



Cercocebus and *Mandrillus* conservation action plan 2024–2028

Andrea Dempsey, David Fernández, Gráinne McCabe, Katharine Abernethy, Ekwoe E. Abwe, Sery Gonedelé Bi, Stanislaus M. Kivai, Barthélémy Ngoubangoye, Fiona Maisels, Reiko Matsuda Goodwin, W. Scott McGraw, Edward McLester, Tjerk ter Meulen, John F. Oates, Christina Lynette Paddock, Angeliki Savvantoglou, and Edward D. Wiafe

Foreword by Russell A. Mittermeier and Anthony B. Rylands



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FOREWORD

As with red colobus conservation planning, outlined in the recently published *Red colobus* (*Piliocolobus*) *conservation action plan 2021–2026*^[1], the origins of this plan go back to the early days of primate conservation efforts, although there has been less of a focus on mangabeys (*Cercocebus*) and mandrills and drills (*Mandrillus*) over the past four decades than on *Piliocolobus*, and certainly far less than on the African apes. One of the earliest mentions of the need for conservation measures for *Cercocebus* and *Mandrillus* was in the 1977 “Global Strategy for Primate Conservation”^[2], the first-ever worldwide overview of primate conservation needs. In this strategy, these genera were included in three projects labelled Highest Priority—“Primate Conservation in the Forest Highlands of Upper Guinea and Establishment of Four National Forests” and “A Gorilla Sanctuary in Cameroon”, both written by the late J. Stephen Gartlan, and “Conservation of Primates in Rain Forest Relics of East Africa”, written by Thomas T. Struhsaker. The Cameroon project also included *Mandrillus sphinx*. *Cercocebus* mangabeys were also included in one High-Priority project (“Primate Conservation in the Congo Basin”) and one Priority Project (“Primate Conservation in the Ankasa Area of Ghana”).

In 1981, John Oates, Thomas Struhsaker, J. Stephen Gartlan and Mittermeier met at Rockefeller University in New York to talk about the need for a more strategic approach to primate conservation in Africa, based on a study of primate distribution patterns that Oates had begun to undertake, as well as on an earlier 1972 paper by Struhsaker, “Rainforest conservation in Africa”^[3]. All of this resulted in a 1982 article in the first newsletter of the International Primatological Society (IPS) (Gartlan was then IPS Vice-President for Conservation), which outlined a framework for African primate conservation^[4].

Four years later, building on the framework outlined by Oates, Gartlan and Struhsaker in that 1982 paper, Oates wrote the first-ever modern action plan for the IUCN Species Survival Commission (SSC), titled *Action Plan for African Primate Conservation, 1986–1990*^[5]. In this historic document, he identified one species in this current plan, *Mandrillus leucophaeus*, as Highest Priority (category 9) and three others, *Cercocebus torquatus*, *Cercocebus galeritus* and *Mandrillus sphinx* as High Priority (category 7). Much of the same information in that plan was again published in the book, *Primate Conservation in the Tropical Rain Forest*^[6], and a year later in the IUCN Conservation Monitoring Centre book titled *Threatened Primates of Africa: The IUCN Red Data Book*^[7].

Ten years after that first African primate action plan, Oates again led the way in 1996 with the first-ever follow-up action plan produced by the SSC, titled *African Primates: Status Survey and Conservation Action Plan. Revised edition*^[8]. In this plan, he reviewed progress over the previous decade, listed many priority sites for primate conservation, and again produced a ranking system for African species, this time down to the subspecies level. Those coming out highest on the priority list (category 6) were *Mandrillus leucophaeus poensis* and *Cercocebus galeritus galeritus*, with *Cercocebus atys lunulatus* in the next highest category.

Beginning in 2000 with the first of our now biennial lists of the World’s 25 Most Endangered Primates, we recognized the importance of *Cercocebus* and *Mandrillus*. Among the species listed were *Mandrillus leucophaeus* (once in the 2000–2002 list), *Cercocebus sanjei* (three times in 2000–2002, 2002–2004 and 2004–2006), *Cercocebus lunulatus* (three times in 2000–2002, 2002–2004 and 2004–2006), and *Cercocebus galeritus* (once in 2002–2004) but then neither of these genera were included again until the latest list (2022–2023), which includes *Cercocebus chrysogaster* for the first time.

In January 2005, we held an African Primate Red-listing Workshop at Disney’s Animal Kingdom in Orlando, Florida. At that meeting, we assessed the species in this current plan, with five coming out on the IUCN Red List of Threatened Species as Endangered in 2008 (Table 1). Although there was once again a clear call for a red colobus action plan at this meeting, there was no clear indication of a plan to focus on the plight of *Cercocebus* or *Mandrillus*.

In 2011, Gráinne McCabe and David Fernández, noting the dearth of publications on *Cercocebus* compared to other African monkeys and that a great deal of what was known to date derived from captive populations, organized the symposium “Reproduction, Behavioral Ecology and Conservation of *Cercocebus* Mangabeys” at the XXIV Annual Meeting of the American Society of Primatologists in Austin, Texas. The symposium brought together researchers involved in studying varying aspects of *Cercocebus* species to summarize what was known, especially in current research, and highlight conservation threats and suggest areas for future investigation across the genus. After the symposium, Colin Groves, who, in 1978, formally recognized that *Cercocebus* should be treated as a separate genus from the *Lophocebus* mangabeys^[9], highlighted, along with Clifford Jolly and Scott McGraw, the importance of the *Cercocebus* mangabeys finally receiving the attention they deserve.

In April 2016, we held another African Primate Red-listing Workshop, this time in Rome. All African species were reassessed, including the 10 taxa in this plan. The final decisions on their status are shown in Table 1. Several of the authors of this plan participated in the Rome workshop. Although the groundwork for the eventual African Primatological Society was laid and again produced a strong recommendation for a red colobus action plan, no such recommendation emerged for *Cercocebus* and *Mandrillus*, although concern was expressed for some of the most threatened taxa.

The origins of the current plan began after the success of the *Lemur Conservation Action Plan 2013–2018*, led in part by Bristol Zoological Society^[10] and the ongoing process of the red colobus action plan, which began in earnest in 2016 and was finally published in 2021^[1]. Christoph Schwitzer and Gráinne McCabe, from the Bristol Zoological Society, along with David Fernández, from the University of the West of England, Bristol, decided that there was a real need for a plan focused on the genera *Cercocebus* and *Mandrillus*, which, in spite of their Endangered status, had received relatively little attention. Subsequently, Gráinne and David reached out to fellow expert Andrea Dempsey from the West African Primate Conservation Association (WAPCA) and made connections with the PSG and International Primatological Society to hold initial discussions at the XXVI Congress of the International Primatological Society in Chicago in August 2016. The main three authors of this plan, David Fernández, Gráinne McCabe and Andrea Dempsey participated in the Chicago Congress where we had preliminary discussions on the need for a plan for these two genera.

At the XXVII IPS Congress in Nairobi in August 2018, we finally took a major leap forward. At the request of the leaders of this process, Mittermeier convened a meeting of interested parties under the banner of the Primate Specialist Group, Gráinne and David led a discussion about the need for such a plan, and 21 primatologists



Figure 1. Initial meeting to discuss the need for a *Cercocebus* and *Mandrillus* action plan during the XXVII IPS Congress in Nairobi, Kenya (Picture by David Fernández).

participated. Although there was some initial discussion about the inclusion of *Lophocebus* and *Rungwecebus* in the plan as well, it was ultimately decided that the action plan should encompass just the genera *Cercocebus* and *Mandrillus* and a preliminary process was proposed.

In June 2019, a three-day planning workshop was held in Accra, Ghana, hosted by the Wildlife Division of the Forestry Commission of Ghana and funded by the Margot Marsh Biodiversity Foundation. This workshop included 16 participants from the USA, Europe and primate range countries, who decided on the first steps to finalize the action plan and the priority conservation measures needed ^[11].

Following this workshop, the Bristol Zoological Society, the University of the West of England and WAPCA engaged in consultations with more than 30 primatologists to obtain their inputs. The result is the current plan, which targets seven *Cercocebus* species and the two species and three taxa of *Mandrillus* for a total of 10. The plan has six overarching objectives:

1. Raise the profiles of these animals, which have been largely overlooked relative to African apes and red colobus;
2. Increase protection in existing parks and reserves and create new ones where needed;
3. Engage in habitat restoration where needed;
4. Increase engagement in range countries across all levels of society and provide local livelihood support;
5. Increase our understanding of the behavior, ecology and conservation needs of the target species and the threats they face; and
6. Respond to public health needs of the neighboring human populations.

For each taxon, the plan identifies a small number of specific, measurable and achievable conservation actions within its 5-year time frame. It also identifies Key Conservation Priority Areas (KCPAs) where these actions need to be carried out—a KCPA being defined as an area that is considered a population stronghold, that is well-protected, and has suitable habitat and a viable population. If properly managed into the future, these KCPAs would thereby ensure the survival of relatively healthy populations of each taxon, even in the event of worst-case scenarios.

The proposed budgets for each taxon are modest and range from US\$ 80,000 to US\$ 295,000, and the total budget of the plan for the period envisaged is US \$1,970,000.

On behalf of the IUCN SSC Primate Specialist Group, we thank the authors of this action plan for recognizing the global importance of these two primate genera, for finally focusing much needed attention on their situation, and for preparing this important document to lead conservation efforts into the future.

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Figure 2. Participants in the 2019 planning workshop Accra, Ghana (Picture by David Fernández).

Table 1. *Cercocebus* and *Mandrillus* IUCN Red List Conservation Status and CITES classification. Data compiled by the authors.

Common name	Scientific name	IUCN Red List Status 2008	IUCN Red List Status 2022	CITES
Agile mangabey	<i>Cercocebus agilis</i>	Least Concern	Least Concern	Appendix II
Golden-bellied mangabey	<i>Cercocebus chrysogaster</i>	Data Deficient	Endangered	Appendix II
Red-capped mangabey	<i>Cercocebus torquatus</i>	Vulnerable	Endangered	Appendix II
Sanje mangabey	<i>Cercocebus sanjei</i>	Endangered	Endangered	Appendix II
Sooty mangabey	<i>Cercocebus atys</i>	Near Threatened	Vulnerable	Appendix II
Tana River mangabey	<i>Cercocebus galeritus</i>	Endangered	Critically Endangered	Appendix I
White-naped mangabey	<i>Cercocebus lunulatus</i>	Endangered	Endangered	Appendix II
Mandrill	<i>Mandrillus sphinx</i>	Vulnerable	Vulnerable	Appendix I
Mainland drill	<i>Mandrillus leucophaeus leucophaeus</i>	Endangered	Endangered	Appendix I
Bioko drill	<i>Mandrillus leucophaeus poensis</i>	Endangered	Endangered	Appendix I

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EXECUTIVE SUMMARY

Collectively, *Cercocebus* and *Mandrillus* include nine species and two subspecies of African monkeys: seven species of *Cercocebus* and two of *Mandrillus*, including two drill subspecies. Together, they represent some of the least studied and hence least known of the Afro-Eurasian Primates. Although they have a wide range across Africa, extending from the Upper Guinean Forests of Senegal in the west to the Tana River Delta in Kenya, they are also some of the most threatened taxa.

In 2016, the nine species were reassessed by the International Union for Conservation of Nature (IUCN) Species Survival Commission Primate Specialist Group. The outcome saw all but one of the nine species classified as threatened, with five being listed as Endangered and one as Critically Endangered.

The species are at risk of extinction due to several threats, with commercial and subsistence hunting being a primary factor affecting seven of the nine taxa; those found in West and Central Africa. Hunting is mostly driven by increased access to previously inaccessible forested areas. This is due to a growing public and private road network, which facilitates both hunting itself and the export of wild meat to populated areas, where there is high demand for primate meat as a delicacy and/or the need for inexpensive, easily sourced protein.

This primary threat is compounded by the destruction and fragmentation of habitat, the second main threat to these taxa. This is driven by global market demand for commodities, such as timber, rubber, palm oil; as well as local demands for natural resources, including firewood and charcoal. Small-scale agriculture, extractive industries such as mining, and the expansion of new and existing settlements in areas where human populations are increasing, are also drivers.

Given the limited knowledge and threatened conservation status of most of these *Cercocebus* and *Mandrillus* species, there is an urgent need for a collaborative, region-wide approach to catalyse and facilitate efforts to ensure the protection of these taxa and their habitats. To address the need to for such a plan, the leading editors and contributors, which include experts from academic institutions, zoological societies, local and international conservation organisations, and national governments have drawn from their firsthand experience to identify a series of concrete conservation interventions for each taxon. In addition, each species had an assigned Species Champion and that Champion was tasked with pulling together key knowledge holders, including representatives from local communities, to develop feasible actions for the 5-year plan. Thus this plan includes taxon-specific conservation actions, devised under six overarching themes: increase engagement and local livelihood support, reduce knowledge gaps, promote habitat restoration, raise the profile of *Cercocebus* and *Mandrillus* taxa, enhance protection, and respond to public health needs for the neighboring human populations. To ensure that the Plan would be as effective as possible in its 5-year implementation period, it was agreed the actions were to be specific, measurable, achievable, realistic and time-bound, and that key conservation priority areas within each of the countries where these taxa are found should be identified. This would enable conservation efforts to be focused in areas able to maintain viable populations.

To avoid repeating conservation interventions and to encourage collaboration, the Plan worked closely with the Red Colobus Conservation Network. The Plan indicates any crossover with actions identified in the red colobus action plan, as well as crossover with other plans for primates that have range overlap with *Mandrillus* and *Cercocebus* taxa.

Estimated costs were attributed to each action and summarised for each taxon. We did not include the costs of long-term, recurrent, or intangible recommended actions, which are difficult to estimate and require high levels of funding. The Plan also includes individual country summaries that can be easily distributed and provides a concise and accessible overview of a country's key conservation areas for the *Cercocebus* and *Mandrillus* taxa found there. It also includes the conservation interventions needed to ensure their survival.

We hope this Plan will raise the profile of the *Cercocebus* and *Mandrillus* species, encourage collaboration amongst conservation practitioners, local communities, government agencies, and other invested parties, and ultimately prevent the extinction of some of the most amazing primate species on the planet.



Figure 3. Sanje mangabey, *Cercocebus sanjei* (Picture by David Fernández).

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We thank all the contributors to this conservation action plan as it would not have been possible without their insights, knowledge, and experience—they are listed on page 62. We are especially grateful to John Oates and Tom Struhsaker, pioneers of primate conservation, champions for these lesser-known African primates, and inspirations to countless primatologists and conservationists.

We thank the International Primatological Society (IPS), which provided space for our first workshop discussions at the Nairobi meetings where the initial concept of the plan was agreed, and also the African Primatological Society (APS) for their support for this plan throughout its development.

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INTRODUCTION

Taxonomy

The term “mangabey” refers to African monkeys from two genera: arboreal mangabeys are placed in the genus *Lophocebus*, while the semi-terrestrial mangabeys comprise *Cercocebus* species^[1–3]. The term “mangabey” was coined by the French naturalist Georges-Louis Leclerc, Comte de Buffon, in the Eighteenth century, who erroneously believed that “mangabeys” were guenons, small African monkeys, from the Nosy Mangabe region of Madagascar^[2]. Mangabeys, however, are found across the forested regions of Central Africa, parts of West Africa and some isolated areas in Kenya and Tanzania. Both genera of mangabeys, *Lophocebus* and *Cercocebus*, share a number of morphological, ecological and behavioral traits, including mid-range body sizes (ca. 3–12 kg) with relatively long limbs and tails, large incisors, long molars with very thick enamel, which they use to crack open hard food items like seeds, and the production of territorial long calls termed “whoop-gobbles”^[4]. These similarities led taxonomists to group *Lophocebus* and *Cercocebus* monkeys, referring to species from both genera as mangabeys.

There is now, however, ample genetic, morphological, and behavioural evidence to strongly support the diphyletic origin of these genera, with *Cercocebus* mangabeys more closely related to drills and mandrills (*Mandrillus*) than they are to *Lophocebus* mangabeys, which are in turn more closely related to baboons (*Papio*)^[1–3,5–8].

The use of the common name (“mangabey”) creates confusion because it refers to monkeys from two distinct groups (*Lophocebus* and *Cercocebus*). In this Plan, we therefore use the genus *Cercocebus*, comprising seven taxa (Figure 4), rather than the term mangabey. The plan also covers the two closely-related *Mandrillus* species (Figure 5) one of which is divided into two subspecies (see Table 1 for full list).

Distribution

The *Cercocebus* and *Mandrillus* species are found in 12 sub-Saharan African countries, ranging from Senegal in the west to the Tana River Delta, Kenya, in the east (Figure 6). Our knowledge about the exact distribution of each taxa varies, however. As such, while for some taxa we know their distribution relatively well, for others we only have a general understanding of where they may be currently found. Maps in this document, therefore, depict actual distribution for some taxa but historical or presumed ranges for others. This difference is indicated in each taxa’s map legend.

These monkeys inhabit diverse forest types, including rain forest, gallery forest, mangrove swamp forest, flooded riparian forest, forest-savanna mosaic and dry savannah woodland, ranging in altitude from sea level^[4] to 1800 m^[9].

Captive populations

According to the Zoological Information Management System (www.species360.org), of the seven *Cercocebus* species only four are maintained in 46 zoological collections: *C. lunulatus*, *C. atys*, *C. torquatus*, and *C. chrysogaster*. In total, in 2023 there were 217 animals in institutions across Asia, Europe, Africa and North America. This number does not include those that are held in private zoos or collections.

