Asian langurs (*Presbytis*) conservation action plan 2024–2034

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Presbytis chrysomelas chrysomelas ©Chien Lee.

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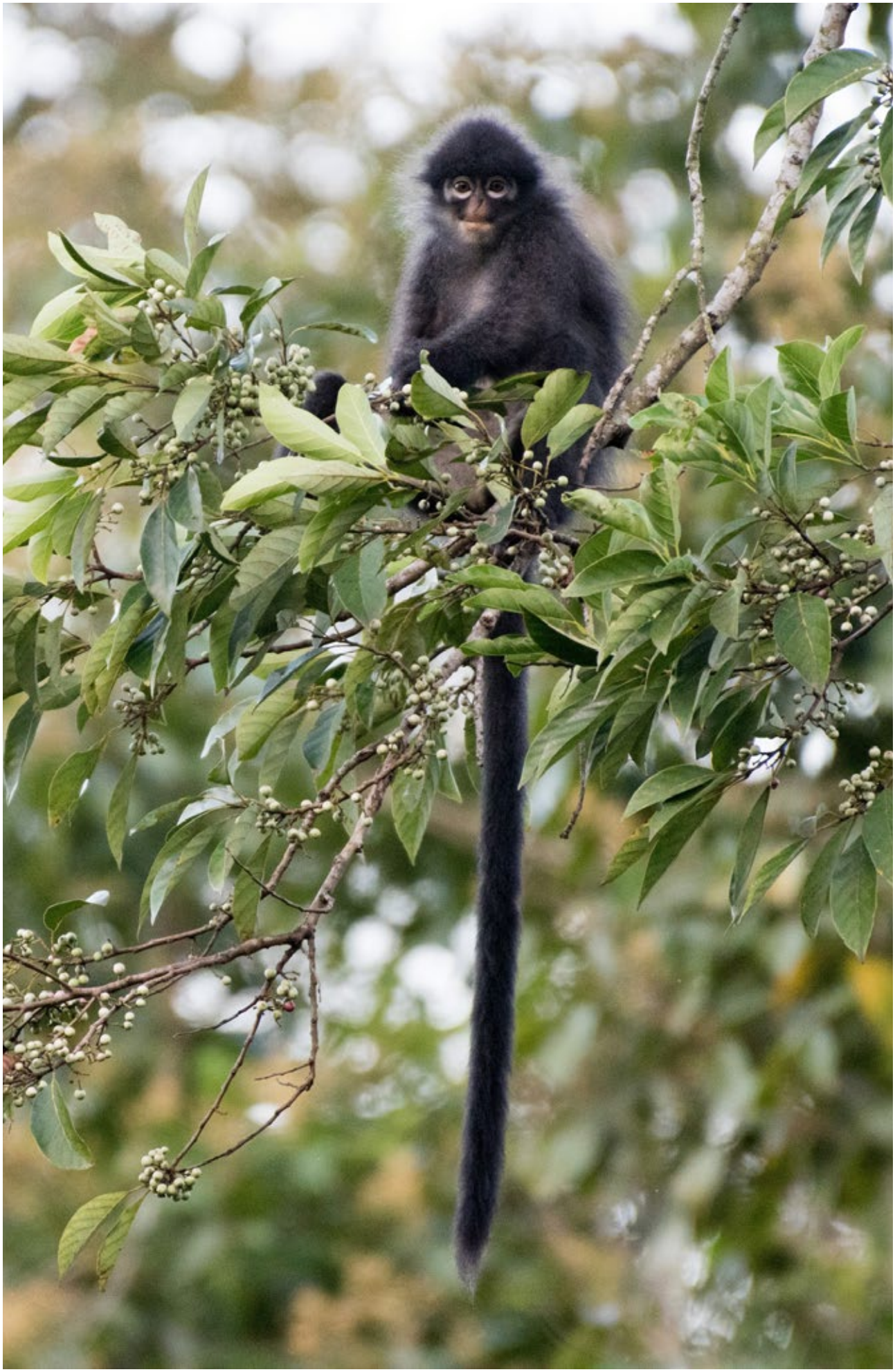

Presbytis femoralis of Malaysia and Singapore ©Zan Hui Lee.

FOREWORD BY RUSSELL A. MITTERMEIER

I am very pleased to present this new IUCN SSC Primate Specialist Group action plan, the latest in a long series of such plans dating back to the first-ever Global Strategy for Primate Conservation (Mittermeier, 1977). Our group has long placed great value on action plans, and dozens of them have been produced over the past 47 years. Initially, we focused on continental level plans with the first modern SSC action plans in the 1980s – Africa (Oates, 1986) and Asia (Eudey, 1987), and the first follow-up plan, one again for Africa (Oates, 1996). In recent years, we have focused more on species and species groups, for example the great apes, and the lion tamarins and muriquis of South America (see Reuter et al., 2020), and also on national level plans, for example, for the lemurs of Madagascar (Mittermeier et al., 1992; Schwitzer et al., 2013), and the primates of Indonesia (Supriatna et al., 2001). In the past five years, we have chosen to highlight several highly endangered and diverse genera that have received insufficient attention for their conservation.

One such was the *Red colobus (*Piliocolobus*) conservation action plan 2021–2026* (Linder et al., 2021), which demonstrated clearly that this genus of African monkeys was in grave danger with one species that all the evidence now suggests might have already gone. We also highlighted the fact that these monkeys were good indicators for the forests where they occur. We are also about to publish another plan on the largely overlooked African monkey genera, *Cercocebus* and *Mandrillus* (Dempsey et al., in press), as well as a third still being drawn up that is focused on the Neotropical genera *Ateles*, the spider monkeys, and *Lagothrix*, the woolly monkeys.

In this latest plan, we are targeting an Asian genus of colobine monkeys, *Presbytis* – langurs that are found only in the Sundaland Biodiversity Hotspot (Thai-Malay Peninsula, Sumatra, Borneo, Java, and adjacent, smaller islands). They have been found to be far more endangered as a group than previously realized. Indeed, 24 of the 28 taxa in this genus are now threatened, with six and eight taxa in the Critically Endangered and Endangered categories, respectively. In striking contrast to the red colobus, however, where discussion of the need for an action plan dated back some 35 years prior to the actual publication of such a plan, the identification of *Presbytis* as a priority genus at a global level is very recent. To be sure, a number of *Presbytis* species were mentioned in the 1977 Global Strategy and the *Action Plan for Asian Primate Conservation 1987–1991* (Eudey, 1987), which gave high ranking to several of them (*Presbytis comata* and *P. potenziani*, for example) and included a number of regional and island-specific projects of pertinence for *Presbytis* species. The genus as a whole, however, was never seen to be a global priority.

That has now changed. Thanks to the efforts of Andie Ang, Christian Roos, Douglas Brandon-Jones, Nadine Ruppert, Zan Hui Lee, Roopali Raghavan and other authors of this *Asian langurs (*Presbytis*) conservation action plan 2024–2034*, *Presbytis* has now been singled out as a genus worthy of much more national and international attention. The plan that follows here should go a long way to demonstrating the importance of these animals that are such a prominent feature of the Sundaland forests, giving as it does considerable detail on what needs to be done to ensure the survival of all 28 species and subspecies.

At its core, the *Asian langurs (*Presbytis*) conservation action plan 2024–2034* advocates for a multifaceted approach, weaving together field studies, habitat protection, education, conservation tourism, *ex situ* measures, global networking, and collaborative partnerships, among other recommendations. By addressing the root causes of langur decline and engaging diverse stakeholders, we can chart a course towards a more sustainable future.

In closing, I congratulate the team that put this outstanding plan together. What is more, they did so in world record time. It usually takes some years, even decades, to develop such an action plan, especially when it covers multiple species and countries. In striking contrast, the workshop to develop this plan took place immediately after the International Primatological Society Congress in Kuching, Sarawak in August 2023, and now, less than a year later, we have a plan ready to go. The quality of this plan and the speed at which it was put together serves as a model for all SSC specialist groups and should guide our conservation activities on behalf of these monkeys for the next decade.

EXECUTIVE SUMMARY

Distributed in the Sundaland region (Thai-Malay Peninsula, Sumatra, Borneo, Java and adjacent smaller islands), langurs of the genus *Presbytis* are one of the most threatened groups of Asian primates. According to the IUCN Red List of Threatened Species™, 24 of the 28 taxa (>85%) are threatened with extinction (listed as Critically Endangered, Endangered or Vulnerable). One taxon is classified as Near Threatened and one as Data Deficient. Only two *Presbytis* taxa are considered as Least Concern. Most assessments were conducted in 2015 and hence are almost a decade old. Despite their conservation status and ecological significance, only a few populations have been studied in detail. This *Asian langurs (*Presbytis*) conservation action plan 2024–2034* brings together the knowledge of experts on these monkeys of Brunei, Indonesia, Malaysia, Myanmar, Singapore, and Thailand to identify the most pressing threats and priority conservation actions for each taxon.

Deforestation and the fragmentation of habitats diminish resources and restrict dispersion and gene flow of wildlife including *Presbytis* langurs. Urban sprawling into forests increases the human-wildlife interface, heightening opportunities for conflicts and pathogen transmission. Poaching of langurs for consumption or pet trade directly reduces their abundance. These collectively drive higher mortality, decrease the adaptive capability of species, and lead to local extinctions, which can have irreversible effects on ecosystems. Crucially, the public is largely unaware of these monkeys, their plight, and that many of them are legally protected by national laws. This is partly due to limited awareness of their presence, and the use of an outdated taxonomy.

Genus-wide and taxon-specific conservation actions are centred around nine main strategies: (1) Field studies: All 28 *Presbytis* taxa require field studies to assess and monitor their distribution, population size, and the threats they face. Obtaining genetic material non-invasively is also key to resolving their taxonomy. (2) Habitat protection and connectivity: Viable populations of each of the 28 *Presbytis* taxa should be protected in at least two relatively large and well-managed protected areas. Restoring wildlife corridors across core habitat fragments is crucial for at least 12 taxa, while developing and implementing fire control measures are essential for 13 taxa. (3) Awareness: For all *Presbytis* langurs, we need to carry out local, national and global awareness programmes. Through education and policy, we must also reduce hunting pressure, which is endangering populations of at least 11 taxa. (4) Conservation tourism: Improving economic livelihoods of local communities living near *Presbytis* habitats is critical, and conservation tourism has been highlighted as potentially beneficial to explore for at least 15 taxa. (5) *Ex situ* care: Best practice guidelines for *ex situ* husbandry of *Presbytis* langurs should be developed in collaboration with facilities currently housing them to ensure that proper care can be provided to individuals which come into or are in *ex situ* facilities. (6) National legislation: It is critical to work with governments to review and update the national lists of protected species using the current taxonomy and status of *Presbytis* taxa. (7) Collaboration: For any action to be successful and sustainable, consideration for collaborations should be given to field sites that already have conservation activities for other wildlife. (8) Secure funding: Long-term funding sources are paramount to drive conservation actions to safeguard the survival of *Presbytis* langurs and their habitats. (9) Global network: A *Presbytis* langur network of researchers, conservation practitioners, government agencies, zoos and sanctuaries, and volunteers is needed to improve collaboration around *Presbytis* langur conservation.

Conserving these langurs and their habitats contributes directly to the Sustainable Development Goal (SDG) 15: Life on Land, and supports SDG 1: No Poverty, and SDG 10: Reduced Inequalities, as healthy ecosystems provide essential resources and livelihood opportunities for local communities, promoting economic development and social equity. Furthermore, by prioritising the protection of these langurs, we seek to address the underlying drivers of biodiversity loss and ensure the sustainable use and conservation of biodiversity, which is integral to achieving the objectives of the Global Biodiversity Framework of conserving at least 30% of land and sea areas globally. We advocate for increased funding to immediately implement recommended actions in this action plan to improve the conservation status of langur populations and protect our shared natural heritage from the looming threat of extinction.

AUTHORS AND CONTRIBUTORS

The full-day workshop on 25 August 2023 was held at the Borneo Convention Centre, Kuching, and was facilitated by Roopali Raghavan and Andie Ang using the IUCN SSC Conservation Planning Specialist Group facilitation framework. A total of 25 participants attended the workshop in-person and two attendees participated virtually. Amos Chua and Jiehlong Koh kindly took notes at the workshop.

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Participants of the *Presbytis* workshop at Borneo Convention Centre Kuching ©Andie Ang.

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We are most grateful to the conservation organisations and local communities that are operating in and around *Presbytis* habitats, and we acknowledge the important role these communities play in the implementation of this Asian langurs (*Presbytis*) conservation action Plan 2024–2034.

***Presbytis robinsoni* of Malaysia, Myanmar and Thailand ©Andie Ang.**

1. INTRODUCTION

1.1. Taxonomy

Old World monkeys (Family Cercopithecidae) are a diverse radiation of primates found in Asia, Africa, and Gibraltar with two extant subfamilies: Colobinae (which includes colobus monkeys, langurs and odd-nosed monkeys) and Cercopithecinae (which includes macaques, baboons, mangabeys, mandrills and guenons) (Davies and Oates, 1994; Rowe, 1996; Groves, 2001; Mittermeier et al., 2013; Rowe and Myers, 2016; Beauséjour et al., 2021; Matsuda et al., 2022). Colobine monkeys consist of two clades, one in Africa and one in Asia.

Asian colobines (60 species) are further divided into two phenotypically distinct groups: a langur group consisting of the genera *Presbytis*, *Semnopithecus* and *Trachypithecus*, and an odd-nosed monkey group with the genera *Nasalis*, *Pygathrix*, *Rhinopithecus* and *Simias* (Groves, 1970; Jablonski, 1998). Until recently, the classification and phylogeny of Asian colobines, particularly of the langur group, had been extensively debated (e.g., Kirkpatrick, 2007; see Karanth et al., 2008) where at one point, one to four genera were proposed. For instance, Napier (1985) and Napier and Napier (1967, 1994) combined all taxa of the langur group in the single genus *Presbytis*, while Hill (1934) and Pocock (1935, 1939) divided them into four genera (*Kasi*, *Presbytis*, *Semnopithecus* and *Trachypithecus*). Reichenbach (1862) had already recognised these four groups, but classified them as subgenera of the genus *Semnopithecus*. Alternative classifications suggested two genera, *Presbytis* and *Semnopithecus*, with *Trachypithecus* as a subgenus of the latter (Brandon-Jones, 1984, 1995, 1996a; Strasser and Delson, 1987).

For *Presbytis*, the classification of taxa was also highly disputed and has changed several times in the last decades. For instance, Napier and Napier (1967) recognised six species, *aygula* (= *comata*), *frontata*, *melalophos*, *rubicunda, thomasi,* and *potenziani*, of which the former five were grouped into the *P. aygula* (= *comata*) group (= genus *Presbytis*), while *potenziani* was assigned to the *P. cristatus* group (= genus *Trachypithecus*). Later on, Napier (1985) and Napier and Napier (1994) correctly assigned *potenziani* to what they then referred to as the *P. melalophos* group (= genus *Presbytis*) and recognised, following Thorington and Groves (1970), a total of seven species—*comata*, *frontata*, *hosei*, *melalophos*, *potenziani*, *rubicunda* and *thomasi*. Davies and Oates (1994) and Rowe (1996) followed this classification, but Rowe (1996) in addition separated *femoralis* from *melalophos*. Brandon-Jones (1984, 1995, 1996b) also recognised eight species, but he used a different species assembly. He also accepted *frontata*, *potenziani* and *rubicunda* as distinct species. However, he divided the *melalophos* complex into three species (*melalophos*, *femoralis*, and *siamensis*), and separated *fredericae* from *comata*, while he followed Chasen (1940) by integrating *thomasi* and *hosei* into *comata*.

Although there is now general consensus concerning the distinct species status of *comata*, *hosei*, *frontata*, *thomasi* and *potenziani*, there is ongoing debate about the taxonomy of the *melalophos* species complex. Traditionally, all Malay Peninsular and Sumatran taxa except *P. thomasi* were combined into the single species *melalophos* (Chasen, 1940; Napier and Napier, 1967, 1994; Napier, 1985; Davies and Oates, 1994), but there were proposals to split them into two (Pocock, 1935; Wilson and Wilson, 1977; Aimi and Bakar, 1992, 1996; Rowe, 1996), three (Brandon-Jones, 1984, 1996b; Brandon-Jones et al., 2004), five (Groves 2001), or even eight species (Mittermeier et al., 2013; Roos et al., 2014; Rowe and Myers, 2016). Meyer et al. (2011) proposed, as Brandon-Jones (1984, 1995, 1996a) had, to separate *fredericae* from *comata*, which is followed by IUCN Red List authorities (Nijman et al., 2022a), while others kept them as subspecies (Mittermeier et al., 2013; Roos et al., 2014; Rowe and Myers, 2016; Beauséjour et al., 2021; Matsuda et al., 2022). Meyer et al. (2011) further suggested the elevation of the two subspecies of *potenziani* (*potenziani* and *siberu*) to species level, which is now widely accepted. Likewise, it was recently suggested that the former subspecies of *hosei* (*canicrus*, *hosei* and *sabana*) be placed as species (Mittermeier et al., 2013; Roos et al., 2014; Rowe and Myers, 2016; Beauséjour et al., 2021; Matsuda et al., 2022), as well as the previous subspecies of *femoralis* (*femoralis*, *percura* and *robinsoni*) (Ang et al., 2020; Beauséjour et al., 2021).

By incorporating all recent changes in *Presbytis* taxonomy, the genus now contains 20 species and 28 taxa (species and subspecies; Fig. 1). Seventeen of the 20 species are monotypic (*P. bicolor*, *P. canicrus*, *P. comata*, *P. femoralis*, *P. fredericae*, *P. frontata*, *P. hosei*, *P. melalophos*, *P. mitrata*, *P. natunae*, *P. percura*, *P. potenziani*, *P. robinsoni*, *P. sabana*, *P. siberu*, *P. sumatrana* and *P. thomasi*), while three are polytypic (*P. chrysomelas* with two subspecies—*chrysomelas* and *cruciger*, *P. rubicunda* with five subspecies—*carimatae*, *chrysea*, *ignita, rubicunda* and *rubida*, and *P. siamensis* with four subspecies—*cana, paenulata, siamensis* and *rhionis*) (Table 1). Although our knowledge about *Presbytis* has increased largely in recent years, there are still gaps to be filled. Nonetheless, the herein adopted classification of *Presbytis* should be treated with confidence as a version close to the actual reflection of the diversity of this genus. At the same time, while this group of primates has been variously called "langurs", "surilis" and "leaf monkeys", for consistency we refer to them as langurs throughout this document.

1.2. Distribution

Presbytis langurs are distributed in the Sundaland region (Thai-Malay Peninsula, Sumatra, Borneo, Java and adjacent smaller islands), ranging in the Southeast Asian countries of Brunei, Indonesia, Malaysia, Myanmar, Singapore, and Thailand (Fig. 2). Of these six countries, Indonesia has the highest diversity with 22 of the 28 *Presbytis* taxa, 18 of which are endemic (Tables 1 and 2). These monkeys inhabit a variety of forests, including tropical rainforest from lowland to hill and montane forests, swamp forest and peatland, and mangrove forest, and have come to be found in plantations and cultivated areas. Elevation typically ranges from sea level to 2,500 m, but Thomas' langur (*P. thomasi*) has been recorded in the lower parts of the subalpine zones, up to 3,400 m, in the Leuser Ecosystem of Sumatra.

1.3. Characteristics

Presbytis langurs have a multi-chambered stomach with an enlarged foregut that contains a vast and diverse array of microflora needed to process and ferment difficult-to-digest plant material such as leaves and seeds (Bauchop and Martucci, 1968; Strasser and Delson, 1987), a characteristic unique to colobine monkeys across the primate kingdom. They also have molars with well-developed shear crests (Fleagle, 2013) adapted for shearing tough foods. Thus, they exhibit an enhanced ability to consume foliage and have been loosely called "leaf monkeys", but they also take in significant amounts of other foods, such as fruits, flowers and fungi.

They are medium-sized primates living a mostly arboreal lifestyle. Adults have diverse colorations (Fig. 1) while infants are born with a distinctly white/grey pelage. There is considerable variability in their social structure, but the most common social unit consists of one-male and several females with their young. On the other hand, the southern Mentawai langur (*P. potenziani*) exhibits a rather uncommon social organisation in forming monogamous pairs and performing duets between males and females (Tilson and Tenaza, 1976).

1.4. Threats

Most forests where *Presbytis* langurs occur experience intensive economic development, natural resource extraction, logging, monoculture plantation, and forest fires. Hunting for their meat, bones and bezoar stones for traditional medicine is a major threat for some taxa. Given that stone migration into the stomach thereby forming gallstone bezoar is rare, langurs are not hunted for bezoar stones opportunistically, but instead typically intensifies when there are active vendors, mostly in Borneo, fuelling the trade (Nijman, 2005). Hence it is crucial to identify areas where there is a continuous demand and supply in order to regulate or reduce such trade. Several *Presbytis* taxa have also been recorded in the illegal pet trade (Shepherd, 2010). Mortality due to road accidents and power line electrocution have been reported (e.g., Ang and Jabbar, 2022; Iqbal et al., 2023), and adapting to plantations and cultivated areas has resulted in some of the *Presbytis* langurs being regarded as pests. Additionally, the public is largely unaware of these monkeys and their legally protected status, which hinders efforts for their conservation and the deterrence of illegal activities.

1.5. Conservation status and legislation

The conservation status of Asian primates was reassessed in 2015 at the IUCN SSC Primate Specialist

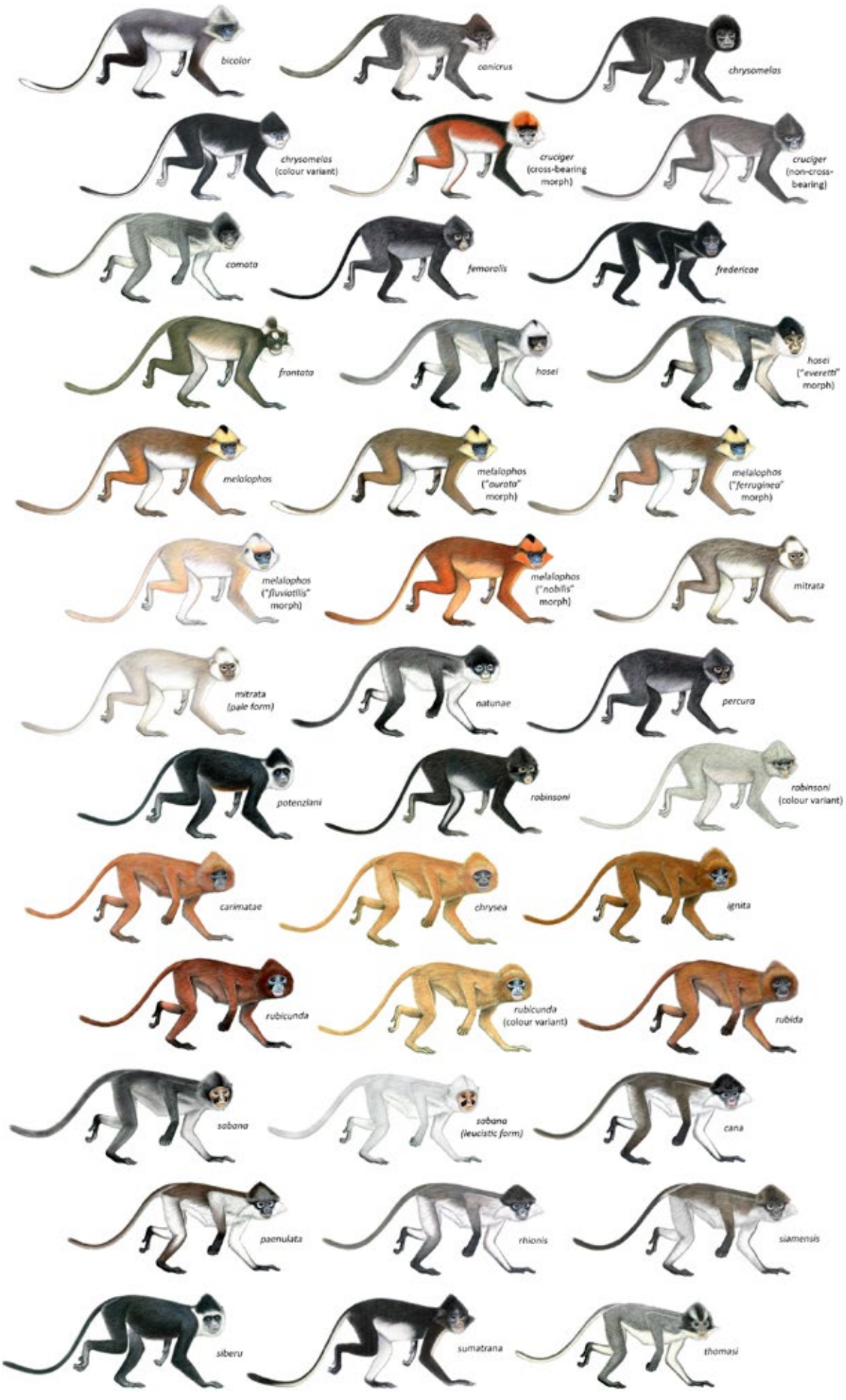


Figure 1: The 28 *Presbytis* taxa and their colour variants. Illustrations by Stephen D. Nash.

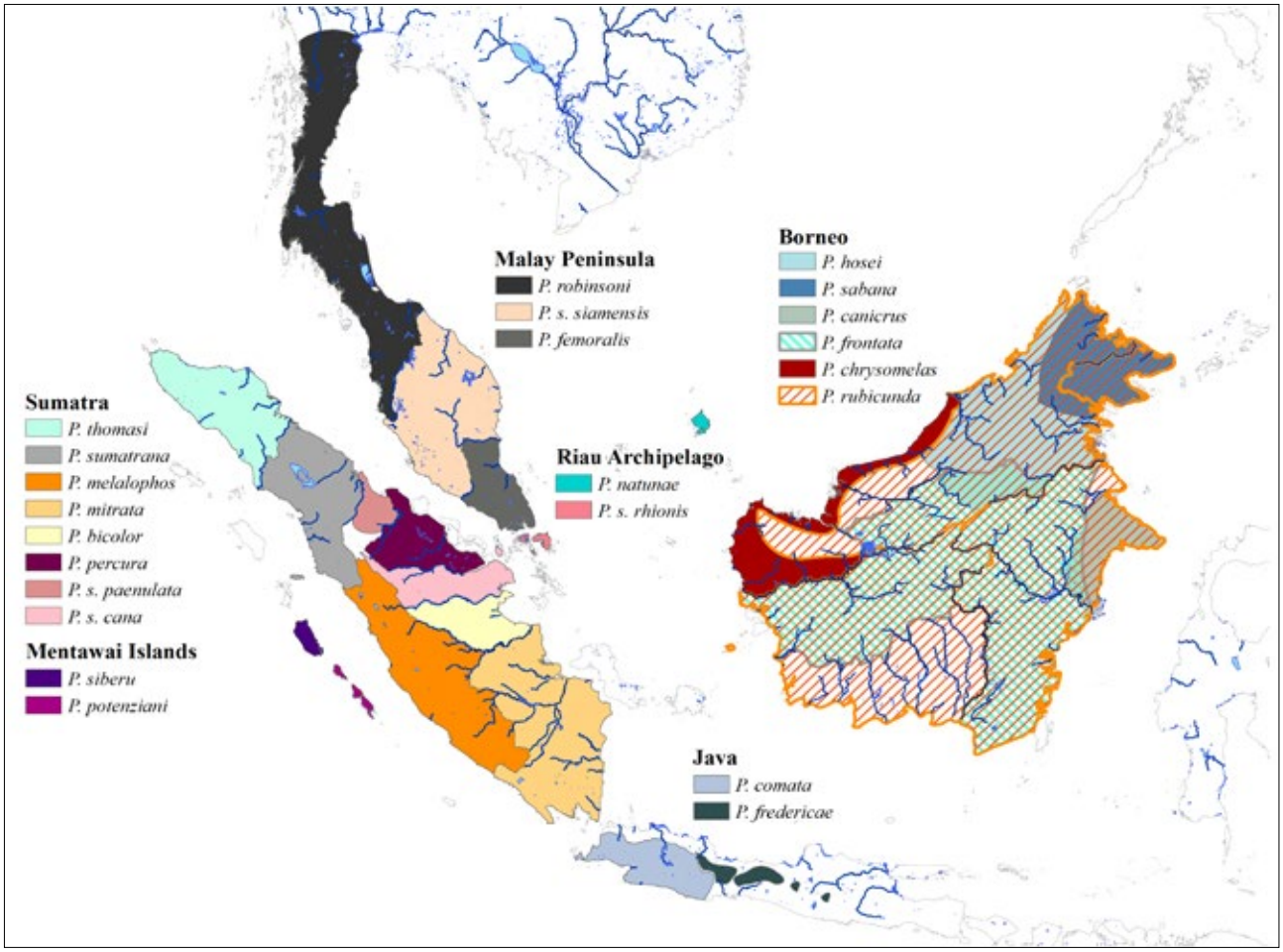


Figure 2: *Presbytis* distributions. Map drawn by Zan Hui Lee.

Group Asian Primate Red List Assessment workshop in Singapore, with some revisions in the subsequent years (some as recent as 2022). The current published IUCN Red List assessments indicate that 17 of 20 *Presbytis* species (or 24 of 28 taxa) are threatened with extinction (Table 3). Two species – the Bornean banded langur (*P. chrysomelas*) and Raffles' banded langur (*P. femoralis*) – are recognised on the list of the World's Top 25 Most Endangered Primates (2023–2025). The southern Mentawai langur (*P. potenziani*) and Siberut langur (*P. siberu*), endemic to the Mentawai Islands of Indonesia, are also highlighted as special mentions due to a heightened risk of imminent extinction.

