

RESEARCH NOTE

Range extension of the agile mangabey (*Cercocebus agilis*) and of the mandrill (*Mandrillus sphinx*) in eastern Gabon evidenced by camera traps

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1 | INTRODUCTION

The agile mangabey (*Cercocebus agilis*) is a medium-sized, omnivorous Old World monkey from the large *Cercopithecidae* family that inhabits the dense humid tropical forests of central Africa. Although mainly arboreal, the species is often found on the ground in groups of highly variable size, from 10 to 50 individuals to over 200 individuals (Devreese et al., 2013; Quris, 1975). The geographical distribution of the species is vast, ranging from western Cameroon to the Central African Republic and north-eastern Democratic Republic of Congo, but its limits are unclear, particularly for its westernmost isolated populations (Maisels et al., 2020). In Gabon, the species is believed to occur only in the north-eastern part of the country, in the Minkébé National Park (NP) area and possibly in the Ivindo NP and Mwagna NP (Maisels et al., 2020; see IUCN range map in Figure 1). Shah (2003, 2013) reports personal communications of experienced scientists in this region but the only documented observations date back more than 50 years along several tributaries of the Ivindo River, on its left bank specifically

(Quris, 1975). Since then, *C. agilis* has no longer been reported in the region (Maisels et al., 2020).

The mandrill (*Mandrillus sphinx*) also belongs to the *Cercopithecidae* family. It is an omnivorous semi-terrestrial forest-dwelling species that live in large groups characterised by a multi-levelled social structure where females generally occupy a central position (Abernethy et al., 2002; Bret et al., 2013; Brockmeyer et al., 2015). The mandrill hordes can reach spectacular numbers, up to over 800 individuals, especially in areas where they are not hunted (Abernethy et al., 2002). Social organisation within mandrill hordes is still debated, particularly concerning the potential seasonal presence of males in the cohesive group of females and offspring (Abernethy et al., 2002; Brockmeyer et al., 2015). In contrast to the agile mangabey, a strong sexual dimorphism exists, distinguishing the larger and more coloured males, especially on the snout and the genitalia, from the smaller, greyish-brown females (Abernethy & White, 2013; Zinner & Gadsby, 2013). Mandrill distribution extends along western central Africa, south of the Sanaga River, in Cameroon, mainland Equatorial Guinea and Gabon, and down to

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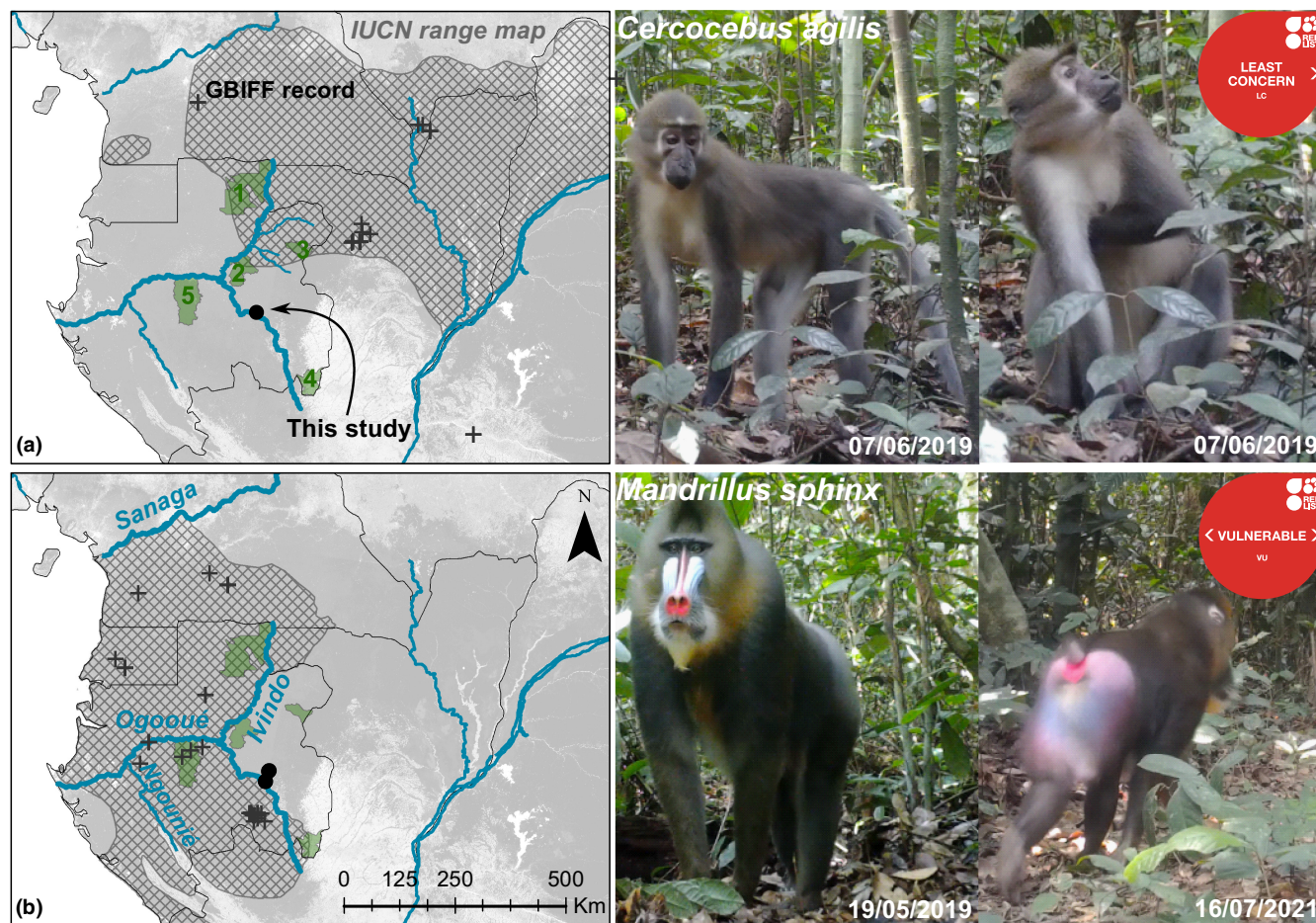