Despite intensive management, a Regional Collection Plan^[10] drafted in 2019 concluded that of the population in Europe only two species, *C. lunulatus* and *C. torquatus*, have viable captive populations and remain part of the

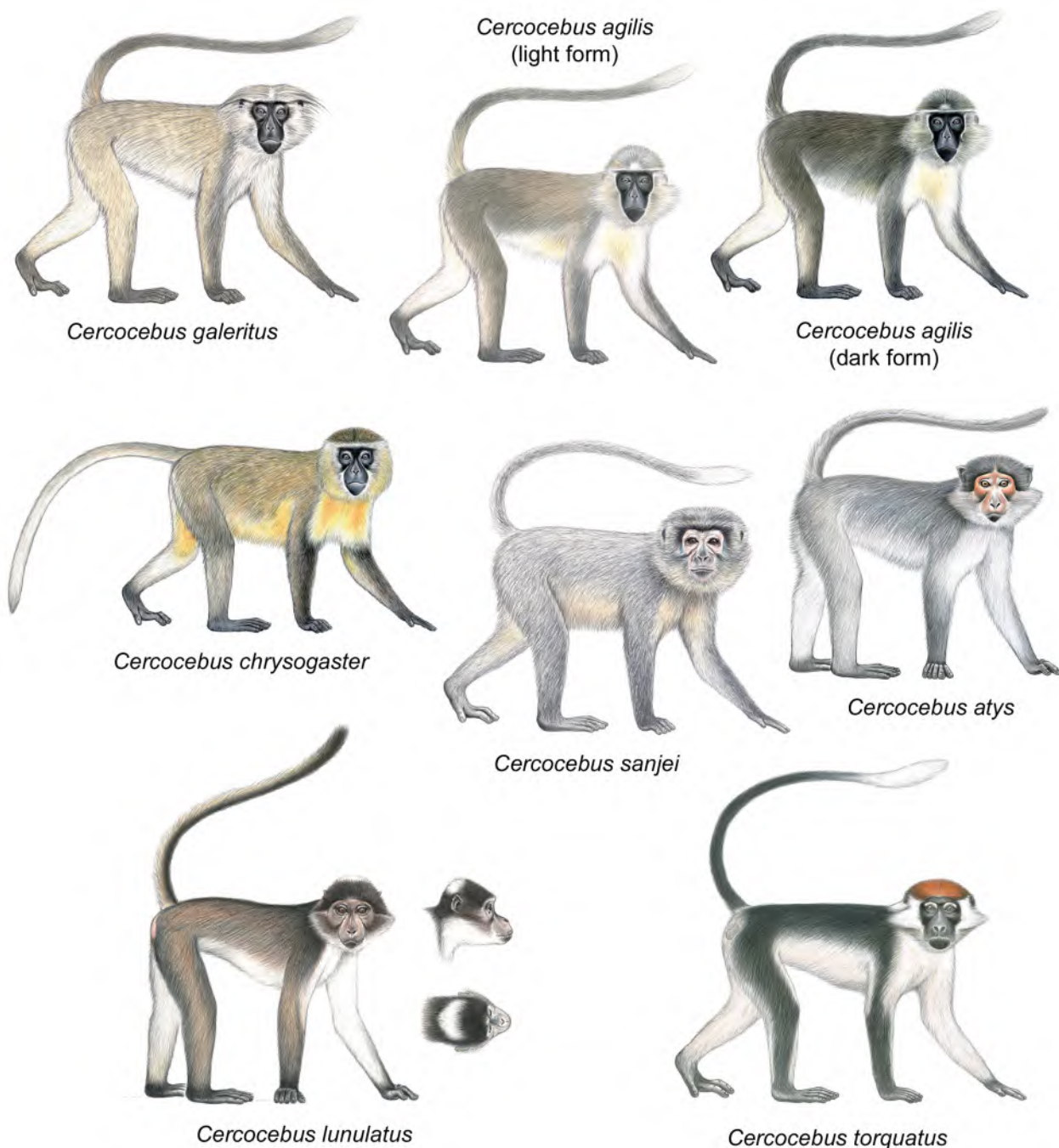


Figure 4. The seven species of *Cercopithecus mangabeys* (Illustrations by Stephen D. Nash).

European Association of Zoos and Aquaria (EAZA) *Ex situ* Programme (EEP), whereby the genetic variation of the captive populations is carefully managed to ensure genetic diversity and long-term survival. Both *C. lunulatus* and *C. torquatus* are recommended species to house in zoos as part of the EAZA Afro-Eurasian Regional Collection Plan, while *C. chrysogaster* is to be phased out. This is based on the genetic sustainability, conservation and education role that they play. The Association of Zoos & Aquariums (AZA) does not actively manage any *Cercopithecus* populations — its current populations of *C. torquatus* and *C. chrysogaster* are to be phased out following the new Species Survival Plan — and is not currently considering any species for their regional collection plan.

Both *M. l. leucophaeus* and *M. sphinx* are present in zoological collections, with *M. sphinx* having a larger population with over 500 individuals in six regions: Asia, Europe, Australia, Europe, North and South America. Both species are part of the EEP and other regional management programmes. Both are recommended species in the EAZA Afro-Eurasian Regional Collection Plan, AZA includes *M. sphinx* under the new Species Survival Plan.

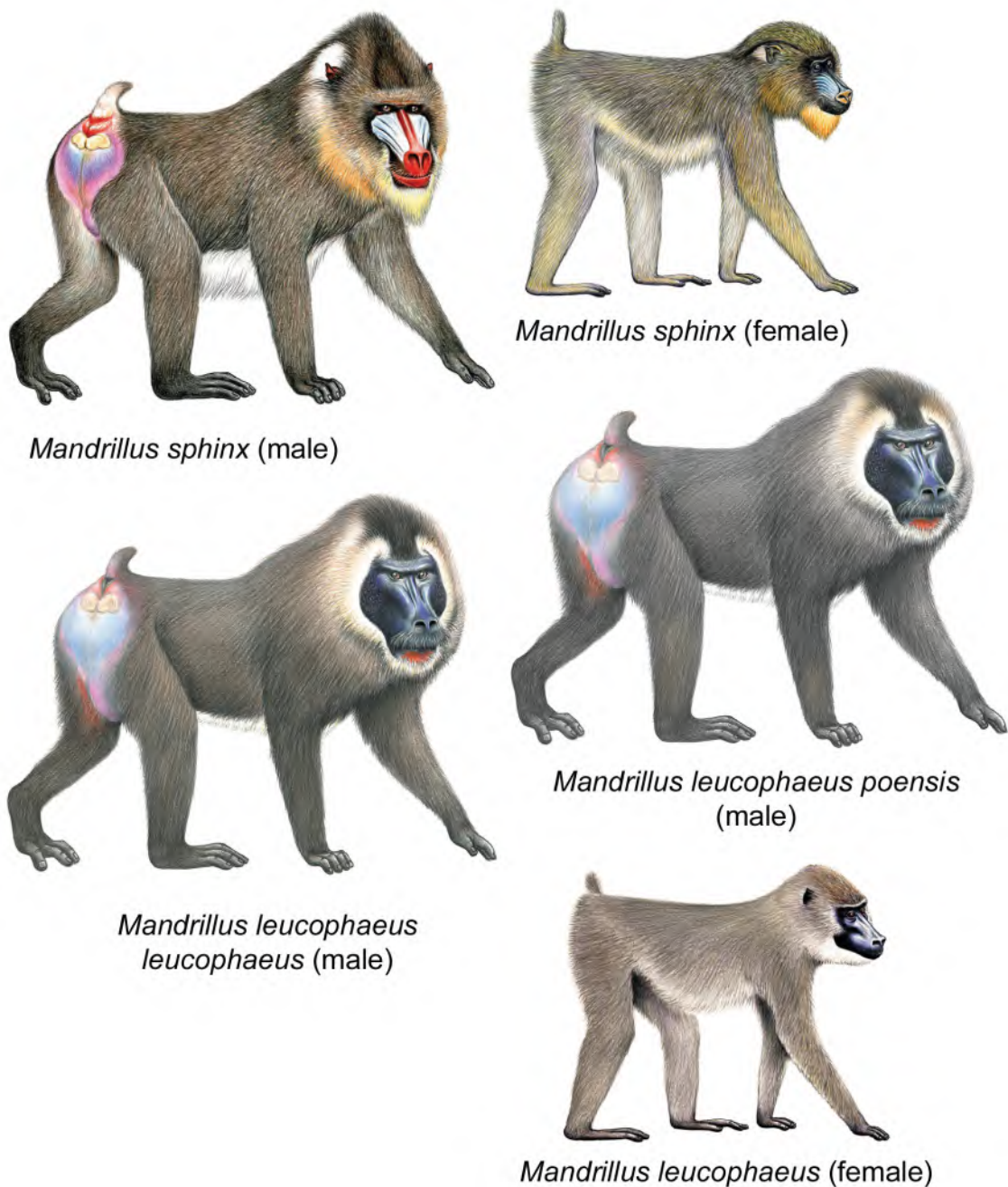


Figure 5. The three *Mandrillus* taxa (Illustrations by Stephen D. Nash).

Anatomy and behavioural ecology

The *Cercocebus* and *Mandrillus* species are characterised by a suite of morphological adaptations to feeding on hard seeds and nuts that are foraged from the forest floor. This is seen in their dentition (e.g., expanded premolars and thick enamel) and postcranial morphology (e.g., enlarged forelimb muscles) that enable effective acquisition and processing of such foods^[1].

Cercocebus monkeys are semi-terrestrial, frequently travelling and foraging on the ground but also ascending to the canopy largely to feed in fruiting trees or to rest. Home range size varies by species and location, from 0.47 km² (*C. galeritus*) to >20 km² (*C. chrysogaster*)^[11]. All *Cercocebus* taxa are omnivorous and, while diets vary by region, they typically consist of fruits, seeds, leaves, insects, invertebrates, amphibians, fungi, shoots, and flowers. *Cercocebus chrysogaster* and *C. agilis* also consume meat, including duikers (Cephalophinae) and water chevrotains (*Hyemoschus aquaticus*)^[12,13]. Diets fluctuate seasonally, and some *Cercocebus* species adjust group

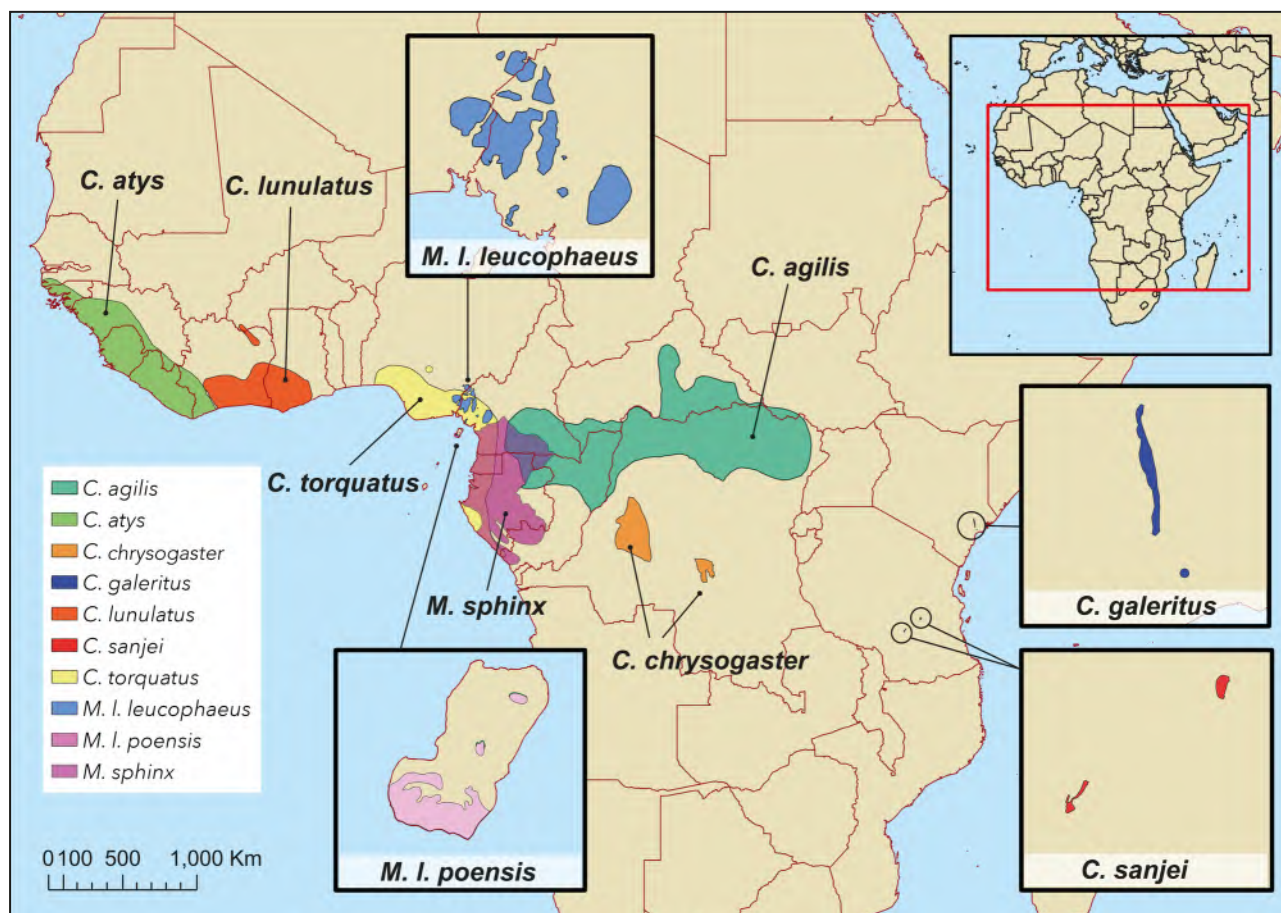


Figure 6. *Cercocebus* and *Mandrillus* species' distribution. Distributions for some taxa are based on recent surveys and/or their most recent IUCN Red List assessments, and reflect relatively well their range. For other taxa, however, the distribution shown here is generalised, based on historical records and/or limited survey data, and therefore may not reflect the taxa's current range. The accuracy of the distribution depicted for each taxon is indicated in their map's legend (Map by Angeliki Savvantoglou).

size and structure in response to food availability^[2]. As with home range, group sizes can vary across species, with reports of *C. galeritus* in groups of ca.15 individuals^[4], to >50 in *C. lunulatus*^[14], >120 in *C. atys*^[9] and *C. agilis*^[15]. *Cercocebus* monkeys live in multi-male, multi-female groups, with male dispersal. Temporary female transfer has been reported in *C. sanjei* ^[16]. Both sexes form linear dominance hierarchies^[17–19]. Average body weight of adult females across the seven species ranges from 3.7 to 6 kg; while the average body weight of adult male *Cercocebus* ranges from 9 to 11 kg^[2]. It should be noted that most of our knowledge of the life history and reproductive ecology for *Cercocebus* are based on *C. atys*, *C. sanjei*, and *C. torquatus*, as the other species are still poorly known.

The two *Mandrillus* species are the largest of the Afro-Eurasian monkeys, indeed of all monkeys, and are highly sexually dimorphic and dichromatic. Adult males are colourful and about three times the weight of adult females (mandrills: ca. 31 kg vs 9 kg, respectively; drills: ca. 32 kg vs. 12 kg)^[4,20]. Strong sexual dimorphism is also shown through significant differences in canine size, pelage and skin colouration, and musculature^[20]. As with *Cercocebus*, *Mandrillus* are diurnal and semi-terrestrial. They are omnivorous, feeding on fruits, seeds, leaves, pith, flowers, invertebrates, and vertebrates ^[21]. Their forested habitat makes it difficult to study the social systems and range sizes of wild drills and mandrills. As a result, we know little about drill life history, behaviour or reproductive ecology, and studies of wild mandrills are also limited. Mandrills live in multi-male, multi-female social groups with mean group sizes of 620^[21]. These large groups may be permanent, with some temporary sub-grouping^[20]. As with *Cercocebus*, *Mandrillus* appears to be primarily female-bonded, with stable matrilineal dominance hierarchies^[22]. Male group membership is more variable, with solitary males occurring in both species.

Conservation status

The conservation status of all African primates was reassessed in 2016 at the International Union for Conservation of Nature (IUCN) Species Survival Commission Primate Specialist Group African Primate Red List Assessment workshop in Rome, Italy. The subsequently-published assessments indicate that populations of the 10 species and subspecies of *Cercocebus* and *Mandrillus* are declining. Further, all but *C. agilis* are threatened with extinction, with one species assessed as Critically Endangered, six Endangered, and two Vulnerable. Only one species is Least Concern (Table 1).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) classifies the species under Appendix I, i.e., species threatened with extinction and thus trade in specimens of these species is permitted only in exceptional circumstances; or Appendix II, i.e., species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilization incompatible with their survival (Table 1) (www.cites.org).

Threats

The *Cercocebus* and *Mandrillus* species are at risk of extinction due to a number of threats, with commercial and subsistence hunting^[23–25] being the primary causes affecting nearly all taxa. Hunting is particularly prevalent for the West and Central African taxa, particularly the larger *Mandrillus* species, although not exclusively, as Sanje mangabeys in Tanzania are also experiencing increasing risk from illegal hunting^[26]. The drivers of hunting include ongoing increased access to previously remote forests due to the incursion of public and private roads that facilitates both hunting itself and the export of wild meat, urban demand for primate meat as a delicacy, and the need for inexpensive, easily-sourced protein in rural communities.

All *Cercocebus* and *Mandrillus* species are highly frugivorous, and, as such, seed dispersers, contributing to maintaining healthy forest ecosystems. With their declining numbers, we can expect to see changes in the floral composition, forest structure and function^[27,28].

This negative effect on primate habitats is exacerbated by the second main threat to these taxa, namely forest conversion and habitat fragmentation. Between 2000 and 2014, 16.6 million ha of forest were lost in Central Africa alone, ranging from one million ha in DRC to ca. 8,000 ha in Equatorial Guinea^[29]. This is driven by global markets for commodities, such as timber, rubber, and palm oil; local demands for natural resources, including firewood and charcoal; small-scale agriculture, extractive industries such as mining, and new settlements where human populations are growing^[23,24,30].

Most taxa in this action plan are also under threat from infectious diseases and climate change^[24]; however, there is currently very limited evidence demonstrating the impact of these threats on *Cercocebus* or *Mandrillus*^[31]. Future studies are needed to better understand the potential impact of these two emerging threats on these taxa and to determine mitigation measures that may be needed to address them.