As mentioned in the earlier section on taxonomy, there have been substantial changes in the classification of *Presbytis* taxa in the last decades but today we have a version that is a more accurate reflection of the diversity of this genus. As such, it may be timely to review the national lists of protected species to ensure the use of the current taxonomy and the correct status of the *Presbytis* taxa. At the moment, the list of protected plants and animals of Indonesia includes *P. comata*, *P. frontata*, *P. melalophos*, *P. natunae*, *P. potenziani*, *P. rubicunda* and *P. thomasi* (Ministry of Environment and Forestry, 2018), which are the seven species recognised by Groves (1970) and Napier and Napier (1994) as comprising the genus *Presbytis*. Detailed phylogenetic analyses have shown that several of the seven species comprise multiple species. *Presbytis melalophos*, for instance, has since been split into at least eight species, including the Endangered *P. sumatrana* and Critically Endangered *P. percura*, and while they are currently protected as *P. melalophos*, it is obviously essential for conservation planning and management to make this explicit in a revised national protected list. The same can be said for *P. siberu*, which is currently protected as *P. potenziani*.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement to regulate international trade in specimens of wild animals and plants so that it does not threaten their survival. Appendices I and II to the Convention are lists of species afforded different levels or types of protection from over-exploitation. Appendix

I lists species that are the most endangered among CITES-listed animals and plants, and are subject to particularly strict regulation. Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. *Presbytis potenziani*, which following CITES' adopted taxonomy comprises *P. potenziani* and *P. siberu*, is listed on Appendix I (thus prohibiting all international trade) whereas all the other *Presbytis* species are listed on Appendix II (thus regulating all international trade).

Table 1. Alphabetical list of *Presbytis* taxa, authorities, common and local names, and the countries where they occur.

Taxon (Authority)	Common name	Local names	Country (Countries)
Presbytis bicolor Aimi and Bakar, 1992	Bicoloured banded langur	Surili hitam putih/Simpai dwiwarna	Indonesia
Presbytis canicrus Miller, 1934	Miller's grizzled langur	Lutung beruban kalimantan/Lutung banggat	Indonesia
Presbytis chrysomelas (Müller, 1838)	Bornean banded langur	Lutung ceeka kalimantan/Nokah (Indonesia); Penetat/Bijit (Iban, Sarawak)	Brunei; Indonesia; Malaysia
P. c. chrysomelas (Müller, 1838)	Bornean banded langur	Lutung ceeka kalimantan/Nokah (Indonesia); Penetat/Bijit (Iban, Sarawak)	Indonesia; Malaysia
P. c. cruciger (Thomas, 1892)	Tricolour langur	Lutung ceeka kalimantan/Nokah	Brunei; Indonesia; Malaysia
Presbytis comata (Desmarest, 1822)	Javan grizzled langur	Surili	Indonesia
Presbytis femoralis (Martin, 1838)	Raffles' banded langur	莱佛士叶猴 [*Lai fo shi ye hou*] (Malaysia; Singapore); Lotong cenekah (Malaysia);	Malaysia; Singapore
Presbytis fredericae (Sody, 1930)	Javan fuscous langur	Rekrekan	Indonesia
Presbytis frontata (Müller, 1838)	White-fronted langur	Lutung jirangan (Indonesia); Puan (Malaysia)	Indonesia; Malaysia
Presbytis hosei (Thomas, 1889)	Hose's langur	Singgagar (Brunei); Banggat (Indonesia); Wangan (Kadazan, Sabah); Berangah (Lundayeh, Sabah and Sarawak); Banggat/ Pendulau/Tohoroh (Murut, Sabah and Sarawak)	Brunei; Indonesia; Malaysia
Presbytis melalophos (Raffles, 1821)	Yellow-handed mitred langur	Simpai	Indonesia
Presbytis mitrata Eschscholtz, 1821	Southern mitred langur	Lutung simpai putih/Chi-cha/Kera putih	Indonesia
Presbytis natunae (Thomas and Hartert, 1894)	Natuna Island langur	Kekah	Indonesia
Presbytis percura Lyon, 1908	East Sumatran banded langur	Nokah	Indonesia
Presbytis potenziani (Bonaparte, 1856)	Southern Mentawai langur	Atapaipai (Mentawai)	Indonesia
Presbytis robinsoni Thomas, 1910	Robinson's banded langur	Chigak (Jahai Tribe, Perak); ค่างดำ *[Khang dum]* (Thailand)	Malaysia; Myanmar; Thailand
Presbytis rubicunda (Müller, 1838)	Maroon langur	Khalasi/Kelasi (Indonesia); Lotong merah (Malaysian)	Brunei; Indonesia; Malaysia
P. r. carimatae Miller, 1906	Red-naped maroon langur	Kera merah	Indonesia
P. r. chrysea Davis, 1962	Orange-backed maroon langur		Malaysia
P. r. ignita Dollman, 1909	Orange-naped maroon langur	Kelasi (Indonesia)	Brunei; Indonesia; Malaysia
P. r. rubicunda (Müller, 1838)	Southeast Bornean maroon langur	Kelasi	Indonesia

Table 1. *Cont'd*.

Taxon (Authority)	Common name	Local names	Country (Countries)
P. r. rubida (Lyon, 1911)	Southwest Bornean maroon langur	Kelasi	Indonesia
Presbytis sabana (Thomas, 1893)	Sabah grizzled langur	Monosop (Kadazan Dusun, Sabah); Tagarog (Abai Sungai, Sabah)	Malaysia
Presbytis siamensis (Müller and Schlegel, 1841)	Pale-thighed langur	ค่างต้นขานวล *[Khang ton-ka nuan]* (Thailand)	Indonesia; Malaysia; Thailand
P. s. cana Miller, 1906	Riau pale-thighed langur	Kokah	Indonesia
P. s. paenulata (Chasen, 1940)	Chasen's pale-thighed langur		Indonesia
P. s. rhionis Miller, 1903	Bintan Island pale-thighed langur	Kokah/Kerkah	Indonesia
P. s. siamensis (Müller and Schlegel, 1841)	Malayan pale-thighed langur	ค่างต้นขานวล *[Khang ton-ka nuan]* (Thailand)	Malaysia; Thailand
Presbytis siberu (Chasen and Kloss, 1928)	Siberut langur	Joja (Mentawai)	Indonesia
Presbytis sumatrana (Müller and Schlegel, 1841)	Black Sumatran langur	Simpai hitam	Indonesia
Presbytis thomasi (Collett, 1893)	Thomas' langur	Kedih/Lutung rungka	Indonesia

Table 2. Alphabetical list of countries where *Presbytis* taxa occur.

Country	Taxon (Taxa)
Brunei	*P. chrysomelas* (*cruciger*), *P. hosei* and *P. rubicunda* (*ignita*)
Indonesia	*P. bicolor*, *P. canicrus*, *P. chrysomelas* (*chrysomelas and cruciger*), *P. comata*, *P. fredericae*, *P. frontata*, *P. hosei*, *P. melalophos*, *P. mitrata*, *P. natunae*, *P. percura*, *P. potenziani*, *P. rubicunda* (*carimatae*, *ignita*, *rubicunda* and *rubida*), *P. siamensis* (*cana*, *paenulata* and *rhionis*), *P. siberu*, *P. sumatrana* and *P. thomasi*
Malaysia	*P. chrysomelas* (*chrysomelas and cruciger*), *P. femoralis*, *P. frontata*, *P. hosei*, *P. robinsoni*, *P. rubicunda* (*chrysea and ignita*), *P. sabana* and *P. siamensis* (*siamensis*)
Myanmar	*P. robinsoni*
Singapore	*P. femoralis*
Thailand	*P. robinsoni* and *P. siamensis* (*siamensis*)

Table 3. IUCN Red List status of *Presbytis* taxa.

Scientific name	IUCN Red List status (Year of assessment)
Presbytis bicolor	Data Deficient (2021)
Presbytis canicrus	Endangered (2015)
Presbytis chrysomelas	Critically Endangered (2015)
Presbytis chrysomelas chrysomelas	Critically Endangered (2015)
Presbytis chrysomelas cruciger	Critically Endangered (2015)
Presbytis comata	Vulnerable (2022)
Presbytis femoralis	Critically Endangered (2022)
Presbytis fredericae	Vulnerable (2022)
Presbytis frontata	Vulnerable (2015)
Presbytis hosei	Vulnerable (2015)

Table 3. *Cont'd*.

Scientific name	IUCN Red List status (Year of assessment)
Presbytis melalophos	Endangered (2015)
Presbytis mitrata	Vulnerable (2015)
Presbytis natunae	Vulnerable (2015)
Presbytis percura	Critically Endangered (2020)
Presbytis potenziani	Critically Endangered (2015)
Presbytis robinsoni	Near Threatened (2020)
Presbytis rubicunda	Vulnerable (2015)
Presbytis rubicunda carimatae	Endangered (2015)
Presbytis rubicunda chrysea	Data Deficient (2015)
Presbytis rubicunda ignita	Vulnerable (2015)
Presbytis rubicunda rubicunda	Vulnerable (2015)
Presbytis rubicunda rubida	Vulnerable (2015)
Presbytis sabana	Endangered (2015)
Presbytis siamensis	Near Threatened (2015)
Presbytis siamensis cana	Vulnerable (2015)
Presbytis siamensis paenulata	Endangered (2020)
Presbytis siamensis rhionis	Endangered (2015)
Presbytis siamensis siamensis	Near Threatened (2015)
Presbytis siberu	Endangered (2015)
Presbytis sumatrana	Endangered (2015)
Presbytis thomasi	Vulnerable (2015)

Presbytis rubicunda **feeding on a Boletaceae mushroom ©Aziz K./Borneo Nature Foundation.**

2. ASIAN LANGURS (*PRESBYTIS*) CONSERVATION ACTION PLAN RATIONALE AND GOALS

Southeast Asia has a high diversity of non-human primates, especially of colobine monkeys. Of particular interest are the *Presbytis* langurs, which consist of 20 species and 28 taxa (species and subspecies). Many of these species are highly threatened, and are also relatively overlooked in the research, outreach, and conservation fronts due to their elusive nature and arboreality, and the challenging terrains where they are located. They are found in Brunei, Indonesia, Malaysia, Myanmar, Singapore, and Thailand.

Learning from the conservation model of red colobus monkeys where a symposium was held at the 27th International Primatological Society (IPS) Congress in Nairobi, Kenya in 2018, followed by an action plan workshop, we hoped to similarly catalyse the conservation of *Presbytis* langurs through a symposium and a workshop. Our symposium at the 29th IPS Congress in Kuching, Malaysia in 2023 reviewed the current status of and knowledge on *Presbytis* langurs, ranging from taxonomy, genetics, ecology, conservation activities, outreach efforts, and captive husbandry and care. Following the symposium on 22 August, three days later we conducted a *Presbytis* Action Plan workshop to identify the threats, gaps and opportunities for the conservation of the genus. *Presbytis* taxa documents were sent to workshop invitees ahead of the workshop to gather information.

A concerted and coordinated genus-wide and taxon-based conservation effort, as laid out in this action plan, is urgently required to conserve all *Presbytis* species and subspecies. Implementation of this action plan is important for the conservation not only of *Presbytis* langurs, but also for the conservation of Southeast Asian forests. Focusing conservation efforts on *Presbytis* langurs will protect many other species inhabiting the same areas.

The goal of this action plan is to unite and mobilise local and international conservation groups, governments, communities, academic and research institutions, zoos and wildlife centres, and other interested parties to protect the viable and representative populations of each taxon. We see this action plan as a living document, one that can be adapted according to circumstances and with information acquired through frequent monitoring and reporting.

***Presbytis sabana* near the Balat ranger station of the Deramakot Forest Reserve ©Mark Spence.**

3. GENUS-WIDE CONSERVATION PRIORITIES

Preventing *Presbytis* langur extinctions and improving their conservation outlook hinge upon implementing the taxon-specific recommendations and the following genus-wide conservation priorities (more details in the Appendix), each of which includes a description of actions that should be addressed within the time frame of this action plan (2024–2034).

(1) Improve knowledge on the distribution, population size, and ecological and taxonomic relationships of each *Presbytis* taxon

Field surveys are needed for all 28 *Presbytis* taxa in order to provide a baseline for monitoring changes through time in their distribution and abundance, reveal previously unknown populations that might have conservation significance, improve understanding about ecological needs such as habitat and food resources, and assess threats and determine their underlying drivers. Obtaining genetic material non-invasively is also key to resolving taxonomic uncertainties. All this information can help to assess the conservation status of *Presbytis* taxa, identify priority areas for protection, and inform appropriate actions for their conservation.

(2) Improve protection of core habitats, restore habitat connectivity, and implement fire control measures

Numerous protected areas face challenges that diminish their efficacy. These obstacles include inadequate human and financial resources, habitat degradation and loss due to human activities or climate change both within and around their boundaries, socio-political crises, and insufficient support from neighbouring communities or governmental bodies. Moreover, some *Presbytis* taxa have no populations in protected areas. We recommend that viable populations of each of the 28 *Presbytis* taxa should be protected in at least two relatively large and well-managed protected areas. For those taxa that occur in more than one country, they should benefit from at least one well-managed protected area in each. Fragmentation forces langurs to cross roads or utilise cable wires to move across habitats, often resulting in fatal road incidents and electrocution. Restoring wildlife corridors across core habitat fragments is essential to facilitate safe movement. Forest fires due to open burning for agricultural purposes and hot weather conditions destroy vast areas each year. There is an urgency to implement preventive and management measures of fires from human-induced (i.e. slash and burn practice, and cigarette smoking) and natural (i.e. lightning strikes) causes, especially in hotspots.

(3) Raise local, national, and global awareness of *Presbytis* langurs and their habitats

Localised education outreach programmes are needed to build and improve the long-term relationship between local communities and conservation, and to inspire people to get involved in conservation efforts. For each taxon, at least one priority site identified should have at least one *Presbytis* langur-focused education awareness programme geared towards people living in or near langur habitat. Coordinated local, national and global campaigns should attempt to shine a spotlight on *Presbytis* langurs to help rally public support for Southeast Asian forest conservation. The creation and celebration of a Colobine Monkey Day will draw attention not only to *Presbytis* langurs but also other colobine primates in Asia and Africa.

(4) Integrate and collaborate with local communities in conservation tourism

Implementing ground-up approaches that garner community support requires the development of projects aimed at training, employing, and providing long-term support to local residents, enabling them to transition away from unsustainable harvesting practices of forest resources. These projects should also involve local communities in monitoring and conservation

efforts, encouraging them to play an active role in forest preservation and endangered-species protection. Conservation tourism is one such initiative to explore. Also known as sustainable ecotourism, tourism activities typically involve visiting protected areas, participating in wildlife watching, and supporting local conservation projects. Conservation tourism provides financial incentives for conservation and helps raise awareness about environmental issues, thereby promoting the long-term protection of nature.

(5) Develop best practice guidelines for *ex situ* care of *Presbytis* langurs

Currently, we do not have sufficient knowledge about keeping *Presbytis* langurs under human care such that individuals that are injured or rescued from the pet trade cannot be properly cared for and often do not survive. Only a handful of *Presbytis* taxa (i.e. *P. comata*, *P. melalophos*, *P. mitrata*, *P. robinsoni* and *P. siamensis siamensis*) have been properly kept under human care in zoos and rescue centres. We should work with *ex situ* facilities to use these taxa as model species to develop and share *Presbytis* husbandry guidelines. Building on this knowledge, we should create best practice guidelines for conservation breeding, particularly of Critically Endangered taxa.

(6) Work with governments to improve the legal protection of *Presbytis* taxa

This conservation plan is more likely to be successful if there is strong political will from the governments of the countries where *Presbytis* occur to address gaps in their conservation. This includes reviewing national legal frameworks and ensuring the implementation of laws that protect these primates and their habitats. One priority identified in this action plan is the need to update the national lists of protected species using the current taxonomy and threatened status.

(7) Foster collaboration in sites with existing efforts for other taxa

Consideration for collaborations should be given to field sites that already have projects for other wildlife so that conservation actions can be carried out in a synergistic and resource-effective manner. In this way, the conservation outcomes may also be amplified.

(8) Secure funding

Conservation efforts require financial support for activities such as habitat restoration, park rangers, anti-poaching patrols, community engagement programmes, research initiatives, and education campaigns. Additionally, funding enables the establishment and management of protected areas where these langurs can thrive undisturbed. Without adequate resources, conservation actions for *Presbytis* langurs would be severely limited, jeopardising their future and the integrity of the ecosystems they inhabit.

(9) Create a global network of *Presbytis* researchers and conservation practitioners

Finally, a *Presbytis* langur network of researchers, conservation practitioners, government institutions, zoos and wildlife sanctuaries, and volunteers is needed to improve communication, collaboration, and coordination around *Presbytis* langur conservation. A working group could be established to support the development, implementation, and tracking of the genus-wide and taxon-specific conservation recommendations presented in this plan.

4. *PRESBYTIS* TAXON ENTRIES AND CONSERVATION PRIORITIES

The remainder of this action plan is organised according to the 28 *Presbytis* taxa (presented alphabetically) listed by the IUCN Red List of Threatened Species™. Researchers and conservation practitioners familiar with each taxon contributed to a narrative (adapted from the IUCN Red List entry) describing that taxon's population status and threats to its survival. Multiple criteria were used to identify three to five priority conservation sites for each taxon (e.g., sites with the most viable populations; sites under severe threat from human activities; sites where the recommended actions could take place, etc.).

Conservation priorities were also determined for each taxon by identifying objectives and actions (e.g., ecological surveys, genetic research, outreach, engagement, and capacity building) that could be completed within the 10-year timeframe (2024–2034), with the emphasis on working closely with all relevant stakeholders, including government agencies, communities, landowners, organisations, and institutions.

***Presbytis siamensis rhionis* on Bintan Island, Indonesia ©Dirga Priyambada.**

Presbytis bicolor ©Muhammad Iqbal.

4.1. BICOLOURED BANDED LANGUR

Presbytis bicolor

Data Deficient

Presbytis bicolor is recorded from east-central Sumatra, distributed from the Indragiri River in the north to Batang Hari River in the south (Figs. 3a-b). However, there is a lack of clarity as to where it was found historically and where it persists today. As a result, this species is listed as Data Deficient as its threat level will depend on its extent of occurrence. The population size is similarly unknown as there is a serious lack of field studies on this species. A number of previous publications which were thought to have observed this species have also misidentified it (e.g., Lathifa et al., 2016; Yasir and Sritsno, 2019). Iqbal et al. (2023) collated their observations of *P. bicolor* from 2016 to 2022 and suggested that this species can tolerate and survive in disturbed habitats, particularly in areas where rubber plantations are present. However, none of these human-modified habitats where *P. bicolor* are found are protected areas, making Bukit Tigapuluh National Park in Riau Province, which is the only national park where *P. bicolor* is known to occur, an important area for the conservation of this species. There appears to be a transitional population between *P. bicolor* and *P. melalophos* along parts of the Trans-Sumatra Highway (Kawamura, 1984). A better understanding of the identity of this population through field and genetic studies is encouraged.

Habitat loss, fragmentation, and forest fire are major threats. Compared to other provinces in Sumatra, Riau has experienced the highest rate of deforestation (Uryu et al., 2010). Recurring forest fires linked to the El Niño-Southern Oscillation events, and open burning of forest land for agricultural purposes destroy millions of hectares of land in Indonesia every year, and Riau is

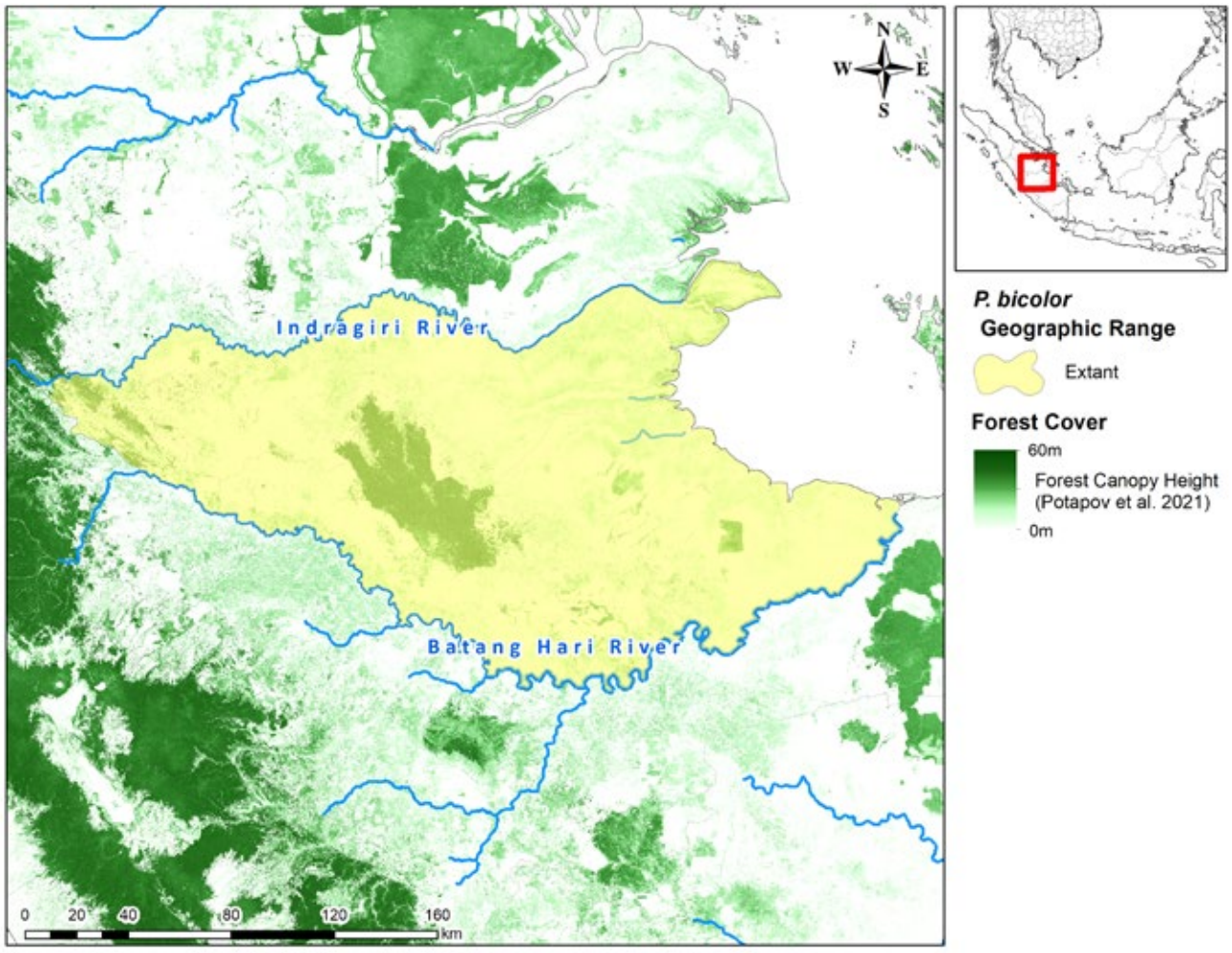


Figure 3a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

often one of the worst impacted areas, owing in part to extensive peatlands (World Bank, 2016). Hunting by indigenous communities appears to be common in Bukit Tigapuluh National Park. In Jambi Province, coal mining in Muara Tebo presents an additional threat to the species, while the landscape in Tebing Tinggi has been fragmented by timber plantations. Mortality due to road accidents and electrocution from power lines have been reported (e.g., in Pemayung District, Jambi Province) (Iqbal et al., 2023). Although *P. bicolor* is usually found near settlements, local people seem to tolerate this species as it does not cause significant disturbance, particularly to their crops (Iqbal et al., 2023).

***Presbytis bicolor* ©Wilson Novarino.**

Figure 3b: Illustration of *Presbytis bicolor* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Jambi Province **Muara Tebo; Tebing Tinggi** Riau Province **Bukit Tigapuluh National Park**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys in all remaining habitats to determine the population size and distribution
	Study populations along the Trans-Sumatra Highway to understand potential transitional zone between *P. bicolor* and *P. melalophos*
Protect and restore core habitat areas	Identify core areas for protection in plantation areas
	Implement fire control measures in hotspots
	Restore degraded habitat in Muaro Tebo post-mining
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate importance of species for conservation
	Determine and enforce no-take zones in Bukit Tigapuluh National Park

Presbytis canicrus ©Mark Spence.

4.2. MILLER'S GRIZZLED LANGUR

Presbytis canicrus

Endangered

Presbytis canicrus is endemic to East and North Kalimantan provinces in Borneo, probably from Sangkulirang-Mangkalihat Karst in the north to Kutai National Park in the south (Figs. 4a-b). However, the western boundary of its range is not well known, and it may extend to the southeastern part of the Malinau Regency in North Kalimantan (Stanislav Lhota, pers. obs.; Nijman, 2010).

Formerly, there was a substantial population of this species in Kutai National Park but it has been considerably reduced due to forest fires in El Niño years in the 1980s and 1990s (Groves and Roos, 2013a). Clearance of habitat for oil palm and timber (e.g., *Acacia* and *Gmelina*) plantations fragments the continuity of forest and canopy cover. They are therefore required to descend to the ground to reach other parts of forests, making them vulnerable to attacks by dogs and to poaching for their bezoar stones (Setiawan et al., 2009). Similarly, in the Sangkulirang-Mangkalihat Karst, mining, hunting, and forest fires continue to threaten the viability of *P. canicrus*. Given the natural landscape of karst habitats, there is potential to develop conservation tourism opportunities for local communities to improve their economic livelihoods and protect the species.

The Wehea Forest in the Wehea-Kelay Landscape is protected locally by the Wehea Dayak. There, tree felling, fires and forest produce harvesting are prohibited and it is also patrolled by the Wehea Dayak rangers (Lhota et al., 2012). In the Wehea Forest, *P. canicrus* has been observed to use mineral springs (*sepan*), which highlights the importance of protecting this resource and ensuring that its use does not compromise its safety as the species is vulnerable to hunters in these sites.

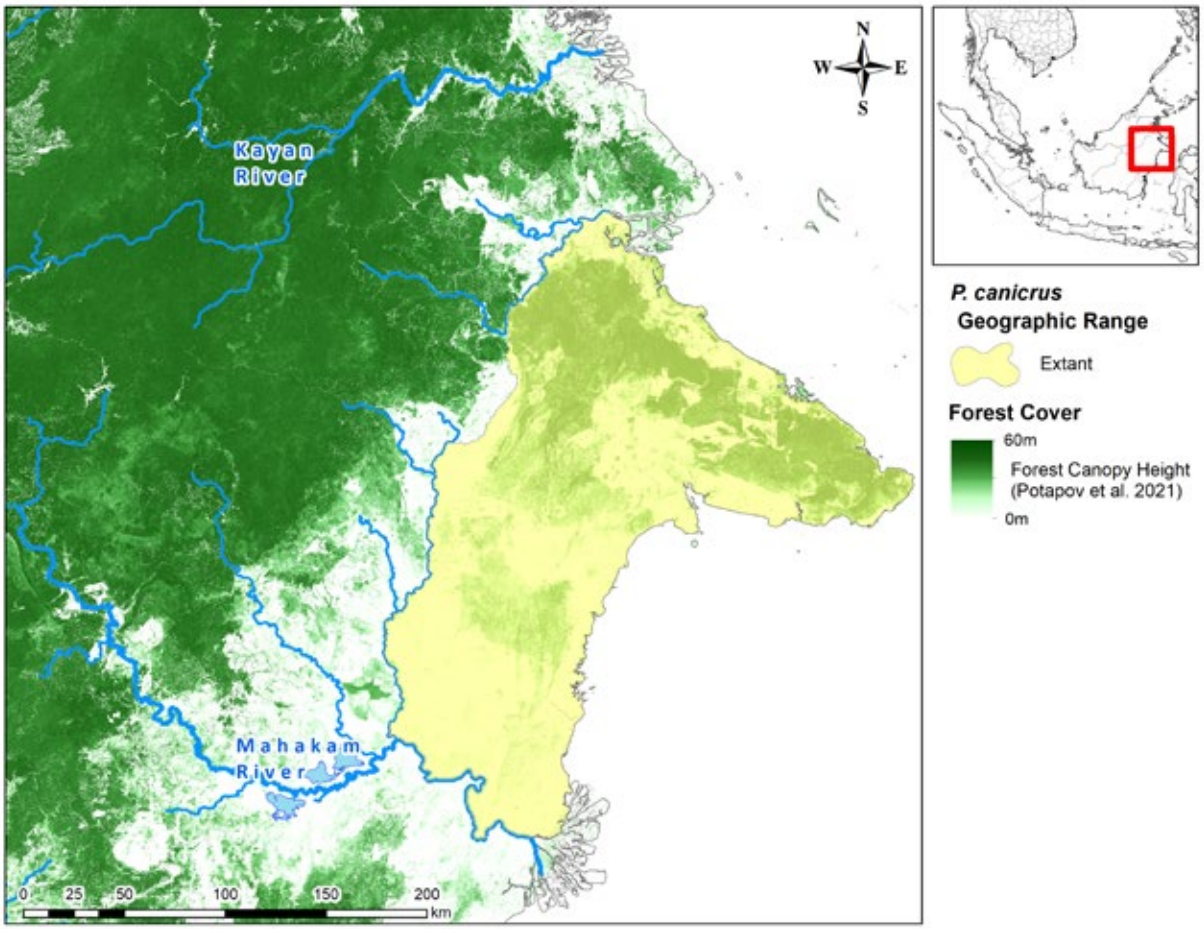


Figure 4a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

Figure 4b: Illustration of *Presbytis canicrus* by Stephen D. Nash.