FIGURE 1 New camera trap records for *Cercocebus agilis* (a) and *Mandrillus sphinx* (b) in eastern Gabon. The background map corresponds to the tree cover (Hansen et al., 2013). Species range (cross-hatched) from the International Union for Conservation of nature (IUCN) and occurrences (cross) from the global biodiversity information facility (GBIF) repository (occurrence dataset <https://doi.org/10.15468/dl.d47asp>, <https://doi.org/10.15468/dl.p5qf62> accessed via [GBIF.org](https://www.gbif.org) on 2021-03-31) are also shown. The Minkébé National Park (NP) (1), Ivindo NP (2), Mwagna NP (3), Batéké Plateau NP (4) and Lopé NP (5) are highlighted in green. Species videos and coordinates of the record localities are available in Video S1.

the Mayombe forest and the Massif du Chaillu in the Republic of Congo (Figure 1). In Gabon, its distribution is limited to the east by the Ogooué and Ivindo Rivers, although its presence has been documented on two occasions in north-western Congo (Abernethy & Maisels, 2019; Zinner & Gadsby, 2013).

In this note, we present new observations of these two primate species in eastern Gabon evidenced by camera traps (Figure 1). These records suggest a potential range extension of *Cercocebus agilis* by 100 km to the south and reassert its presence in Gabon, which had not been documented for 50 years. Mandrill detections were also obtained for the first time on the right bank of the Ogooué in this area, in 2019 and in 2021, supporting the potential long-term establishment of at least one and possibly a few individuals on this side of the river.

2 | METHODS

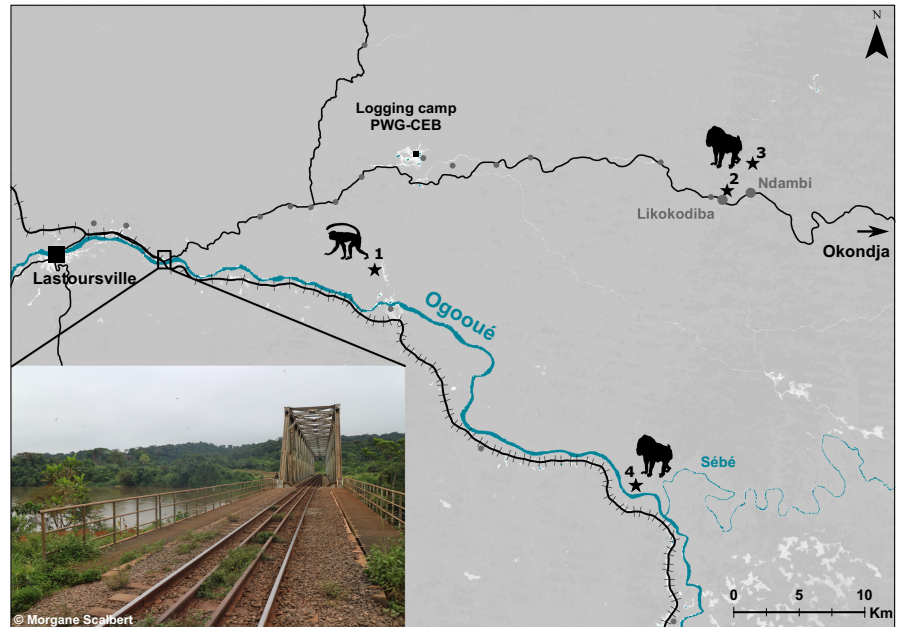
Species records were obtained from extensive camera trap surveys conducted in 2019 (May–June) and in 2021 (June–October) in different hunting territories around Lastoursville as part of the ongoing