Figure 7. *Cercocebus chrysogaster* (Picture by Edward McLester).

CERCOCEBUS AND MANDRILLUS CONSERVATION ACTION PLAN RATIONALE AND GOAL

The declining populations of the *Cercocebus* and *Mandrillus* species, combined with increasing threats to their survival and the dearth of detailed ecological, biological and behavioural knowledge of most taxa, underscore the need to raise awareness about them. The lack of awareness of these taxa among public audiences has compounded the problem with, to date, limited research, attention and conservation focus. Thus, the rationale of this plan, which draws from the collective experience international and range-national researchers, conservationists and decision makers, is to prevent a silent extinction of these ecosystem engineers. Only by taking new aggressive action to prevent further loss of *Cercocebus* and *Mandrillus* monkeys and their habitats will we ensure the long-term survival of these unique species.

This action plan is a call to action for the global conservation community, as well as national governments, multilateral organisations, zoological societies, wildlife centres, civil society organisations, academic institutions and communities that are interested parties in the conservation of these *Cercocebus* and *Mandrillus* species. The goal is to provide clear recommendations for impactful conservation actions for these taxa collectively within their range countries that would halt the decline of these monkeys and contribute as such to the maintenance and health of the forest ecosystems of West, Central and East Africa.

RANGE-WIDE CONSERVATION PRIORITIES

All conservation actions proposed in this document fall into six general categories.

1. Increase engagement and local livelihood support

Successful implementation and the long-term effectiveness of any conservation action must obtain the support, engagement, and commitment of all interested parties, especially grassroot communities. Successful conservation requires the fostering of collaboration and knowledge exchange among conservationists, local communities, researchers, and local and national government authorities to ensure effective, integrated, long-lasting change. Most critically, we must consider the needs and wellbeing of local communities living alongside *Cercocebus* and *Mandrillus* monkeys, and especially in the vicinity of, or inside, protected areas. Their involvement and leadership throughout each stage of the development of conservation initiatives is critical to ensure long-term conservation success. This includes, for example, the development of suitable, culturally acceptable, income-generating alternative activities to those that have been negatively affecting the *Cercocebus* and *Mandrillus* species and their habitat. In areas where capacity is lacking to lead on such activities, the global conservation community must prioritise capacity building through training and mentoring. The support and engagement of government officials must also go together with community-based approaches to conservation, as many of the most urgent threats are directly linked to poorly managed protected areas, limited implementation of current wildlife and environmental legislation, and conflicting interest with extractive industries.

2. Reduce knowledge gaps

Our current knowledge of the distribution and abundance of the *Cercocebus* and *Mandrillus* species is limited, highly variable and, in many cases, outdated. Their patchy distribution, rapid infrastructure development in range countries, increasing deforestation rates, and civil unrest have only increased our uncertainty with respect to the current state of many of these species. Systematic and regular surveys and monitoring and genetic studies are needed to obtain current and accurate information on spatial distribution, effective population size, and genetic distinctiveness. Such data are also required to accurately update their conservation status, to undertake scenario-based forecasting of species distribution and adaptation, to identify priority areas for each species, and to develop evidence-based, targeted conservation actions.

3. Habitat restoration

Rapid human population growth, infrastructure development and extractive industries are taking a heavy toll on *Cercocebus* and *Mandrillus* habitats, reducing the extent and quality of available forests and ultimately fragmenting and isolating populations. Habitat restoration is needed to establish corridors between subpopulations to facilitate effective dispersal for genetic exchange, reduce stochastic effects caused by small population sizes and minimise edge-effects in small fragments of forests that still harbour these species.

4. Raise the profile of *Cercocebus* and *Mandrillus* species

With the possible exception of the mandrill, these species are some of the publicly least known primates. The fact that many face extinction is even more poorly known. Activities aimed to raise awareness of these species and the threats facing them, including conservation education, species-specific celebration days, and media coverage (globally and in range countries) are needed. Global engagement, particularly among potential donors,

will increase support and foster more effective conservation action. In range countries, awareness activities should target urban and rural communities alike, highlighting the natural heritage of these species, as well as the need to conserve them for future generations.

5. Enhance protection

Illegal hunting and logging are two of the main drivers behind the rapid decline of *Cercocebus* and *Mandrillus* populations. Even if many of the proposed conservation actions in this document are successfully implemented, some populations, or even entire species, may still disappear within the lifetime of this plan if these illegal activities are not stopped or significantly reduced. In many range states, laws are already in place to protect primates and their habitats. What is urgently needed is effective protected areas, with forest patrols carried out by teams bearing the authority to make arrests and confiscations; as well as effective prosecution of high-level figures involved in the illegal wildlife trade so as to reverse the rapid decline of these species and the impoverishment of their habitats.

6. Respond to public health needs of neighbouring human populations

Increasing human pressures, including localized population growth, on wildlife and the ecosystems they inhabit, are a major challenge in conservation. However, there are situations when responding to public health needs will also respond to threats to *Cercocebus* and *Mandrillus* monkeys. Many human communities living alongside *Cercocebus* and *Mandrillus* monkeys are resident in regions with relatively poor healthcare service provision. Lack of healthcare service provision, and other barriers to family planning, can lead to families having more children than they would ideally choose. This, in turn, can lead to greater pressures on families with limited livelihood options, and on local ecosystems. Use of a Population, Health and Environment (PHE) model is one pathway to improve biodiversity outcomes, engage more men in reproductive health, and more women in livelihood and natural resource management, ultimately achieving more significant and longer-lasting conservation outcomes than would likely occur without integration^[32]. If PHE models are found to be appropriate in some areas of the range for the *Cercocebus* and *Mandrillus* species, they could support long-term conservation efforts by increasing community engagement in conservation activities. Improved health systems can also respond to infectious diseases impacting human and non-human primates. Those with reproductive health expertise and organisational specialisation are best equipped to provide healthcare service provision, including family planning services. Thus, conservation plans should include prioritising partnerships with health care organisations which can provide the information and resources needed for people to access the health services they want, in turn contributing to positive conservation outcomes for our target taxa.

KEY CONSERVATION PRIORITY AREAS BY COUNTRY

Although all areas where *Cercocebus* and *Mandrillus* species exist should be conserved, it is constructive to identify and prioritise specific, measurable, achievable, realistic, and time-bound actions in key areas due to limited resources and capacity. If we can protect these Key Conservation Priority Areas (KCPA), then even in a worst-case scenario, we should still be able to sustain relatively healthy populations of each taxon. To identify KPCAs, priority was given to sites that were considered species strongholds, defined as areas which have:

1. Effective protection – *the area has active and effective government and/or community-based protection;*
2. Suitable habitat – *has suitable vegetation and climate for the species' ecology, as well as enough available habitat to support a viable population; and*
3. Viable populations – *the effective population size is able to maintain genetic health over time.*

Species have a good chance of surviving at these sites provided protection measures there continue, and threats are eliminated or controlled. In the future, they could serve as insurance populations, which could emigrate and/or be translocated to repopulate other areas where the species may have gone locally extinct or decreased to very low numbers. For some other species, however, KPCAs identified are not currently well protected, but are regarded as critical to conservation efforts due to their geographic location, such as remote, intact, but unprotected forests, or those that could be linked by corridors to other forests to increase available habitat, or to a recognised Key Biodiversity Area^[33].

Based on these criteria, and to aid in regional conservation management for *Cercocebus* and *Mandrillus* species throughout their range, we have identified KPCAs for each range country, from East to West, with the relevant species from that country and for each KCPA, and their associated conservation management recommendations. These are summarized by country in Appendix 2.

CERCOCEBUS AND MANDRILLUS TAXONOMIC ENTRIES

This section includes individual entries for each of the 10 *Cercocebus* and *Mandrillus* taxa. Taxa are presented according to their distribution in Africa: from East to West and from North to South. Each entry includes a brief description of the distribution, population size and conservation status of each taxon, followed by a summary of the main threats faced. These sections do not aim to be exhaustive, as excellent summaries can be found elsewhere and, for many species, the IUCN Red List contains information published between 2016 and 2020^[34–36]. Instead, the goal is to provide up-to-date information, in many cases using first-hand accounts and unpublished studies from species' experts, conservationists, wildlife biologists and practitioners with direct knowledge on each of these aspects; and to focus on the key elements that informed the conservation recommendations identified for each taxon. Entries also list KPCAs for conservation actions for each country in which the taxon is found.

For each taxonomic entry we also provide a map of their known distribution based on recent surveys and/or the most recent IUCN Red List assessment. Given that the information we have for each taxa varies, however, some entries' maps are detailed and depict the taxa's actual distribution, while for other taxa the maps are more generalized and reflect the taxa's historical and/or presumed range, which may or may not reflect their current distribution. The reader is therefore urged to refer to maps' legends to learn the accuracy of the distribution shown.

The final section of each entry is a list of priority objectives, which align with the Range-wide Conservation Priorities discussed earlier, and taxon-specific recommended conservation actions. Conservation actions were first proposed by the contributors with the most knowledge for each taxa, and then revised for clarity and conciseness by the lead editors. All conservation actions included in the plan are meant to be feasible within the 5-year duration of the plan, actionable, relatively easy to fund, and achieve clear and concrete conservation impact, when completed by 2028.

To maximize the impact of the proposed action, and given that multiple red colobus species overlap with *Cercocebus* and/or *Mandrillus* taxa, entries also indicate when a proposed activity overlaps with a conservation activity included in the recently published IUCN Red Colobus (*Piliocolobus*) action plan^[37], as well as the red colobus species that may benefit from the actions recommended here. Entries also include an estimate of the total costs of the proposed action, excluding the costs of long-term, recurrent, or large-scale recommended actions, which are difficult to estimate.

A summary of the priority sites, conservation objectives, recommended actions and budget can be found in www.cam-conservation.org.



Figure 8. *Cercocebus atys* (Picture by Justin Philbois).

TANA RIVER MANGABEY

Cercocebus galeritus Peters, 1879

Critically Endangered

Description, distribution and population status:

The Tana River mangabey is endemic to fragmented riparian and flood-plain forests along 60 km of the lower Tana River (from 01°45'05"S; 40°06'55"E to 02°18'71"S; 40°11'07"E), Tana River County, north coast of Kenya^[38–40]. The area occupied along the lower Tana River is only 26 km² ^[40]. A few groups occur in the Tana Delta (from 02°24'26"S; 40°19'45"E to 02°26'42"S; 40°20'35"E)^[41]. The population estimate in 1994 was 1000–1200 individuals in 48 groups^[38], a decline from the first (1975) estimate of 1200–1600 individuals^[42,43]. The current population may now be below 1000 individuals, with an effective population size at <100 individuals^[44].

Threat analysis: Habitat degradation, loss, and fragmentation through unsustainable exploitation of forest products and clearance for farmland are the greatest threats ^[38,39,45–47]. An invasive and aggressive plant, *Prosopis juliflora* (Fabaceae), is replacing indigenous forest, while fire, livestock encroachment, and damage to trees by elephants are also threatening

the survival of the Tana River mangabey^[48–54]. In addition, large-scale infrastructure projects (e.g., the Lamu Port, Southern Sudan-Ethiopia Transport Corridor, and Grand High Falls Dam) will further alter flooding and river flow regimes, thereby changing forest cover^[41,53,55].

The status of the only protected area, the Tana River Primate National Reserve (TRPNR), is unclear. The High Court of Kenya ordered the degazettement of the TRPNR in 2007, after the local community petitioned the legality of its establishment and management by Kenya Wildlife Service. The degazettement has not, however, been published by the Cabinet Secretary or approved by Parliament. These are necessary steps according to the Kenya Wildlife Act 2013, Section 37. Other threats include poor research infrastructure following the collapse of the Mchelelo Research Camp, inadequate security in the area, negative community attitudes towards conservation, a poor working-relationship with the Kenya Wildlife Service, and limited community conservation education, capacity building, and community-led conservation initiatives^[47,50,56,57].



Figure 9. *Cercocebus galeritus* (Picture by Julie Wiecekowski).

Key conservation priority areas

Country	Priority Sites
Kenya	Tana River Primate National Reserve and surrounding community forests
	Tana Delta, particularly the Bililo-Vunja Moyo Forest Complex
	Areas between Mwina and Mitapani
	Areas between Makere West and Wenje West
	Areas between Makere East and Nkanjonja

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$295,000*		
Priority objectives	Recommended actions	Action plan crossover
Engagement and local livelihood support	Engagement through training and support of community conservancy initiatives. Provide alternative livelihoods to ease pressure on habitat. Promote collaborative efforts among interested parties towards mangabey conservation.	<i>P. rufomitratus</i>
Reduce knowledge gap	Undertake a complete census and an assessment of suitable habitat.	<i>P. rufomitratus</i>
	Genetic analysis to determine relatedness and heterozygosity among sub-populations of the Tana River mangabey and to determine the genetic health of the population.	
	Restore Mchelelo Research Camp to support research and ecological monitoring.	<i>P. rufomitratus</i>
Habitat restoration	Restore and connect degraded and fragmented forest fragments and unprotected areas between Mwina and Mitapani, between Makere West and Wenje West, and between Makere East and Nkanjonja to improve the quality and size of critical habitats for Tana River mangabey. This is to include an exploration of the implications of the spread of invasive species and ways to mitigate further habitat loss.	<i>P. rufomitratus</i>
Raise the profile of the species	Conservation education to raise awareness of the Tana River mangabey conservation status and promote actions to address the threats (e.g., habitat degradation, loss and fragmentation, livestock encroachment, overgrazing, unsustainable wild honey harvesting, forest fires).	<i>P. rufomitratus</i>
Respond to public health needs	Work with organisations with relevant reproductive health and demographic expertise (e.g., Communities Health Africa Trust [CHAT], which is already active in Kenya; Margaret Pyke Trust, IUCN Biodiversity & Family Planning Task Force) to support and/or advise on the processes of: (a) analysing the extent to which barriers to family planning are a threat to the Tana River mangabey across its range; (b) establishing the extent to which existing health, conservation, and development policies within the range of the Tana River mangabey could support the development of conservation programs focussed on this species, following the PHE approach to conservation; (c) establishing whether and how programmatic partnerships with health NGOs, the Ministry of Health, and/or others, could respond to range-specific barriers to family planning and identifying partners; and (d) when funding can be secured, develop holistic PHE interventions to simultaneously support community health and well-being and conservation of the Tana River mangabey.	

*Excluding costs of long-term/recurring actions

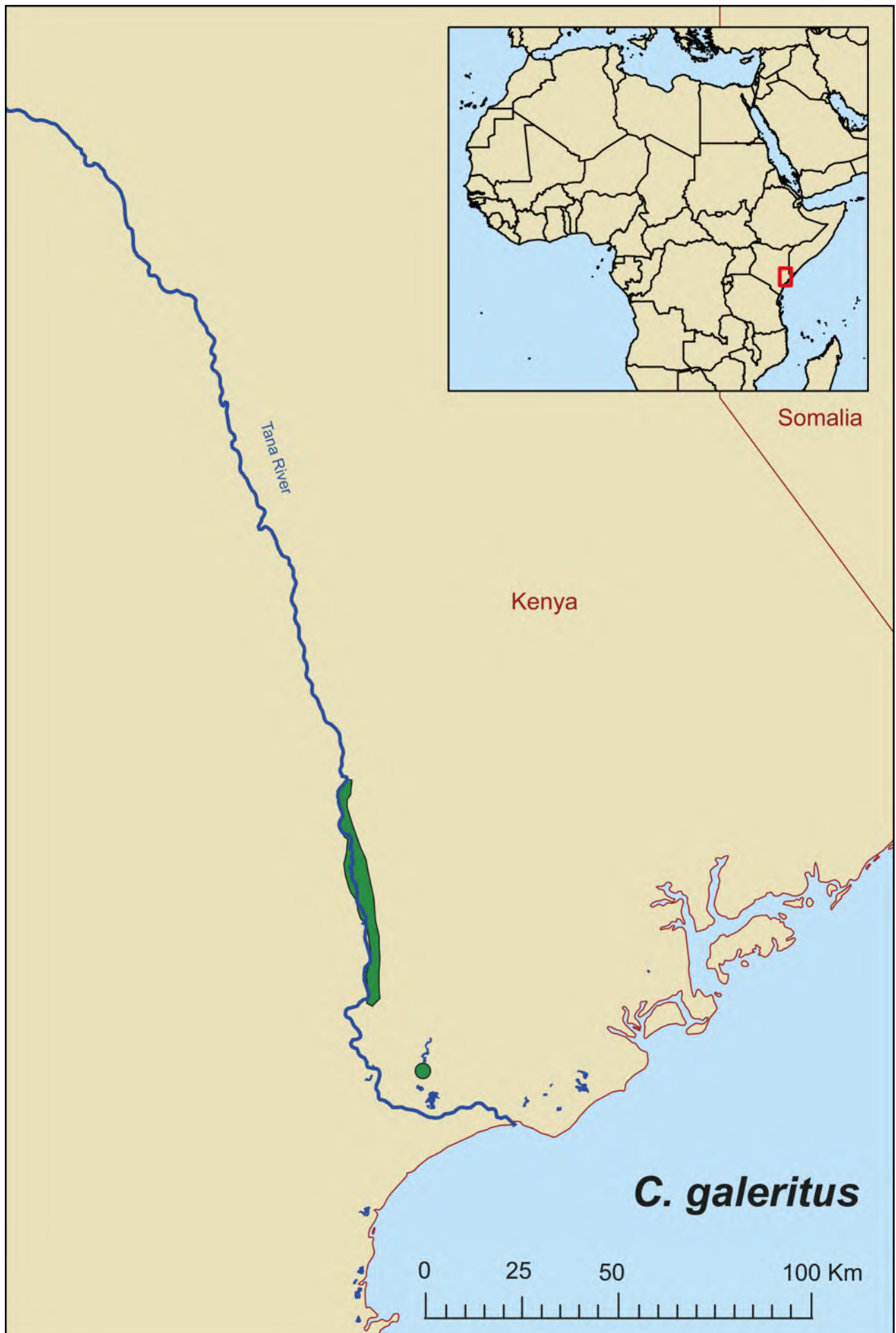


Figure 10. *Cercocebus galeritus* distribution. The species is currently limited to the fragmented forests along 60km of the lower Tana River delta and the Tana delta itself (Map by Angeliki Savvantoglou).