Presbytis canicrus ©Brent Loken.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	East Kalimantan Province **Kutai National Park**; **Sangkulirang-Mangkalihat Karst**; **Wehea-Kelay Landscape**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, particularly in Kutai National Park and Wehea-Kelay Landscape
	Examine the availability and use of mineral springs (*sepan*)
Protect and restore core habitat areas	Implement fire control measures in Kutai National Park, Sangkulirang-Mangkalihat Karst and Wehea-Kelay Landscape
Maintain and restore habitat connectivity	Construct canopy bridges across roads and over small tributaries and drains where there is insufficient arboreal connectivity between fragmented areas
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Determine and enforce no-take zones in Kutai National Park and Sangkulirang-Mangkalihat Karst
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Sangkulirang-Mangkalihat Karst and Wehea-Kelay Landscape
	Create education materials for the differentiation of the langur species

Presbytis chrysomelas chrysomelas **©Chien Lee.**

4.3. BORNEAN BANDED LANGUR

Presbytis chrysomelas

Critically Endangered

4.3.1. BORNEAN BANDED LANGUR

P. c. chrysomelas

Critically Endangered

4.3.2. TRICOLOUR LANGUR

P. c. cruciger

Critically Endangered

Presbytis chrysomelas is an understudied, rare primate that is endemic to Borneo on the western coast of Sarawak, Malaysia, and West Kalimantan, Indonesia; it may also be found in Brunei and Sabah, Malaysia (Groves, 2001; Fig. 5a). It has one of the most limited ranges among langurs on the island of Borneo (Bennett, 1992). Two subspecies are recognised: the Bornean banded langur (*P. c. chrysomelas*; Figs. 5b-c) and the tricolour langur (*P. c. cruciger*; Figs. 5d-e). *Presbytis c. chrysomelas* is generally jet-black above with a white band on the underside of the lower thighs. *Presbytis c. cruciger* is mainly blackish-brown, with a paler underside, but there is another strikingly different and "cross-bearing" morph, in which the characteristic black cross pattern of infants is retained into adulthood, while the legs, flanks, and crown are bright red. There appears to be an additional, isolated population found only in a small area of southeastern Sarawak (Betong,

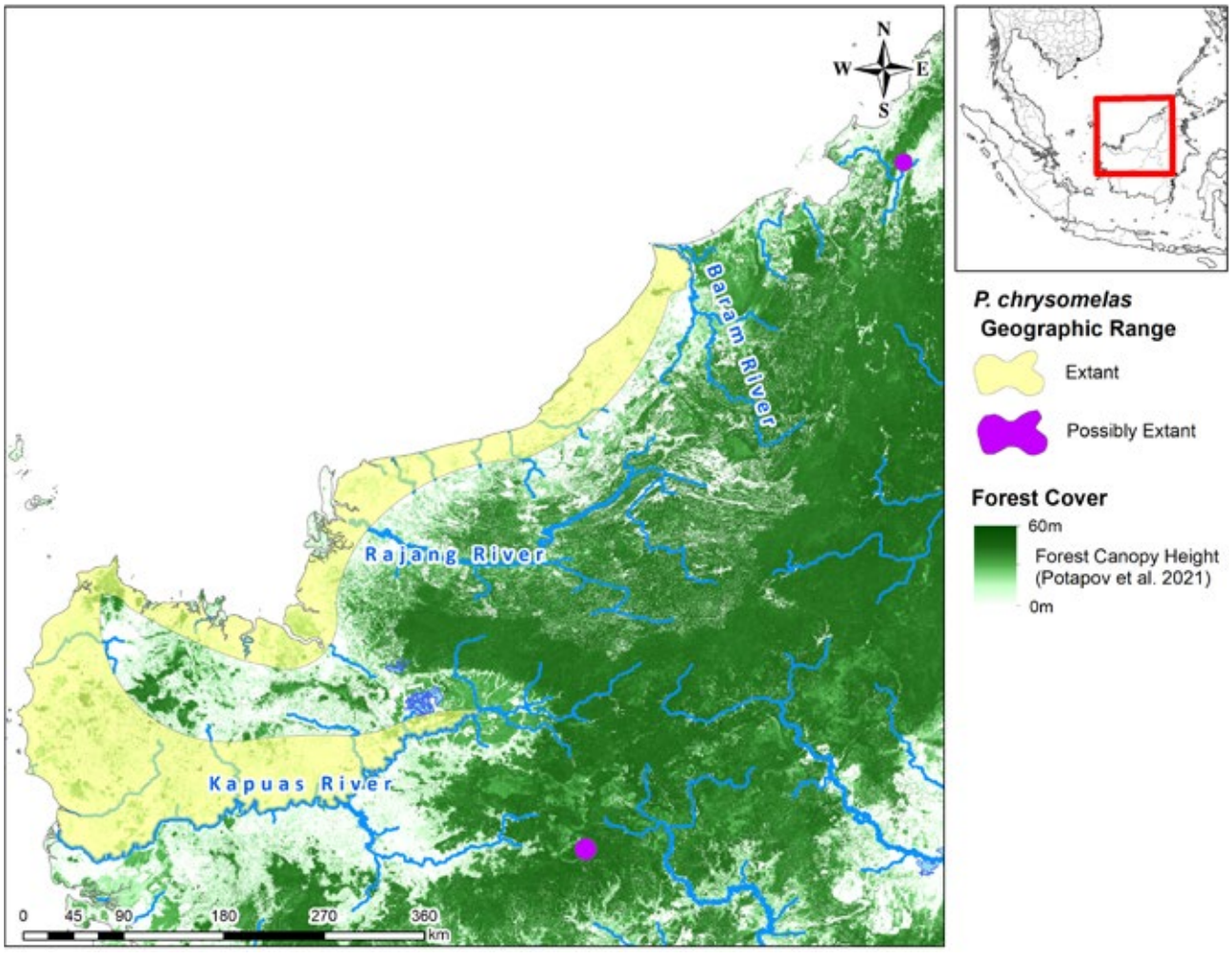
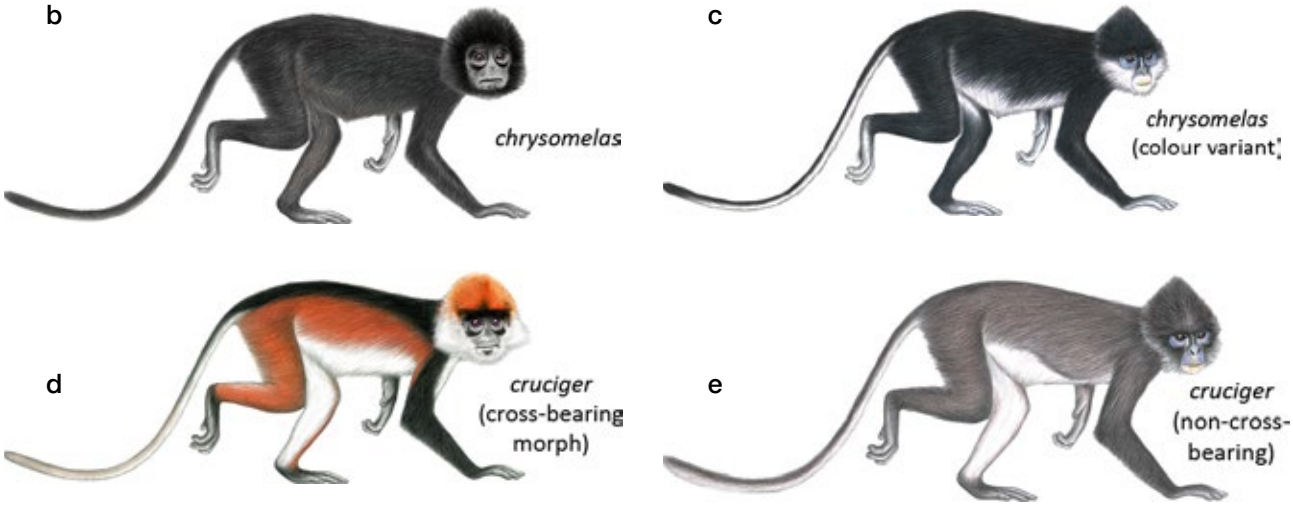


Figure 5a: Geographic range (yellow: extant; purple: possibly extant) drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

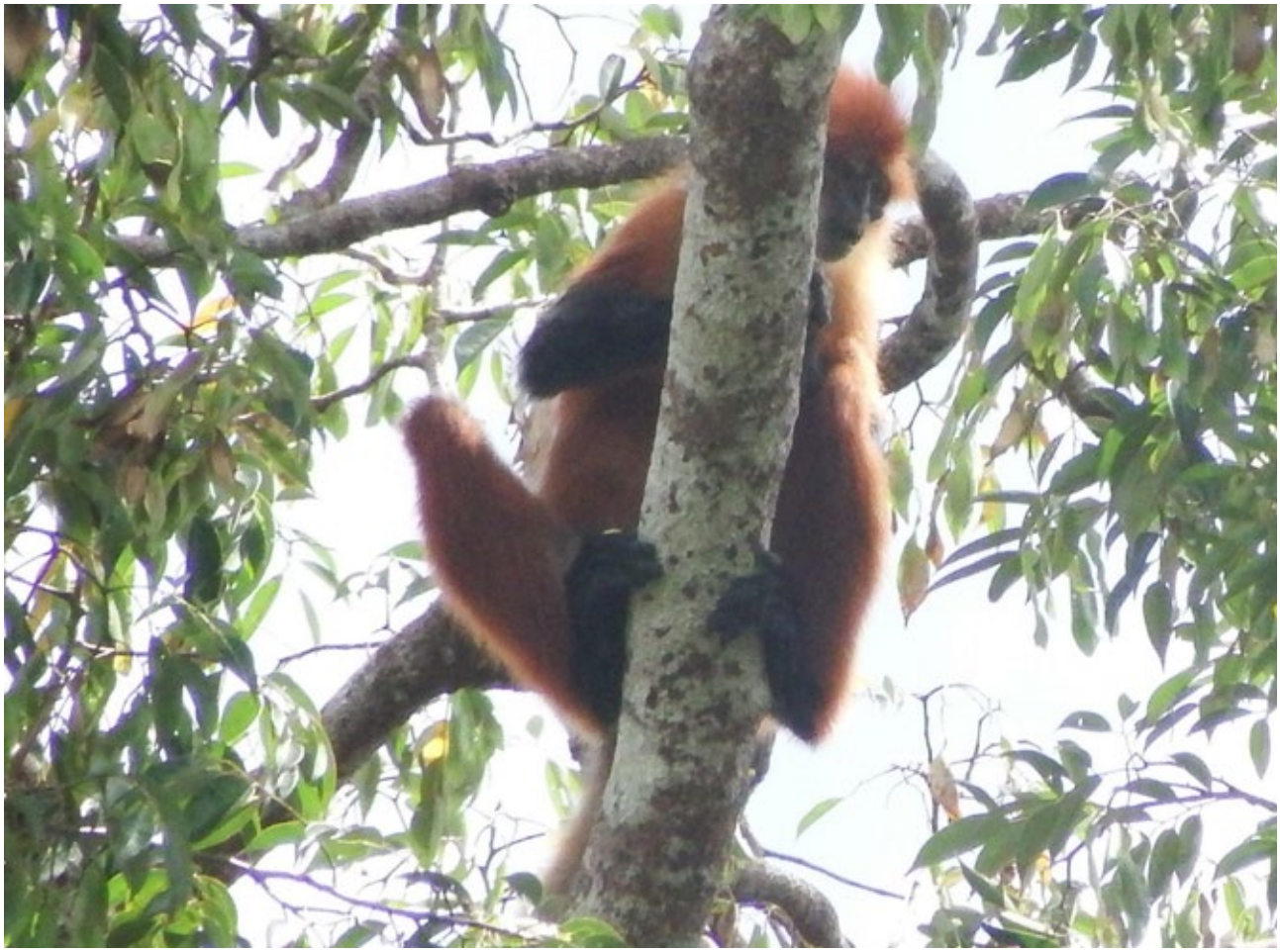
Saribas; Nimong; Batang Lupar) (Groves, 2001), the taxonomic identity of which, if present, remains unclear.

Presbytis chrysomelas was considered common in the early 20th century (Phillipps and Phillipps, 2018) but the current area of occupancy of this species is less than 5% of its historical range (Ehlers Smith, 2014; Nijman et al., 2020). Historical records showed that this species was found in protected areas such as the Tanjung Datu National Park, Maludam National Park, Gunung Pueh National Park, Similajau National Park, Sedilu National Park, and Niah National Park, Lanjak Entimau Wildlife Sanctuary and Samunsam Wildlife Sanctuary, all in Sarawak, and the Danau Sentarum National Park in West Kalimantan (Groves, 2013; Phillipps and Phillipps, 2018). However, the most recent records of their occurrence in all but the first two parks date back more than a decade (Aripin et al., 2019; Kaicheen and Mohd-Azlan, 2022), with a report of the species spotted in the Lambir Hills National Park in 2021 (Chien Lee, pers. obs.) and in the Jemoreng Protected Forest in 2022 (Ampeng et al., 2024).

Their habitat continues to decline due to cash crop plantations, forest fragmentation, and forest fires. Peat swamp forest in Maludam National Park, an important habitat of *P. chrysomelas*, requires preventive and management measures of fires from human-induced (i.e. slash and burn practice, and cigarette smoking) and natural (i.e. lightning strikes) causes. Another threat is hunting, which is still being reported in protected areas. *Presbytis chrysomelas* is listed as one of the top 25 most endangered primates in the world (2023–2025), highlighting the urgent need of conservation interventions to avoid its imminent extinction.



Figures 5b-e: *Presbytis c. chrysomelas* (b) and its colour variant (c); *Presbytis c. cruciger* cross-bearing morph (d) and its non-cross-bearing morph (e). Illustrations by Stephen D. Nash.



Presbytis chrysomelas cruciger **(cross-bearing morph) ©Muhammad Iqbal.**

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold; subspecies in brackets)
Indonesia	West Kalimantan Province Betung Kerihun National Park (probably *cruciger*); **Danau Sentarum National Park** (*cruciger*)
Malaysia	Sarawak State Gunung Lesong National Park (probably *chrysomelas*); Gunung Pueh National Park (probably *chrysomelas*); Jemoreng Protected Forest (*cruciger*); Lambir Hills National Park (probably *chrysomelas*); **Maludam National Park** (*cruciger*); **Samunsam Wildlife Sanctuary** (*chrysomelas*); Similajau National Park (*cruciger*); **Tanjung Datu National Park** (*chrysomelas*)

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations in known locations and suspected locations, and analyse the genetic data to clarify taxonomic identity and relationships
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, particularly starting in the priority sites
Protect and restore core habitat areas	Implement fire control measures in the Maludam National Park and Danau Sentarum National Park
Maintain and restore habitat connectivity	Construct canopy bridges in the Samunsam Wildlife Sanctuary
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Determine and enforce no-take zones in Danau Sentarum National Park

Presbytis comata **in Gunung Halimun-Salak National Park ©Rahayu Oktaviani.**

4.4. JAVAN GRIZZLED LANGUR

Presbytis comata

Vulnerable

While *Presbytis comata* and *P. fredericae* are treated as two species, research is urgently needed to clarify their taxonomic arrangement. For now, the main basis of grouping populations in either *P. comata* or *P. fredericae* is based on pelage characteristics, and the boundary between these two species is currently unclear. Populations in West Java are dorsally grey, and ventrally white. From about 108°E eastwards, the dorsal colour turns brownish black. A similar colour progressively displaces the ventral white. Following the IUCN Red List, two scenarios are presented: one wherein the populations in the easternmost part of West Java Province (Gunung Ciremai National Park) and the westernmost part of Central Java Province (Pegunungan Pembarisan) are considered *P. comata* (Figs. 6a-b), and one wherein these are considered *P. fredericae* (Nijman et al., 2022a, b). Another caveat is that a series of 20 specimens at the American Museum of Natural History indicate that the population on Gunung Ciremai is intermediate between *P. comata* and *P. fredericae* (Douglas Brandon-Jones, pers. obs.) or is part of a geographical cline (Vincent Nijman, pers. obs.).

The overall population size of *P. comata* is estimated at 5,000–12,000 individuals, of which 2,300–5,500 are adults (Nijman et al., 2022b). There are approximately 30 isolated populations (which have been isolated from each other for decades, and some for more than 100 years), including those where the species has been studied in recent years (e.g., 27 individuals in the Wanayasa Block in Gunung Burangrang Nature

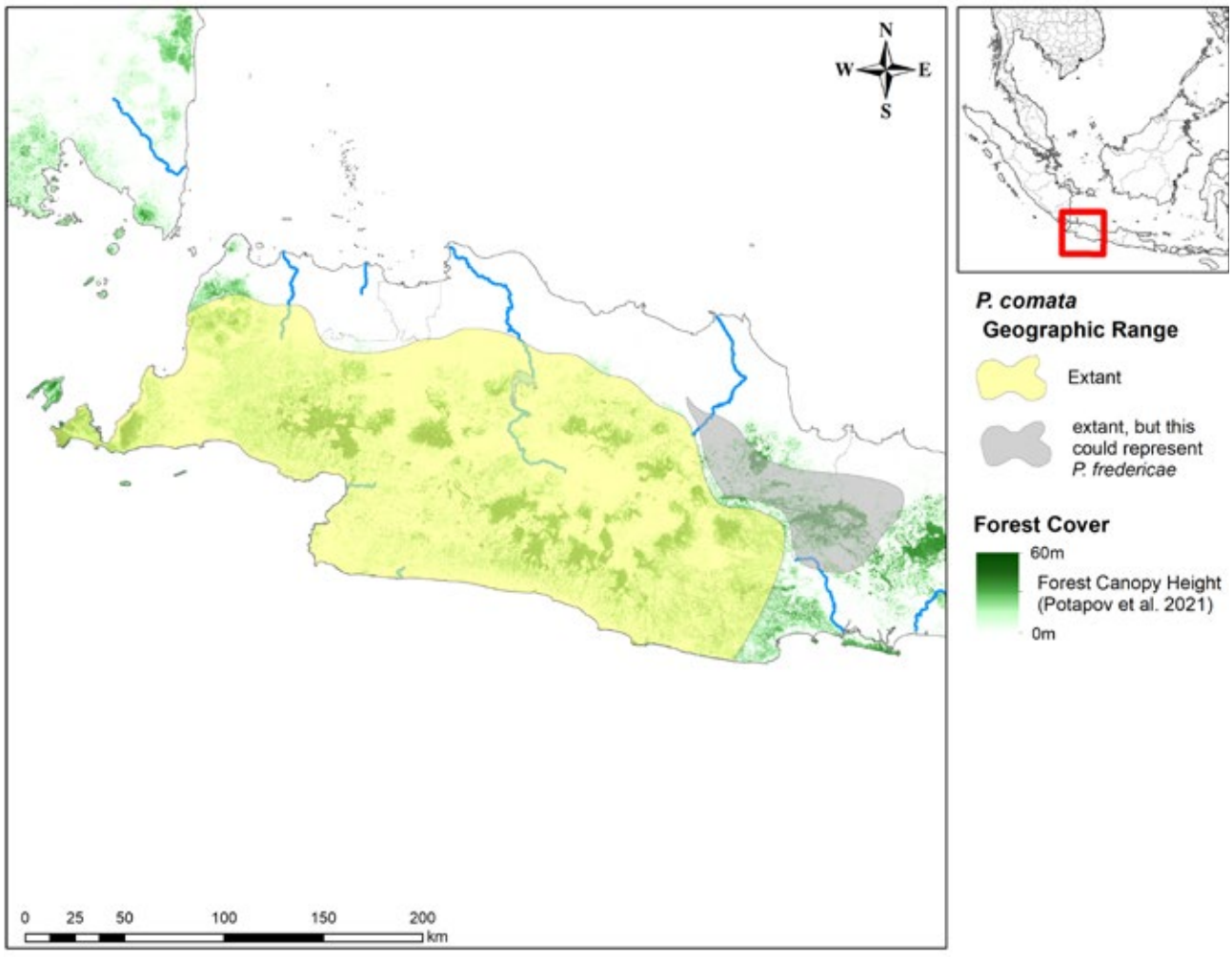


Figure 6a: Geographic range (yellow: extant; grey: extant, but this could represent *P. fredericae*) drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

Reserve; 34 individuals in three areas in Kawah Kamojang Strict Nature Reserve; nine individuals in Honje in Ujung Kulon National Park; 39 individuals near Patenggang Lake) (Nurjaman et al., 2002; Heriyanto and Iskandar, 2004; Widiana et al., 2018; Santosa et al., 2020; Alwi, 2021).

Several nature reserves and parks, such as Cimanggu and Gunung Tilu, are fragmented, being surrounded by residential and agricultural areas. These forests are also in need of more manpower to carry out enforcement against illegal activities. Consideration should be given to upgrade the status of the Gunung Simpang and Gunung Tilu nature reserves to national parks as they cover more than 14,000 hectares, providing habitat for many threatened species. A national park status also allows for more flexible management than a nature reserve in allowing for local community involvement.

Some *P. comata* individuals rescued from illegal hunting are placed under human care in the rehabilitation centres which, when possible, release them back into the wild. The rehabilitation of confiscated animals, however, remains challenging owing to a shortage of manpower and resources. As this species is one of only a handful of *Presbytis* species that have been successfully kept under human care in some rehabilitation centres and zoos, sharing knowledge and building capacity through collaboration among ***ex situ*** facilities in Java and the region are recommended.

Figure 6b: Illustration of *Presbytis comata* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Banten Province Rawa Danau Strict Nature Reserve; Ujung Kulon National Park West Java Province Cimanggu Nature Recreational Park; Gede-Pangrango National Park; Gunung Burangrang Nature Reserve; Gunung Ciremai National Park (uncertain *comata* or *fredericae*); Gunung Halimun-Salak National Park; Gunung Malang Strict Nature Reserve; Gunung Papandayan Strict Nature Reserve; Gunung Sawal Wildlife Reserve; **Gunung Simpang Nature Reserve**; **Gunung Tilu Strict Nature Reserve**; Kawah Kamojang Strict Nature Reserve; Leuweung Sancang Nature Reserve; Patenggang Lake; **Telaga Warna Strict Nature Reserve**; Tangkuban Perahu Nature Reserve **Pegunungan Pembarisan**, which spans across three regions (Brebes, Cilacap, and Kuningan) is potentially a transition zone between *P. comata* and *P. fredericae*

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. comata* and *P. fredericae* in known locations, including the westernmost (Rawa Danau or Ujung Kulon), the easternmost (Gunung Merbabu) and populations in the centre (Pegunungan Pembarisan), and analyse the genetic data to clarify taxonomic identity and relationships
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
Protect and restore core habitat areas	Upgrade the status of the Gunung Simpang and Gunung Tilu nature reserves to national parks
Improve capacity of existing rescue and rehabilitation centres	Conduct workshops and share best practices of rescue and rehabilitation with centres in Java, tapping into the expertise and experience of *ex situ* facilities that house the species
	Expand the manpower strength in the rehabilitation centre in Cimanggu Nature Recreational Park

Presbytis femoralis in Singapore ©Andie Ang.

4.5. RAFFLES' BANDED LANGUR

Presbytis femoralis

Critically Endangered

Presbytis femoralis is found only in Singapore and southern Peninsular Malaysia (in the states of Johor and Pahang; Figs. 7a-b). The populations in Singapore and Malaysia are isolated from one another by the Straits of Johor. In Singapore, this primate is found mainly in the Central Catchment Nature Reserve (CCNR), the largest protected area in the country. The CCNR comprises 2,880 hectares of lowland primary and secondary forest, and freshwater swamp forest. In Malaysia, most populations occur in the state of Johor in severely fragmented habitats, with at least two populations in the state of Pahang. The forest complex in eastern Johor consisting of the Endau-Rompin National Park, Mersing, Kahang, Jemaluang and Lenggor Forest Reserve appears to be the largest remaining block of suitable habitat for *P. femoralis* in Johor. Populations in western Johor, e.g., Bukit Perdana Batu Pahat, and central Johor, e.g., Bukit Lunchu-Bukit Tiz (Lewis O'Shea, pers. obs.), Gunung Pulai and Gunung Lambak, are isolated with little habitat connectivity.

Presbytis femoralis and *P. siamensis siamensis* are believed to intergrade along a boundary from Malacca eastward via Segamat to Sungai Rompin, and then southward via Jemaluang to Kuala Johor. Most populations along this boundary have likely been extirpated, so Bukit Perdana Batu Pahat is possibly the only site where parapatric populations of the two taxa still occur.

As of 2024, there are 76 individuals in the Singapore population with a sex ratio (male:female:unknown) of 28:26:22 (updated from Ang and Jabbar, 2022). There are no reliable population estimates available for the

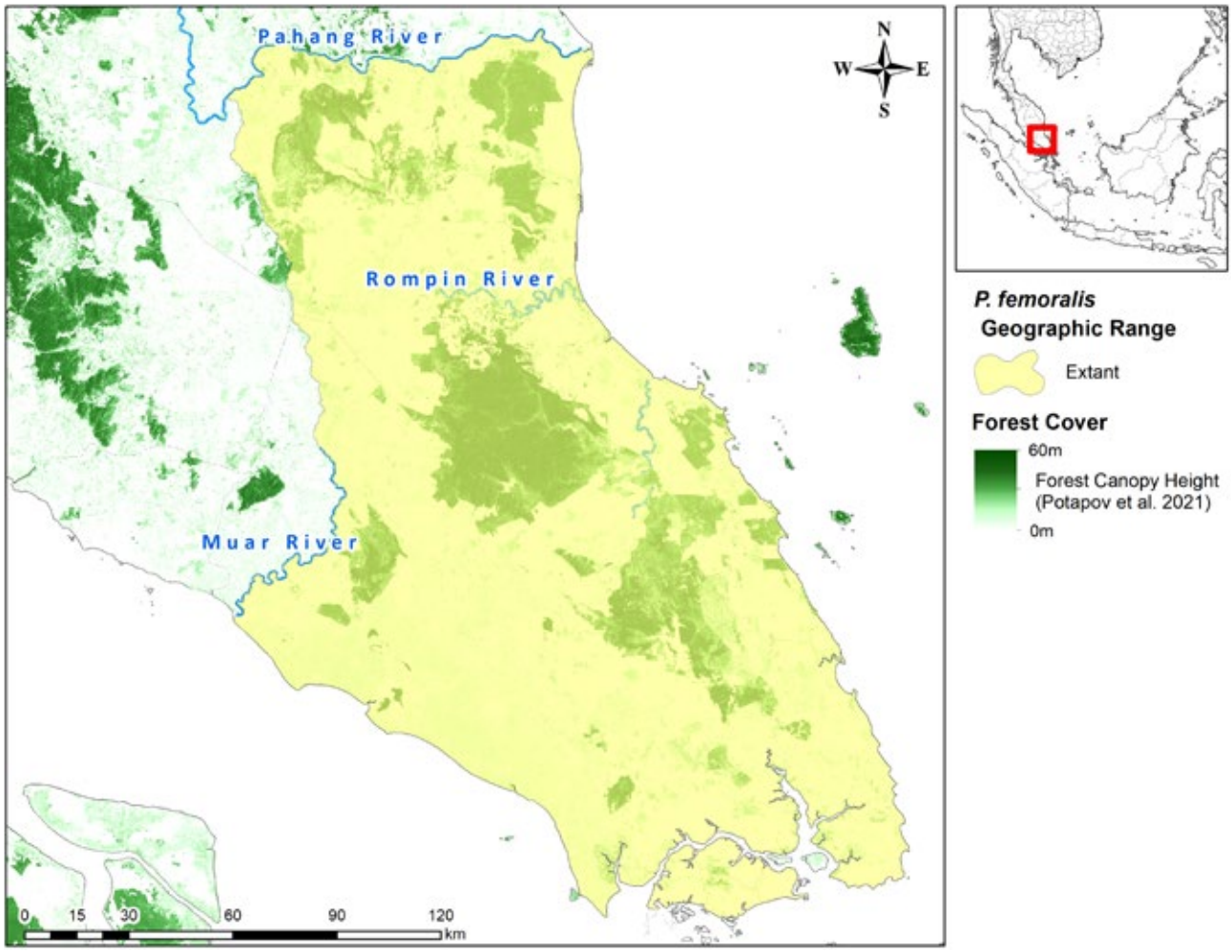


Figure 7a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

conspecifics in Malaysia, but it is believed that only a few hundred individuals remain (Abdul-Latiff et al., 2019; Ang et al., 2022). The overall population of *P. femoralis* could, therefore, be less than 250 mature individuals. *Presbytis femoralis* is considered one of the top 25 most endangered primates in the world (2023–2025).

Deforestation, habitat conversion and fragmentation continue to be the major threats to this species. It is particularly affected by forest clearance and disturbance from urban development in Singapore and from oil palm plantations, agriculture, mining, and other forms of development in Malaysia. The Upper Thomson state-land forest in Singapore is utilised by *P. femoralis* (Ang and Jabbar, 2020) but is unprotected and is slated for residential development, which will impede the growth of the population (Woolloff et al., 2023).

Casualties in both countries have been recorded as individuals try to travel between fragmented habitats using roads and electric cables (Ang and Jabbar, 2020; Nadine Ruppert, pers. obs.). Predation events are rare, although the langurs have been seen to be killed by eagles (Fam and Nijman, 2011) and dogs (Yang and Lua, 1988; Najmuddin et al., 2019). Human-wildlife interactions might be an additional threat when the langurs enter suburban and residential areas to eat garden fruits (Zan Hui Lee, pers. obs.). *Presbytis femoralis* shows low genetic variability in Singapore (Ang et al., 2012; Srivathsan et al., 2016), and there is a lack of data from Malaysia.

In 2016, an IUCN Species Action Plan for *P. femoralis* was developed, and the Raffles' Banded Langur Working Group was formed. The goals of the action plan are threefold: (i) to recover and protect *P. femoralis* in the wild; (ii) to gather data through ongoing studies; and (iii) to secure the necessary resources and commitments for its long-term conservation (Ang et al., 2016). Since then, there have been a number of

***Presbytis femoralis* in Johor ©Zan Hui Lee.**

site-specific studies in Malaysia and Singapore. In 2019, two rope bridges were installed in Singapore by the National Parks Board to facilitate safe crossing of the langurs over roads. *Presbytis femoralis* made a total of 293 successful crossings on two bridges over 16 months (Ow et al., 2022). In Malaysia, a rope structure was installed for primates by the Malaysian Nature Society (Johor) in Gunung Panti (Chong, 2020). Since 2016, there is an ongoing citizen science programme in Singapore where volunteers are trained to collect data on the langurs (Ang et al., 2021). In the long term, molecular studies on suitability of conservation translocation of *P. femoralis* individuals between Singapore and Malaysia should be considered to restore population genetic diversity and increase genetic adaptive potential.

Figure 7b: Illustration of *Presbytis femoralis* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Malaysia	Johor State **Bukit Perdana Batu Pahat**; Bukit Lunchu-Bukit Tiz; Endau-Rompin National Park; **Gunung Arong**; Gunung Belumut; Gunung Panti/Panti Bird Sanctuary; Gunung Lambak; Gunung Pulai; Tanjung Sedili Pahang State **Pekan Peat Swamp Forest**; Rompin State Park
Singapore	Bukit Timah Nature Reserve; Central Catchment Nature Reserve; Dairy Farm Nature Park; Rifle Range Nature Park; **Upper Thomson state-land forest**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology in Malaysia	Carry out field surveys to determine the population size and distribution in Malaysia, focussing particularly on the priority sites
Protect and restore core habitat areas	Restore degraded habitat in Bukit Tiz post-mining
	Upgrade the status of Upper Thomson state-land forest to nature park
Maintain and restore habitat connectivity	Enhance forest/canopy connectivity by implementing the Central Forest Spine policy in Peninsular Malaysia, particularly between Johor and Pahang
	Construct canopy bridges in Gunung Arong
Conservation translocation	Assess genetic diversity of populations in Malaysia
	Develop *ex situ* holding and translocation protocols

Presbytis fredericae in Sokokembang Forest in Central Java ©Arif Setiawan/Swaraowa.

