-11	1+140, U	S	18, S, U	6(0)/6(0)	9(4)/9(4)	1/1	2/2	3/2	2/2

Table 3. List of reptile species confirmed for Ivindo National Park, Gabon. * = new park record; ** = new provincial record; *** = new country record.

Taxon	References	IUCN Red List status
Pelomedusidae		
Pelusios gabonensis	Knoepffler (1974: Loa Loa & Mayiga); this work	Not assessed
Testudinidae		
Kinixys erosa	Knoepffler (1974: Loa Loa & Ntsibelong); Christy et al. (2008); Pauwels and Vande weghe (2008: 61: photo of an individual from Ipassa)	Data Deficient
Trionychidae		
Cycloderma aubryi	Vande weghe (2006: 84); Knoepffler's (1974) record from downstream Mingouli Falls probably made within the park	Not assessed
Trionyx triunguis	Christy et al. (2008); this work	Not assessed
Crocodylidae		
Mecistops cataphractus	Pauwels (2006); Fergusson et al. (2006; "very intact populations" in Djidji River); Vande weghe (2006: 83: photo of an individual on Djidji River, where it is said to be abundant); Pauwels and Vande weghe (2008: 3-4: photo of an individual on Djidji River); Dinets et al. (2014, >10 individuals on Djidji River); this work	Critically Endangered
Osteolaemus tetraspis	Knoepffler (1974: Loa Loa); Christy et al. (2008); Pauwels and Vande weghe (2008: 22: photo of an individual from Djidji River); this work	Vulnerable
Agamidae*		
*Agama agama**	This work	Not assessed
Chamaeleonidae		
*Chamaeleo cristatus**	This work	Least Concern
C. owenii	Christy et al. (2008); Pauwels and Vande weghe (2008: 86: photo of an individual along Djidji River)	Not assessed
Rhampholeon spectrum	Knoepffler (1974: Mayiga); Christy et al. (2008); Pauwels and Vande weghe (2008: 88);Pauwels et al. (2008); this work	Least Concern
Gekkonidae		
*Hemidactylus echinus****	This work	Not assessed
Hemidactylus fasciatus	Christy et al. (2008); Pauwels and Vande weghe (2008: 97: photo of an individual from rock outcrops along Langoué River); this work	Not assessed
Hemidactylus mabouia	Christy et al. (2008); this work	Not assessed
H. muriceus	Knoepffler (1974: Mayiga); this work	Not assessed
H. richardsonii	Vande weghe (2006: 205); Christy et al. (2008); Pauwels and Vande weghe (2008: 101: photo of an individual from rock outcrops along Langoué River); this work	Not assessed

Table 3. (cont'd)

Taxon	References	IUCN Red List status
Lygodactylus sp.	Pauwels and Vande weghe (2008: 93, 103-104); still undescribed, probably endemic to Ivindo NP	Not assessed
*Urocotyledon palmata***	This work	Not assessed
Lacertidae		
Holaspis guentheri	Vande weghe (2006: 205); Christy et al. (2008); Pauwels and Vande weghe (2008: 108: photo of an individual from Langoué Bai)	Not assessed
Poromera fordii	Knoepffler (1974: Mayiga); this work	Not assessed
Scincidae		
*Feylinia currori**	This work	Not assessed
*Lepidothyris striatus***	This work	Not assessed
*Panaspis breviceps**	This work	Not assessed
*Trachylepis affinis**	This work	Not assessed
*T. albilabris***	This work	Not assessed
*T. maculilabris**	This work	Not assessed
T. polytropis	Christy et al. (2008); Pauwels and Vande weghe (2008: 124: photo of an individual from near Langoué Bai)	Not assessed
Varanidae		
Varanus ornatus	Christy et al. (2008); Pauwels and Vande weghe (2008: 128: photo of a juvenile); this work	Not assessed
Boidae*		
*Calabaria reinhardtii**	This work	Not assessed
Colubridae		
*Boiga blandingii**	This work	Not assessed
*B. pulverulenta**	This work	Not assessed
Dasypeltis fasciata	Knoepffler (1966: Loa Loa); this work	Least Concern
*Dipsadoboa duchesnii***	This work	Not assessed
*D. underwoodi***	This work	Not assessed
D. viridis	Knoepffler (1966: Loa Loa); Rasmussen (1993: Loa Loa); this work	Not assessed
*D. weileri**	This work	Not assessed
Grayia ornata	Knoepffler (1966: Loa Loa); this work	Not assessed
Hapsidophrys lineatus	Knoepffler (1966: Mayiga)	Not assessed
*H. smaragdina**	This work	Not assessed
*Philothamnus carinatus**	This work	Not assessed
P. heterodermus	Knoepffler (1966: Loa Loa & Mayiga); this work	Not assessed
Rhamnophis aethiopissa	Knoepffler (1966: Mayiga)	Not assessed
R. batesii	Christy et al. (2008); Pauwels and Vande weghe (2008: 172: photo of individual from Langoué clearing, also illustrated by Vande weghe, 2006: 204 under *Trasops* [sic] sp.)	Not assessed
Thrasops jacksonii	Carlino and Pauwels (2013)	Not assessed
Elapidae		
Dendroaspis j. jamesoni	Knoepffler (1966: Loa Loa); this work	Not assessed
Naja a. annulata	Pauwels and Vande weghe (2008: 185-186, photo of an individual on Djidji River; 2013: 12); this work	Not assessed
N. melanoleuca	Knoepffler (1966: Loa Loa, Mayiga & Ntsibelong); Christy et al. (2008); this work	Not assessed
Lamprophiidae		
*Aparallactus modestus**	This work	Not assessed
Atractaspis boulengeri	Knoepffler (1966: Loa Loa, under *A. boulengeri mixta*)	Not assessed
*Bothrophthalmus brunneus***	This work	Not assessed
*Gonionotophis brussauxi**	This work	Not assessed
*G. poensis**	This work	Not assessed
*G. stenophthalmus**	This work	Not assessed
Lamprophis olivaceus	Knoepffler (1966: Loa Loa, Mayiga & Ntsibelong); this work	Not assessed
*Lycophidion laterale***	This work	Not assessed
*Polemon collaris**	This work	Not assessed
Natricidae		
Hydraethiops melanogaster	Knoepffler (1966: Ntsibelong & Simintang); this work	Not assessed
Natriciteres fuliginoides	Knoepffler (1966: Simintang); Christy et al. (2008); Pauwels and Vande weghe (2008: photo of an individual along Djidji River); this work	Least Concern

Table 3. (cont'd)

Taxon	References	IUCN Red List status
Pythonidae		
Python sebae	Knoepffler (1966: Loa Loa); Christy et al. (2008); Pauwels and Vande weghe (2008: Dji Dji River); this work	Not assessed
Viperidae		
Atheris squamigera	Christy et al. (2008); this work	Not assessed
Bitis gabonica	Christy et al. (2008); Pauwels and Vande weghe (2008: 234)	Not assessed
B. nasicornis	Knoepffler (1966: Loa Loa); individual illustrated by Vande weghe (2006: 84) photographed on Djidji River (Pauwels and Vande weghe, 2008); Christy et al. (2008)	Not assessed
*Causus lichtensteinii**	This work	Not assessed

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