Figure 11. *Cercopithecus galeritus* (Picture by Julie Wieczkowski).

SANJE MANGABEY

Cercocebus sanjei Mittermeier, 1986

Endangered

Description, distribution and population status:

The Sanje mangabey is endemic to the Udzungwa Mountains of Tanzania, part of the Eastern Afrotropical Biodiversity Hotspot^[58]. It is found in two isolated forest fragments, Mwanihana Forest in the Udzungwa Mountains National Park (UMNP; 150.59 km²) and the Uzungwa Scarp Nature Reserve (USNR; 314.48 km²)^[59]. A recent phylogenetic analysis has shown that these two populations were separated approximately 0.71 MYA^[60] suggesting that they should be treated as potentially evolutionarily significant units for conservation management planning. A survey conducted in 2017 using acoustic point-count sampling, a more accurate method than transect surveys to estimate their population^[61], concluded that there are approximately 3100 individuals remaining in the entire population^[62]. This is an approximately 30% decline compared to the last survey (conducted between 1997 and 2002), once available habitat and average group size are adjusted based on our current knowledge of the species behavioural ecology^[63]. A recent combination of results from the acoustic survey with data from systematic camera trapping across the range suggests, however,

a population abundance of 3800 individuals, with a density that decreases close to reserve boundaries^[64].

Threat analysis: Only the UMNP is actively protected by park rangers. Despite this, signs of illegal activity are high in the northeastern boundary regions, far from the headquarters of the park and areas routinely patrolled by park rangers. In contrast, the USNR lacks active park ranger protection^[63,65], except for monthly patrols of this area that the Uzungwa Scarp Protection Project has run with the Tanzanian Forest Service since mid-2018. These patrols have confiscated mangabeys from hunters and found dead mangabeys caught in ground snares^[26]. As USNR harbors between 40 and 57% of the total Sanje mangabey population, without active protection the species could undergo a substantial decline in the near future^[64,66].

The UMNP and USNR are separated by ca. 120 km of land used primarily for agriculture. While the remaining forests in these two areas contain large stands of primary forest, and are considered high quality habitats for the Sanje mangabey and other forest dwelling species,



Figure 12. *Cercocebus sanjei* (Picture by David Fernández).

there are high levels of hunting, timber extraction, and forest clearing for agriculture around the USNR in particular^[67,68].

corridors^[37]; however, the phylogenetic analysis of these sub-populations as evolutionary significant units suggests we should consider this potential action with caution^[60].

In addition, the human population in the Kilombero Valley, neighbouring the mountains, has grown exponentially over the last decades, largely due to the fertility of the soil for farming in the region. Annual population growth is estimated to be between 3.4 and 10%, with 70% of heads of households being immigrants from other regions of Tanzania^[61,68], putting more pressure on these forests. Recommended conservation actions for other endemic primates in this region have been wildlife

Finally, in this region there is some animosity towards the protected areas, with local communities feeling excluded from access to natural resources in the forests. This animosity has led at times the local community setting the forest on fire. Thus, it will be key to work with local communities to find mutually beneficial solutions to protecting mangabey habitat in this region for successful long-term conservation.

Key conservation priority areas:

Country	Priority Sites
Tanzania	Uzungwa Scarp Nature Reserve
	Udzungwa Mountains National Park

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$225,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Establish recurring, standardised monitoring of the entire mangabey population across USNR and UMNP using acoustic survey methods with Distance software and wide-spread camera trapping arrays.	<i>P. gordonorum</i>
	Investigate wild meat hunting and consumption in USNR and UMNP.	
Habitat restoration	Habitat restoration of both forests to increase availability of preferred mangabey habitat and decrease edge-to-core ratios in both Mwanihana and USNR.	<i>P. gordonorum</i>
Raise profile of the species	Work with local partners to continue and enhance conservation education in neighboring communities.	<i>P. gordonorum</i>
Enhance protection	Increase patrol frequency and coverage in the Uzungwa Scarp Nature Reserve.	<i>P. gordonorum</i>
Respond to public health needs	Work with organisations with relevant reproductive health and demographic expertise (e.g., Communities Health Africa Trust [CHAT], Margaret Pyke Trust, IUCN Biodiversity & Family Planning Task Force) to support and/or advise on the processes of: (a) analysing the extent to which barriers to family planning are a threat to the Sanje mangabey across its range; (b) establishing the extent to which existing health, conservation, and development policies within the range of the Sanje mangabey could support the development of conservation programmes focussed on this species, following the PHE approach to conservation; (c) establishing whether and how programmatic partnerships with health NGOs, the Ministry of Health, and/or others, could respond to range-specific barriers to family planning and identifying partners; and (d) when funding can be secured, develop holistic PHE interventions to simultaneously support community health and well-being, and the conservation of the Sanje mangabey.	

*Excluding costs of long-term/recurring actions

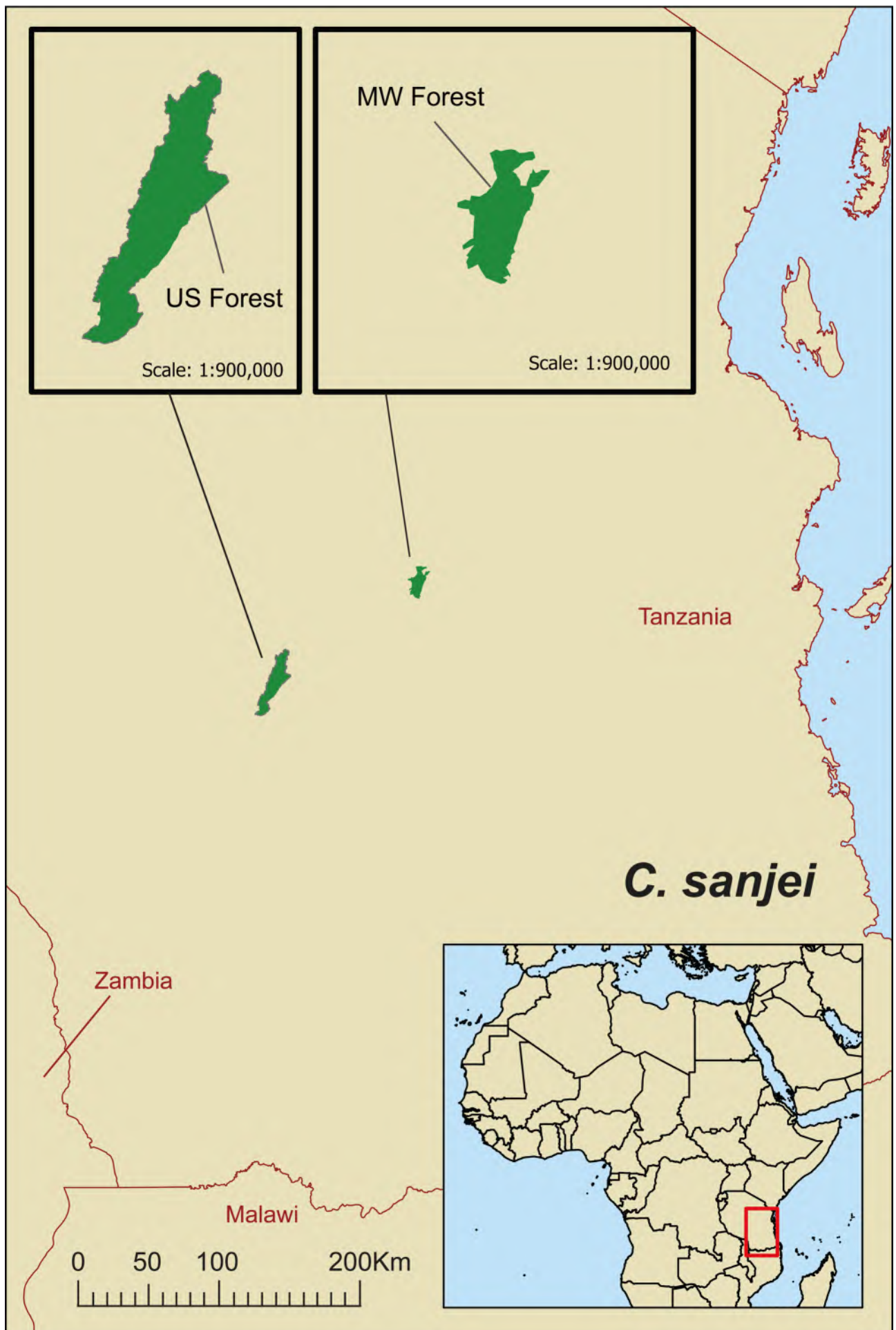


Figure 13. *Cercocebus sanjei* distribution. The species is currently limited to two isolated forests in the Udzungwa Mountains (Map by Angeliki Savvantoglou).



Figure 14. *Cercopithecus sanjei* (Picture by Gráinne McCabe).

GOLDEN-BELLIED MANGABEY

Cercocebus chrysogaster Lydekker, 1900

Endangered

Description, distribution and population status: The golden-bellied mangabey was first described in 1900^[69] but has since remained one of the most understudied primates in Africa. This species is endemic to the central Congo Basin, Democratic Republic of the Congo. Current information on the species' abundance and distribution is extremely limited. Its population is likely small and fragmented within its range, which is divided into two distinct blocks^[70,71]. An earlier description of the distribution by Gautier-Hion *et al.*^[71] likely overestimated the species' range^[72]. Current estimates indicate a total range of 80,000 km², of which Salonga National

Park—in the Western population and the only formally protected area in its entire range—comprises 17,000 km² (18% of the total distribution).

Surveys conducted on the Western population (68,000 km²) from 1994–2007^[72] and 2016–2018^[73] found the northern limit to be the Lokolo River system (~2°30'S), eastern limit the Luilaka River (~21°13'E), southern limit the Kwa-Kasai-Sankuru River (~3–4°S), and western limit the Congo River (18°06'30"E, 00°53'14"S). Although *C. chrysogaster* has been observed in the northern and eastern areas of Salonga National Park's



Figure 15. *Cercocebus chrysogaster* (Picture by Edward McLester).

southern sector, there are no records from the south-western area or from the Park's northern sector (J. Eriksson, F. Maisels, E. McLester and G. Reinartz pers. comm), and its occurrence in this protected area is likely to be patchy^[73,74]. *C. chrysogaster* has been reported to be common on the southern bank of the Lukenie River, and 'fairly abundant' in the Lokolama village and Mimia village regions and between Lokolama village and the Lukenie River (J. Eriksson pers. comm. in^[70]). The Eastern population (ca. 12,000 km²) ranges between the Sankuru and the Lubefu Rivers, in an area known as the Kipula Block (23°40'50"E, 4°38'15"S)^[75]. The Western and Eastern populations are distinct, separated by at least 300 km and with no evidence of connectivity between them along the Lukenie or Sankuru rivers, contrary to previous suggestions^[70,75].

Approximately 58% of habitat in the area of distribution is classified as permanent swamp or seasonally flooded and riparian forest^[72]. It is likely that the occurrence of *C. chrysogaster* is uneven in the estimated area of distribution, as many habitats are probably unsuitable depending on vegetation composition or altitude. The typical altitudinal range for this species is 300–500 m, with habituated groups at LuiKotale almost exclusively using relatively high and dry terra firma vegetation at ca. 400 m and rarely venturing into swamps or riparian areas^[11,72]. In addition, initial behavioural data indicate golden-bellied mangabey groups have extremely large home ranges (approximately 20–25 km²—twice as large as the next largest home range reported for *C. agilis*^[11]). In the absence of any detailed estimates of population density, limited habitat choice and large ranges suggest densities are likely to be relatively low (at LuiKotale, three groups live in an area of at least 100 km²).

Threat analysis: Large numbers of *C. chrysogaster* are killed for the commercial wild meat trade across its range, which has led to ongoing and dramatic population declines^[76]. Although the species appears

to be highly vulnerable to hunting in some areas^[76], there is likely considerable variation in the extent of hunting across its distribution. In some Bolongo villages in the centre of its distribution, golden-bellied mangabeys are rarely consumed as wild meat (e.g., no records in two years of monitoring wild meat eaten by community members^[77]). Moreover, groups flee rapidly from researchers but readily habituate with a few days of persistent follows. In some areas, hunting pressure may, therefore, be low because other species (e.g., more conspicuous, arboreal colobus monkeys that live at higher densities) make much easier targets for hunters.

The illegal pet trade likely also poses a substantial threat: captive animals are seen frequently (e.g., 21 live individuals encountered in early 2003 alone) in both the western and eastern populations, and for sale on the streets in Kinshasa^[72]. A shipment of eleven individuals being smuggled to South Africa was confiscated in 2021, indicating that the pet trade extends internationally. The species is also persecuted as an agricultural pest in some areas^[72].

Cercocebus chrysogaster is also threatened by habitat loss due to industrial logging operations, leading to declines in range area and occupancy^[76]. Additional smaller-scale logging is widespread in the western range^[72], further decreasing the availability of suitable habitat for this species. Mining and oil permits are increasingly common in this species' range, and updated maps of ongoing logging permits (including industrial, community, and artisanal) and mining and oil permits can be found here.

Effectively addressing these threats can only be done once we obtain accurate and up-to-date information on the species' distribution, population size, and ecology, as such data are significantly lacking across almost all of its range.

Key conservation priority areas:

Country	Priority Sites
Democratic Republic of the Congo	Salonga National Park
	Lokolama Village region
	Lukenie River region
	Mimia Village region
	Kipula Block (Eastern population)

Priority objectives and recommended actions:

ESTIMATED BUDGET: 80,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Conduct population surveys in all priority sites.	<i>P. tholloni</i>
	Systematic surveying of wild meat markets to better understand precedence, species distribution and hunting pressure.	
Respond to public health needs	Work with organisations with relevant reproductive health and demographic expertise (e.g., Margaret Pyke Trust, IUCN Biodiversity & Family Planning Task Force) to support the processes of: (a) analysing the extent to which barriers to family planning are a threat to the golden-bellied mangabey across its range; (b) establishing the extent to which existing health, conservation, and development policies within the range of the golden-bellied mangabey could support the development of conservation programs focussed on this species, following the PHE approach to conservation; (c) establishing whether and how programmatic partnerships with health NGOs, the Ministry of Health, and/or others, could respond to range-specific barriers to family planning and identifying partners; and (d) when funding can be secured, develop holistic PHE interventions to simultaneously support community health and well-being, and conservation of the golden-bellied mangabey.	

*Excluding costs of long-term/recurring actions

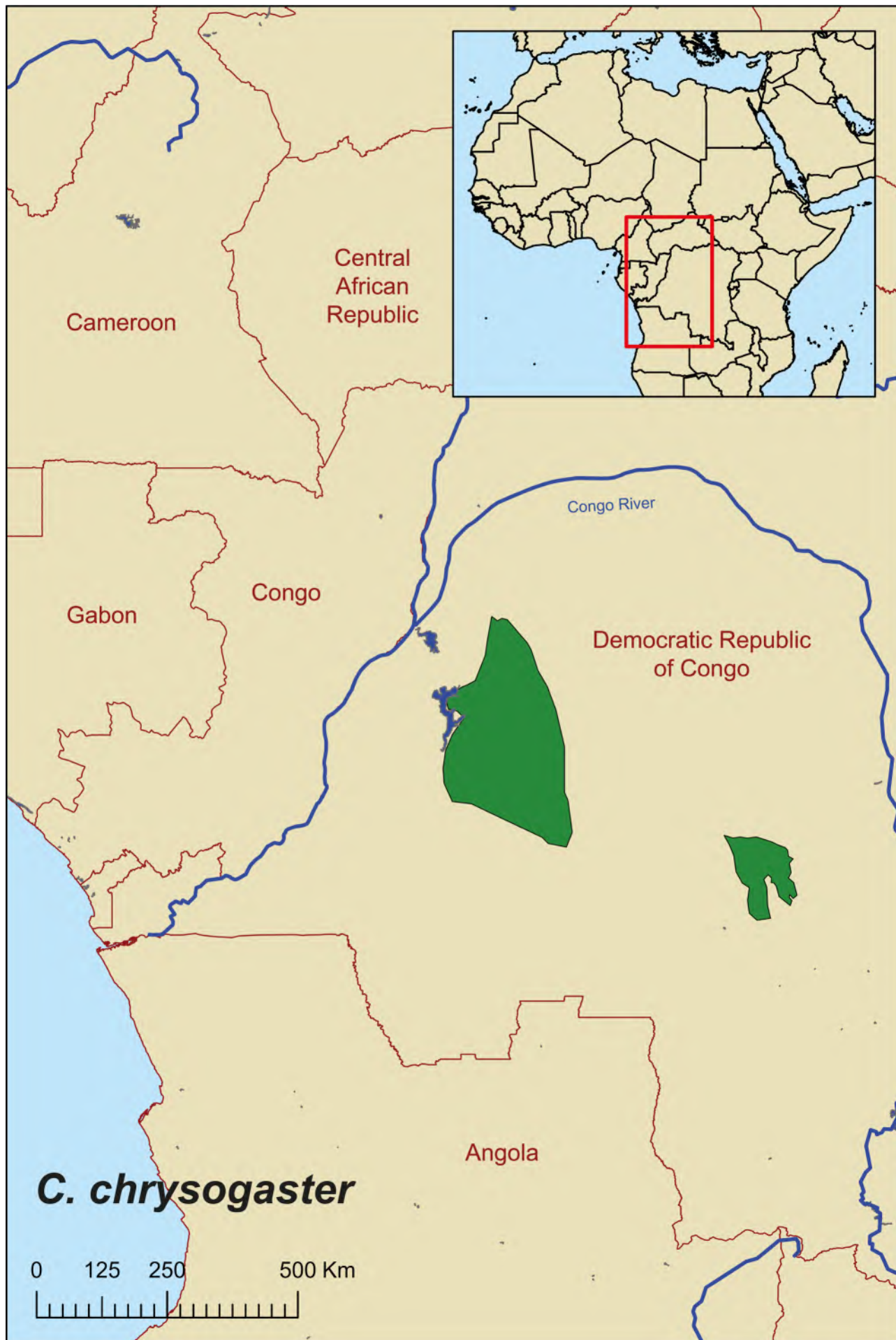


Figure 16. *Cercocebus chrysogaster* distribution, which is separated into two distinct blocks. Current information on species abundance and range is extremely limited, however, but it is likely that their population is small and fragmented within each of the subpopulations shown here (Map by Angeliki Savvantoglou).