4.6. JAVAN FUSCOUS LANGUR

Presbytis fredericae

Vulnerable

While *Presbytis fredericae* and *P. comata* are treated as two species, research is urgently needed to clarify their taxonomic arrangement. The main basis of grouping populations in either *P. fredericae* or *P. comata* is based on pelage characteristics, and the boundary between these two species is currently unclear. Populations in West Java are dorsally grey, and ventrally white. From about 108°E eastwards, the dorsal colour turns brownish black. A similar colour progressively displaces the ventral white. For now, two scenarios are presented: one wherein the populations in the easternmost part of West Java Province (Gunung Ciremai National Park) and the westernmost part of Central Java Province (Pegunungan Pembarisan) are considered *P. fredericae* (Figs. 8a-b), and one wherein these are considered *P. comata* (Nijman et al., 2022a, b). Of note is that some populations exhibit intra-specific pelage variations (e.g., of *fredericae* in Central Java; Karyanto et al., 2023). Another caveat is that a series of 20 specimens at the American Museum of Natural History indicate that the population on Gunung Ciremai is intermediate between *P. fredericae* and *P. comata* (Douglas Brandon-Jones, pers. obs.) or is part of a geographical cline (Vincent Nijman, pers. obs.).

Presbytis fredericae is threatened by habitat destruction, such that most of the populations are found in montane forest patches, with only some remaining in lowland forests (i.e. Sokokembang Forest within the Dieng Mountains). It is confirmed to be extirpated from Gunung Lawu (Central Java and East Java provinces). With the exception of Gunung Merbabu National Park,

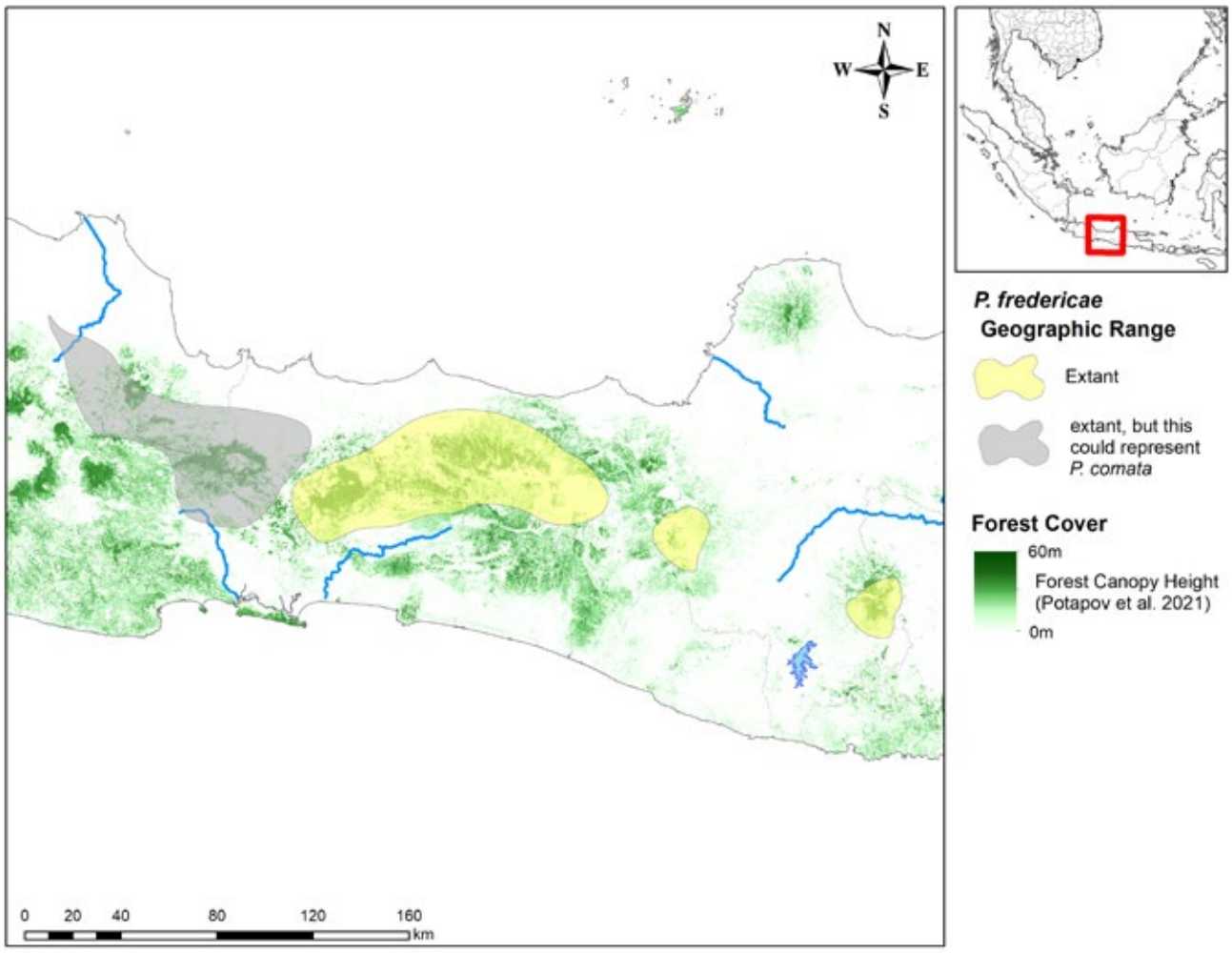


Figure 8a: Geographic range (yellow: extant; purple: possibly extant; grey: extant but it could be *P. comata*) drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

all other populations occur in unprotected habitats. It is estimated that there are fewer than 50 individuals remaining in Gunung Merbabu (Andi Irawan, pers. obs.). The total population size is estimated at between 5,000–17,000 individuals, of which 2,300–7,800 are mature individuals; these are found in four to eight isolated subpopulations (Nijman et al., 2022a). Hunting is a persistent threat in many of the remaining population fragments.

The forests on Gunung Slamet are partially protected for watershed reasons, partly as a strict nature reserve with some parts being used as production forest. Some areas are set aside for geothermal energy development for electricity. There is a need to engage the companies managing the area and local government to ensure that there are measures in place to protect remaining habitat and species. Between June 2019 and April 2022, a total of four *P. fredericae* individuals were electrocuted on electricity wires in Petungkriyono District of Pekalongan Regency in Central Java Province. By working with the local agencies and government, electricity lines were insulated to allow for safe crossing of langurs and other wildlife between forest patches, which also prevented road-kills from vehicular strikes (Arif Setiawan, pers. obs.).

The small population size and suspected decline suggest that this species may actually qualify for Endangered under criterion C1. However more data is needed to confirm the rate of decline before criterion C1 can be used for this species.

Possibly an intermediate form of *Presbytis comata* and *P. fredericae*, at Gunung Ciremai ©Ahmad Chumaedi.

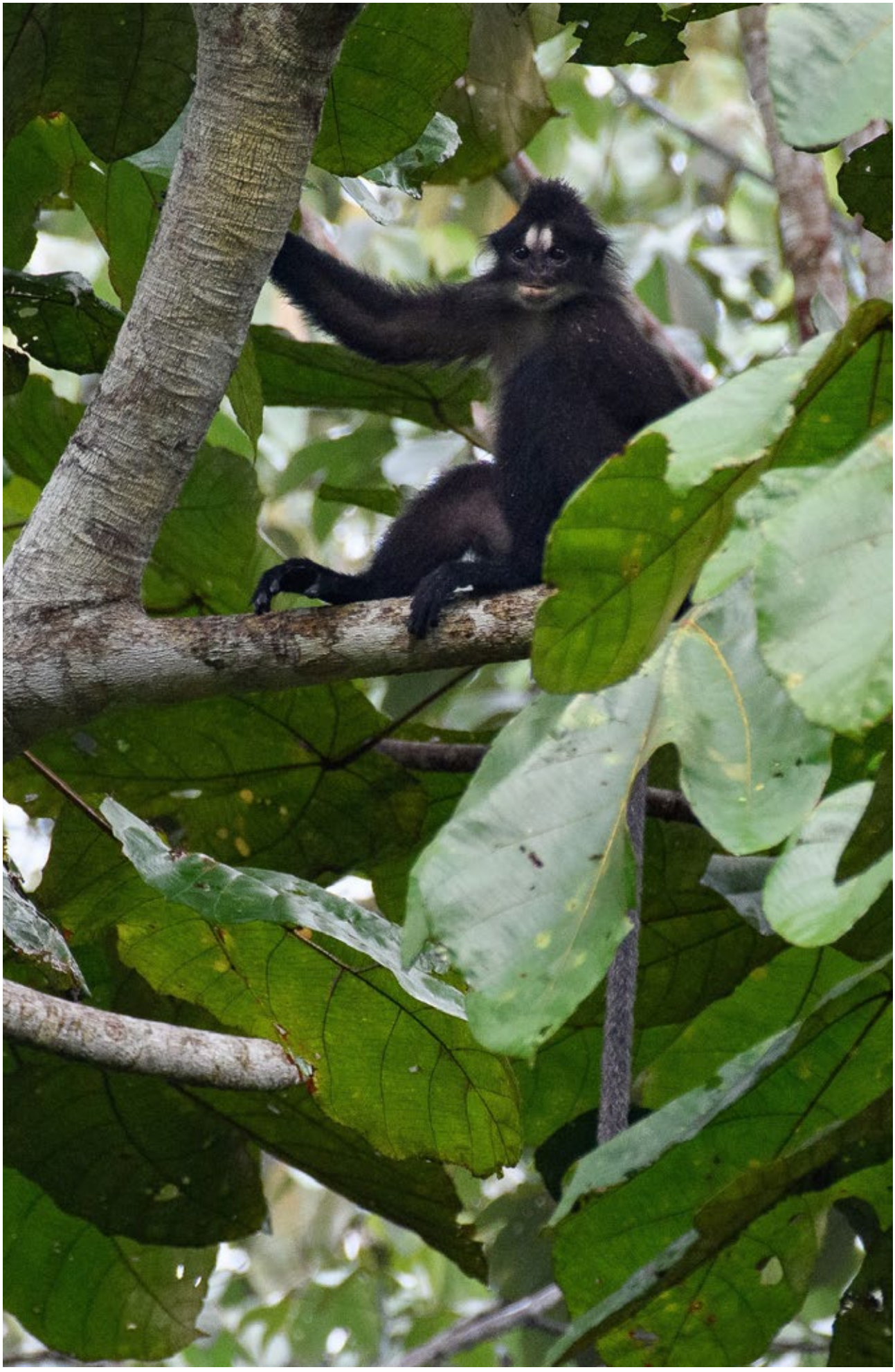
Figure 8b: Illustration of *Presbytis fredericae* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Central Java Province **Dieng Mountains**; Gunung Merbabu; **Gunung Slamet** **Pegunungan Pembarisan**, which spans across three regions (Brebes, Cilacap, and Kuningan) is potentially a transition zone between *P. comata* and *P. fredericae*

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. fredericae* and *P. comata* in known locations, including the westernmost (Rawa Danau or Ujung Kulon), the easternmost (Gunung Merbabu) and populations in the centre (Pegunungan Pembarisan), and analyse the genetic data to clarify taxonomic identity and relationships
Protect and restore core habitat areas	Work with geothermal corporations and local government to reduce threats to species and habitat in Gunung Slamet
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Dieng Mountains
	Create education materials for the differentiation of the langur species, especially for *P. fredericae*, *P. comata* and *Trachypithecus* species in Java



Presbytis frontata in Muara Wahau, East Kalimantan ©Chien Lee.

4.7. WHITE-FRONTED LANGUR

Presbytis frontata

Vulnerable

Presbytis frontata is endemic to Borneo, occurring in Kalimantan (Indonesia) and Sarawak (Malaysia) (Figs. 9a-b). Although the range of *P. frontata* is extensive relative to other *Presbytis* species, it is distributed patchily in low density (Nijman and Nekaris, 2012). It is found in lowland dipterocarp forest, riparian and hill forest, and secondary and plantation habitats (Nijman, 2022).

Presbytis frontata appears to occur in high population density in two separate customary forests under the care of traditional communities, as well as in forest under logging concessions, around Pinang Jatus Village in East Kalimantan Province. Reviewing the need for formal protection of these forests with the local communities, logging companies and Tropenbos International Indonesia, a non-profit organisation working in the area, is important. In Murung Raya in the Heart of Borneo, *P. frontata* is threatened with the development of a new hydroelectric dam. Similarly, a recently discovered population in the Sungai Cantung Watershed (Darmaji et al., 2023) in South Kalimantan is under threat from mining and agricultural activities.

Hunting of this species for its meat and for bones and bezoar stones for traditional medicine is a persistent threat, which was especially intensive nearly a century ago (Bank, 1931). Hunting intensifies when there are active vendors fuelling the trade (Nijman, 2005). Hence it is crucial to identify areas with a continuous demand and supply in order to regulate or reduce such trade.

A new capital city is being built in East Kalimantan Province, which will affect not only *P. frontata* but also

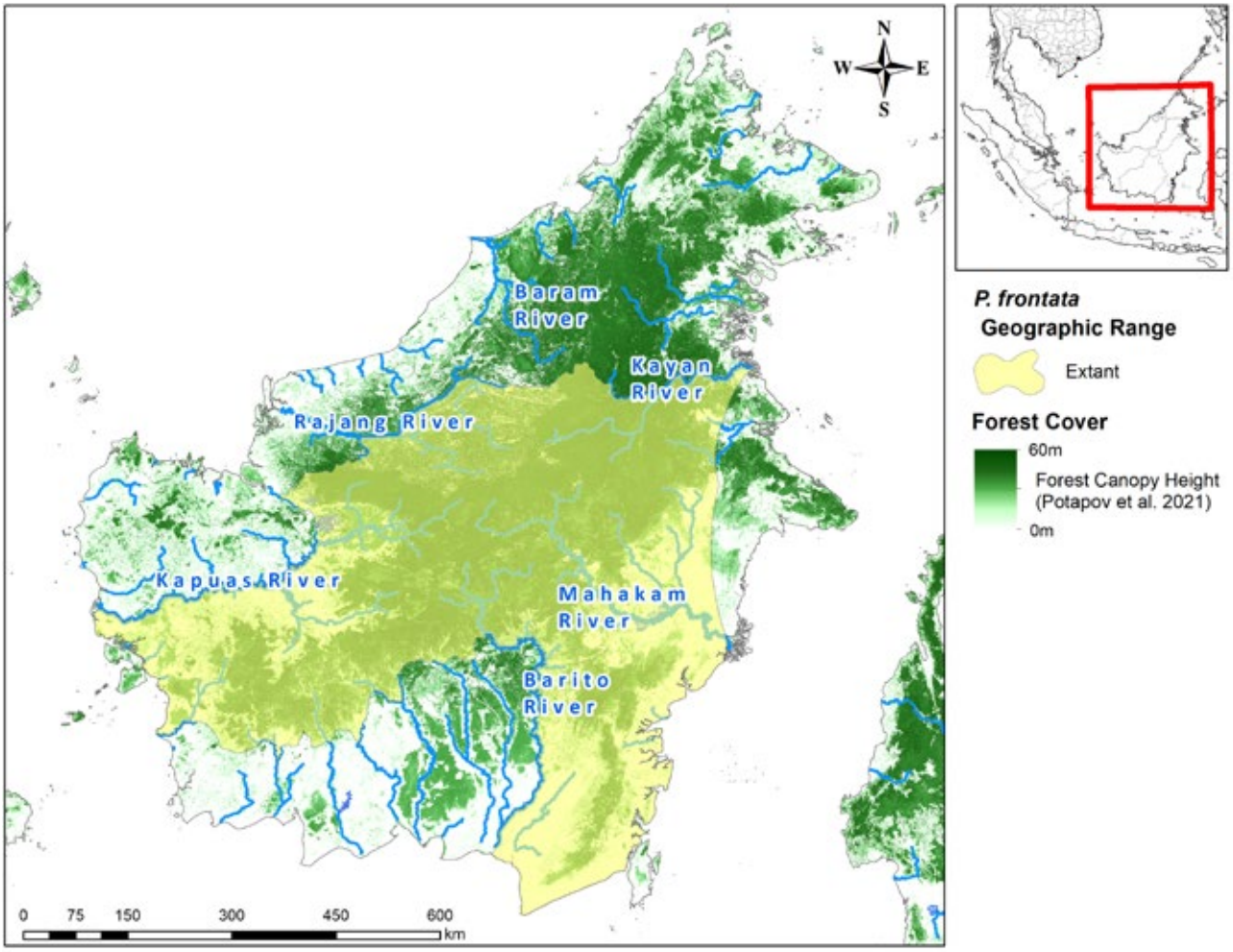


Figure 9a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

P. rubicunda. Under the development plan, about 65% of the area is intended to be turned into a tropical forest through reforestation (BIMP-EAGA, 2023). It is crucial to understand how this plan would be carried out with the opportunity to conserve flora and fauna in the area.

Figure 9b: Illustration of *Presbytis frontata* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Central Kalimantan Province Murung Raya region within the Heart of Borneo East Kalimantan Province Kutai National Park; **Pinang Jatus**; **Sungai Wain Protection Forest**; Muara Wahau; Wehea-Kelay Landscape South Kalimantan Province Sungai Cantung Watershed West Kalimantan Province Betung Kerihun National Park; Bukit Baka – Bukit Raya National Park; Gunung Palung National Park
Malaysia	Sarawak State Baleh National Park; Batang Ai National Park; Batu Laga National Park; **Hose Mountain National Park**; Lanjak Entimau Wildlife Sanctuary

Priority objectives and recommended actions

Priority objectives	Recommended actions
Protect and restore core habitat areas	Consult and work with stakeholders including Tropenbos International Indonesia and logging companies to review the protection status of forests in Pinang Jatus
	Work with logging companies and engage local communities to participate in field surveys and raise awareness in Pinang Jatus
	Work with local government and stakeholders to prevent the isolation of the Sungai Wain Protection Forest during the development of the capital city Nusantara
Maintain and restore habitat connectivity	Establish wildlife corridors linking Hose Mountain National Park to Betung Kerihun National Park, and Betung Kerihun National Park to Kayan Mentarang National Park
Regulate hunting through education, policy and active law enforcement	Create educational materials to communicate the importance of species for conservation
	Determine the extent of hunting in Indonesia and Malaysia and take legal action where appropriate
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Hose Mountain National Park

Presbytis hosei in Kampung Mungkom, Tutong District, Brunei ©Joremy Tony.

4.8. HOSE'S LANGUR

Presbytis hosei

Vulnerable

Presbytis hosei was first described from an adult male with a white forehead from Niah, Sarawak, Malaysia. Later, an adult female with a white spot on the forehead was described from Mount Kinabalu as "*Semnopithecus everetti*". The difference was initially thought to be altitudinal but it was eventually realised that the species is sexually dichromatic: juveniles, subadults, and adult males have white foreheads, while blackish envelops the forehead in adult females. However, field researchers reported "*S. everetti*" absent in the lowlands, unwittingly implying that the coastal population is sexually monochromatic, and therefore taxonomically distinct. Brandon-Jones (1996c) described female specimens from Limbang and Batu Belah that may be subspecifically intermediate. A photograph by Joremy Tony of a male and a female *P. hosei*, both with white foreheads and seemingly adult, at Kampung Mungkom, Tutong District, Brunei, indicates that *Presbytis hosei everetti* may be a valid taxon. The corollary is that it occupies most of the geographic distribution previously assigned to *P. h. hosei*.

As a species, *P. hosei is* found in northern Borneo: Sarawak and Sabah (Malaysia), Kalimantan (Indonesia), and Brunei (Nijman, 2004) (Figs. 10a-c). The southern boundary of the species' range is not yet clear, and the distribution map should be regarded as provisional. As the species is found in all three countries in Borneo, a cross-country conservation plan could be developed for *P. hosei*.

A population in parts of the Kayan Mentarang National Park in North Kalimantan Province was assessed by counts along transects as well as data from all other encounters. A follow-up census seven years later concluded that densities had dropped by 50–80%, and

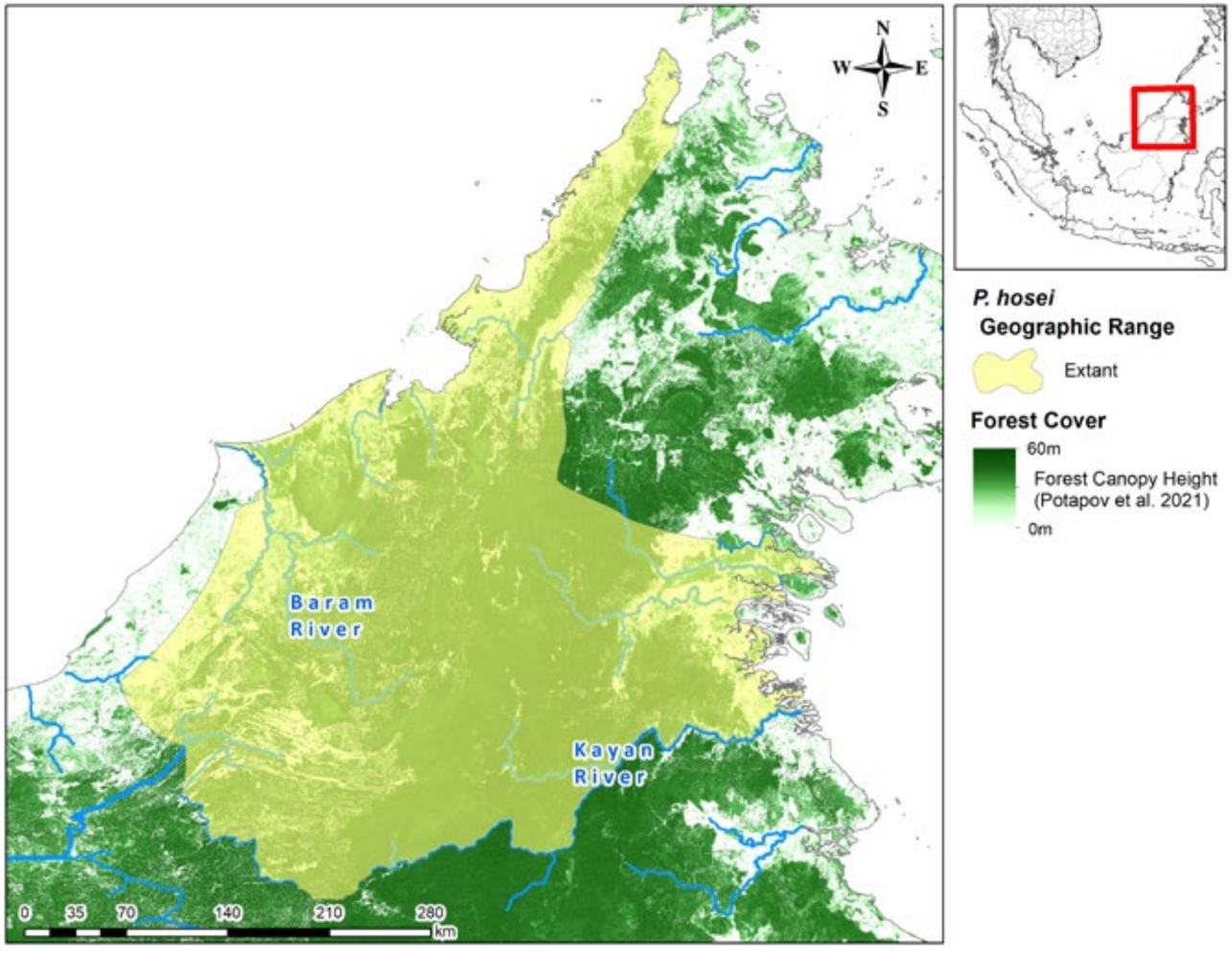


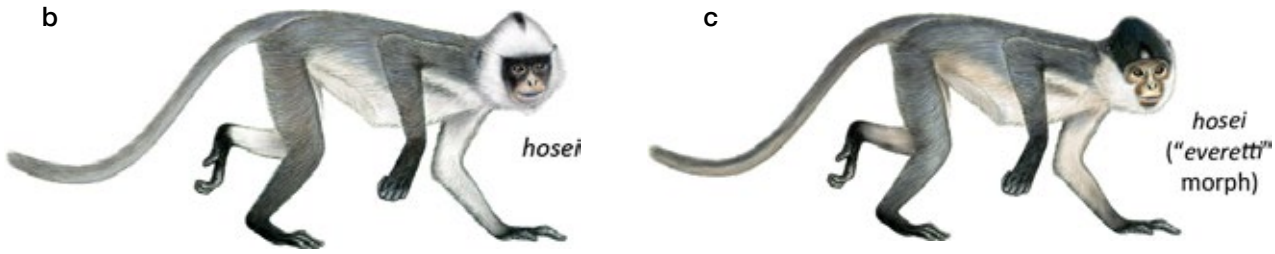
Figure 10a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

it was determined that hunting was the principal cause of this decline (Nijman, 2004, 2005). Even though it is a national park, hunting, particularly for bezoar stones, persists till today.

Baram Peace Park in Sarawak is a 3,000 km^2 community-initiated conservation area and not officially recognised as a protected area yet. Hunting is a primary threat in this site. Camera traps at salt licks/mineral springs found that *P. hosei* is among the most frequent visitors for mineral intake and poachers wait there to hunt the langurs. By designating these areas as a no-hunting zone and turning them into wildlife-watching sites, conservation tourism can be developed to provide a sustainable livelihood for local communities. The presence of *P. hosei* in Gunung Kinabalu National Park in Sabah is uncertain, but if it is present, then this site would be an important area for the population as it is a well-protected national park.

Threats to *P. hosei* in Brunei appear to be relatively less severe, but there is only one protected area for the species, in Ulu Temburong National Park, while the other populations are in unprotected areas. In Tutong District such as Kampong Kiudang and Meriuk Farm Stay, unmanaged, continuous expansion of human settlement and farming reduces available habitat for the species. A national conservation plan for *P. hosei* in Brunei could help to secure the long-term survival of the species in Borneo.

***Presbytis hosei* in Kampung Mungkom, Tutong District, Brunei ©Joremy Tony.**



Figures 10b-c: Illustrations of *Presbytis hosei* (b) and an "*everetti*" morph (c) by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Brunei	Temburong District Bukit Patoi Forest Recreation Park; Kampong Batu Apoi; **Ulu Temburong National Park** Tutong District Kampong Kiudang; **Meriuk Farm Stay**
Indonesia	North Kalimantan Province **Kayan Mentarang National Park**
Malaysia	Sabah State **Gunung Kinabalu National Park** (presence uncertain) Sarawak State **Baram Peace Park**; Lanjak Entimau Wildlife Sanctuary (presence uncertain); Niah National Park (presence uncertain); Usun Apau

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. hosei* in known locations and analyse the genetic data to clarify taxonomic identity and relationships
	Investigate populations at Niah National Park (if extant) and in Meriuk Farm Stay to see if they are sexually monochromatic
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
Protect and restore core habitat areas	Upgrade the status of Baram Peace Park to national park
	Work with local communities to participate in field surveys and raise awareness in Baram Peace Park
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Designate a no-hunting zone in Baram Peace Park and enforce a hunting ban in Kayan Mentarang National Park and other parts of Indonesia
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Baram Peace Park

Presbytis melalophos in Kerinci-Seblat National Park, West Sumatra ©Chien Lee.

4.9. YELLOW-HANDED MITRED LANGUR

Presbytis melalophos

Endangered

Presbytis melalophos is endemic to southwestern Sumatra (Indonesia), from the upper Rokan River south to the upper Hari River and beyond along the Barisan Range into Lampung Province (Groves, 2001) (Figs. 11a-c). Presbytis melalophos is probably the taxon which has undergone the most taxonomic changes in the genus, from having multiple subspecies to now being recognised as a monotypic species (Aimi and Bakar, 1996; Roos et al., 2014), though this status still requires further examination (Meyer et al., 2012). For instance, based on pelage colouration, there could be at least two subspecies: a white-ventered *P. m. melalophos* coastally distributed from Padang to the southern tip of Sumatra, and an orange-ventered P. m. nobilis distributed from Lubukbasung (0°20'S 100°04'E) to Sorulangun (2°37'S 102°45'E), parallel to that of *P. bicolor.* A transitional population between *P. m. nobilis* and *P. bicolor* stretches for 27 km along the Trans-Sumatra Highway (c. 0°47'S 101°15'E) (Kawamura, 1984). *Presbytis m. nobilis* may extend to the coast at Painan and Padang and intergrades with *P. m. melalophos* on Gunung Kerinci. Additionally, the buffy population in the vicinity of Gunung Talakmau (which is the type locality of *P. sumatrana*) may have taxonomic validity. Given that there remains uncertainty with much morphological variation among the populations across its range, resolving its taxonomy with additional data is urgently needed for their conservation.