EU Sustainable Wildlife Management programme (<https://www.swm-programme.info/>; Figure 1). The study area is essentially covered by wet evergreen forest (Fayolle et al., 2014; Réjou-Méchain et al., 2021) and the mean annual rainfall and temperature reach, respectively, 1702 mm and 24.4°C (Fick & Hijmans, 2017). The camera traps (Bolyguard SG 2060X, Boly, Victoriaville, QC, Canada) were installed in the forest undergrowth at 30–50 cm height, oriented towards a small wildlife trail or trail crossing according to our early work in the area (Fonteyn et al., 2021). When triggered, camera traps recorded high-quality 5-s videos with the minimum reset time (0.8 s).

3 | RESULTS AND DISCUSSION

In June 2019, we detected the agile mangabey on five consecutive videos (available in Video S1), all included in the same detection event (i.e. detected within 30 min). The date, time and exact location of the camera trap records are available in Table S1. The recorded location was 2.5 km north of the Ogooué River (location 1, Figure 2), consistent with the habitat preferences of the species for seasonally-flooded

FIGURE 2 Map of the study area and exact locations of the camera trap records of *Cercocebus agilis* (location 1) and *Mandrillus sphinx* (locations 2, 3, 4) shown on a background map of tree cover (Hansen et al., 2013). The road and railway networks are also displayed in black. A photograph of the railway bridge crossing the Ogooué River is also shown in inset.



and swamp forests and riparian habitats (Gautier-Hion et al., 1999; Shah, 2013; Zinner, 2013). The detection was made <50 m from an old logging road of the Precious Woods Gabon—Compagnie Equatoriale des Bois (PWG-CEB) logging company, as the area was logged 5 years prior to the camera trap survey. Unfortunately, the sex of the individual could not be determined in the videos. Prior records of the species in Gabon date back to 1974, when Quris (1975) reported sightings of several bands in the riparian environments of the Njadié, Liboui and Mounianghi rivers, which all flow into the Ivindo River (see Figure 1) more than 130 km north from our study area, suggesting an extension of the species range of more than 100 km southwards.

Two mandrill detections were recorded in May 2019 (locations 2, 3, Figure 2 and in Supporting information) along the Lastoursville-Okondja road (R19) close to the villages of Likokodiba and Ndambi. A third detection was recorded 23 km south in July 2021 (location 4, Figure 2). These three detection events (with a total of four videos) evidenced the presence of at least one and potentially two adult males in the area. Natural crossing of a river as wide as the Ogooué remains a difficult hypothesis to consider, and where mandrill populations do occur on both banks in other sites, two genetically distinct populations have been found, suggesting that the Ogooué River potentially forms an important barrier to gene flow (Telfer et al., 2003). Even smaller rivers, such as the Ngounié (Figure 1), seem to be an insurmountable obstacle for mandrills (C. Orbell, pers. obs.). Hedwig et al. (2018), however, reported a camera trap record of a young male mandrill, east of the Ogooué River, in the Batéké Plateau NP, 150 km south of our recorded location. The authors suggested that this individual is a transient emigrant who may have either crossed the river or bypassed it south of the park at its source. In our case, the two scenarios may be considered. Crossing of the Ogooué River could have occurred via the road or railway bridges on the outskirts of Lastoursville (Figure 2), the railway bridge being probably the less frequented of the two communication routes. Solitary males leaving their cohesive horde and moving independently have already

been documented in wild populations in the Lopé NP (Abernethy et al., 2002; White, 2007), as has the immigration of non-natal adult and sub-adult males in a released mandrill population in the Lékédi Park (Brockmeyer et al., 2015). We may thus assume that such exploratory behaviour could have ended in a crossing of the Ogooué River, though mandrills are reputed to usually avoid open habitats in undisturbed areas, especially adult males (Brockmeyer et al., 2015; White, 2007; White et al., 2010). Another possible scenario might also be the release of an individual by humans. Indeed, sometimes hunters temporarily keep young orphan monkeys as pets (Calattini et al., 2007). Once adolescents, these potentially aggressive individuals may escape or be released. In both cases, the different observations made 3 years apart indicate the ability of this (or these) individual(s) to survive in this area. If this event is not too rare and occurred again, with the arrival of additional congeners, especially mature females, it could lead to the establishment of a population in the forest area managed by the PWG-CEB logging company.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Species videos and coordinates of the record localities are available in Supporting Information.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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