AGILE MANGABEY

Cercocebus agilis Milne-Edwards, 1886

Least Concern

Description, distribution and population status:

The extent of occurrence of the agile mangabey covers over a million km² across the central African forests, with an extension into the savannas in the central part of their range^[78]. They are mostly found north of the Equator and their distribution covers at least five countries: most of southeastern Cameroon, northeast Gabon, the forest zone of western Central African Republic (CAR),

most of the forests of northern Republic of Congo, and Democratic Republic of the Congo, north of the Congo River and the Ituri/Aruwimi River, and an area of central and eastern CAR. There appears to be an isolated population in Campo Ma'an, Cameroon, so they may also be in neighbouring Equatorial Guinea, but this has yet to be confirmed (see map). Their eastern limit, presumably the forest-savanna ecotone,



Figure 17. *Cercocebus agilis* (Picture by Jo Gaweda).

might reach into South Sudan (see map). Densities of agile mangabeys appear to be highly variable, roughly between six and 40 individuals/km², presumably influenced by both habitat type and hunting pressure. Group sizes are generally around 20, but occasional records have documented groups of more than 300 animals^[15]. Most studies have shown that they prefer some kind of riparian, swamp, or periodically flooded forest, although they also use terra firma forests^[79].

Their presence has been confirmed in at least one protected area in each of the species' five range states and in perhaps as many as 20 protected areas across their entire range^[79]. While they are currently listed as Least Concern^[79] on the IUCN Red List, we have very little data on their abundance. There is evidence that populations are decreasing, although data is patchy: an example is in the Dja Reserve in Cameroon, where they were already one of the rarest monkeys recorded in 2009^[80] and were even more infrequently encountered a decade later, despite a considerable sampling effort^[81].

Threat analysis: The most immediate threat to this species is hunting^[79,82], with the highest levels where human density is high and access is easy^[83]. Agile mangabeys are hunted wherever they occur and their large size means that the cost-benefit ratio to the price

of a shotgun cartridge to the amount of meat obtained from one individual is high. As hunting is driven by trade opportunities, it is likely that they will increase in the short term^[84]. Due to their semi-terrestrial habits, they are also vulnerable to capture in wire snares set on the ground, which are very common across their range. Consumption of agile mangabeys has also been recorded in all its range states: Cameroon^[85], Central African Republic^[86], Congo^[87,88], DRC^[89,90] and Gabon^[91,92].

At the edges of its geographic range in the west, north and east, this species is threatened by habitat loss caused by deforestation for timber and firewood^[79]. An analysis of forest loss suggests that 1.3% of the forests in its range was lost between 2001 and 2016 (13,368 km² of its ~1 million km² range)^[93]. However, because this taxon occurs primarily along rivers, this may be an underestimate of the true loss of habitat, as in the savanna-forest mosaic to the north, forest loss will be concentrated along the rivers and galleries^[79]. Additional threats include isolation due to habitat loss and fragmentation (the latter due to the expansion of infrastructure such as roads, as well as other anthropogenic barriers), and a lack of accurate and up-to-date information on current population distribution and size.



Figure 18. *Cercocebus agilis* (Picture by Ian Bickerstaff).

Key conservation priority areas:

Country	Priority Sites
Democratic Republic of the Congo	Okapi Wildlife Reserve
Republic of Congo	Lac Tété/Likouala-aux-Herbes
	Nouabalé-Ndoki National Park
	Ntokou-Pikounda National Park
	Odzala-Kokoua National Park
Gabon	Ivindo National Park
	Minkébé National Park
	Mwagna National Park
Cameroon	Boumba-Bek National Park
	Campo Ma'an National Park
	Dja Faunal Reserve
	Lobéké National Park
	Nki National Park
Central African Republic	Dzanga-Sangha Complex (Ndoki and Dzanga National Parks sectors and the Dzanga Special Reserve)

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$160,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Conduct population surveys in all priority sites and maintain regular monitoring (at least every five years) in each protected area where the species occurs.	<i>P. oustaleti</i> <i>P. bouvieri</i>
Raise profile of the species	Initiate community awareness activities including Mangabey Awareness Day in communities around all protected areas where this species occurs	
Enhance protection	Reinforcement of surveillance and anti-hunting (including intelligence-led methods) efforts in all protected areas where this species occurs	<i>P. oustaleti</i> <i>P. bouvieri</i>

*Excluding costs of long-term/recurring actions



Figure 19. *Cercocebus agilis* distribution. The map shows the species' historical and presumed distribution. Current information on the species' abundance and range is limited, but it is likely more fragmented than what is shown here (Map by Angeliki Savvantoglou).

RED-CAPPED MANGABEY

Cercocebus torquatus Kerr, 1792

Endangered

Description, distribution and population status:

The distribution of the red-capped mangabey is patchy, across an area of 270,000 km² in a band of forest never wider than about 350 km along the Atlantic coast^[94,95]. It is found in five countries, from western Nigeria through southern Cameroon, mainland Equatorial Guinea (Rio Muni) to the Gabon-Congo border^[94,95] (see Map). An isolated population in Angyigba area (Kogi State, Nigeria), present in the 1960s^[96], may still persist despite human population growth, hunting and habitat loss

(J.F. Oates, unpublished). They live in groups of 14–25 (occasionally up to ~60)^[97]. In sites where populations are not hunted, red-capped mangabeys may occur at higher densities than other monkey species (e.g., Loango National Park, Gabon)^[98].

Their presence has been confirmed in at least one protected area in each of the species' five range states and in 14 protected areas across their range^[95]. Populations are decreasing throughout its range,



Figure 20. *Cercocebus torquatus* (Picture by S. Smith).

however, and the species has been extirpated from some areas within its historic range, including Benin. Although the species has been recorded in several sites in Equatorial Guinea^[99–101], with sightings as late as 2011 in Rio Campo, and on the Gabon border next to Monte Alén, Monte Temelon, and just west of Piedra Bere^[102], its continued presence in the country remains uncertain. The latest evidence was the carcass of an adult female for sale in 2019 along the Niefang-Bata expressway, north of Monte Alén National Park (J.C. Ondo Nze Avomo and D. Fernández, unpublished). A four-month camera-trap deployment in 2019 in Punta Llende Nature Reserve (L. Powell, pers. comm), and an ongoing (2018 onwards) biomonitoring project in Monte Alén National Park^[103] and in Oyala (L. Powell, pers. comm) have failed to find any evidence of its presence, as has a recent systematic camera trap survey in Rio Campo Nature Reserve^[104]. The surveys in Equatorial Guinea’s coastal forests (e.g., Rio Muni Estuary), however, habitat favored by this species and where it was abundant in 1967^[101], have been extremely limited, so it is possible that this species is still present in the country’s coastal forests even if it has been extirpated from more inland areas.

Threat analysis: The principal threat to *C. torquatus* is illegal hunting for wild meat. In this region, where market price is associated with carcass size, the species may be disproportionately targeted given its large size^[105]. Human populations in the range states of *C. torquatus* continue to grow at roughly 2.5%

annually and are not projected to slow down for several decades^[106,107]. Nigeria is expected to become the third most populous country in the world by 2050, with more than 400 million people^[108]. Road access into formerly remote forests has increased greatly during the last 20–30 years and will continue to do so at an accelerated rate^[109,110], facilitating hunting and transport of wild meat to both local markets in the rural areas and distant urban centers, sometimes hundreds of kilometres away^[82,83,95].

Red-capped mangabeys are also threatened by habitat loss, particularly in the northern half of their range, where some of the Atlantic coastal forests have been modified for agriculture. In coastal western Cameroon, around the town of Limbe, industrial agricultural plantations (banana, oil palm, and rubber) and smallholder farming have replaced much of the original forest. However, southwards from Douala, the modification is far less extreme^[93]. Many coastal forest areas in Nigeria have similarly been damaged by urbanization, oil exploration/production, and other human activities, but again, significant areas of forest remain, albeit sometimes modified, especially in the wetlands.

Future threats include isolation through habitat loss or the creation of large anthropogenic barriers such as monoculture plantations^[95]. Lack of accurate and up-to-date information on current population distribution and abundance across much of the species’ historical range compromises effective conservation action.

Key conservation priority areas:

Country	Priority Sites
Republic of Congo	Conkouati-Douli National Park
Gabon	Loango National Park
	Moukalaba Doudou National Park
Equatorial Guinea	Rio Muni Estuary National Park
Cameroon	Ebo-Makombe-Ndokbou Forests
	Campo Ma'an National Park
	Douala-Edea National Park
Nigeria	Okomu National Park
	Omo Forest Reserve
	Apoi Creek Forest Reserve

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$160,000*		
Priority objective	Recommended actions	Action Plan crossover
Reduce knowledge gap	Conduct population surveys in all priority sites, and monitor them at least every five years	<i>P. preussi</i>
	Assess habitat condition and connectivity between priority sites, including outside protected areas.	
	Surveys to confirm presence and assess population in Douala-Edea National Park	
Raise profile of the species	Initiate community awareness activities including Mangabey Awareness Day in communities around all priority sites.	<i>P. preussi</i>
Enhance protection	Reinforcement of surveillance and anti-hunting (including informant-led methods) efforts in all priority sites.	<i>P. preussi</i>

*Excluding costs of long-term/recurring actions



Figure 21. *Cercocebus torquatus* distribution. The map shows the species' historical and presumed distribution, including a potential remaining population in Kogi State, Nigeria. Current information on the species' abundance and range is limited, but it is likely more fragmented than what it is shown here (Map by Angeliki Savvantoglou).

MANDRILL

Mandrillus sphinx Linnaeus, 1758

Endangered

Description, distribution population status:

Mandrills are found only in the evergreen rainforests of western Central Africa (see map). The species has very large and variable group sizes (200–850 individuals) [21,111–114]. Fruit abundance influences group fission with smaller groups in poorer times [115] suggesting that habitat quality will affect group size and stability. Mandrills are extremely sexually dimorphic and the ecological needs of the two sexes may differ [116]. Males probably disperse from natal groups during maturation [21,116,117], but dispersal distances are unknown. The historical

factors creating the current species' range are not fully understood. The Sanaga River divides the ranges of the drill (*M. l. leucophaeus*) and mandrill, and the Ogooué divides genetically-distinct 'northern' and 'southern' lineages of mandrills [118]. Recent camera trap surveys have recorded solitary males >40 km outside the reported range in Cameroon, Republic of Congo and Gabon [119,120]. Population abundances, densities and trends remain unassessed, meaning that priority sites are unknown. Group spreads of several hectares prohibit accurate group counts



Figure 22. *Mandrillus sphinx* (Picture by Jo Setchell).

in forests and encounters are rare^[113,121]. Census methods using line transects or camera traps may not be reliable for the *Mandrillus* species because of low encounter rates and hypervariable group sizes^[122,123]. Radiotelemetry of *Mandrillus* found that group follows produced more accurate population estimates than line transects^[21,115,122,123,124]. Non-invasive genetic methods to estimate effective population size may perform better^[125] and are currently being developed^[114,126]. Habitat occupancy modeling informed by camera-trapping may serve as the best basis for conservation planning in the meantime.

Mandrill populations are confirmed in at least one protected area in each range state and 14 protected areas across their global range^[127]. The species' total population size is unknown, but it is believed to have declined significantly in recent years, particularly in Cameroon and Equatorial Guinea^[127]. Gabon harbors—by far—the largest remaining population. Overall, mandrills show a patchy distribution with high variability in density as a result of differing levels of hunting^[127].

Threat analysis: The main threat to this species is hunting. Mandrill carcasses have been recorded in rural and urban markets in all range states^[91,128–130]. A systematic assessment of mainland drills (*M. l. leucophaeus*) showed that hunting pressure reduced group size and led to local population extirpation^[131]. This is likely to be the case for mandrills too. Habitat loss is also likely to affect mandrills when forests are severely degraded and fragmented. The northern range (Cameroon, Equatorial Guinea, north Gabon) is considerably more intensely threatened by forest degradation and conversion than the southern range^[93]. Additional threats include isolation through habitat loss and fragmentation. The 'peninsular' population of the Congo coast will be vulnerable to such isolation. As we understand so little of dispersal processes, it is hard to assess the long-term effects of obstacles to gene flow. Parasite burdens and disease susceptibilities of wild mandrills are poorly known (but see^[118,132,133]), but new zoonotic infections could also pose a threat^[134].



Figure 23. *Mandrillus sphinx* at Lékédi Park (Gabon) (Picture by Pauline Grentzinger).

Key conservation priority areas:

Country	Priority Sites
Republic of Congo	Conkouati-Douli National Park
Gabon	Lopé National Park
	Moukalaba-Doudou National Park
	Mayumba National Park
Equatorial Guinea	Monte Alén National Park Rio Campo Natural Reserve
Cameroon	Campo Ma'an National Park

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$240,000*		
Priority objective	Recommended actions	Action plan crossover
Engagement & local livelihood support	Work with local communities to first understand, and then increase, knowledge of conservation needs at all priority sites.	
Reduce knowledge gap	Development of robust census methods to determine distribution, occupancy, group sizes and overall densities throughout the range, including non-invasive genetic methods. Methods must be sufficiently accurate to set baselines to determine population trends and priority sites (particularly in Gabon). Determine where populations remain outside PAs and whether PA populations are at risk of isolation.	
	Detailed empirical assessments of habitat use allowing habitat suitability and risk modeling to identify high priority areas to maintain overall population connectivity in and around all priority sites.	
	Research to assess the distinctiveness of populations north and south of the Ogooué and determine if separate action plans are needed.	
	Census of orphans in households, rescue, quarantine, and release of orphans within the mandrills' range. Must be done sensitively to avoid an anti-conservation effect and combined with social science and effective awareness raising. Provide a preliminary indicator of presence, density and hunting pressure.	
Raise profile of the species	Media campaigns, working with the ministries of education to embed an understanding of local biodiversity and flagship species in the curriculum. Associated projects that motivate communities to reduce hunting and consumption.	
Enhance protection	Initiatives to understand local community perceptions of conservation efforts, allowing the design and implementation of effective strategies to increase local community cooperation in reducing hunting and targeting of mandrills in Gabon and Equatorial Guinea.	
	Reinforcement of anti-hunting efforts across the species' range, particularly in Monte Alén National Park.	
	Create a database to monitor hunting infractions in PAs where mandrills are found in order to prioritise support and funding to insecure PAs. SMART is used across most PAs in the region and has government support in Gabon and Cameroon.	

*Excluding costs of long-term/recurring actions

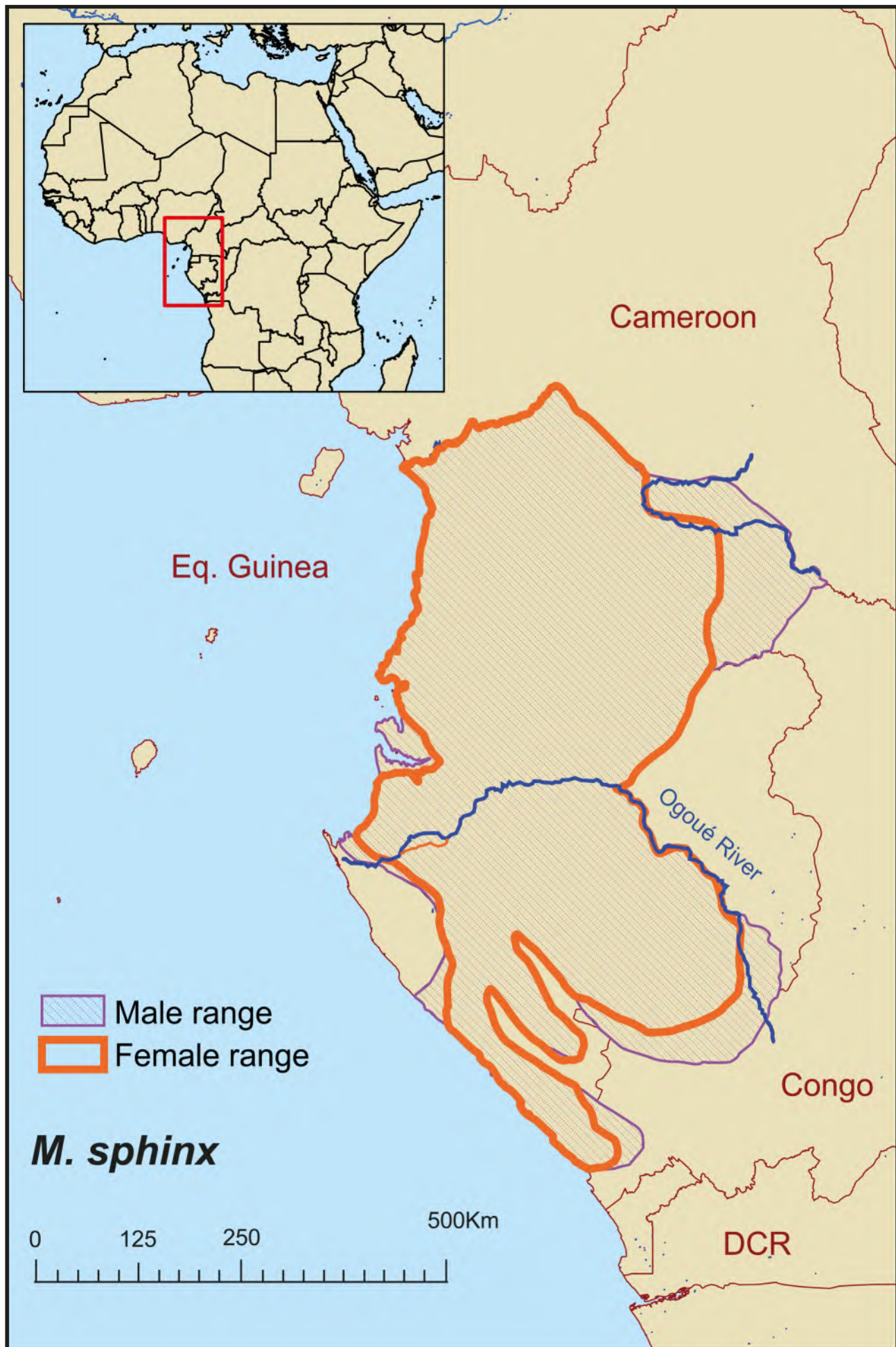


Figure 24. *Mandrillus sphinx* distribution of females and males. While the map shows a continuous distribution, their actual range is likely more fragmented than shown here due to different levels of hunting (Map by Angeliki Savvantoglou).