While *P. melalophos* can be found in a number of protected areas, many of these sites lack resources to be properly managed. In Bukit Sebelah Protection Forest, government staff would benefit from training to prevent illegal conversion of existing rubber estates

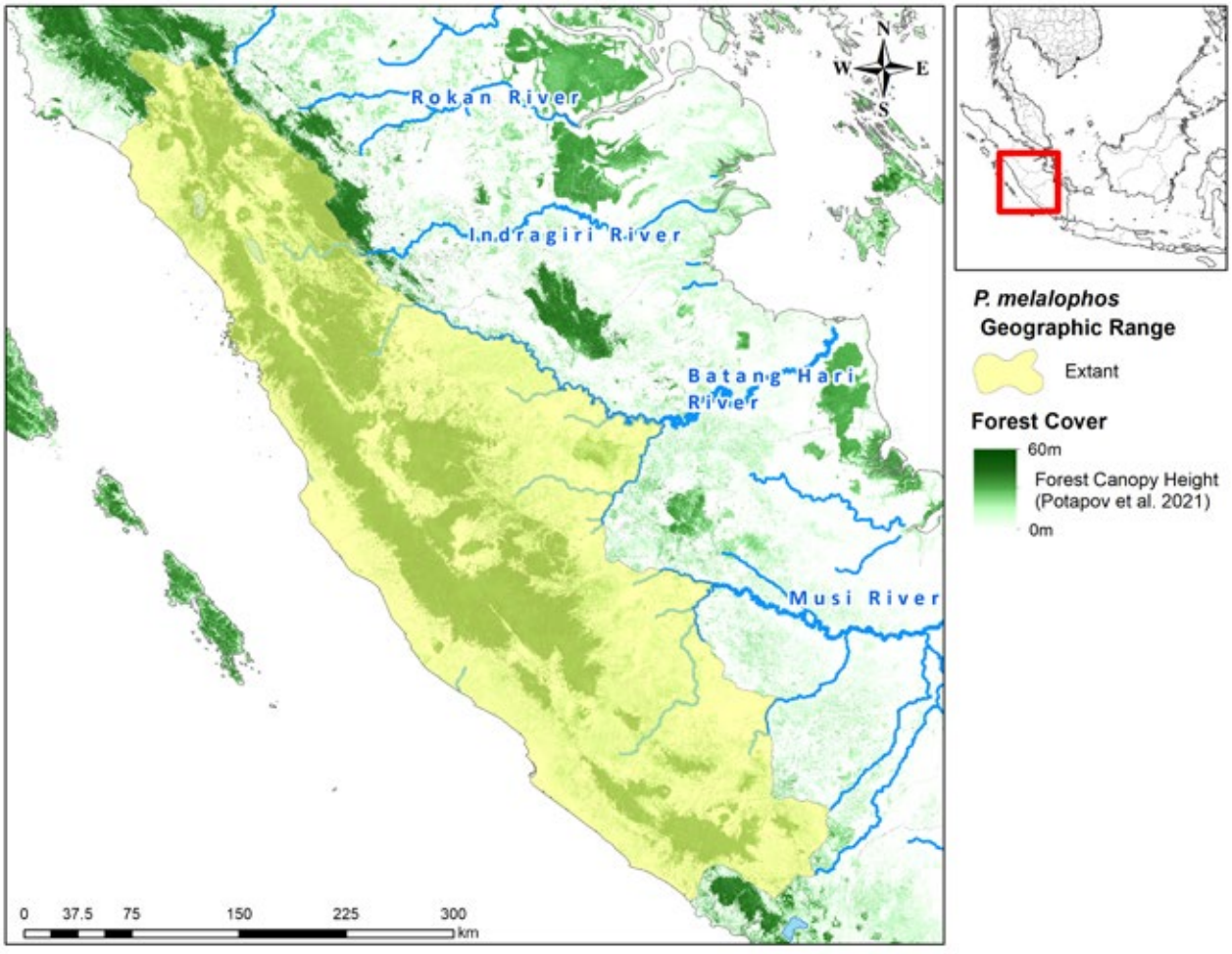
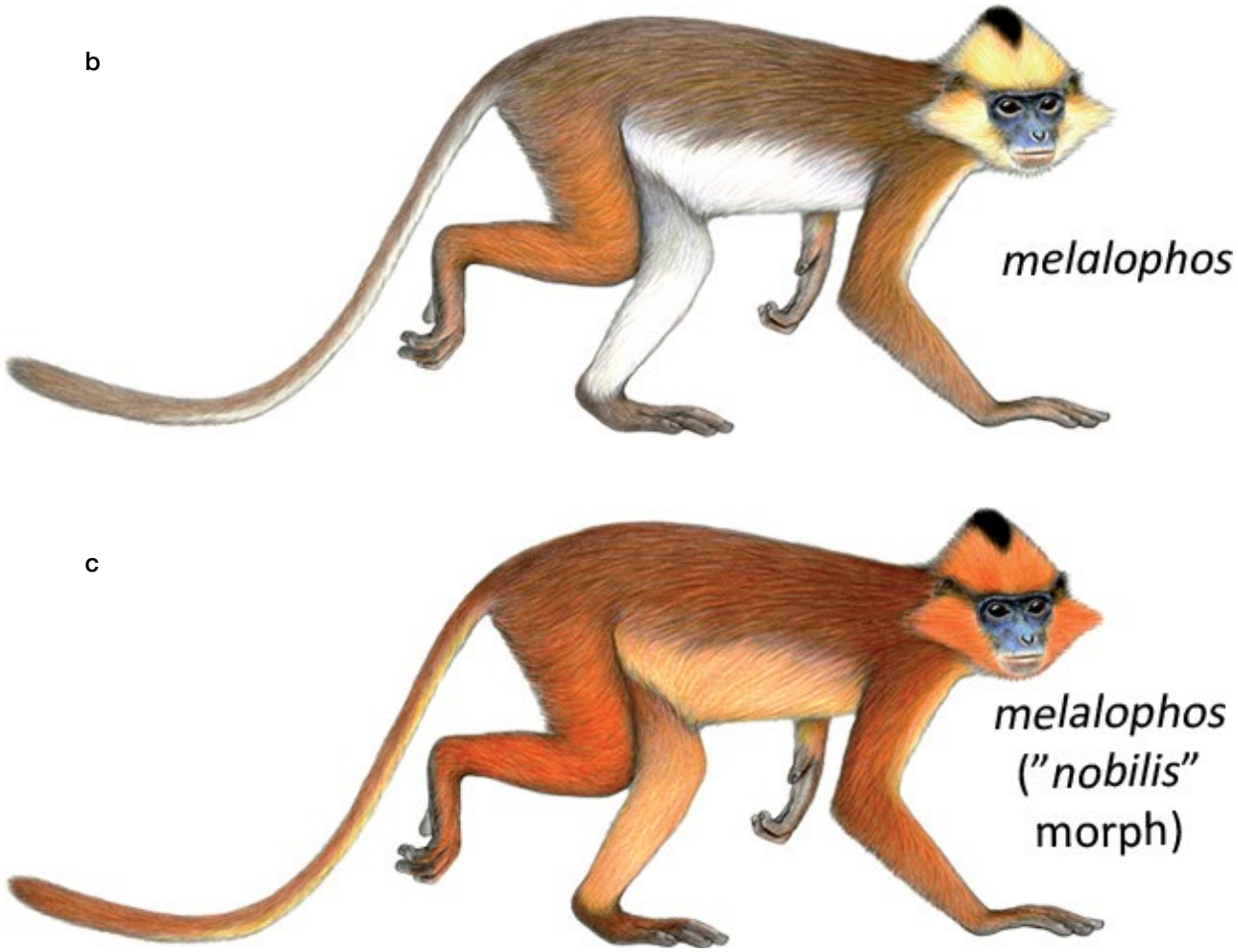


Figure 11a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

to oil palm plantations. Park management training is needed to improve staff effectiveness here and in other protected areas.

Due to a more widespread distribution, *P. melalophos* is relatively easier to observe than other *Presbytis* langurs. There is much untapped opportunity to develop conservation tourism to benefit the species and local communities in Sumatra. In Kerinci-Seblat National Park where the *P. melalophos* population might be the largest, developing and implementing ethical tourism can serve to increase protection and awareness of the species, and provide sustainable, long-term livelihoods for local communities. Primate-watching, especially riverside opportunities, already exists in Lembah Anai Nature Reserve, but proficient management is needed to stop or minimise food provisioning and human-wildlife conflicts. As this area is next to a major highway (Padang-Bukit Tinggi), canopy bridges should be installed to prevent *P. melalophos* road casualties. Another roadside population which would similarly benefit from canopy bridges is in Padang-Solok. This area also serves as an important connection between the Barisan Selatan National Park and Kerinci-Seblat National Park, which should be strengthened to maintain a long-term ecological corridor.



Figures 11b-c: Illustrations of *Presbytis melalophos* (b) and possibly a subspecies/morph "*nobilis*" (c) by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Bengkulu Province, Jambi Province, South Sumatra Province and West Sumatra Province Kerinci-Seblat National Park Bengkulu Province and South Sumatra Province **Bukit Barisan Selatan National Park** Jambi Province Berbak National Park; Muara Tebo (presence uncertain) West Sumatra Province **Bukit Sebelah Protection Forest**; Lembah Anai Nature Reserve; **Gunung Talakmau** (species uncertain); Padang-Solok

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. melalophos* in known locations and analyse the genetic data to clarify taxonomic identity and relationships, particularly in Gunung Talakmau and of the suspected transitional population along the Trans-Sumatra Highway
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
Maintain and restore habitat connectivity	Improve wildlife corridors in Padang-Solok which links Barisan Selatan National Park and Kerinci-Seblat National Park
	Construct canopy bridges in Lembah Anai Nature Reserve and Padang-Solok
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Kerinci-Seblat National Park, Lembah Anai Nature Reserve and and Padang-Solok
	Create education materials for the differentiation of the langur species
Build capacity in government and management staff	Train government and management staff of protected areas to carry out wildlife monitoring, especially in Bukit Sebelah Protection Forest

Presbytis mitrata ©Muhammad Iqbal.

4.10. SOUTHERN MITRED LANGUR

Presbytis mitrata

Vulnerable

Presbytis mitrata is located in southeastern Sumatra, from Batang Hari River, south-west to the upper Musi River drainage, eastern Barisan range, in the south of Lampung Province (Figs. 12a-b). Similar to *P. melalophos*, there is dispute as to whether it is a monotypic species or has subspecies (Meyer et al., 2012). Given that both *P. mitrata* and *P. melalophos* are likely found in Bukit Barisan Selatan National Park, population surveys and genetic research to clarify taxonomy of the *Presbytis* populations found there are needed.

The habitat in which *P. mitrata* lives is experiencing conversion to agriculture and oil palm plantations and the species is often killed for crop raiding. It is also targeted for illegal collecting for the pet trade. In Bukit Barisan Selatan National Park, illegal logging and habitat encroachment for coffee cultivation continue despite it being a protected area. By providing more resources, government staff could be further trained to carry out enforcement and proper management of the national park. Berbak-Sembilang Biosphere Reserve is near an Ecosystem Restoration Concession at the south of Batang Hari River where there is a conflict of land tenure between local tribes. As a result, restoration efforts are hindered, and illegal mercury and gold mining activities continue.

Presbytis mitrata in the well-protected Way Kambas National Park could serve as a prominent species for conservation tourism opportunities, raising awareness of this species and providing an alternative and sustainable source of income for local communities. As this species is one of only a handful of *Presbytis* species that have been successfully kept under human care in zoos (e.g., in Ragunan Zoo in Jakarta), developing husbandry guidelines and sharing this knowledge across *ex situ* facilities housing *Presbytis* species are recommended.

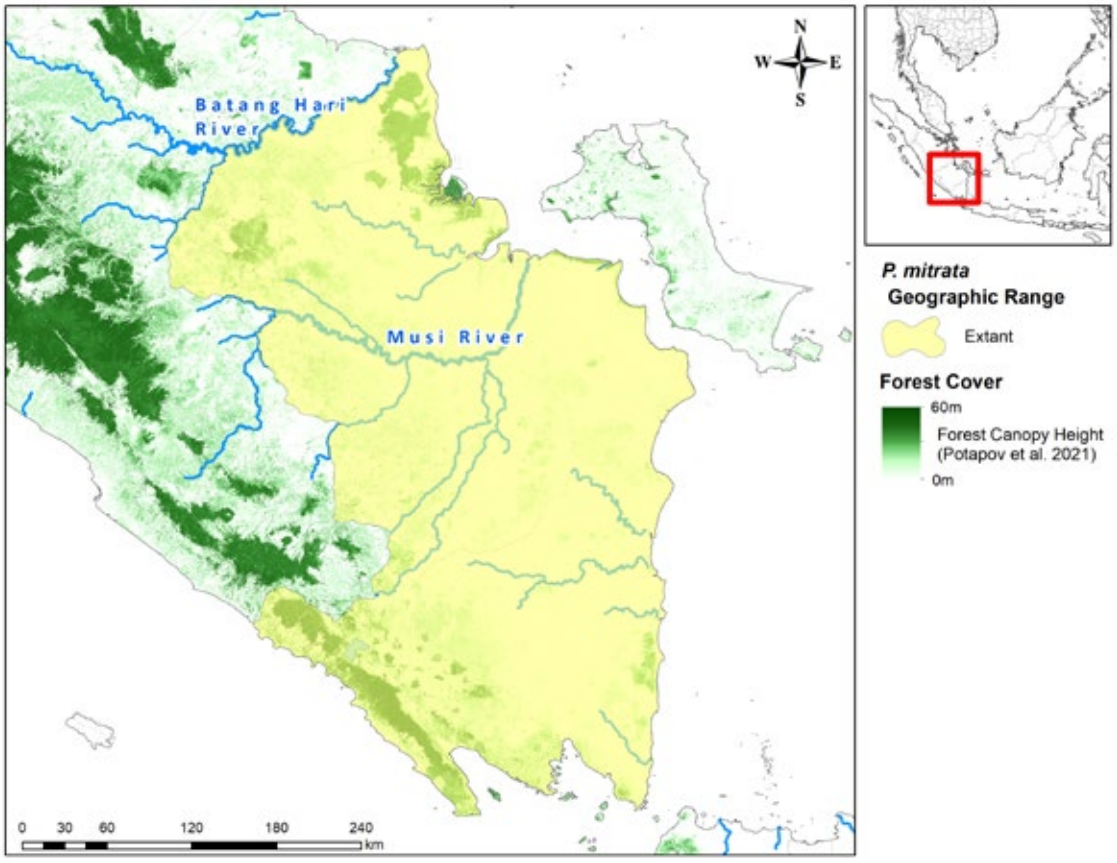


Figure 12a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

Figure 12b: Illustration of *Presbytis mitrata* by Stephen D. Nash.

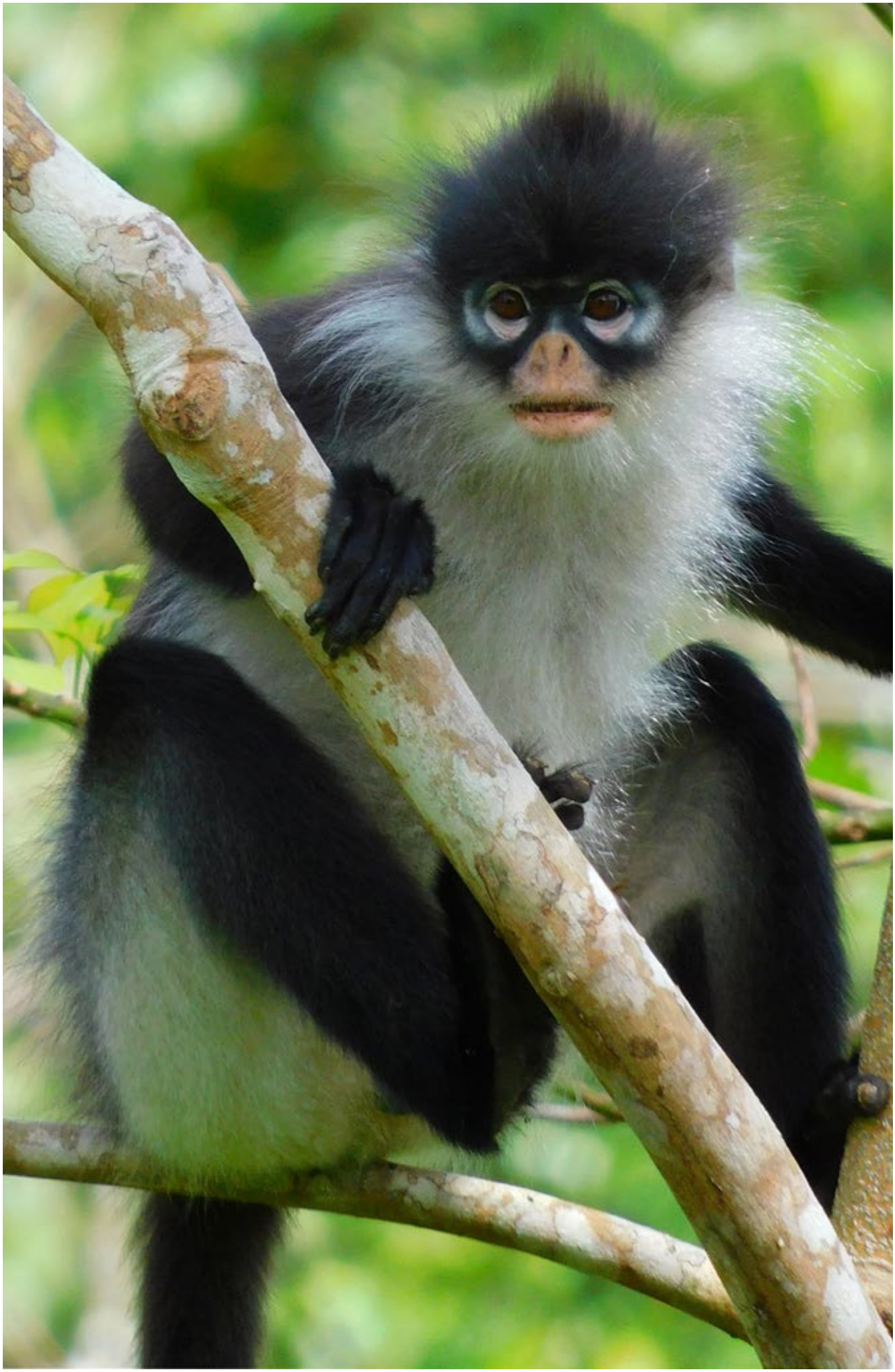
Presbytis mitrata **©Muhammad Iqbal.**

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Jambi Province **Berbak-Sembilang Biosphere Reserve**; Hutan Harapan Restoration Ecosystem Concession; Near Muaro Jambi temple Lampung Province **Way Kambas National Park** Bengkulu Province, Lampung Province and South Sumatra Province **Bukit Barisan Selatan National Park**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. mitrata* in known locations and analyse the genetic data to clarify taxonomic identity and relationships
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Way Kambas National Park
	Create education materials for the differentiation of the langur species
Develop and share best practice guidelines for keeping *Presbytis* spp. under human care	Create guidelines for husbandry under human care, using *P. mitrata* (also *P. robinsoni* and *P. siamensis*) as a model species for the genus
	Share guidelines with *ex situ* facilities housing *Presbytis* species
Build capacity in government and management staff	Train government and management staff of protected areas to carry out wildlife monitoring, especially in Bukit Barisan Selatan National Park



Presbytis natunae ©Ahdiani.

4.11. NATUNA ISLAND LANGUR

Presbytis natunae

Vulnerable

This species was formally described as *Semnopithecus natunae* in 1894, but later taxonomic revisions placed the taxon as a subspecies of the more widespread species, *Presbytis siamensis* (Chasen, 1935; Brandon-Jones, 1984), *P. femoralis* (Chasen, 1940; Whitten et al., 1987), and *P. melalophos* (Oates et al., 1994). Current available knowledge places *P. natunae* as a valid species, restricting its distribution only to Bunguran Island in the northern Natuna Islands of Indonesia off the northwestern coast of Borneo (Groves, 2001) (Figs. 13a-b).

Only three scientific field studies have been conducted for *P. natunae*, including a first population study which estimated that there were at least 1,000 individuals on Bunguran Island in 2001 (Indrawan and Rangkuti, 2001), and the second, more extensive study using line transects that estimated the population size to be between 4,473 and 12,547 individuals (Lammertink et al., 2003). The most recent study specifically in the community forest of Mekar Jaya Village (1,236 ha) revealed that the langurs have adapted to eating rubber seeds in forest gardens (a mix of fruit and rubber trees) and that small-scale primate-watching tourism had already started in the village (Fahsyuliardi et al., 2022).

Elsewhere on the island, there is still a dearth of information about *P. natunae*, while numerous threats continue to endanger its survival. Bauxite and limestone mining are taking place in a number of areas (e.g., Pengadah and Teluk Buton), and hunting for the pet trade and for entertainment is still active. There is a general lack of awareness of *P. natunae* locally and regionally such that little conservation attention has been afforded to the species.

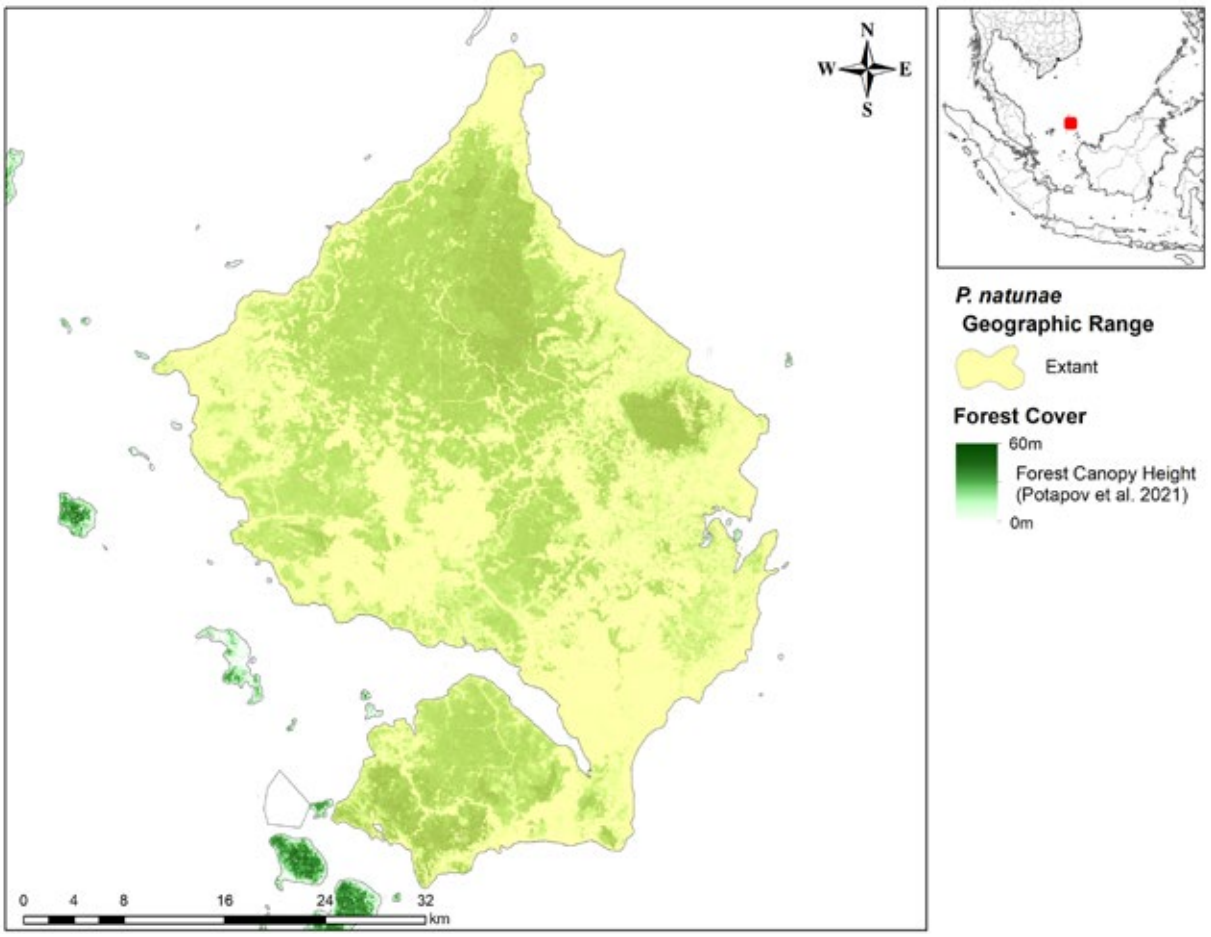


Figure 13a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

As the Natuna Islands are being developed collectively as an UNESCO Geopark, primate-watching of the endemic *P. natunae* should be proposed and considered along with the cultural heritage of the islands in the tourism development plans. Conservation tourism and awareness programmes could also be explored in Gunung Ranai, which is the largest forest block on the island with possibly the largest population of *P. natunae*.

Figure 13b: Illustration of *Presbytis natunae* by Stephen D. Nash.

***Presbytis natunae* ©Ahdiani.**

***Presbytis natunae* ©Arif Setiawan/Swaraowa.**

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Riau Islands Province Gunung Bedung (presence uncertain); **Gunung Ranai**; **Mekar Jaya Village**; Pengadah; Teluk Buton

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution on the entire Bunguran Island
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Approach relevant stakeholder groups to regulate or stop hunting
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Mekar Jaya Village and Gunung Ranai
	Create education materials for the differentiation of the langur species
	Work with Geopark development agencies to include *P. natunae* for tourism opportunities

Presbytis percura ©Budi Koesoemo.

4.12. EAST SUMATRAN BANDED LANGUR

Presbytis percura

Critically Endangered

Presbytis percura is endemic to the Riau Province in east-central Sumatra (Indonesia) (Figs. 14a-b). It is distributed from the Rokan River in the north to at least the Kampar River in the south (Wilson and Wilson, 1977; Kawamura, 1984; Aimi and Bakar, 1992; Rizaldi et al., 2019). It is found only in a number of isolated and unprotected lowland forests, and faces extinction in the wild based on large-scale forest loss in Riau Province (Rizaldi et al., 2019). Riau experienced the highest rate of deforestation in Sumatra and 63% of the natural forest was lost between 1985 and 2008 (Uryu et al., 2010). Forest fires linked to the El Niño-Southern Oscillation events and open burning of forest land for agricultural purposes destroy millions of hectares of land in Indonesia every year, and Riau is often one of the most impacted areas, owing in part to its extensive peatlands (World Bank, 2016).

A 16-month study in the 1980s in Perawang, Riau recorded a remarkable range of 136 species of food plants of *P. percura* (Megantara, 1989) but with the intensive land use change to monoculture plantations, the availability of food plants may have been lost. The scattered forest remnants and agroforests where *P. percura* were found may no longer remain without conservation actions on the ground.

Giam Siak Kecil-Bukit Batu Biosphere Reserve is a small nature reserve surrounded by oil palm and rubber plantations. Creating an agroforest corridor, partnering with companies and small-scale plantation owners, should be encouraged to better protect the habitat. The riverbank vegetation along the Siak River should also be maintained and, if possible, restored through gazettement.

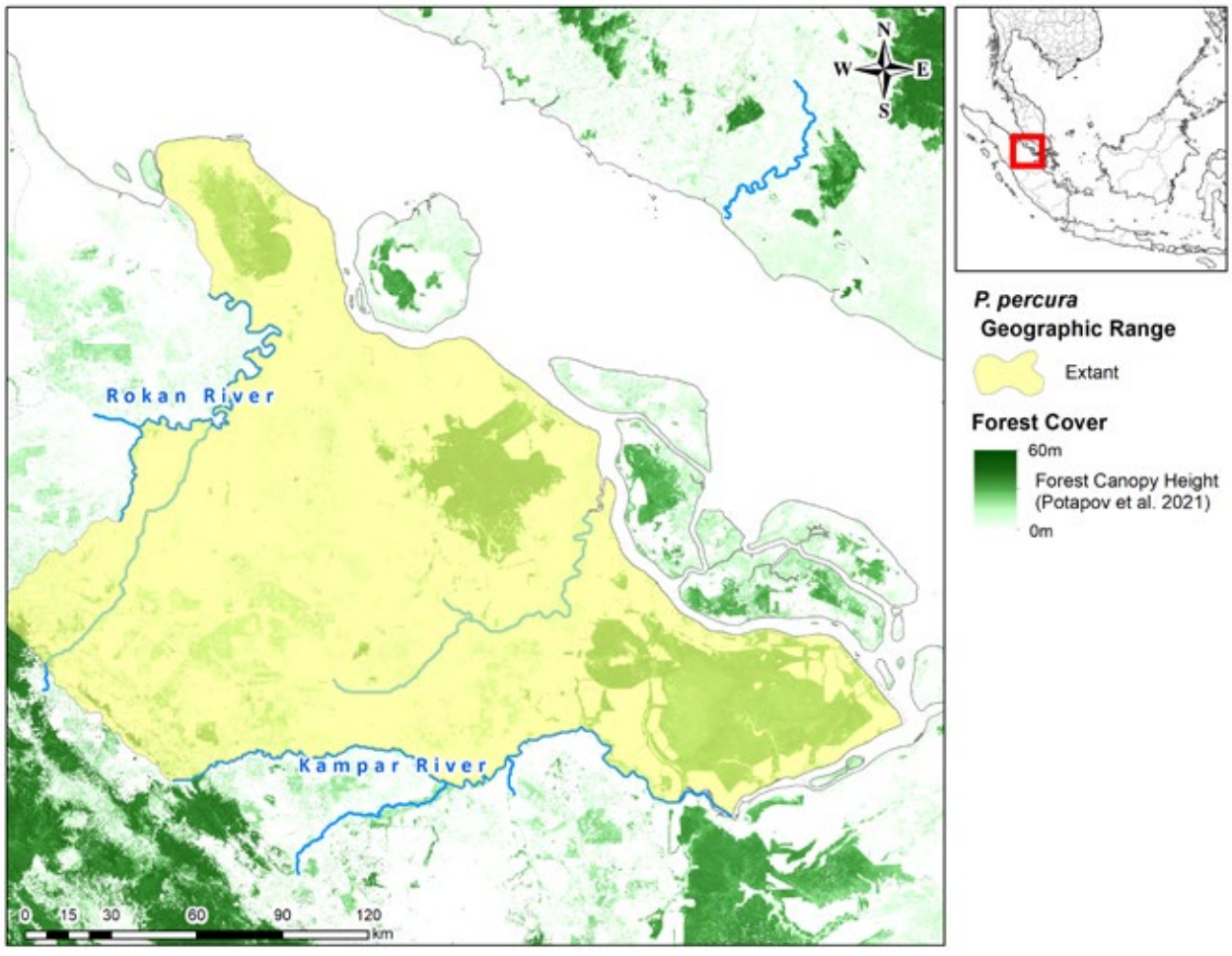
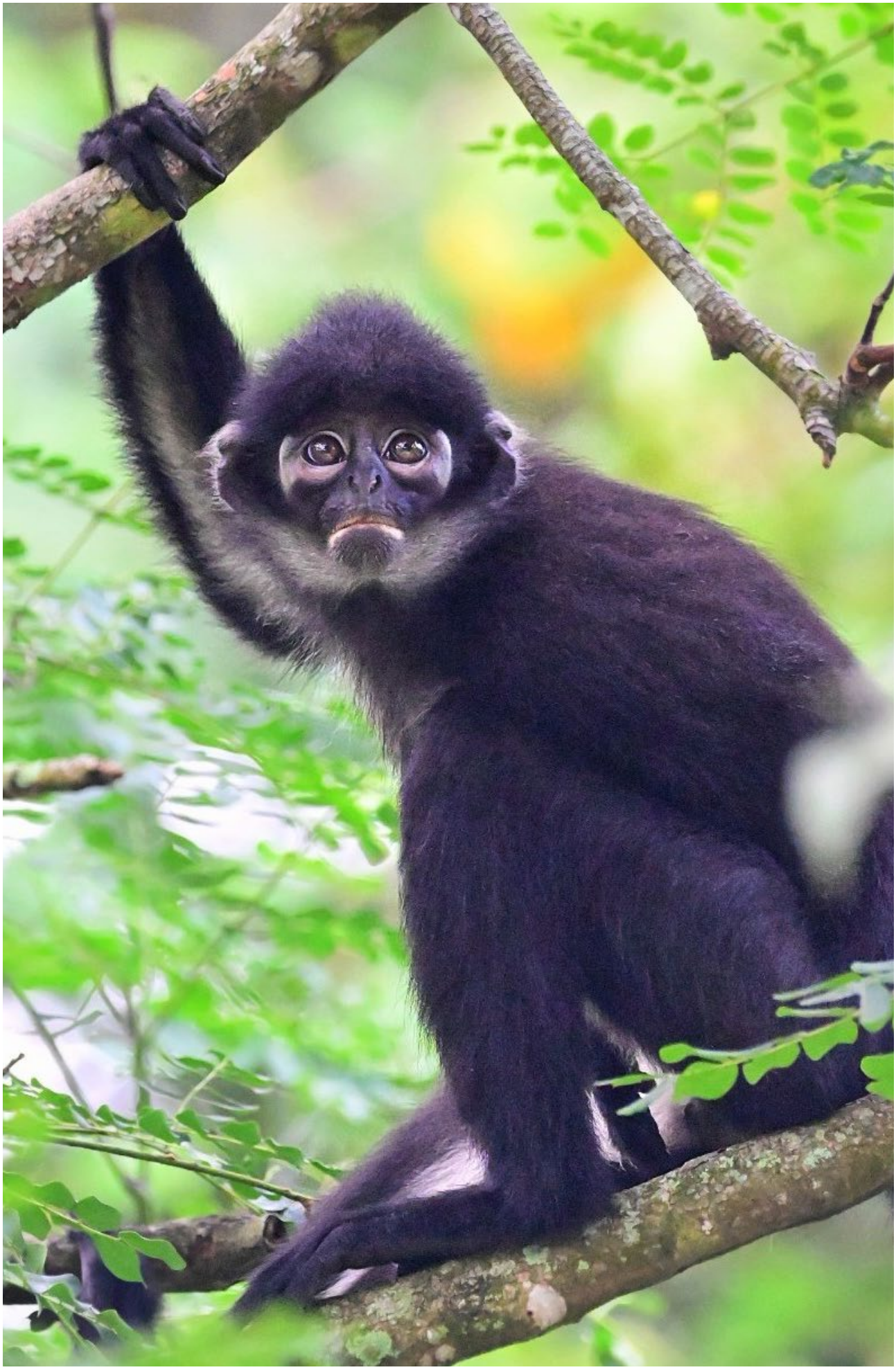


Figure 14a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.



Presbytis percura ©Budi Koesoemo.

Riau Ecosystem Restoration (RER) is a private sector-led project set up to restore and conserve ecologically important, high conservation areas on Indonesia's Kampar Peninsula and Padang Island. It would be opportune to explore a partnership with RER to help identify potential villages to collaborate on restoring habitats and/or establishing agroforests in plantations. There are protected areas in Perawang City in the Siak Regency, which are relatively well managed for wildlife. If their status can be maintained, these areas could sustain viable populations.

Presbytis percura is probably opportunistically poached for the illegal pet market but there is currently insufficient data to understand the level of threat and impact. Primates are regularly offered for sale in the Jalan Durian bird market in Pekanbaru City, capital city of Riau Province.

Individuals of this species are also killed by local communities when they feed on fruit crops such as those of rambutans, durians and mangosteens. During the fruiting season (rambutan, langsat), human-langur conflicts are especially frequent. Preventive and deterrence measures need to be developed and implemented in these croplands, along with outreach activities to increase awareness of *P. percura*, to promote human-langur coexistence.

Figure 14b: Illustration of *Presbytis percura* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Riau Province **Giam Siak Kecil-Bukit Batu Biosphere Reserve**; Pekanbaru; Perawang; rubber plantation along West Sumatra-Riau Highway

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
Protect and restore core habitat areas	Establish and restore buffer areas around the Giam Siak Kecil-Bukit Batu Biosphere Reserve
	Work with Riau Ecosystem Restoration (RER) to restore habitat and/or establish agroforests in plantations
Promote human-langur coexistence	Develop and implement preventive and deterrence measures to keep *P. percura* away from cropland
	Create education materials to communicate the importance of the species for conservation

Presbytis potenziani **on South Pagai Island ©Andie Ang.**

4.13. SOUTHERN MENTAWAI LANGUR

Presbytis potenziani

Critically Endangered

Presbytis potenziani is one of seven endemic primates on the Mentawai Islands (West Sumatra, Indonesia). The Mentawai Islands are a group of about 70 islands off the west coast of Sumatra, with a total area of 6,011 km^2 and a human population of about 91,000 (BPS-Statistics Indonesia, 2023). *Presbytis potenziani* occurs on Sipora, North Pagai and South Pagai islands (Figs. 15a-b), while the closely-related *P. siberu* is found on Siberut. The few studies on *P. potenziani* date back at least 15 years (Paciulli, 2004; Paciulli and Viola, 2009; Yanuar and Supriatna, 2018) and there is currently no abundance estimate of this species.

In June and July of 2023, a preliminary field survey on the Mentawai Islands was conducted by Andalas University students, who documented continued hunting pressure on the primates with the presence of several active logging areas (Rizaldi, pers. obs.). Hunting has increased in recent years as a result of improved access to remote areas due to logging roads, as well as the replacement of bows and arrows with air rifles. Furthermore, local rituals and taboos that previously regulated hunting have been progressively eroded due to missionary and state influences (Mitchell and Tilson, 1986). There is also a rise in wildlife sport hunting by young people who have plenty of leisure time after school. Local people do not have certification of ownership of the land, which leads to conflicts with government and rapid and sporadic degradation and conversion of remaining forests to agricultural land (Rizaldi, pers. obs.).

Given the constant hunting and deforestation, there is a pressing need for field surveys to identify priority

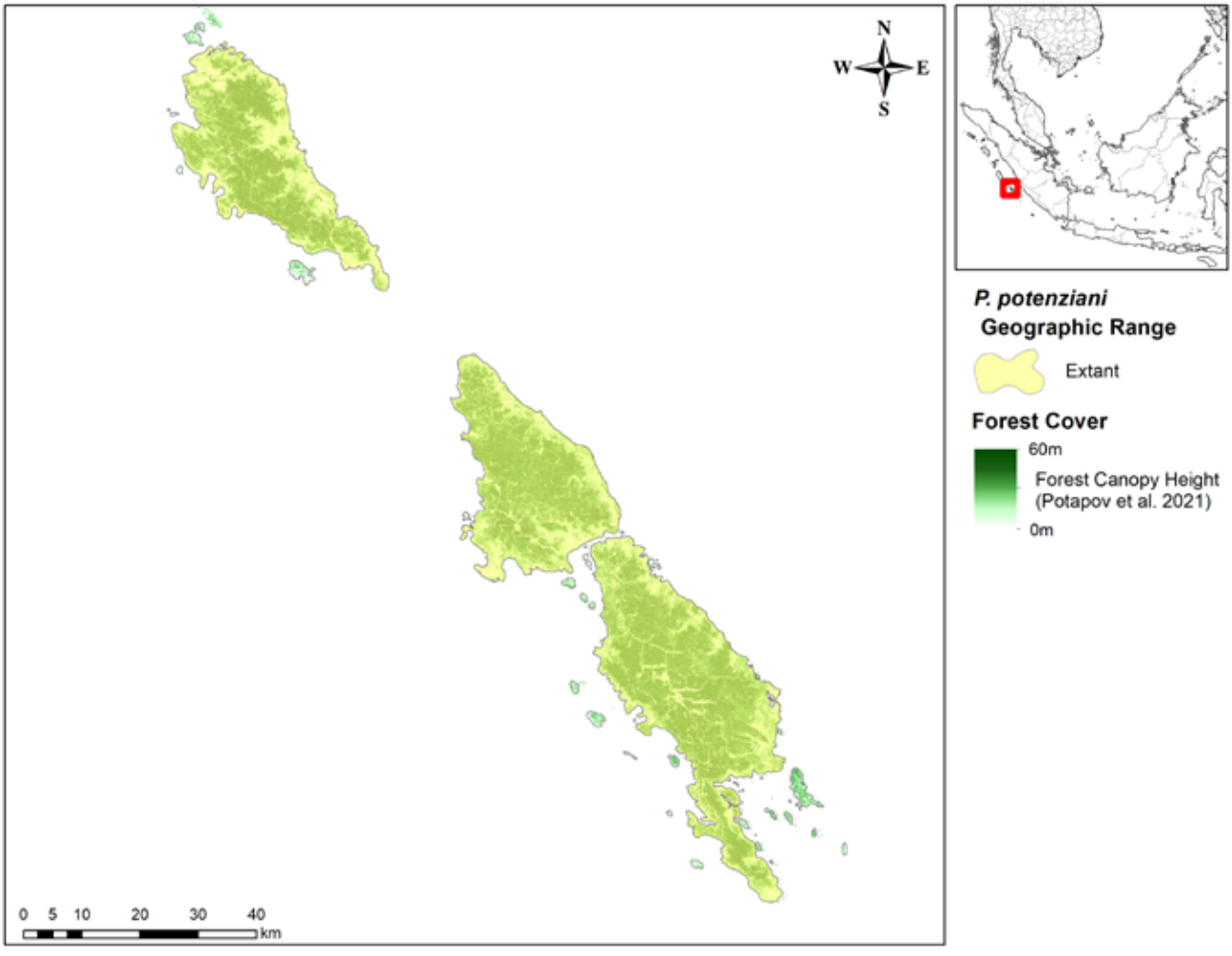


Figure 15a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

sites for the protection of *P. potenziani* populations. These sites need to be evaluated alongside existing logging locations, with the objective of working with the government, private landowners and local communities to develop a sustainable land use plan. We could also explore an economic model for managing the forests that can provide higher returns to the local stakeholders in the long-term rather than the short-term benefits of land conversion; there may be potential to develop carbon/biodiversity credit projects, agroforestry of spices, and conservation tourism on these islands. There are no protected areas on Sipora and North Pagai, while there appears to be a protected area (422/Kpts-II/1999) and an abandoned field station (see Tenaza, 1988) around Sinaka Village on South Pagai. At present, however, there is no management and the area is not clearly defined. The status of the protected area needs to be clarified and restoration of the field station for primate conservation should be considered. Education campaigns in schools and religious communities to raise awareness of the primates is needed, and after-school enrichment/sports activities for youths should be provided to discourage recreational hunting.

Overall, it is crucial to develop an up-to-date action plan for all primates of the Mentawai Islands. Some of the recommended next steps include (1) a stakeholder engagement with relevant government agencies and the local community, (2) a large-scale conservation education campaign to raise awareness about the rich biodiversity and endemism of not only the primates, but also other taxonomic groups, (3) the development of conservation tourism, following the model of the flourishing diving industry on the islands, (4) the exploration of carbon/biodiversity credit projects on the islands, and (5) the protection of at least one priority, representative site for primates on each of Sipora, North Pagai, South Pagai, and Siberut islands.

***Presbytis potenziani* in South Pagai, Mentawai Islands, Indonesia ©Andie Ang.**

Figure 15b: Illustration of *Presbytis potenziani* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	West Sumatra Province **North Pagai Island**; **Sipora Island**; **South Pagai Island**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution in all remaining habitats
Protect and restore core habitat areas	Work with government and landowners to protect the habitat and establish agroforests in plantations
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Provide after-school enrichment/sports activities for youths to discourage recreational hunting
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in Sipora and South Pagai islands
	Create education materials for the differentiation of the langur species

Presbytis robinsoni in Pekan Kaki Bukit, Perlis, Malaysia ©Peter Ong.

4.14. ROBINSON'S BANDED LANGUR

Presbytis robinsoni

Near Threatened

Presbytis robinsoni is found in north-western Peninsular Malaysia, southern Thailand, and southern Myanmar (Fooden, 1976; Groves, 2001; Roos et al., 2014) (Figs. 16a-c). There are no population estimates (neither recent nor in the past), but some of the species' habitat continues to be converted for agriculture and urban settlements.

In Myanmar, hunting is a more serious threat to *P. robinsoni* than habitat loss or conversion. Local people consume the meat, including the stomach of *P. robinsoni*; langur stomach is one of the Kayin people's favourite foods (May Lay, Ngwe Lwin and Su Pan, pers. obs.). Even though the species is found in Lenya Reserve Forest and Ngawun Reserve Forest, which are Key Biodiversity Areas (Key Biodiversity Areas Global Dataset, 2024), enforcement against hunting is not properly implemented. The northern limit of the species is unclear as its presence in the Tanintharyi Nature Reserve has yet to be confirmed. If *P. robinsoni* is present there, it may benefit from the conservation management plan for the nature reserve (May Lay, Ngwe Lwin and Su Pan, pers. obs.).

In Malaysia, the Royal Belum State Park is the largest protected area in the range of *P. robinsoni*. There, the indigenous people *Orang Asli* still practise their traditional lifestyle. They prefer to hunt small-medium arboreal animals which are vocal, including *P. robinsoni*, with the traditional blowpipe *sumpit*. The Jahai tribe of Belum practise traditional hunting almost exclusively for self-subsistence (Loke et al., 2020). Ulu Muda Forest Reserve, which is an important water catchment forest for the northern states of Malaysia, has been proposed

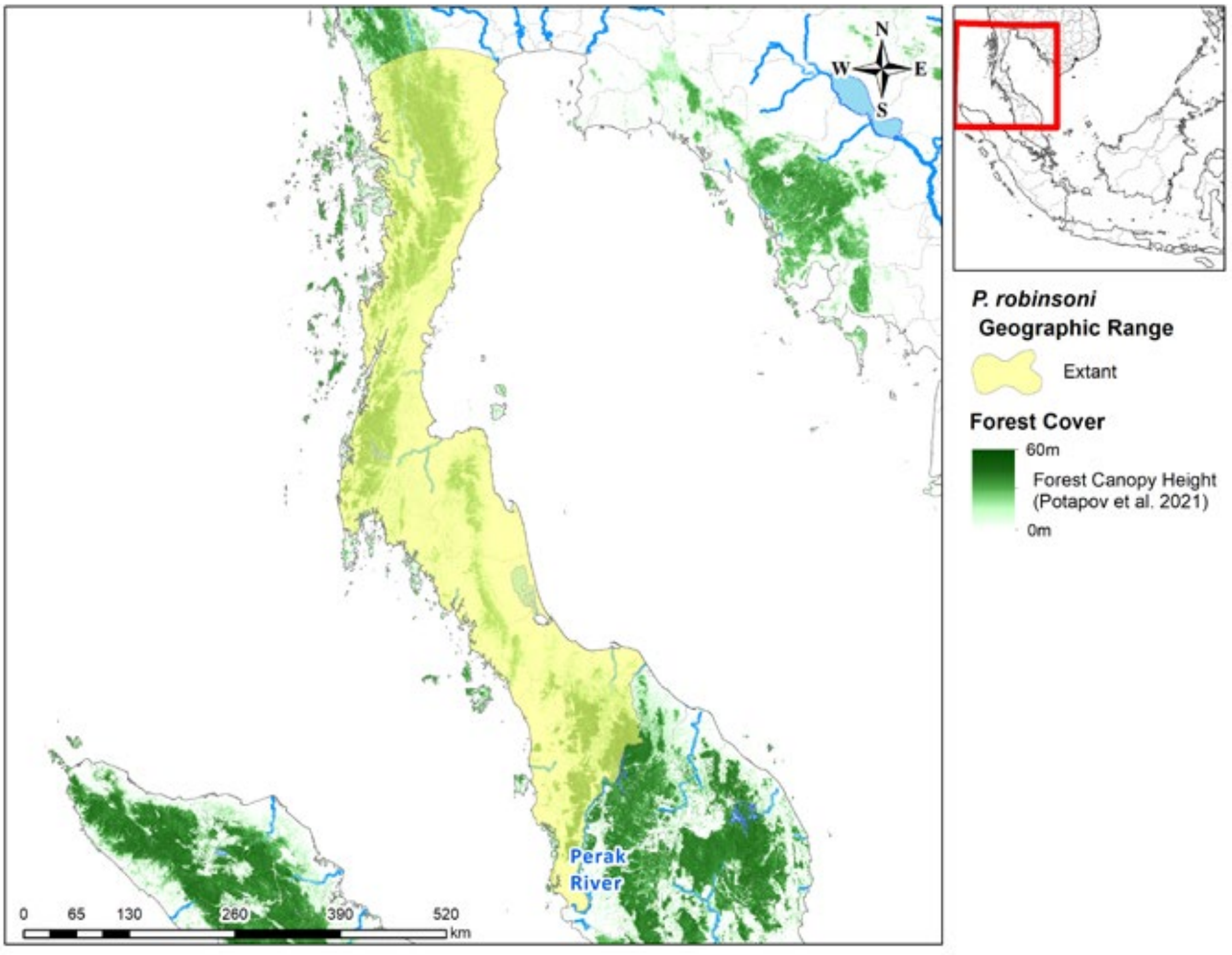
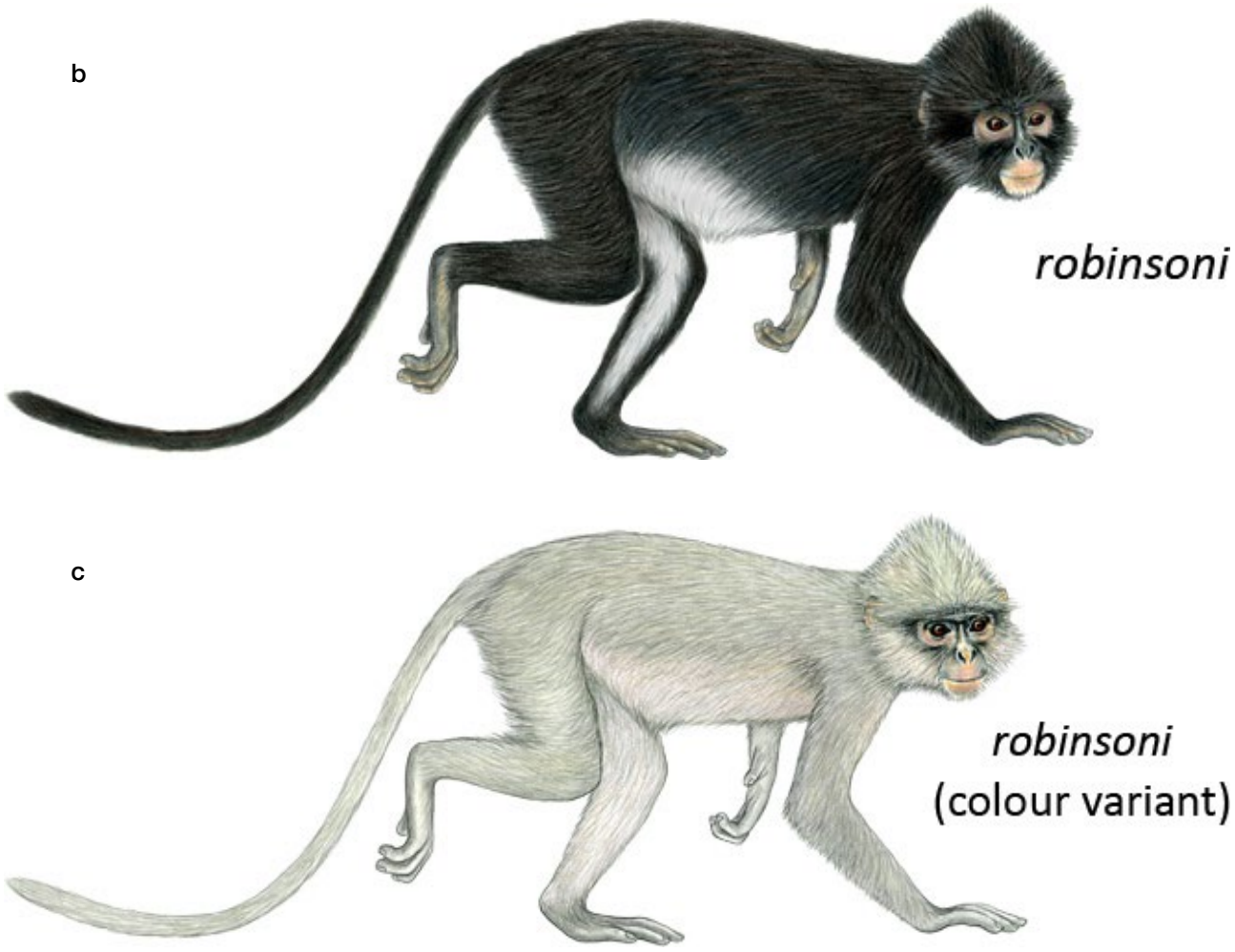


Figure 16a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

to receive totally protected status with the level of state park or national park. The status elevation would ensure higher protection of the habitat for not only *P. robinsoni* but other wildlife including agile the gibbon (Pang et al., 2022) and the clouded leopard (Tan et al., 2017). Both Royal Belum State Park and the Greater Ulu Muda Forest Complex are connected to the forest reserves in Thailand, which provides for an important contiguous habitat. The Segari Melintang Forest Reserve in the district of Manjung, Perak State, is a primary lowland coastal rainforest which has the southernmost population of the species, and possibly one of only a few lowland populations, as the distribution range of *P. robinsoni* spans across a landscape of mountainous terrain. Being in one of Peninsular Malaysia's last remaining coastal rainforests, this lowland population of *P. robinsoni* may also exhibit unique ecological traits that differ from populations inland in the hill dipterocarp forests of Malaysia and deciduous dipterocarp forest of Thailand and Myanmar.

The recent rise in *ladang hutan* (forest farming) programmes (planting durian or timber monocultures) in forests in the northern states of Peninsular Malaysia is an additional threat to *P. robinsoni* due to forest loss and human-wildlife issues. Farmers in plantations adjacent to Sungai Sedim Forest have been seen using firecrackers to deter the primates (Zan Hui Lee, pers. obs.). Road-kills of *P. robinsoni* have also been observed on roads traversing the larger forests (e.g., around Bintang Range and Royal Belum State Park; Lau Ching Fong, pers. obs.).

Some *P. robinsoni* individuals rescued from illegal hunting and the pet trade are placed under human care in the Zoological Park Organisation of Thailand (ZPOT). As this species is one of only a handful of *Presbytis* species that have been successfully kept under human care in zoos, we recommend developing husbandry guidelines and sharing this knowledge across *ex situ* facilities housing *Presbytis* species.



Figures 16b-c: Illustrations of *Presbytis robinsoni* (b) and its colour variant (c) by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Malaysia	Kedah State Sungai Sedim Forest; **Ulu Muda Forest Reserve** Perak State Bukit Larut; Gerik Town rubber plantation; Royal Belum State Park; **Segari Melintang Forest Reserve** Perlis State Perlis State Park
Myanmar	Tanintharyi Region Htaung Pru Reserve Forest (presence uncertain); **Lenya Reserve Forest**; **Ngawun Reserve Forest**; Tanintharyi Nature Reserve (presence uncertain)
Thailand	Narathiwat Province Hala Bala Wildlife Sanctuary Phetchaburi Province and Prachuap Khiri Khan Province Kaeng Krachan National Park Saturn Province Thale Ban National Park (presence uncertain)

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Determine the presence and distribution of the species, particularly in Tanintharyi Nature Reserve and Thale Ban National Park
	Carry out population surveys in the Lenya Reserve Forest, Ngawun Reserve Forest and Htaung Pru Reserve Forest
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Explore alternative subsistence options such as livestock raising
	Designate a no-hunting zone in the Lenya Reserve Forest and Ngawun Reserve Forest
Develop and share best practice guidelines for keeping *Presbytis* spp. under human care	Create guidelines for husbandry under human care, using *P. robinsoni* (also *P. mitrata* and *P. siamensis*) as a model species for the genus
	Share guidelines with *ex situ* facilities housing *Presbytis* species

Presbytis rubicunda (*chrysea* or maybe *ignita*) in Danum Valley Conservation Area ©Chien Lee.

4.15. MAROON LANGUR

Presbytis rubicunda

Vulnerable

4.15.1. RED-NAPED MAROON LANGUR

P. r. carimatae

Endangered

4.15.2. ORANGE-BACKED MAROON LANGUR

P. r. chrysea

Data Deficient

4.15.3. ORANGE-NAPED MAROON LANGUR

P. r. ignita

Vulnerable

4.15.4. SOUTHEAST BORNEAN MAROON LANGUR

P. r. rubicunda

Vulnerable

4.15.5. SOUTHWEST BORNEAN MAROON LANGUR

P. r. rubida

Vulnerable

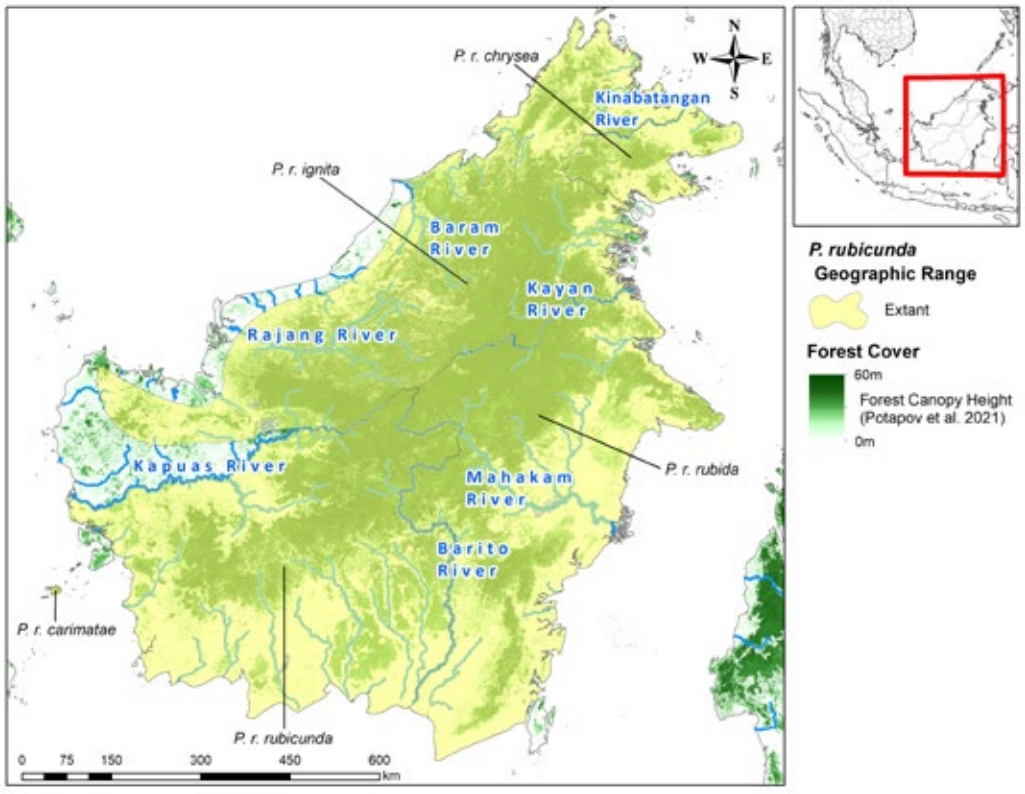


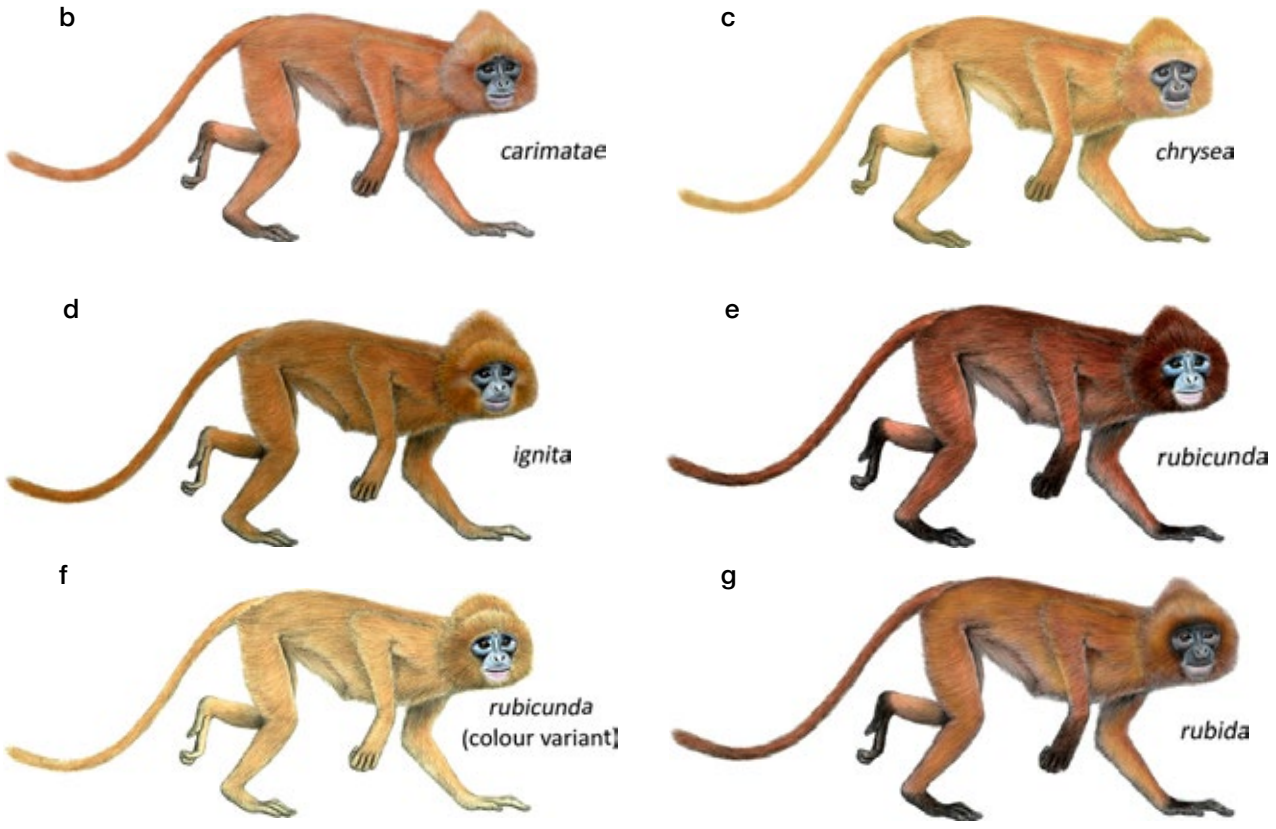
Figure 17a: Geographic range of five subspecies of *Presbytis rubicunda* drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

Presbytis rubicunda is found only on the island of Borneo and on the adjacent offshore island of Karimata (Fig. 17a). Five subspecies are recognised but their taxonomy is disputed. Most of the subspecies justification is based on pelage (Groves, 2001; Figs. 17b-g), rather than differences in calls or genetics. Resolving their taxonomy with additional data is urgently needed, given that there is much morphological intergradation between the subspecies, as well as variation within them.