BIOKO DRILL

Mandrillus leucophaeus poensis Zukowsky, 1922

Endangered

Description, distribution and population status:

The Bioko drill is endemic to Bioko Island (Equatorial Guinea). Historically distributed throughout Bioko, its population has steadily decreased since 1986, when

the first censuses were conducted. From 1986 until the mid-1990s, the geographic range of the Bioko drill was $>675 \text{ km}^2$ ^[135,136]. With an estimated population of ca. 2,700 individuals, they were locally common in both of

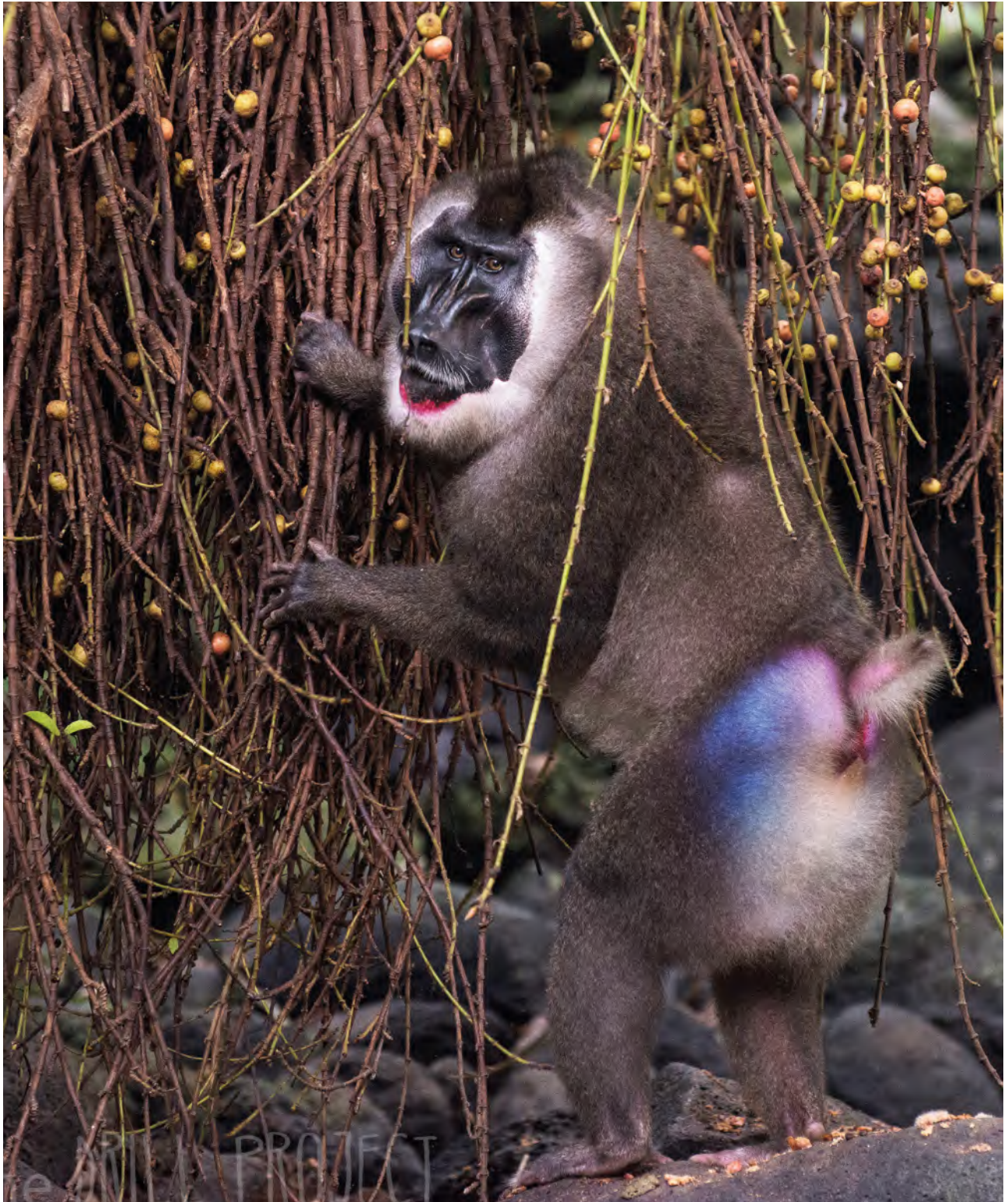


Figure 25. *Mandrillus leucophaeus poensis* (Picture by Justin David Jay).

Bioko's protected areas ^[135,136]: in the north they were present throughout the southeast, south, and most of the east of Pico Basilé National Park (PBNP), while in the south they occurred throughout the relatively isolated Gran Caldera Scientific Reserve (GCSR)^[135,137–139]. By 2000, the distribution and abundance of the Bioko drill had decreased dramatically to <1,800 individuals^[136]. They had become rare in PBNP, although still relatively common in parts of GCSR^[140].

Today, the distribution of the Bioko drill is ca. 474 km², a more than 30% decline since 1994^[141]. The present distribution is almost entirely restricted to monsoon forests of GCSR. The population density and distribution in PBNP is not known, but it is probably extremely low and highly fragmented. Transect surveys during 2008–2014 did not detect any drills in PBNP^[142–144], only indirect evidence of their presence (e.g., branches uprooted and plants crushed) at altitudes from 1000–1250 m.a.s.l. and at least two captive baby drills in nearby villages^[145]. More recently (November 2017 – May 2020) off-take surveys at Basilé Fang, a village near the main entrance of the park, where most hunters reside, documented 13 drill carcasses: 2 in 2018 and 11 in 2019, all killed between 632 (i.e., outside the park boundary, located at 800 m.a.s.l.) and 1300 m.a.s.l.^[145]. In August 2021, however, camera traps confirmed they were still present in the north-western and south-eastern slopes (O. Colomo et al. unpublished data). The distribution in GCSR has also decreased and is now limited to the most isolated areas, where difficult access acts as a natural barrier^[140]. Current estimates of relative abundance in GCSR, however, are highly variable, ranging from 0.05 to 0.55 groups/km²^[141,146,147]. This variability may reflect changes in species abundance but also variation in levels of habituation and in inter-observer reliability. Overall, estimates based on field and market surveys suggest there were between 3000 and 4000 drills remaining in 2013^[148], while more recent calculations based on field surveys and ecological niche modeling brought this figure down to <800 individuals in 2016 (D. Cronin, unpublished). The latter estimate would represent a ca. 70% decline in population density since 1986.

Threat analysis: The main threat to the Bioko drill is hunting to supply a long-established and growing wild meat trade. Currently, there is one main wild meat market (Semu Market, Malabo), which has operated for >20 years. Since at least 2017, several

new secondary markets have been established in Malabo and Luba^[146,147]. There is also a market by the Malabo port that sells wild meat from the mainland^[147]. The establishment of these new markets highlights the high demand for wild meat and the profitability of its trade. From October 1997 to August 2018, 7603 drill carcasses were recorded at the Semu Market^[147]. Carcasses for sale steadily increased during 1997–2011, peaking in 2010 with an average 8.7 drills/day^[148]. This is an underestimate since data on wild meat were only collected 6 days/week. At present, the rate of drill for sale is 3.0/day (January–February 2018) in Semu Market and 0.08/day (January–December 2018) in three of the secondary markets^[146]. There is evidence that sales in secondary markets and direct sales to restaurants have increased. This may account for the reduction of carcasses in the Semu Market over the last few years^[147].

Although wild meat hunting is the primary threat to the Bioko drill, infrastructure development and the subsequent habitat degradation, destruction, and fragmentation are also serious threats^[149]. For example, the Luba-Ureca road, finished in 2015, opened access to previously inaccessible areas. This enabled hunting, facilitated unregulated tourism, and promoted further infrastructure development in this delicate ecosystem (e.g., construction of a parking lot and new military base near Ureca). This road led to a marked decrease in the density of primates in the vicinity of the road and the extirpation of drills in the immediate area^[146]. A recent study using passive acoustic monitoring also found that even inside the Caldera de Lubá, the most isolated area of GCSR and the last stronghold of all of Bioko's primates^[149], are regularly being targeted by hunters^[150]. A new road connecting the village of Moka with Lake Biao is now under construction in eastern GCSR. This will further exacerbate these threats in this area, as the southern slope of Pico Biao retains populations of species more vulnerable to hunting than Bioko drill, such as the Critically Endangered black colobus (*Colobus satanas*)^[151]. Similarly, the degree of connectivity for the drill in PBNP and in GCSR is unknown, but it is likely that these populations are isolated and there is no gene flow between them.

Finally, the near absence of government protection on Bioko Island continues to limit the conservation prospects for both protected areas. The situation in GCSR is improving, but there remain many significant

obstacles to effective protection of drills. A management plan for GCSR was drafted in 2021 but has yet to be completed and then ratified by Equatoguinean government before going into effect. The management plan for PBNP is also in progress.

The main barrier to any conservation efforts, however, is the overwhelming lack of any tangible investment of

the Equatoguinean government in its National Institute for Forestry Development (INDEFOR), the governmental body responsible for managing the country's protected areas but that currently lacks the financial resources, technical expertise and legal mandates to effectively carry out their duties^[151].

Key conservation priority areas:

Country	Priority Sites
Equatorial Guinea	Gran Caldera Scientific Reserve
	Pico Basilé National Park

Key conservation priority areas:

ESTIMATED BUDGET: \$80,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Conduct a comprehensive survey of drill in PBNP, particularly on the southern slope of Pico Basile, and in areas of GCSR that are not currently monitored, to update their current range and population density and determine the degree of connectivity between the populations of both protected areas.	<i>P. pennantii</i>
Raise profile of the species	Establish a regulated, drill-viewing ecotourism program in GCSR, particularly along Bioko's southern beaches where drills still occur at high density.	
Enhance protection	Establish government-run, anti-hunting road checkpoints at the entry points and key access routes to PBNP and GCSR to stem the flow of wild meat from the western and eastern access points of the island.	<i>P. pennantii</i>
	Increase monitoring patrols and initiate and deploy anti-hunting patrols with authority to sanction existing legislation within GCSR and PBNP, particularly around access points and hunting hotspots, such as the Luba-Ureca road, the southwestern beaches, and areas with the highest drill densities.	<i>P. pennantii</i>

*Excluding costs of long-term/recurring actions

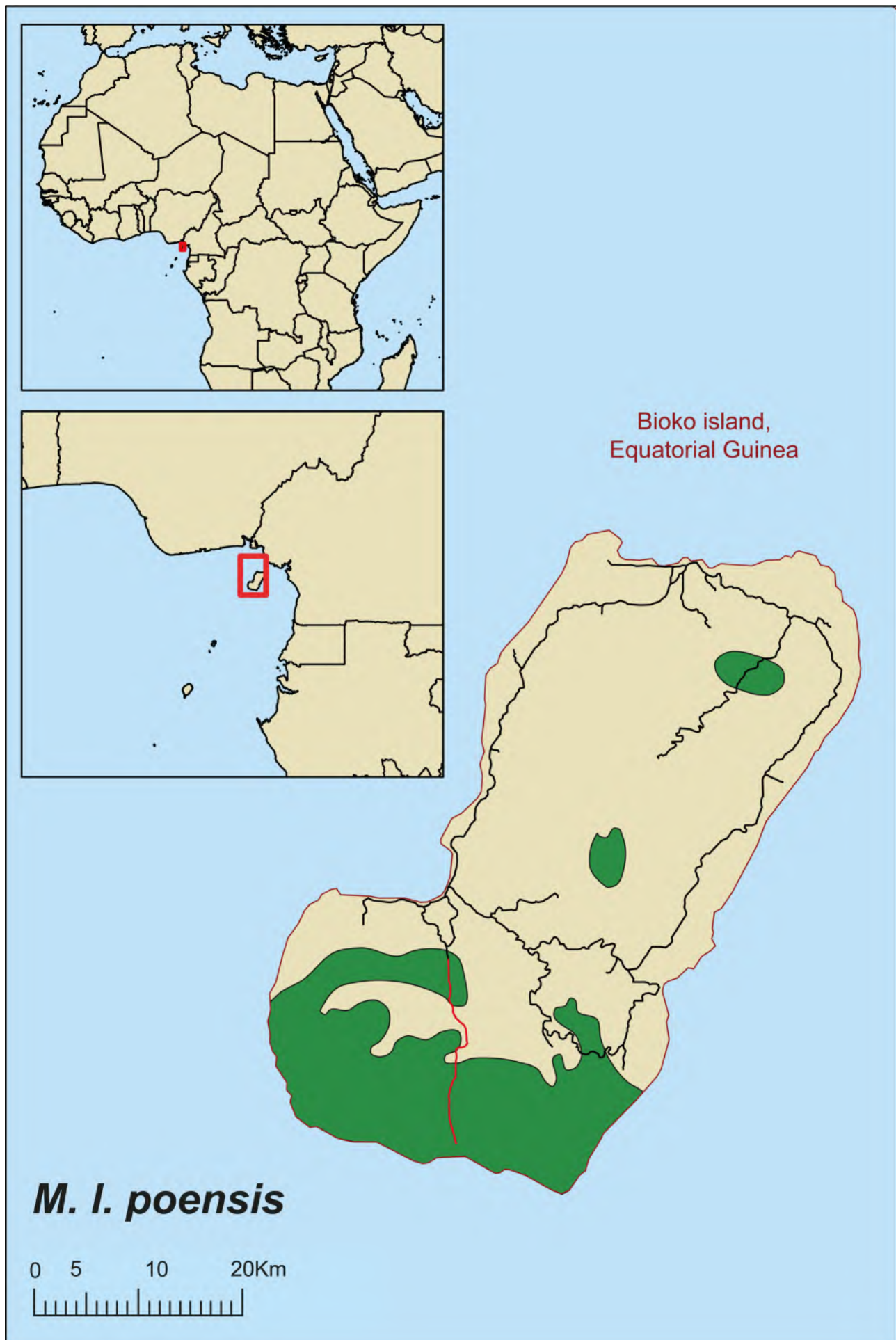


Figure 26. *Mandrillus leucophaeus poensis* distribution, which is divided into two distinct subpopulations: one fragmented population in the north, and a larger population in the south of Bioko Island. Their actual distribution is probably smaller due to intense hunting pressure throughout their range. Black lines indicate paved roads. Red line indicates paved road open in 2015 (Map by Angeliki Savvantoglou).

MAINLAND DRILL

Mandrillus leucophaeus leucophaeus
F. Cuvier, 1807

Endangered

Description, distribution and population status:

This large terrestrial primate ranges in rainforest from the Cross River in southeastern Nigeria, east to the Mbam River in western Cameroon, with the Sanaga

River as the southern boundary and the forest-derived savannah boundary limiting its range to the north. The area of occupancy for drills is estimated at <20,000 km²^[152]. Approximately 1000 individuals may



Figure 27. *Mandrillus leucophaeus leucophaeus* (Picture by Noel Rowe).

remain in Nigeria, while up to 4000, or 75% of their population, may remain in Cameroon^[131,152,153]. The historical range of drills has been highly fragmented and degraded due to agricultural expansion, logging and road construction, and increasingly there is little or no connectivity between populations^[131]. Several protected areas pepper the drill range, but important populations of the species are found in unprotected forests. Due to the declining population and taxonomic distinctiveness of the species, the mainland drill has been earmarked as one of Africa's primates in most need of conservation action^[154].

Drills persist in Cross River National Park (Oban Division: 3000 km²; Okwangwo Division: 640 km²), the neighboring Afi Mountain Wildlife Sanctuary (100 km²), as well as the Mbe Mountains Community Forest (86 km²), but at very low densities, with animals encountered only infrequently during surveys^[131,152,153].

In Cameroon and with over 1,260 km², Korup National Park (KNP) holds one of the healthiest drill populations in the country, with an estimated 2500–3000 individuals in the park and surrounding forests^[131,152]. The park is also contiguous with Nigeria's Cross River National Park (Oban Division). Oil palm plantation expansion, infrastructure and road development, logging and smallholder farming, however, are increasingly isolating KNP and diminishing ecological connectivity with adjacent drill populations, including those in Banyang-Mbo Wildlife Sanctuary, the Bakossi area, and the nearby Rumpi Hills.

Drills are also found in the Ebo–Makombe–Ndokbou forests complex in Cameroon, >180 km to the southeast of KNP. The Ebo Forest (ca. 1,500 km²) contains an estimated 750 drills^[131] and is an area with high potential for the long-term conservation of the species^[152]. The gazettement of the forest into a national park was started in 2006. A July-2020 governmental proposal to degazette the eastern part of the Ebo (683.85 km²) and reclassify it as a forest management unit for logging was rapidly retracted due to national and international public backlash. While this exemplifies that the Cameroon government recognizes the biological importance of Ebo it also demonstrates the tremendous economic pressures to commercially exploit this area^[7]. There is no recent information from the remaining populations in Cameroon, although they are believed to be in decline^[131,152].

The Makombe (600 km²) and Ndokbou (>1,000 km²) forests, contiguous to the south with the Ebo Forest, extend from the Nkam River eastward to the town of NdikiniMéki and are bounded by the Iwouem River and by the Dibamba River in the east and west, respectively^[155,156]. Drill encounter frequency at both sites is 0.02 groups/km, while surveys conducted in 2018/2019 found greatly decreased encounter frequencies of 0.006 and 0.007 groups/km respectively^[157].

Threat analysis: The main threats to drills are hunting and habitat destruction. The species is vulnerable to hunting with shotguns and dogs, which is fuelled by the high demand for wild meat in cities across the species range in Nigeria and Cameroon^[131,153]. Hunting with dogs is particularly detrimental for this species (E. Abwe, pers. comm), as they prevent individuals from running away, easily corralling them up trees, where a large number can be killed by a single hunter^[131]. The expansion of subsistence and commercial agriculture, especially the recent phenomenon of oil palm plantations around the Korup National Park complex and the Ebo Forest is further decimating and isolating remnant populations^[158]. More recently, insecurity linked to civil unrest in Northwest and Southwest regions has hampered conservation activities including outreach and research on the species in Cameroon. For example, KNP has been used as a refuge for communities fleeing insecurity linked to the social-political crisis, increasing the pressure on this important drill habitat (E. Abwe, pers. comm). Thus, the drill population on the Nigerian side could currently serve as the most secured population if specific attention and resources are focused on Cross River National Park, Mbe Mountains and the Afi Mountain Wildlife Sanctuary.

Key conservation priority areas:

Country	Priority Sites
Cameroon	Korup National Park
	Ebo Forest
Nigeria	Cross River National Park
	Afi Mountain Wildlife Sanctuary
	Mbe Mountains Community Conservation Area

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$270,000*		
Priority objective	Recommended actions	Action plan crossover
Engagement & local livelihood support	Support community meetings with partners to identify regional concerns and secondary opportunities for engagement (e.g., One Health, alternative proteins, value chain).	<i>P. preussi</i>
Reduce knowledge gap	Conduct population surveys in all priority sites.	<i>P. preussi</i>
	Continue human demographic and socioeconomic surveys to better understand attitudes towards conservation and development actions around Korup National Park, and Ebo and adjacent Ndokbou-Makombe forests.	
Raise profile of the species	Identify and engage partners in smaller communities and urban centers adjacent to the four priority sites to establish collaborations for education programs that highlight wildlife law and the importance to the drill and its habitat, as well as to assess local perceptions, knowledge, and use of drills.	<i>P. preussi</i>
Enhance protection	Increase patrolling around the Oban East, Oban West and Okwangwo Ranges of Cross River National Park, Afi Mountains Wildlife Sanctuary, and Ebo Forest, ensuring local people are trained and involved in proposed conservation actions, which should include community management.	<i>P. preussi</i>
	Re-establish and staff the research camp in northeastern Korup National Park, near the village of Ikenge.	<i>P. preussi</i>
	Implement a monthly biomonitoring programme that is separate from the responsibilities of the park guards in Korup National Park.	
	Increase the number of park guards and patrol coverage, implement regular guard-training workshops, upgrade guard equipment, improve the bonus system, and systematically improve anti-hunting patrol design and monitoring in all priority sites.	

*Excluding costs of long-term/recurring actions



Figure 28. *Mandrillus leucophaeus leucophaeus* distribution. The taxon's current distribution, shown here, is highly fragmented and much smaller than their historical range (Map by Angeliki Savvantoglou).

WHITE-NAPED MANGABEY

Cercocebus lunulatus Temminck, 1853

Endangered

Description, distribution and population status:

The white-naped mangabey is often treated as a subspecies of *C. atys*^[159,160] but is recognized here as a species^[161]. It is endemic to Côte d'Ivoire, Ghana, and Burkina Faso. The species is diurnal, largely frugivorous and semi-terrestrial. Historically, this mangabey occurred widely in primary and secondary forests, gallery forests, and swamp forests, as well as mosaic habitats in the Guinean Savanna Zone^[14,162]. Currently

available data indicate that these habitats have declined in size and quality across the range countries and the species now occurs in only a handful of localities^[163–165].

Cercocebus lunulatus used to be widespread in its historical range, which extended from east of the Nzo-Sassandra River System in western Côte d'Ivoire to west of the Volta River in Ghana^[161,166]. Today, however, the species has a patchy distribution, being rare and



Figure 29. *Cercocebus lunulatus* (Picture by West African Primate Conservation Action).

restricted to a small number of sites. In southern Burkina Faso, the species was observed in the Comoé-Lébara Partial Reserve in 2005^[167], but a 2012 survey failed to find it there^[168]. However, A. Galat-Luong and G. Galat found them in the reserve a year later (A. Galat-Luong and G. Galat, pers. comm. to R. Matsuda-Goodwin). Thus, it is likely that this species still persists there.

In Ghana, surveys conducted in the last 10 years have confirmed the presence of this monkey only in Atewa Range Forest Reserve, Cape Three Points Forest Reserve, and the Ankasa-Tano Community Forest, formerly known as Kwabre Forest and adjacent to Côte d'Ivoire's Tanoé-Ehy Community Forest^[169–171]. Historically, the species has been observed in the Ankasa Conservation Area (formally Nini-Suhien National Park and Ankasa Resource Reserve); however, further surveys are needed to confirm its presence there.

In Côte d'Ivoire, the species has been eliminated from

the majority of the protected areas it once inhabited, and is now probably restricted to Comoé National Park^[172], the Tanoé-Ehy Community Forest, and the Dassioko and Port Gauthier Forest Reserves^[173–175]. Populations in these localities are now encountered at low rates.

Threat Analysis: Habitat degradation and hunting for local subsistence and to supply the commercial wild meat trade are the two major threats affecting its survival^[165,176,177]. Habitat loss in Côte d'Ivoire and Ghana^[93] is an especially important threat, with 80% of lumber extracted from Ghana done so in an unregulated fashion^[163,178]. In addition, the conversion of many protected areas into plantations has resulted in the local extirpation of *C. lunulatus* and other primates^[163]. An increase in illegal small-scale mining in the north-eastern and south-eastern part of Comoé National Park (R. Matsuda-Goodwin, unpublished data) and in several protected areas in Ghana^[14,178], also threaten the species' habitat.

Key conservation priority areas:

Country	Priority Sites
Ghana	Ankasa-Tano Community Forest
	Cape Three Points Forest Reserve
Côte d'Ivoire	Comoé National Park
	Tanoé-Ehy Community Forest
Burkina Faso	Comoé-Lébara Partial Reserve

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$220,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Conduct surveys in other potential areas (in Ghana: Ankasa Conservation Area, Ankasa-Tano Community Rainforest, Krokosua Hills Forest Reserve and particularly Atewa Range Forest Reserve, known habitat for the species but with very limited data; in Côte d'Ivoire: Port Gauthier Forest Reserve, Dassioko Forest Reserve, Azagny National Park; and Burkina Faso: Comoé-Lébara Partial Reserve) to gather data on distribution and population density.	
	Establish research camps in Comoé National Park, Tanoé-Ehy, Cape Three Points Forest Reserve, and Ankasa Conservation Area to house seasonal research visits. These camps could further become permanent research stations if matching funds are sought.	<i>P. waldroni</i>
	Release of captive bred groups/individuals and monitor post-release.	
Raise profile of the species	Increase conservation education and awareness among local communities living around the priority sites on the conservation of <i>C. lunulatus</i> through workshops, meetings, billboards, posters, pamphlets, and other related material.	<i>P. waldroni</i>
Enhance protection	Reinforce protection at the priority sites (Comoé National Park, Tanoé-Ehy Community Forest, Cape Three Points Forest Reserve, and Ankasa-Tano Community Forest; Comoé-Lébara Partial Reserve) including law enforcement through providing support (financial, logistic and training) to rangers and involving local communities in patrolling.	<i>P. waldroni</i>
	Support transboundary conservation actions in the Tanoé-Ehy and Ankasa-Tano community forests.	<i>P. waldroni</i>
	Support advocacy action against the construction of a petroleum hub, taking 20,000 acres of land around and including parts the Ankasa-Tano Community Forest.	
Respond to public health needs	Provide opportunities for women to receive family planning through established women's coconut oil cooperatives near Ankasa-Tano Community Rainforest and other green value chain groups around Cape Three Points Forest Reserve, Ghana. Work with organisations with relevant reproductive health and demographic expertise (e.g., Margaret Pyke Trust, IUCN Biodiversity & Family Planning Task Force) to support the processes of: (a) analysing the extent to which barriers to family planning are a threat to the white-naped mangabey across its range; (b) establishing the extent to which existing health, conservation, and development policies within the range of the white-naped mangabey could support the development of conservation programs focussed on this species, following the PHE approach to conservation; (c) establishing whether and how programmatic partnerships with health NGOs, the Ministry of Health, and/or others, could respond to range-specific barriers to family planning and identifying partners; and (d) when funding can be secured, develop holistic PHE interventions to simultaneously support community health and well-being, and conservation of the white-naped mangabey.	



Figure 30. *Cercocebus lunulatus* distribution. While the map shows a continuous distribution, their actual range is patchy and much more fragmented than shown here (Map by Angeliki Savvantoglou).

SOOTY MANGABEY

Cercocebus atys Audebert, 1797

Vulnerable

Description, distribution and population status:

The sooty mangabey is a monotypic species and the western-most member of the genus *Cercocebus*. It is a medium-sized, long-limbed monkey, predominantly terrestrial, that prefers primary forest but is able to thrive

in a variety of habitats including gallery, swamp forest, and secondary forest^[9,161,167,179]. Sooty mangabeys are highly social monkeys that live in large, multi-male/multi-female groups that maintain large home ranges of up to 8 km²^[180–182]. Nuts and seeds are important



Figure 31. *Cercocebus atys* (Picture by W. Scott McGraw).

components of their diet, and they are widely reported as crop-raiders. The species has been studied extensively in Taï National Park, Côte d'Ivoire, where aspects of vocal, ranging, social, feeding, anti-predation, and reproductive behavior are well known^[13,181–189].

Sooty mangabeys are found across six countries in West Africa: Senegal, Guinea-Bissau, Guinea, Sierra Leone, Liberia and Côte d'Ivoire. Current and comprehensive data on the abundance and distribution of the species throughout much of their range are lacking; however, available evidence indicates that the species has declined across most of its extent of occurrence^[190].

The historical northwest limit of *C. atys* is southern Senegal (Casamance region)^[191–193]; but the ongoing presence and current distribution of this species in Senegal needs investigation.

In Guinea-Bissau, sooty mangabeys were recently detected in Cufada Lagoons Natural Park (2015), in the southern portion of the Dulombi National Park (2016) and throughout the Boé region (2008, 2015, 2017) including in Boé National Park^[179,194]. The presence of the species elsewhere in Guinea-Bissau is not known^[194–196].

In Guinea, the abundance of sooty mangabeys varies significantly by region^[197,198] and country-wide information is needed, including the population in the Fouta Djallon region, as this population may be taxonomically distinct (R.A. Mittermeier, pers comm; C. Andre, pers comm).

In Sierra Leone, the species is present in the northern part of the country including the Loma Mountains National Park^[199] and particularly in the southeast, where it occurs both in Tiwai Island Wildlife Sanctuary and in the Gola Rainforest National Park, where the population may actually be increasing^[200,201].

In Liberia, sooty mangabeys appear to be faring relatively well and, although their abundance varies widely, they are estimated to be the second most common monkey taxon in the country^[161,202–206]. A release program of confiscated pet sooty mangabeys is currently being developed at the Libassa Wildlife Sanctuary.

In Côte d'Ivoire, the species appears to have been mostly extirpated everywhere except for Taï National Park, Nimba Mountains (near the borders with Guinea and Liberia), and the sacred grove of Gbepleu near Man in the western portion of Liberia^[207–211].

Threat analysis: The main threats to sooty mangabeys are hunting for the wild meat and pet trade, habitat destruction, illegal mining, and human settlements in protected areas. These activities, especially artisanal mining, illegal hunting (subsistence and commercial), and conversion of forest to farms and plantations inside protected areas have increased dramatically in the last decade and continue to rise in most areas^[161,163,207,212,213]. Illegal hunting and the expanding wild meat trade are significantly and negatively impacting sooty mangabey populations, especially in Côte d'Ivoire, Guinea, Liberia, and Sierra Leone^[199,206,214]. Increasing habitat fragmentation makes locating forest primates easier for hunters and several studies have indicated that sooty mangabeys are the most frequently hunted primate in parts of Guinea and Liberia^[215,216].

Key conservation priority areas:

Country	Priority Sites
Côte d'Ivoire	Taï National Park
Liberia	Gola National Park
	Sapo National Park
Sierra Leone	Gola Rainforest National Park
	Loma Mountains National Park
Guinea	Fouta Djallon
Guinea-Bissau	Cufada Lagoons National Park
	Cantanhez National Park
	Dulombi-Boé Complex
Senegal	Forests around the Casamance River

*Components of the Gola Transboundary Forest System

Priority objectives and recommended actions:

ESTIMATED BUDGET: \$240,000*		
Priority objective	Recommended actions	Action plan crossover
Reduce knowledge gap	Build and/or renovate visitor facilities (e.g., Vera Camp, a former research station) and/or establish a permanent research station in Sapo National Park.	<i>P. badius badius</i>
	Construct and staff a research station in the eastern portion of Taï National Park.	<i>P. badius badius</i>
	Assess presence and population status of sooty mangabeys and other primates in: - Senegal: around the Casamance River - Guinea-Bissau: Cufada Lagoons Natural Park, Cantanhez National Park and Dulombi-Boé Complex - Sierra Leone: Loma Mountains National Park - Liberia: Grebo-Krahn National Park	<i>P. badius temminckii</i> <i>P. b. badius</i>
	Carry out population assessment in: - Côte d'Ivoire: Taï National Park - Sierra Leone: Gola Rainforest National Park - Liberia: Sapo National Park	<i>P. badius badius</i>
	Determine taxonomic status (via genetic analysis) of sooty mangabeys in Guinea's Fouta Djallon area	
	Survey mangabey populations of sooty mangabeys in Guinea's Fouta Djallon area region	
Habitat restoration	Identify and restore if needed potential dispersal routes between parks in the southern region of Guinea-Bissau.	
Raise profile of the species	Collaborate with local communities to develop education & awareness materials centered on sooty mangabeys and other primates: - Liberia: Gola National Park - Guinea-Bissau: Dulombi-Boé Complex	
Enhance protection	Hire, train and equip park guards to enforce hunting laws in Cantanhez National Park	
	Make recommendations on the management of protection efforts in Sierra Leone's Loma Mountains National Park.	<i>P. badius badius</i>
	Make recommendations for improved conservation in Grebo National Forests including consideration of national park status.	<i>P. badius badius</i>
	Reinforce protection throughout Taï National Park	
	Reinforce protection throughout Gola National Park	
Respond to public health needs	Work with organisations with relevant reproductive health and demographic expertise (e.g., Margaret Pyke Trust, IUCN Biodiversity & Family Planning Task Force) to support the processes of: - analysing the extent to which barriers to family planning are a threat to the sooty mangabey across its range; - establishing the extent to which existing health, conservation, and development policies within the range of the sooty mangabey could support the development of conservation programs focussed on this species, following the PHE approach to conservation; - establishing whether and how programmatic partnerships with health NGOs, the Ministry of Health, and/or others, could respond to range-specific barriers to family planning and identifying partners; and - when funding can be secured, develop holistic PHE interventions to simultaneously support community health and well-being, and conservation of the sooty mangabey.	



Figure 32. *Cercocebus atys* distribution. The map shows the species' historical and presumed distribution. Current information on the species' abundance and range is limited, but it is likely more fragmented than what is shown here (Map by Angeliki Savvantoglou).

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APPENDIX 1: SUMMARY BUDGET FOR TAXON-BASED RECOMMENDED ACTIONS

The table below summarises the estimated costs for the conservation actions recommended for each taxon. Costs include only those actions that are deemed to be feasible within the 5-year implementation period of the action plan and will have a positive and measurable impact on the conservation of each species. The table does not include the costs of long-term, recurrent, or high-level recommended actions, which are difficult to estimate and typically require high levels of funding. A detailed lists of all taxon-based actions and estimated costs can be found at www.cam-conservation.org.

Table 2. Estimated overall budget.