There may be a transitional zone between two subspecies (*chrysea* and *ignita*) in Sabah's Danum Valley Conservation Area and Kinabatangan Wildlife Sanctuary and its surrounding area, with two morphs (a lighter morph and a darker morph) occurring in the latter. Here, more dark morphs are seen especially in the Gomantong Forest Reserve, a stronghold of the species. Additionally, light and dark morphs are observed along the main Kinabatangan River (see Davies and Lakim, 2022). More studies are needed to better characterise this pelage variation.

The species' habitat continues to decline, due to cash crop plantations, forest fragmentation, and forest fires. Peat swamp forests, particularly in Gunung Mulu National Park in Sarawak and Sebangau National Park in Central Kalimantan Province, require fire prevention and management measures. Poaching of *P. rubicunda* for bezoar stones and capture for pet trade have been observed, but more information is required to assess the level of these threats. In the Kinabatangan region, group numbers and sizes have declined over the past 15 years. Electrocution of this species is routinely observed when individuals use the uninsulated wires to cross between forest patches. Although this species has a broad overall range, we recommend that local density and distribution be more closely monitored and that increased protected status be considered throughout their range.

In Indonesia and Malaysia, a large proportion of the *P. rubicunda* populations are found outside protected areas. Some sites, including the Rungan Landscape, Sebangau National Park, and Tanjung Puting National Park in Central Kalimantan Province, are in need of habitat restoration to rebuild ecosystem integrity. A new capital city is being built in East Kalimantan Province, which will affect not only *P. rubicunda* but also *P. frontata*. Under the development plan, about



Figures 17b-g: *Presbytis rubicunda* subspecies and the colour variant of *P. r. rubicunda*. Illustrations by Stephen D. Nash.

65% of the land area is intended to be transformed into a tropical forest through reforestation (BIMP-EAGA, 2023). It is therefore crucial to understand how this plan would be carried out with the opportunity to conserve flora and fauna in the area.

Remaining *P. rubicunda* populations in Brunei are probably ignita, but more research is needed. As this species is still widely found in Belait and Tutong districts in western Brunei, populations here may be reliably sustained with conservation and education efforts.

***Presbytis rubicunda* (subspecies uncertain) with white eye rings in Wehea Forest ©Mark Spence.**

Presbytis rubicunda (subspecies uncertain) with white eye rings in Wehea Forest ©Doni Prayogo.

Presbytis rubicunda ignita in Brunei ©Marlowe Acompanado.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold; subspecies in brackets)
Brunei	Belait District Bukit Teraja (probably *ignita*); Labi Forest Reserve (probably *ignita*) Belait District and Tutong District Andulau Forest Reserve (probably *ignita*) Temburong District Ulu Temburong National Park (probably *ignita*) Tutong District Tasek Merimbun Heritage Park (probably *ignita*)
Indonesia	Central Kalimantan Province Bawan Forest (subspecies uncertain); Belantikan Protected Forest (subspecies uncertain); Lamandau Nature Reserve (probably *rubida*); Rungan Landscape (probably *rubida*); **Sebangau National Park** (probably *rubida*); Tanjung Puting National Park (probably *rubida*) East Kalimantan Province Kutai National Park (*rubicunda*); Lesan River Forest (*rubicunda*); Sungai Wain Protection Forest (*rubicunda*); Wehea Forest (probably *rubicunda*) North Kalimantan Province Kayan Mentarang National Park (subspecies uncertain) South Kalimantan Province Pleihari Martapuri Nature Reserve (*rubicunda*) West Kalimantan Province Betung Kerihun National Park (subspecies uncertain); Bukit Baka – Bukit Raya National Park (subspecies uncertain); Gunung Palung National Park (subspecies uncertain); **Karimata Island** (*carimatae*)
Malaysia	Sabah State **Danum Valley Conservation Area** (*chrysea* and maybe *ignita*); Deramakot Forest Reserve (subspecies uncertain); Gomantong Forest Reserve (subspecies uncertain); Imbak Canyon Conservation Area (subspecies uncertain); Kinabatangan Wildlife Sanctuary (subspecies uncertain); Maliau Basin Conservation Area (subspecies uncertain); Gunung Kinabalu National Park (subspecies uncertain); Paitan-Sugut Forest Reserve (subspecies uncertain); Sapagaya Forest Reserve (*chrysea*); Sepilok Forest Reserve (subspecies uncertain); **Tabin Wildlife Reserve** (*chrysea*); Tawau Hills (*chrysea*); Ulu Segama Reserve (subspecies uncertain); Sukau Village (subspecies uncertain) Sarawak State Baram Peace Park (*ignita*); Gunung Mulu National Park (*ignita*); Usun Apau National Park (subspecies uncertain)

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample populations of *P. rubicunda* in known locations and analyse the genetic data to clarify taxonomic identity and relationships, particularly of *P. r. carimatae* on Karimata Island and *P. r. chrysea* in Tabin Wildlife Reserve
	Determine the identity of the subspecies in locations where it is uncertain, particularly in the Danum Valley Conservation Area and Kinabatangan Wildlife Sanctuary where subspecies transition zones may exist
Protect and restore core habitat areas	Restore habitats, particularly in the Rungan Landscape, the Sebangau National Park, and the Tanjung Puting National Park in Central Kalimantan Province
	Implement fire control measures in the Gunung Mulu National Park and the Sebangau National Park
Maintain and restore habitat connectivity	Construct canopy bridges across roads and over small tributaries and drains where there is insufficient arboreal connectivity between fragmented areas
	Insulate and maintain overhead electrical wires for safe usage at/near known crossing sites

Presbytis sabana in the Tabin Wildlife Reserve ©Charlie Ryan.

4.16. SABAH GRIZZLED LANGUR

Presbytis sabana

Endangered

Presbytis sabana occurs in the state of Sabah (Malaysian Borneo), as far southwest as the Kalabakan District (Figs. 18a-b). There is some uncertainty as to the limits of the distribution of *P. sabana*, particularly where it meets *P. hosei*. More on-the-ground surveys are needed, especially in the Crocker Range Park. If *P. sabana* does occur in the Crocker Range, it may be a stronghold for the species. This species is confirmed along the lower Kinabatangan River from Batu Puteh to Sukau and in forest patches from Batu Puteh to just north of Lahad Datu ranging from undisturbed to moderately degraded habitat. Here, there have been sightings of individuals with a slightly less pronounced white underbelly but characteristic of *P. sabana* in facial appearance, along with others with the typical white-grey pelage pattern of *P. sabana*. A different, leucistic form (white morph) has also been observed in Tabin Wildlife Reserve (Fig. 18c). In the Danum Valley Conservation Area and the surrounding Ulu Segama Forest Reserve (including around the Bole River), individuals of a white morph were observed in association with *P. sabana* and *P. rubicunda*, but its taxonomic identity has not been determined (Johns, 1989).

Many of the forest patches in the Kinabatangan District where sightings are confirmed are not part of the protected forest network but in agricultural mosaics. With relatively good and intact secondary forest remaining and given that ventrally darker *P. sabana* have been seen there, identifying core areas for protection and raising awareness of the species among local communities are imperative. Given the severe forest loss within *P. sabana*'s distribution and its threatened status, gazetting of unallocated lands

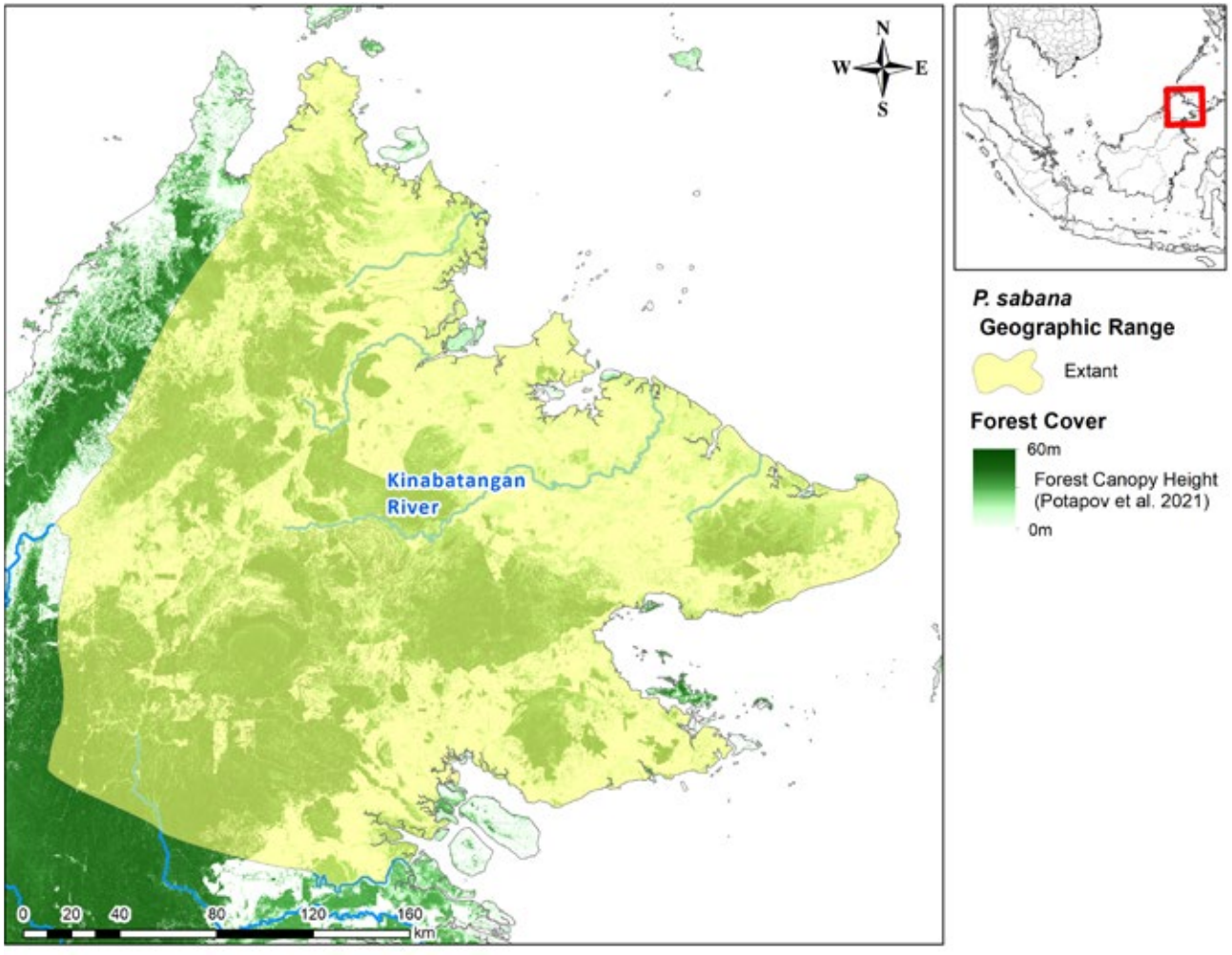
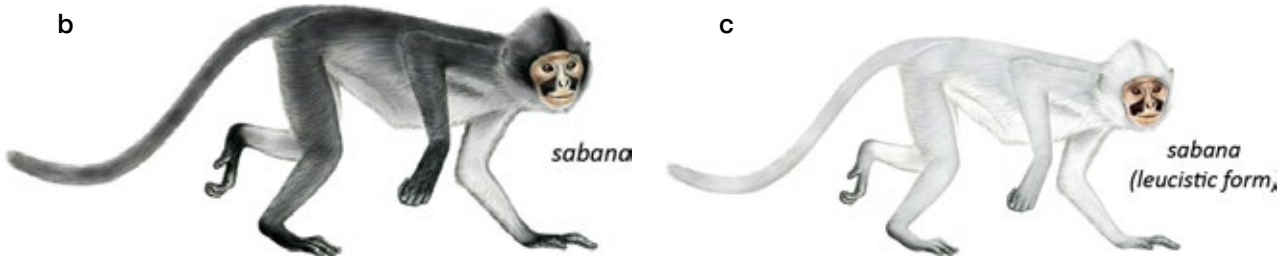


Figure 18a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

to new protected areas within its distribution has long been recommended as a priority (Ehlers Smith, 2014). On the other hand, the Danum Valley Conservation Area and the Tabin Wildlife Reserve are protected areas with ample conservation tourism opportunities. *Presbytis sabana* is difficult to observe but responsible primate-watching opportunities targeting *P. sabana* can be developed following field surveys to determine hotspots.

Overall, there is an urgency to better understand the species' distribution and abundance in Sabah. Given the above concerns, we recommend that *P. sabana* be upgraded to fully protected status in Sabah as a discrete species. Currently, it is recognised as a subspecies of *P. hosei*. This action will also facilitate an improved understanding of its range and distribution and support increased habitat protection in Sabah.



Figures 18b-c: Illustrations of *Presbytis sabana* (b) and a leucistic form (c) by Stephen D. Nash.

***Presbytis sabana* near the Balat ranger station of the Deramakot Forest Reserve ©Mark Spence.**

Leucistic *Presbytis sabana* observed in 2018 in the Tabin Wildlife Reserve ©Charlie Ryan.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Malaysia	Sabah State **Batu Puteh Kinabatangan**; **Crocker Range Park** (presence uncertain); Danum Valley Conservation Area; Balat ranger station of Deramakot Forest Reserve; Kinabatangan Wildlife Sanctuary; Maliau Basin Conservation Area (presence uncertain); Sepilok Forest Reserve; Tabin Wildlife Reserve

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
	Determine the identity of the *Presbytis* species in the Crocker Range Park and in Batu Puteh Kinabatangan
	Create education materials for the differentiation of the langur species
Protect and restore core habitat areas	Identify core areas for protection in Batu Puteh Kinabatangan
Improve economic livelihoods for local communities	Develop conservation tourism opportunities targeting *P. sabana* in the Danum Valley Conservation Area and the Tabin Wildlife Reserve

Presbytis siamensis siamensis in Selangor, Malaysia ©Zan Hui Lee.

4.17. PALE-THIGHED LANGUR

Presbytis siamensis

Near Threatened

4.17.1. RIAU PALE-THIGHED LANGUR

P. s. cana

Vulnerable

4.17.2. CHASEN'S PALE-THIGHED LANGUR

P. s. paenulata

Endangered

4.17.3. BINTAN ISLAND PALE-THIGHED LANGUR

P. s. rhionis

Endangered

4.17.4. MALAYAN PALE-THIGHED LANGUR

P. s. siamensis

Near Threatened

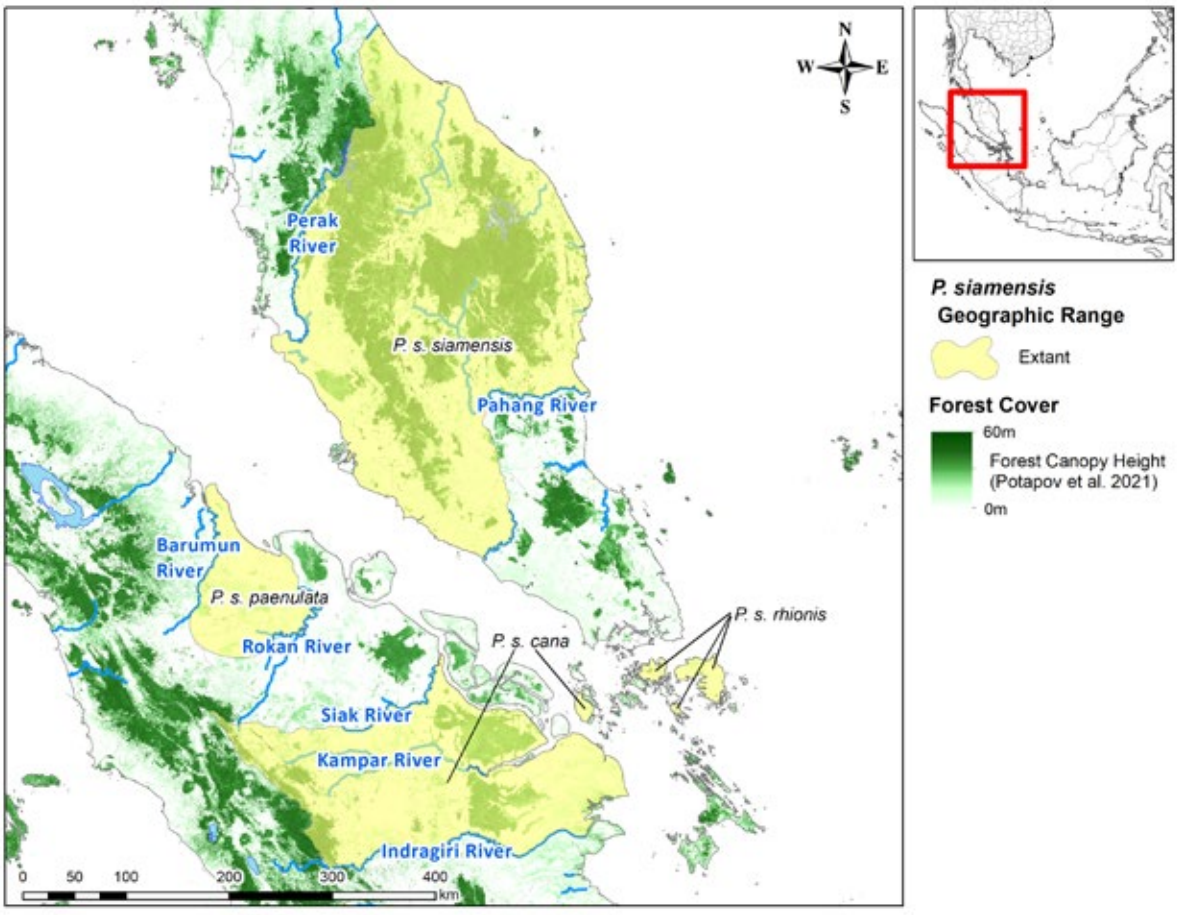


Figure 19a: Geographic range of the four subspecies of *Presbytis siamensis* drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

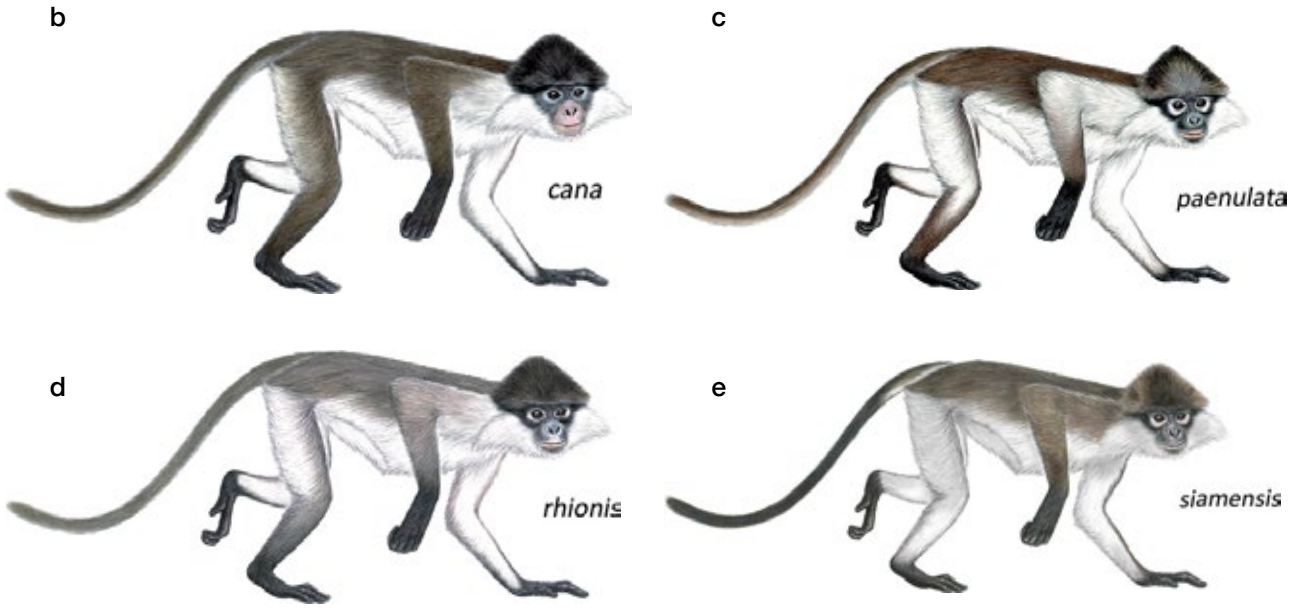
Presbytis siamensis occurs in Indonesia (Sumatra), Peninsular Malaysia, and extreme southern Thailand (Fig. 19a). Four subspecies are recognised: *P. s. cana* (Fig. 19b) in eastern Sumatra and on Kundur Island, *P. s. paenulata* (Fig. 19c) in east-central and northern Sumatra, *P. s. rhionis* (Fig. 19d) on Bintan Island and perhaps Batam and Galang islands, and *P. s. siamensis* (Fig. 19e) in Malaysia and Thailand. There is a need to clarify the taxonomy and distribution of what is considered *P. siamensis* at both the species and subspecies levels (Groves and Roos, 2013b). The mitochondrial HV1 sequence of a sample of *P. s*. *cana* from Kampar Forest, Sumatra has a 11.1% divergence from *P. s. siamensis* and 5.1% from *P. melalophos*, while cytochrome-b and complete mitochondrial genomes show divergences of 2.8% and 2.5% between sequences from *P. s*. *cana* and *P. mitrata/P. melalophos* (Ang et al., 2020). These results suggest that *P. s*. cf. *cana* may represent a genetically distinct *Presbytis* lineage.

Presbytis s. cana

Populations of this subspecies are found in Sumatra's Riau Province and West Sumatra Province. Riau Province is especially vulnerable to deforestation, having experienced the highest rate of deforestation in Sumatra where 63% of the natural forest was lost between 1985 and 2008 (Uryu et al., 2010). Recurring forest fires linked to the El Niño-Southern Oscillation events, and open burning of forest land for agricultural purposes destroy millions of hectares of land in Indonesia every year, and Riau is often one of the worst impacted areas, owing in part to extensive peatlands (World Bank, 2016). Identifying peat swamp habitats where *P. s. cana* (e.g., Tesso Nilo National Park [Supriatna and Mariati, 2014]) occurs and introducing preventive and management measures of fires will be needed.

Riau Ecosystem Restoration (RER) is a private sector-led project set up to restore and conserve ecologically important, high conservation areas on Indonesia's Kampar Peninsula and Padang Island. It would be opportune to explore a partnership with RER to identify villages to collaborate in protecting and restoring habitats (e.g., Bukit Bungkuk Wildlife Sanctuary [Yasir and Sutrisno, 2019]) and/or establishing agroforests suitable for langurs in and around plantations.

Wildlife tourism opportunities are currently being developed in the Air Putih Nature Reserve and Geopark Silokek, where food provisioning has started. Responsible primate-watching guidelines (Waters et al., 2023) and proper management are critically needed to stop food provisioning and prevent human-wildlife conflicts in these areas.



Figures 19b-e: *Presbytis siamensis cana* (b), *P. s. paenulata* (c), *P. s. rhionis* (d) and *P. s. siamensis* (e). Illustrations by Stephen D. Nash.

Presbytis s. paenulata

This subspecies occurs almost exclusively in Sumatra's vulnerable coastal habitat, with only one protected area, the Zamrud National Park in Riau Province. Little is known about this subspecies, highlighting an urgency to better understand its distribution, population and ecology. An ecological corridor established for Sumatran tigers in Zamrud National Park needs additional restoration with food plants for *P. s. paenulata* in order to encourage its use. While there are no available records of hunting of *P. s. paenulata* (as for *P. s. cana* and *P. s. rhionis*) for food, there are non-targeted, opportunistic captures of langurs for the pet trade. Dialogue with law enforcers and local communities is needed to assess and mitigate this threat.

Presbytis siamensis cana **©Andie Ang.**

Presbytis siamensis rhionis **on Bintan Island, Indonesia ©Andie Ang.**

Presbytis s. rhionis

This subspecies is found on Bintan Island of Indonesia's Riau Archipelago. Given the uncertainty of its presence on Batam and Galang Islands, the population on Bintan Island may be the only stronghold of this subspecies. Field research is needed to verify if the subspecies is found outside of Bintan Island.

Populations of *P. s. rhionis* in the forests in Lagoi (Bintan Resorts), Riau Islands Province, appear to be better protected from deforestation and poaching. This area consists of 230 km^2 of land with various hotels and tourist facilities, managed by Bintan Resort Cakrawala (Fundacion Metropoli, 2011). Access to this area by non-tourist, non-staff members of the public is mostly restricted. However, this area will be further developed to increase tourist capacity and economic activities, such as the development of the Formula 1 international circuit (Beda and Noviana, 2022), which would deforest existing habitats. It is imperative to engage the developers and management to identify core habitats for protection, and to restore degraded habitats with food plants of *P. s. rhionis*. With declining habitat availability, *P. s. rhionis* individuals might also need to be relocated away from the designated race circuit area into a suitable and protected habitat.

Both in and outside Lagoi, there have been reports of *P. s. rhionis* road-kills as they attempt to cross between forest fragments. Road-kill mitigation efforts such as traffic calming measures and canopy bridges should be carried out.

Other protection efforts have come from the communities outside Lagoi. In particular, the villages of Ekang, Kota Baru, and Pengudang have retained some of the forested habitats and also restored the areas around their camping ground and coffee shops with *P. s. rhionis* food plants. These efforts need to be encouraged with more financial and resource support.

Presbytis s. siamensis

Being the most widespread of the subspecies and also relatively easy to observe, *P. s. siamensis* is probably the most intensively studied *Presbytis* taxon, at least in the 1970s and 1980s, in Kuala Lompat (Curtin, 1976; Bennett, 1983) and Sungai Tekam (Johns, 1986), both in central Pahang. Since then, however, there has been a severe lack of attention and research on *P. s. siamensis*, such that there is little current information on its abundance and ecology. Opportunistic data on *P. s. siamensis* collected during transect surveys between 2007 and 2008 on land-bridge forest islands in Lake Kenyir, Terengganu, found that the langurs have persisted on the islands as small as 1.1 ha two decades

***Presbytis siamensis siamensis* in Fraser's Hill, Pahang, Malaysia ©Han.**

***Presbytis siamensis siamensis* in the Hala Bala Wildlife Sanctuary, Thailand ©Vatcharavee Sriprasertsil/Thailand Hornbill Project.**

post-isolation since the damming of the Kenyir River in 1985 (Yong, 2015).

Habitat fragmentation, along with food provisioning especially in urban areas, are driving the langurs onto the roads and into conflicts with people. Road-kill incidents have been observed across its range, such as on major highways of Perak (Zan Hui Lee, pers. obs.) and near protected areas in Kelantan (Lau Ching Fong, pers. obs.). Restoration of habitat connectivity through canopy bridges and planting of native food plants in the Greater Klang Valley, particularly near urban green spaces in Selangor, such as the Shah Alam Community Forest, Kota Damansara Community Forest and Taman Rimba Ampang, and in Kuala Lumpur, such as Taman Rimba Kiara, can help mitigate the negative impacts of habitat fragmentation.

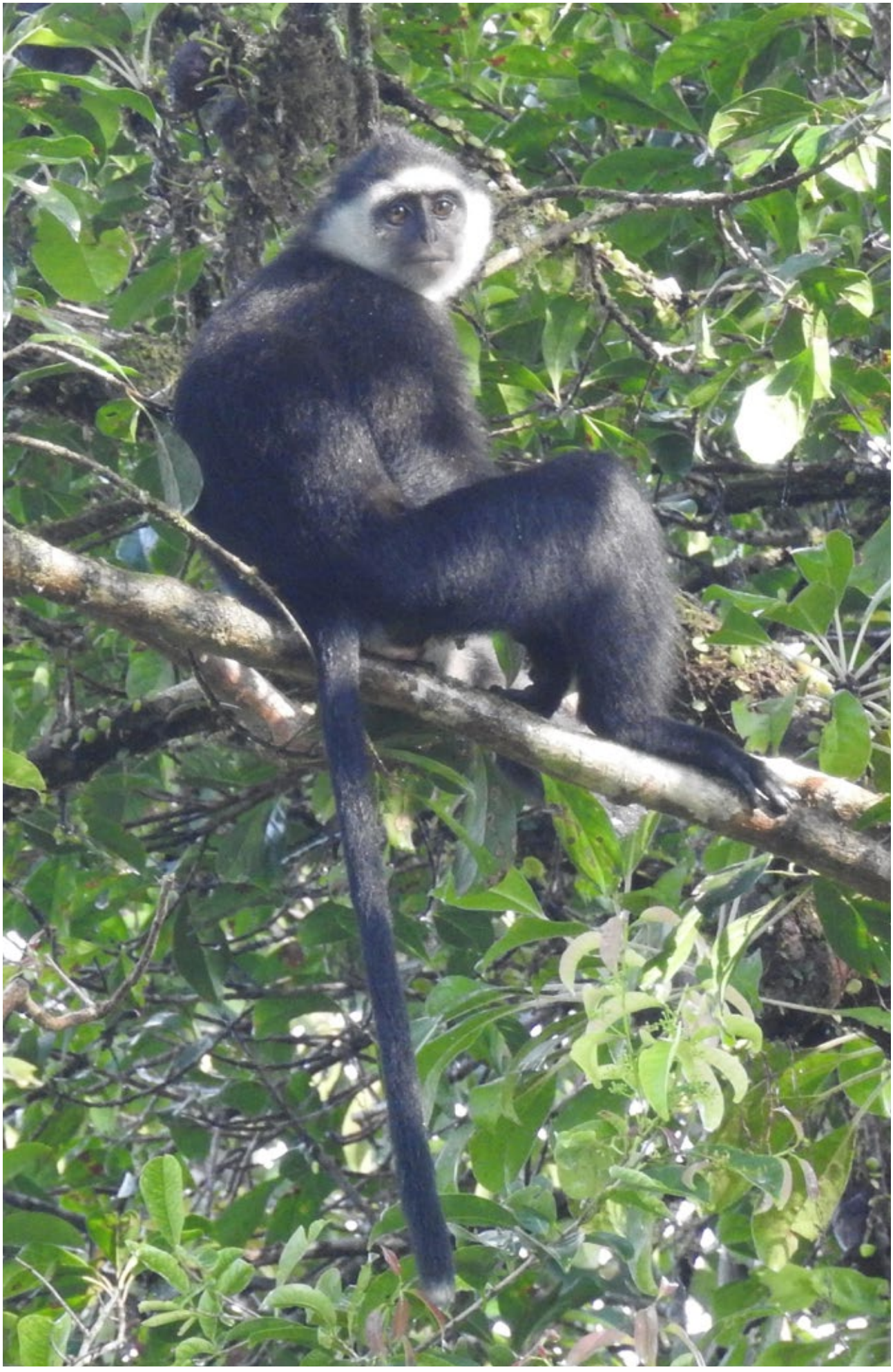
Being the oldest national park in Malaysia and a popular tourist destination in the country, Taman Negara National Park can become a platform for conservation tourism opportunities for *P. s. siamensis*, following proper primate-watching guidelines (Waters et al., 2023).