Taxon	Scientific Name	Budget (US\$)
Agile mangabey	<i>C. agilis</i>	160,000
Golden-bellied mangabey	<i>C. chrysogaster</i>	80,000
Red-capped mangabey	<i>C. torquatus</i>	160,000
Sanje mangabey	<i>C. sanjei</i>	225,000
Sooty mangabey	<i>C. atys</i>	240,000
Tana River mangabey	<i>C. galeritus</i>	295,000
White-naped mangabey	<i>C. lunulatus</i>	220,000
Mandrill	<i>M. sphinx</i>	240,000
Mainland drill	<i>M. leucophaeus leucophaeus</i>	270,000
Bioko drill	<i>M. leucophaeus poensis</i>	80,000
TOTAL		1,970,000

APPENDIX 2: COUNTRY TABLES

Illustrations by Stephen Nash

Country: Burkina Faso		
Species	 <i>Cercocebus lunulatus</i>	
Conservation Areas	Comoé-Lébara Partial Reserve	

Conservation management recommendations		
	Comoé-Lébara Partial Reserve	Species present: 
• Surveys to determine distribution and population density • Conservation education in communities around KCPA • Improve protection efficiency through supporting patrolling in the KCPA, community or government based • Working with relevant organisations to respond to public health needs of neighbouring human populations		

Country:

Cameroon



Species



Cercocebus torquatus

Cercocebus agilis

Mandrillus sphinx

Mandrillus leucophaeus leucophaeus

Conservation Areas

Korup National Park	Ebo-Makombe-Ndokbou Forests	Campo Ma'an National Park	Dja Biosphere Reserve	Nki National Park	Boumba-Bek National Park	Lobeke National Park	Douala-Edea National Park
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Conservation management recommendations across all sites

Surveys to determine population size

Korup National Park

Species present:



- Improve support and facilities for researchers/research camps
- Demographic and socioeconomic surveys
- Enhance community education and involvement in the conservation of primates and their habitats
- Improve protection efficiency through supporting patrolling in the KCPA, community or government based

Ebo-Makombe-Ndokbou Forests

Species present:



- Improve support for ecological monitoring
- Implement habitat restoration and forest connectivity
- Improve protection efficiency through supporting patrolling in the KCPA, community or government based
- Enhance community education and involvement in the conservation of primates and their habitats
- Demographic and socioeconomic surveys

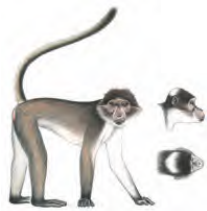
Campo Ma'an National Park	Species present:	  
• Improve support for ecological monitoring • Implement habitat restoration and forest connectivity • Enhance community education and involvement in the conservation of primates and their habitats • Improve protection efficiency through supporting patrolling in the KCPA, community or government based • Initiate community awareness activities • Regular population surveys and monitoring • Determine distinctiveness of mandrill populations north and south of Ogooué • Census of orphans in households, rescue, quarantine and release of orphans • Monitor illegal hunting • Identify high priority areas for protection		
Dja Biosphere Reserve Nki National Park Boumba-Bek National	Species present:	
• Enhance community education and involvement in the conservation of primates and their habitats • Improve protection efficiency through supporting patrolling in the KCPA, community or government based • Initiate community awareness activities • Regular population surveys and monitoring		
Douala-Edea National Park	Species present:	
• Implement habitat restoration and forest connectivity • Enhance community education and involvement in the conservation of primates and their habitats • Improve protection efficiency through supporting patrolling in the KCPA, community or government based		

Country:

Côte D'ivoire



Species



Cercocebus lunulatus



Cercocebus atys

Conservation
Areas

Comoé
National Park

Tanoe-Ehy Community
Forest

Taï National
Park

Conservation management recommendations across all sites

- Improve support and facilities for researchers/research camps
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based.
- Surveys to determine population size
- Working with relevant organisations to respond to public health needs of neighboring human populations

Additional management recommendations

Comoé National Park

Species
present:



- Enhance community education and involvement in primate conservation and their habitats
- Conservation education in communities around KCPAs

Tanoe-Ehy Community Forest

Species
present:



- Enhance community education and involvement in primate conservation and their habitats
- Conservation education in communities around KCPAs
- Support transboundary activities

Country:

Democratic Republic of the Congo



Species



Cercocebus chrysogaster

Conservation
Areas

Salonga National
Park

Lokolama
Village Region

Lukenie River
Region

Mimia Village
Region

Kipula Block (Eastern
population)

Conservation management recommendations across all sites

Surveys to determine population size

Investigate wild meat hunting and consumption

Working with relevant organisations to respond to public health needs of neighboring human populations

Country:

Equatorial Guinea



Species



Cercopithecus agilis

Cercopithecus torquatus

Mandrillus sphinx

Mandrillus leucophaeus poensis

Conservation
Areas

Areas

Monte Alén
National Park

Rio Campo
National Park

Gran Caldera de
Lubá Scientific
Reserve

Pico Basilé
National Park

Rio Muni Estuary
National Park

Conservation management recommendations across all sites

Improve protection efficiency through supporting patrolling in the KCPAs, community or government based

Additional management recommendations

Monte Alén National Park

Species
present:



- Improve support for ecological monitoring
- Implement habitat restoration and forest connectivity
- Conservation education in communities around KCPAs
- Abundance surveys
- Surveys to determine population size
- Engage with surrounding communities to increase cooperation
- Initiate community awareness activities
- Support/establish ecotourism
- Genetic analysis
- Census of orphans in households, rescue, quarantine and release of orphans
- Monitor hunting levels

Rio Campo National Park	Species present:	
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- Conservation education in communities around KCPAs

Gran Caldera de Lubá Scientific Reserve	Species present:	
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- Surveys to determine population size
- Support/establish ecotourism
- Monitor hunting levels

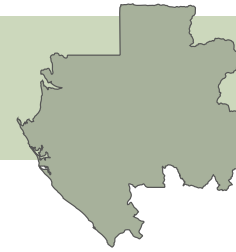
Pico Basilé National Park	Species present:	
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- Surveys to determine population size
- Monitor hunting levels

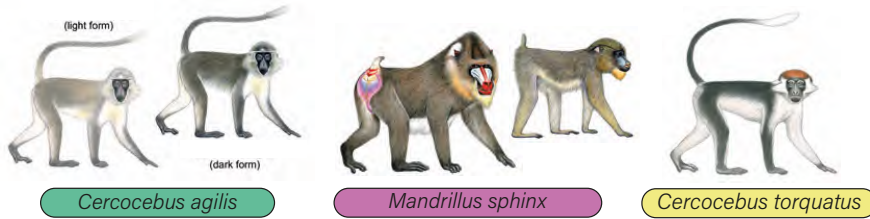
Rio Muni Estuary National Park	Species present:	
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- Implement habitat restoration and forest connectivity
- Conservation education in communities around KCPAs
- Abundance surveys
- Surveys to determine population size

Country:
Gabon



Species



Conservation
Areas

Ivindo National Park Minkebe National Park Loango National Park Moukalaba Doudou National Park Lope National Park Mayumba National Park

Conservation management recommendations across all sites

Surveys to determine population size

Additional management recommendations

Ivindo National Park	Species present:	☒
Initiate community awareness activities		
Loango National Park	Species present:	☐
- Implement habitat restoration and forest connectivity - Improve protection efficiency through supporting patrolling in the KCPAs, community or government based. - Conservation education in communities around KCPAs - Abundance surveys - Initiate community awareness activities		

Moukalaba Doudou National Park

Species
present:



- Improve support for ecological monitoring
- Improve protection efficiency through supporting patrolling in the KCPA, community or government based
- Conservation education in communities around KCPAs
- Abundance surveys
- Surveys to determine population size
- Initiate community awareness activities
- Genetic analysis
- Census of orphans in households, rescue, quarantine and release of orphans
- Monitor illegal hunting

Lope National Park

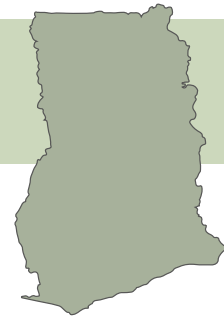
Species
present:



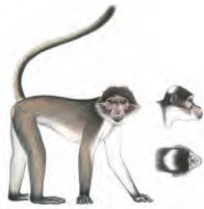
- Improve support for ecological monitoring
- Improve protection efficiency through supporting patrolling in the KCPA, community or government based
- Conservation education in communities around KCPAs
- Abundance surveys
- Surveys to determine population size
- Engage with surrounding communities to increase cooperation
- Initiate community awareness activities
- Genetic analysis

Country:

Ghana



Species



Cercocebus lunulatus

Conservation
Areas

Ankasa-Tano
Community Forest

Cape Three Points
Forest Reserve

Conservation management recommendations across all sites

- Enhance community education and involvement in the conservation of primates and their habitats
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based
- Conservation education in communities around KCPAs
- Surveys to determine population size
- Support advocacy action against the construction of a petroleum hub around and within the Ankasa-Tano CF
- Working with relevant organisations to respond to public health needs of neighboring human populations

Additional management recommendations

Ankasa-Tano Community Forest

Species
present:



- Implement habitat restoration and forest connectivity
- Abundance surveys
- Support transboundary activities

Cape Three Points Forest Reserve

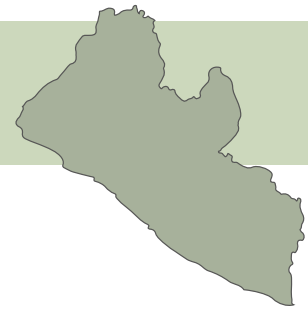
Species
present:



- Improve support and facilities for researchers/research camps

Country:

Guinea



Species



Cercocebus atys

Conservation
Areas

Fouta
Djalou

Conservation management recommendations

Fouta Djalou

Species
present:



- Abundance surveys
- Determine taxonomic status
- Working with relevant organisations to respond to public health needs of neighboring human populations

Country:

Guinea-Bissau



Species



Cercocebus atys

Conservation
Areas

Cufada Lagoons
Natural Park

Cantanhez
National Park

Dulombi-Boé
Complex

Conservation management recommendations across all sites

Abundance and population status surveys

Working with relevant organisations to respond to public health needs of neighboring human populations

Additional management recommendations

Cantanhez National Park

Species
present:



• Enhance protection

Dulombi-Boé Complex

Species
present:



• Raise profile of the species

Country:
Kenya



Species



Cercocebus galleritus

Conservation
Areas

Tana River Primate
National Reserve
and surrounding
community forests

Tana Delta, par-
ticularly the
Bililo-Vunja Moyo
Forest Complex

Upper Tana Delta
between Mwina
and Mitapani
forests

Unprotected
areas between
Makere West and
Wenje West

Unprotected
areas between
Makere East and
Nkanjonja

Conservation management recommendations across all sites

Improve support for ecological monitoring

Increase stakeholder engagement and livelihood support around the KCPAs

Enhance community education and involvement in the conservation of primates and their habitats

Surveys to determine population size

Working with relevant organisations to respond to public health needs of neighboring human populations

Additional management recommendations

Tana River Primate National Reserve
and surrounding community forests

Species
present:



• Improve support and facilities for researchers/research camps

Upper Tana Delta between Mwina and Mitapani forests,
Unprotected areas between Makere West and Wenje West and
Unprotected areas between Makere East and Nkanjonja

Species
present:



• Implement habitat restoration and forest connectivity

• Implement measures to mitigate the spread of invasive species

Country:
Liberia



Species



Cercocebus atys

Conservation
Areas

Sapo National
Park

Gola National
Park

Conservation management recommendations

Sapo National Park

Species
present:



- Improve support and facilities for researchers/research camps
- Support/establish ecotourism

Gola National park

Species
present:



- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based
- Conservation education in communities around KCPAs
- Abundance surveys
- Surveys to determine population size
- Initiate community awareness activities

Country:

Nigeria



Species



Cercopithecus torquatus



Mandrillus leucophaeus leucophaeus

Conservation
Areas

Okomu
National Park

Omo Forest
Reserve

Apoi Creek Forest
Reserve

Cross River
National Park

Afi Mountain Wildlife
Sanctuary

Conservation management recommendations across all sites

- Surveys to determine population size
- Initiate community awareness activities

Additional management recommendations

Okomu National Park	Species present:	☒
Omo Forest Reserve	Species present:	☒
Apoi Creek Forest Reserve	Species present:	☒

- Implement habitat restoration and forest connectivity
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based

Cross River National Park

Species
present:



- Increase stakeholder engagement around the KCPAs
- Enhance community education and involvement in the conservation of primates and their habitats
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based.

Afi Mountain Wildlife Sanctuary

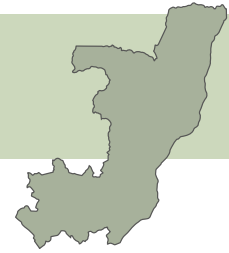
Species
present:



- Increase stakeholder engagement around the KCPAs
- Enhance community education and involvement in the conservation of primates and their habitats
- Conservation education in communities around KCPAs
- Engage with surrounding communities to increase cooperation

Country:

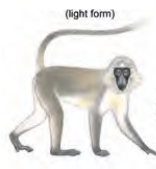
Republic of Congo



Species



Cercocebus torquatus



Cercocebus agilis



(dark form)



Mandrillus sphinx

Conservation
Areas

Lac Tèlè/Likouala aux
Herbes

Conkouati-Douli
National Park

Conservation management recommendations across all sites

- Surveys to determine population size
- Initiate community awareness activities

Additional management recommendations

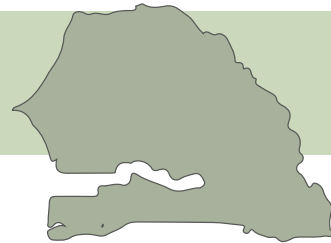
Conkouati-Douli National Park

Species
present:



- Implement habitat restoration and forest connectivity
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based

Country:
Senegal



Species



Cercocebus atys

Conservation
Areas

Forest around the
Casamance River

Conservation management recommendations

Forest around the Casamance River

Species
present:



- Surveys to determine population status
- Working with relevant organisations to respond to public health needs of neighboring human populations

Country:

Sierra Leone



Species



Cercocebus atys

Conservation
Areas

Gola Rainforest
National Park

Loma Mountains
National Park

Conservation management recommendations across all sites

- Working with relevant organisations to respond to public health needs of neighboring human populations

Gola Rainforest National Park

Species
present:



- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based
- Abundance surveys

Loma Mountains National Park

Species
present:



- Assess presence and population status of sooty mangabeys and other primates
- Make recommendations on the management of protection efforts

Country:

Tanzania



Species



Cercocebus sanjei

Conservation Areas

Uzungwa Scarp
Nature Reserve

Udzungwa Mountains
National Park

Conservation management recommendations across all sites

- Implement habitat restoration and forest connectivity
- Enhance community education and involvement in the conservation of primates and their habitats
- Improve protection efficiency through supporting patrolling in the KCPAs, community or government based.
- Surveys to determine population size
- Investigate wild meat hunting and consumption
- Working with relevant organisations to respond to public health needs of neighboring human populations

Additional management recommendations

Uzungwa Scarp Nature Reserve

Species present:



- Conservation education in communities around KCPAs

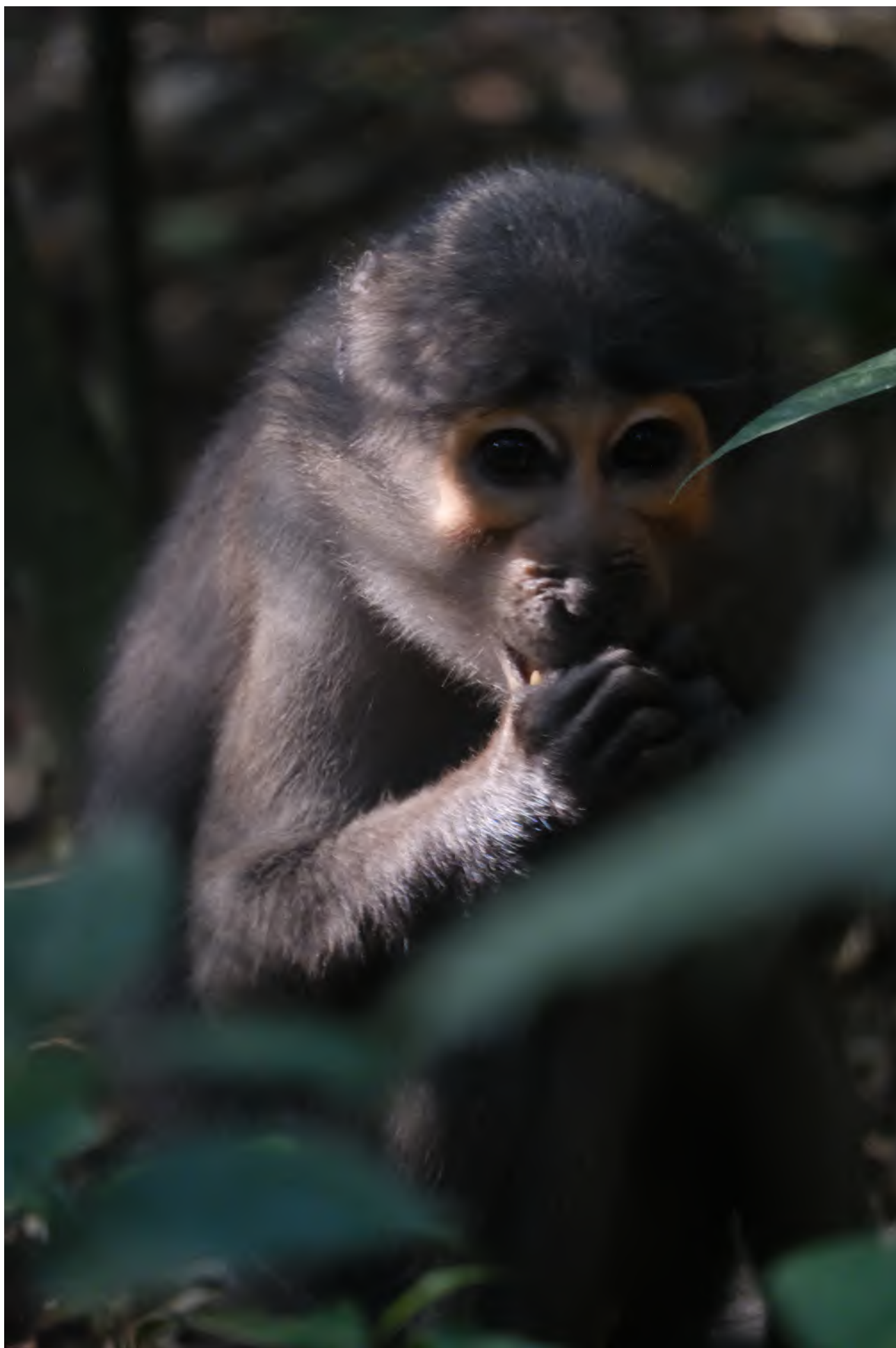


Figure 33. *Cercopithecus atys* (Picture by Nuria Badiella).



Figure 34. *Mandrillus leucophaeus leucophaeus* (Picture by Noel Rowe).



Figure 35. *Cercocebus agilis* (Picture by Ian Bickerstaff).



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