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold, subspecies in brackets)
Indonesia	Riau Islands Province Batam Island (*rhionis*; presence uncertain); Galang Island (*rhionis*; presence uncertain); Bintan Island [**Ekang Village**; Kota Baru Village; **Lagoi**; Pengudang Village] (*rhionis*) Riau Province **Air Putih Nature Reserve** (*cana*); Bukit Bungkuk Wildlife Sanctuary (*cana*); Bukit Tigapuluh National Park (*cana*); Harau Nature Reserve (*cana*); Kampar Forest (*cana*); Kerumutan Reserve Forest (*cana*); Tesso Nilo National Park (*cana*); **Zamrud National Park** (*paenulata*) West Sumatra Province **Geopark Silokek** (*cana*)
Malaysia	Johor State Bukit Perdana Batu Pahat (*siamensis*); Gunung Ledang National Park (*siamensis*) Kelantan State, Pahang State, and Terengganu State **Taman Negara National Park** (*siamensis*) Negeri Sembilan State Housing area near Gunung Tampin (*siamensis*); Gunung Datuk Recreational Forest (*siamensis*) Pahang State Fraser's Hill (*siamensis*); Tengku Hassanal Wildlife Reserve (*siamensis*) Perak State Kledang Saiong Forest Eco Park (*siamensis*); Temenggor Forest Reserve (*siamensis*) Selangor State Ampang foothill (*siamensis*); Bukit Kiara (*siamensis*); Shah Alam Community Forest (*siamensis*); Sungai Congkak Recreational Forest (*siamensis*); Sungai Lalang Forest Reserve (*siamensis*)
Thailand	Narathiwat Province and Yala Province Hala Bala Wildlife Sanctuary (*siamensis*) Yala Province Population isolate at 6°22'N, 101°08'E (*siamensis*)

Priority objectives and recommended actions

Priority objectives	Recommended actions
Resolve taxonomy	Sample all subspecies of *P. siamensis* in known locations and analyse the genetic data to clarify taxonomic identity and relationships
Understand population size, distribution and ecology	Determine the presence of *P. s. rhionis* on Batam and Galang islands
	Carry out field surveys to determine the population size and distribution, focussing particularly on the priority sites
	Create education materials for the differentiation of the langur species
Protect and restore core habitat areas	Work with Riau Ecosystem Restoration (RER) to restore habitat and/or establish agroforests in plantations (*cana* and *paenulata*)
	Implement fire control measures in hotspots
Maintain and restore habitat connectivity	Collaborate with oil palm and mining companies in Zamrud National Park (*paenulata*) to restore existing wildlife corridor
	Construct canopy bridges in Lagoi (*rhionis*)
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in the Air Putih Nature Reserve (*cana*), Geopark Silokek (*cana*), Ekang village (*rhionis*), Lagoi (*rhionis*), Fraser's Hill (*siamensis*), and the Taman Negara National Park (*siamensis*)



Presbytis siberu ©Ismail Saumanuk/Swaraowa.

4.18. SIBERUT LANGUR

Presbytis siberu

Endangered

Presbytis siberu is one of seven endemic primate taxa on the Mentawai Islands (West Sumatra, Indonesia; Figs. 20a-b). The Mentawai Islands are a group of about 70 islands off the west coast of Sumatra, covering a total area of 6,011 km^2, with a human population of about 91,000 people (BPS-Statistics Indonesia, 2023). *Presbytis siberu* is found on the northernmost island of the Mentawai Islands named Siberut, while the closely-related *P. potenziani* is distributed on Sipora, North Pagai and South Pagai islands.

The Mentawai Islands have been recognised as a global priority for conservation since the 1970s, and the first comprehensive plan for their conservation, entitled "Saving Siberut: A Conservation Master Plan", was published more than 40 years ago (WWF, 1980). A conservation plan for the island's primates followed shortly after (Eudey, 1987). Since the 1980s, attention to, and support for, conservation on the Mentawai Islands has come and gone, with some major, short-term investments and long periods of little to no attention (Whitten, 2009). This lack of long-term support has led to a serious degradation in the Mentawai ecosystem and a collapse of the primate populations. The last in-depth primate studies on Siberut, the largest and most accessible island, is now more than a decade old (Quinten et al., 2010; see Setiawan et al., 2020).

Hunting has increased in recent years as a result of improved access to remote areas due to logging roads, as well as the replacement of bows and arrows with air rifles. Furthermore, local rituals and taboos that previously regulated hunting have been progressively eroded due to missionary and state influences (Mitchell and Tilson, 1986). An island-wide campaign to preserve traditional practices and taboos rather than hunting

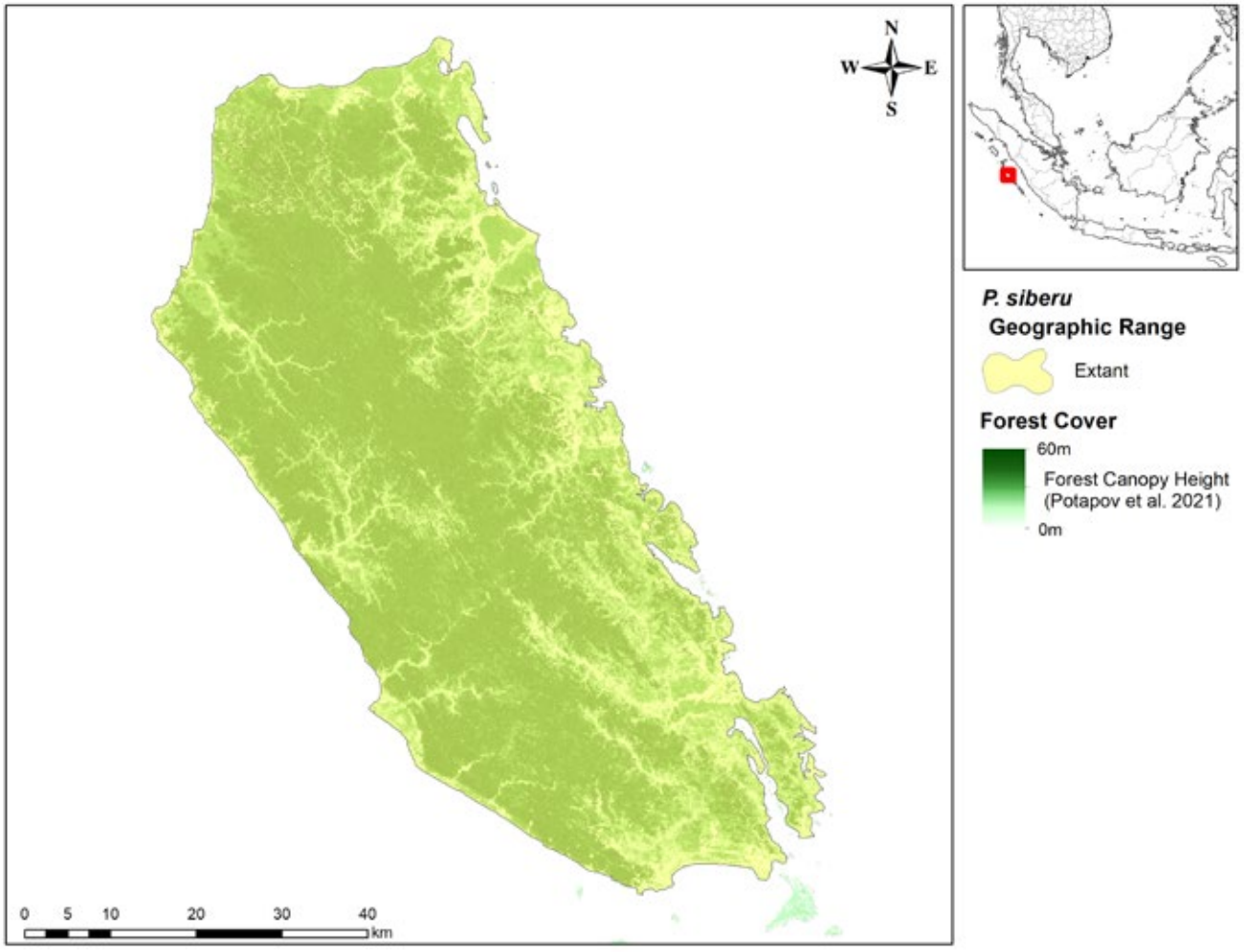


Figure 20a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

with modern guns could be explored. Working with the local government and community to ban the use and possession of air rifles throughout the archipelago should also be looked into.

Siberut Island has a national park that covers 47% of the island. At present, however, the national park lacks proper management and enforcement against illegal activities, and habitat loss is a serious threat, especially outside the national park. Increased protection of Siberut National Park is needed, and it is imperative to work with local communities to manage their forests outside the park. The Kalaweit organisation is collaborating with the government outside the national park, so there may be an opportunity to explore working together. The Peleonan Forest in North Siberut also requires formal protection. Work is already underway to build the Trans-Mentawai highway, a two-lane paved road running north-south along the eastern half of Siberut Island (Harbinson, 2019). Understanding the distribution of *P. siberu* in this area and identifying priority sites for its conservation is crucial.

To foster economic resilience and environmental sustainability on Siberut Island, there is a need to diversify income streams through agroforestry of different forest commodities and to improve agricultural yield. Involving local communities (in longhouse *uma malingai*) in conservation tourism and wildlife monitoring projects is essential, empowering them as advocates.

Education campaigns in schools and religious communities to raise awareness on *P. siberu* and all the Mentawaian primates is needed. Co-designing curriculum and materials with teachers to include Mentawaian biodiversity and to mainstream nature education will help improve knowledge and appreciation of wildlife and the environment. We recommend a collective effort to support young people to remain in schools and pursue higher education.

Overall, it is crucial to develop an up-to-date action plan for all primates of the Mentawai Islands. Some of the recommended next steps include (1) a stakeholder engagement with relevant government agencies and the local community, (2) a large-scale conservation education campaign to raise awareness about the rich biodiversity and endemism of not only the primates, but also other taxonomic groups, (3) the development of conservation tourism, following the model of the flourishing diving industry on the islands, (4) the exploration of carbon/biodiversity credit projects on the islands, and (5) the protection of at least one priority, representative site for primates on each of Sipora, North Pagai, South Pagai, and Siberut islands.

Figure 20b: Illustration of *Presbytis siberu* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	West Sumatra Province **Peleonan Forest**; **Siberut National Park**; **Tololago Forest**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution in all remaining habitats
Protect and restore core habitat areas	Work with government and landowners to protect habitat and/or establish agroforests in plantations
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Determine the extent of hunting in its range and take legal action where appropriate
Improve economic livelihoods for local communities	Develop conservation tourism opportunities on Siberut Island
	Create education materials for the differentiation of the langur species
Build capacity in government and management staff	Train the government and management staff of Siberut National Park to carry out wildlife monitoring

Presbytis sumatrana from Natal District, North Sumatra Province ©Wilson Novarino.

4.19. BLACK SUMATRAN LANGUR

Presbytis sumatrana

Endangered

Presbytis sumatrana occurs in western and north-central Sumatra (Figs. 21a-b), but the actual delineation of the distribution of this species and other Sumatran *Presbytis* species, i.e. *P. bicolor*, *P. melalophos*, *P. mitrata*, *P. siamensis* (*cana* and *paenulata*), requires further studies and examination. A buffy population occupies a limited distribution from about 0°20'S to about 0°40'N. The five *P. sumatrana* type specimens from Kampung Sawah Village (0°08'N 99°55'E) in Natal District in North Sumatra Province indicate intergradation between this population and the predominantly brown *Presbytis* that replaces it to the north. Intermediates between them were also seen in Kotanopan District (0°40'N 99°40'E) and between Muara Sipongi District in North Sumatra Province and Sunpadang District in West Sumatra Province (0°36'N 99°58'E). Further intergradation probably occurs at the Rimbo Panti Nature Reserve (0°22'N 100°02'E) in West Sumatra Province. Studies on the morphology, genetics, and geographic distribution are urgently needed to establish the status of *P. sumatrana*, and its relationship with *P. melalophos*, the buffy population, and populations further north. The validity of *Presbytis aygula margae* Hooijer, 1948 to the north-east should also be reviewed.

The identity of the *Presbytis* langur population in Gunung Talakmau is uncertain as it may be the boundary between *P. sumatrana* and *P. melalophos*. There, there is ongoing forest clearing for oil palm plantations and also conversion of rubber estates to oil palm monoculture. Partnering with companies and small-scale rubber plantation owners should be encouraged to prevent conversion to oil palm plantations and/or establish agroforests with the potential of restoring the habitat.

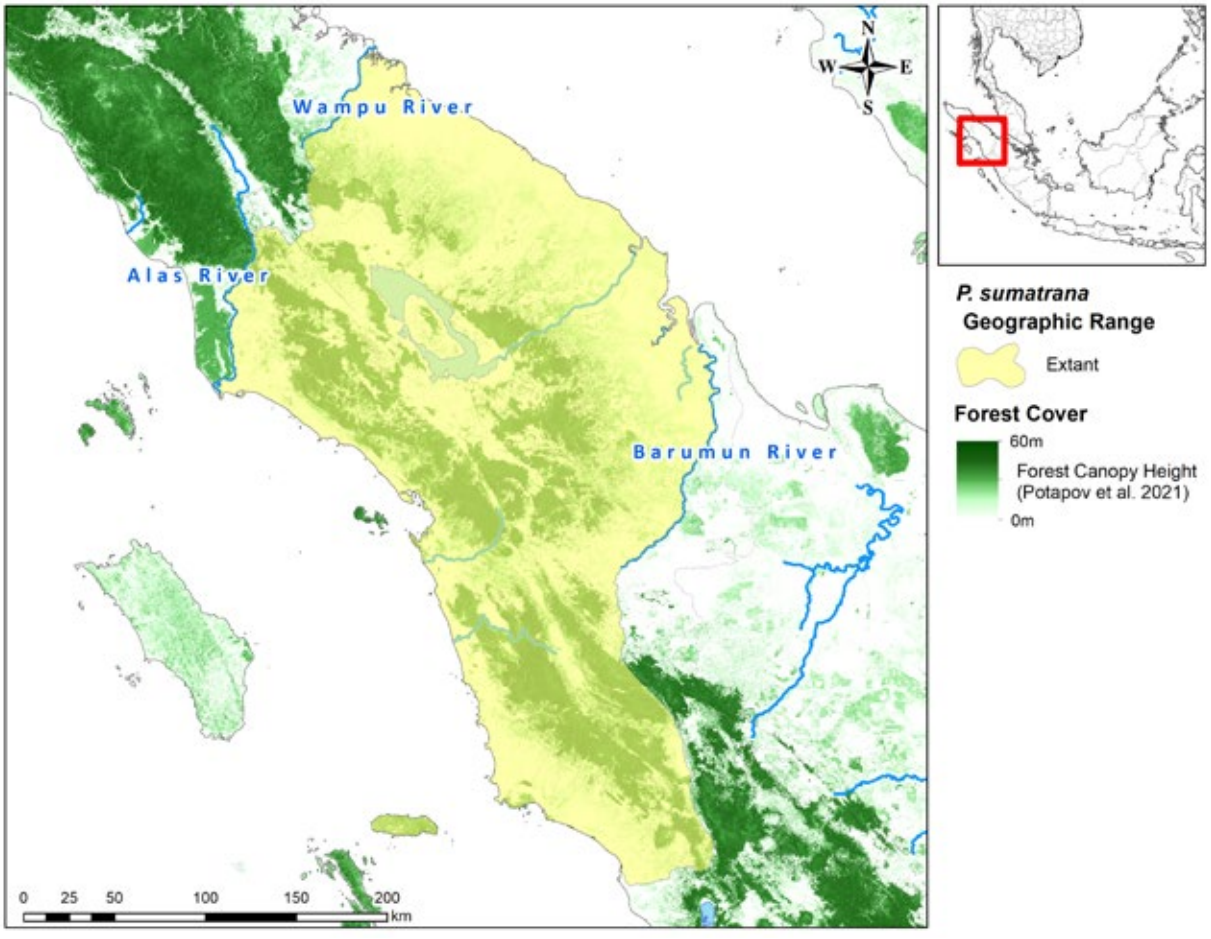


Figure 21a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

The survival of *P. sumatrana* on the Batu Islands in North Sumatra Province (primarily the three largest islands: Pini, Tanahmasa and Tanahbala) is uncertain and requires field surveys.

The Batang Toru Ecosystem hosts some of the most biodiverse ecosystems, covering at least six principal habitat types (Perbatakusuma et al., 2008) and is home to *P. sumatrana* and the Critically Endangered Tapanuli orangutan. It is currently threatened by a hydropower project, a geothermal power plant and gold mining (Jong, 2023). Additionally, there is significant agricultural encroachment around the Batang Toru Ecosystem. Field surveys are needed to determine abundance and distribution of *P. sumatrana* here, and to identify priority areas for its conservation.

Individuals of this species sometimes feed on fruit crops, and farmers and village heads have commissioned hunters to kill them. There needs to be a strong partnership with the government and farmers to develop and implement preventive and deterrence measures, along with outreach activities to increase awareness of *P. sumatrana*. Regulating compensation payment, identifying more suitable locations of growing crops, and improving crop yield are ways that could be explored. Building capacity of these stakeholders to support human-wildlife coexistence is, therefore, necessary.

Illegal logging is still taking place in Rimbo Panti Nature Reserve. By turning it into a primate-watching site, conservation tourism can be developed to provide a sustainable livelihood for communities, following proper primate-watching guidelines (Waters et al., 2023).

A juvenile *Presbytis sumatrana* from Natal District, North Sumatra Province ©Wilson Novarino.

Figure 21b: Illustration of *Presbytis sumatrana* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	North Sumatra Province Batang Gadis National Park; **Batang Toru Ecosystem**; Batu Islands (primarily **Pini**, Tanahmasa and Tanahbala; presence uncertain); Berastagi Town; Gunung Leuser National Park; Kotanopan District West Sumatra Province Gunung Talakmau (species uncertain); Rimbo Panti Nature Reserve

Priority objectives and recommended actions

Priority objectives	Recommended actions
Understand population size, distribution and ecology	Carry out field surveys to determine the population size and distribution in all remaining habitats
Protect and restore core habitat areas	Work with government and landowners to protect habitat and/or establish agroforests in plantations, particularly in Gunung Talakmau
	Work with government and relevant stakeholders to stop illegal logging in the Rimbo Panti Nature Reserve
Regulate hunting through education, policy and active law enforcement	Create education materials to communicate the importance of the species for conservation
	Develop and implement preventive and deterrence measures to keep *P. sumatrana* away from cropland and urban areas
	Determine the extent of hunting in its range and take legal action where appropriate
Improve economic livelihoods for local communities	Develop conservation tourism opportunities in the Rimbo Panti Nature Reserve
	Create education materials for the differentiation of the langur species
Build capacity in government and management staff	Train the government and management staff of protected areas to carry out wildlife monitoring

Presbytis thomasi **in the town of Meulaboh, Aceh Province ©Muhammad Iqbal.**

4.20. THOMAS' LANGUR

Presbytis thomasi

Vulnerable

Presbytis thomasi is found in northern Sumatra in Aceh and North Sumatra provinces, mostly north of Wampu River and Alas River (Aimi and Bakar, 1996; Figs. 22a-b). This species has been recorded to inhabit undisturbed primary rainforest (Sterck et al., 2005), primary and secondary forest with rubber plantations on its fringes (Wich and de Vries, 2006), rubber plantations (Gurmaya, 1986), and lowland alluvial, riparian forests. The species can adapt to selective logging of trees but densities tend to be lower closer to human settlements (Hankinson et al. 2023).

The Jantho Nature Reserve and Gunung Leuser National Park are two nationally protected parks where populations of *P. thomasi* can reliably be sustained with stronger law enforcement against habitat disturbance and hunting. Habitat restoration with *P. thomasi* food plants in the rehabilitation block in the Jantho Nature Reserve is also needed. Establishing and maintaining wildlife corridors across the agricultural landscape within *P. thomasi* habitat is important.

Langkat is a water catchment area heavily populated with human settlements and oil palm plantations. This area is in need of protection from further deforestation and land conversion. A high conservation value forest (HCVF) within the oil palm plantations could be identified and protected with collaboration and enforcement.

Although protected by the local Batak traditional and religious taboos, there is still some hunting of *P. thomasi*. The langurs also come into conflict with farmers when they eat crops. The farmers do not know that *P. thomasi* is a protected species. Preventive and deterrence measures need to be developed and implemented in these croplands, along with outreach activities to increase awareness of *P. thomasi* and its protected status to promote human-langur coexistence.

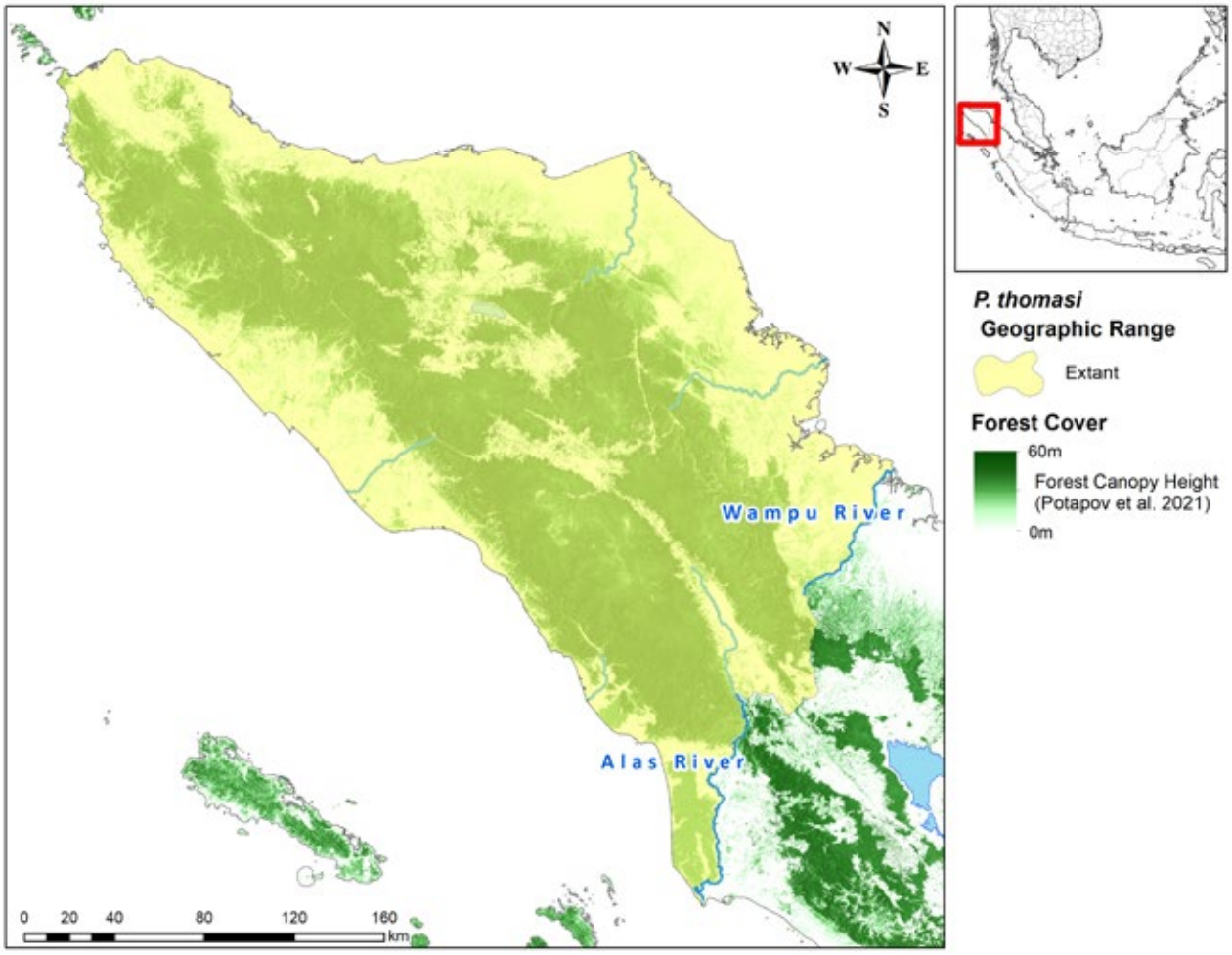


Figure 22a: Geographic range drawn by Zan Hui Lee. Modified from the IUCN Red List of Threatened Species version 2022-6.3.

In Bukit Lawang, *P. thomasi* is provisioned by tourists and is also incidentally fed by tour agencies looking to attract rehabilitated, released orangutans. Over-habituation of *P. thomasi* leads to undesirable human-langur interactions. Responsible primate-watching guidelines (Waters et al., 2023) in Bukit Lawang need to be implemented.

***Presbytis thomasi* in Gunung Leuser National Park ©Ruskhanidar and Misdi.**

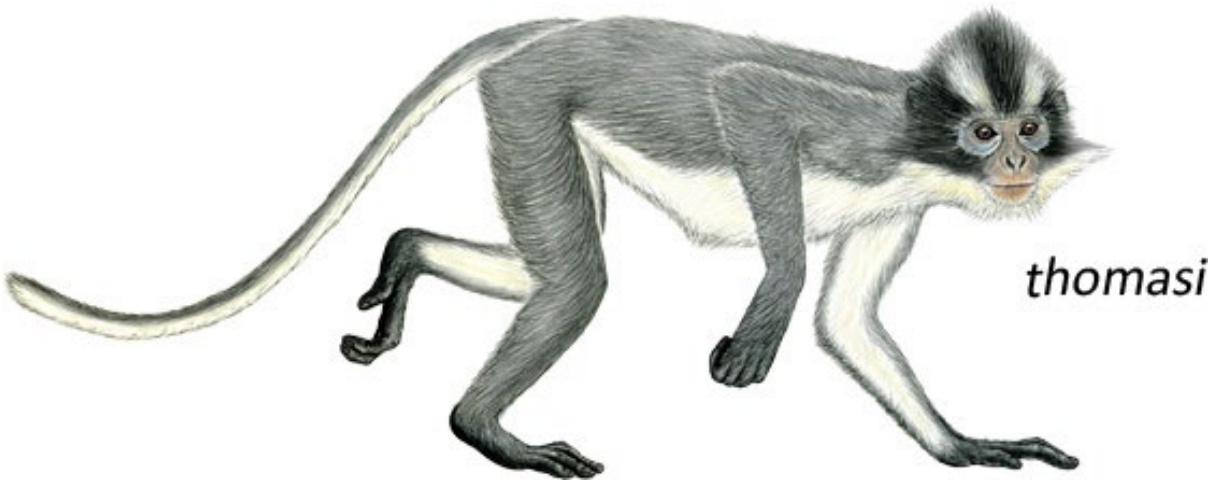


Figure 22b: Illustration of *Presbytis thomasi* by Stephen D. Nash.

Locations of occurrence and priority sites

Country	Locations of occurrence (priority sites in bold)
Indonesia	Aceh Province **Jantho Nature Reserve**; Lingga Isaq Hunting Park; Seulawah Ecosystem; South Aceh Protected Forest; Ulu Masen Ecosystem Aceh Province and North Sumatra Province **Gunung Leuser National Park** North Sumatra Province **Bukit Lawang**; **Langkat**

Priority objectives and recommended actions

Priority objectives	Recommended actions
Protect and restore core habitat areas	Plant food plants in the rehabilitation block in the Jantho Nature Reserve
	Maintain high conservation value forest in oil palm plantations in Langkat
Maintain and restore habitat connectivity	Establish and maintain wildlife corridors across the agricultural landscape within *P. thomasi* habitat
Promote human-langur coexistence	Develop and implement preventive and deterrence measures to keep *P. thomasi* away from cropland
	Create education materials to communicate the importance of the species for conservation and its protected status in Indonesia
Improve economic livelihoods for local communities	Implement responsible primate-watching guidelines in Bukit Lawang

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APPENDIX: OVERVIEW OF TAXON-BASED AND GENUS-WIDE RECOMMENDED ACTIONS

The table below presents the nine recommended conservation actions for the *Presbytis* genus, with its relevance to the taxon indicated by a blue cell. Additionally, priorities which are especially urgent for the taxa are written in the cells.

Presbytis species\Actions	(1) Field surveys	(2) Protect/ Restore habitat	(3) Raise awareness	(4) Conservation tourism	(5) *Ex situ* care	(6) Update list of protected species	(7) Multi-species collaboration	(8) Secure funding	(9) Global network
P. bicolor	+taxonomy	+fire control measures	+reduce hunting						
P. canicrus		+fire control measures	+reduce hunting						
P. chrysomelas chrysomelas	+taxonomy	+fire control measures	+reduce hunting						
P. chrysomelas cruciger	+taxonomy	+fire control measures	+reduce hunting						
P. comata	+taxonomy								
P. femoralis									
P. fredericae	+taxonomy								
P. frontata			+reduce hunting						
P. hosei	+taxonomy		+reduce hunting						
P. melalophos	+taxonomy								
P. mitrata	+taxonomy								
P. natunae			+reduce hunting						
P. percura									
P. potenziani			+reduce hunting						
P. robinsoni			+reduce hunting						
P. rubicunda carimatae	+taxonomy	+fire control measures							
P. rubicunda chrysea	+taxonomy	+fire control measures							
P. rubicunda ignita	+taxonomy	+fire control measures							

P. rubicunda rubicunda	+taxonomy	+fire control measures							
P. rubicunda rubida	+taxonomy	+fire control measures							
P. sabana	+taxonomy								
P. siamensis cana	+taxonomy	+fire control measures							
P. siamensis paenulata	+taxonomy	+fire control measures							
P. siamensis rhionis	+taxonomy	+fire control measures							
P. siamensis siamensis	+taxonomy	+fire control measures							
P. siberu			+reduce hunting						
P. sumatrana			+reduce hunting						
P. thomasi									

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