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# A Survey of Miller's Grizzled Surili, *Presbytis hosei canicrus*, in East Kalimantan, Indonesia

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**Abstract:** Miller's grizzled surili, *Presbytis hosei canicrus*, is the rarest of the four *hosei* subspecies, all endemic to the island of Borneo. From 5 March to 6 April 2008, we carried out a survey to examine the status of this monkey in the eastern part of Borneo, most particularly in Kutai National Park. We were unable to find any evidence for the continued existence of *Presbytis hosei* in the park. We were able to locate just one group occupying the riverbank habitat of Baai River, isolated by oil palm plantations in the District of Karang, East Kalimantan. Forest fires, particularly in 1997–1998, and hunting for food and for their bezoar stones are probably the main causes of the probable extirpation of *P. hosei* in the Kutai National Park. Forest loss due to extensive oil palm plantations is the main threat to this species in the areas of Sangkulirang and Karang.

**Key words:** *Presbytis hosei canicrus*, east Kalimantan, survey, habitat, forest fires, palm oil

## Introduction

The grizzled surili, *Presbytis hosei* (Thomas, 1889), is a Bornean endemic consisting of four subspecies (Brandon-Jones *et al.* 2004). Miller's grizzled surili, *Presbytis hosei canicrus* Miller, 1934, occurs in the northeastern part of Borneo, in Kutai National Park, Mt. Talisayan, and in the Karang River basin in East Kalimantan, Indonesia (Supriatna and Wahyono 2000). It is now very rare, and has been listed as one of the world's 25 most endangered primates (Brandon-Jones 2006). It has been classified as Endangered by V. Nijman, E. Meijaard and J. Hon (assessors) on the 2008 IUCN Red List of Threatened Species (IUCN 2008). This assessment was based on an evident decline in the population due to extensive habitat loss, fragmentation and hunting. The assessors indicated, however, that the geographical boundaries of the range of *P. hosei* are unknown, and future surveys could result in it being reclassified.

Its former stronghold, Kutai National Park, has been largely wrecked, and only 5% of its forest remains. Its destruction was largely due to logging concessions, illegal settlement and massive and widespread forest fires. The population of *P. h. canicrus* believed to occur in this park, however, has never been surveyed (Meijaard and Nijman 2000). Here we report on a survey of this species in the Kutai National Park and other parts of its known geographic distribution.

## Methods

From 5 March 2008 to 6 April 2008, we surveyed three sites in Kutai National Park (created in 1982, 198,629 ha)—Prebab (00°31'54.6"N, 117°27'54.0"E), Mentoko (00°34'04.0"N, 117°25'53.0"E), and Melawan (00°30'17.3"N, 117°26'45.5"E). We also traveled along the Sangata River (that forms the northeastern boundary of the park) starting from the town of Sangata lama downstream to the mouth of the river. We surveyed locations outside the Kutai National Park: Baai River from Pengadan village (01°15'10.9"N, 117°45'20.3"E); Karang River from Perondongan village (01°20'15.1"N, 117°42'14.9"E); and another location in a karst area, north-east of Mt. Beriun (01°09'00.6"N, 117°22'48.8"). These locations are in the Districts of Sangkulirang and Karang of the East Kutai Regency (Fig. 1). The surveys conducted on foot used line transect methods (Whitesides *et al.* 1988). We walked along existing trails (cut by the research station in Kutai National Park), and in some cases we set up new transects where trails were unavailable. Each transect was 2 to 5 km long. We recorded animal-to-observer distances using a laser rangefinder, and noted the number of individuals, group spread, age-class categories of the individuals seen, their behavior, and their responses to the observer. The surveys were begun at about 07:00 and would continue till about 17:30 h.

We also surveyed rivers that we presumed passed through areas with habitat suitable for *P. hosei*. We surveyed from 06:30 to 09:30 and 16:00–18:00. Our speed was 2–3 km/hour, and the surveys were repeated up to three times on different days. Vegetation types were recorded along the transects, as were any signs of disturbance or sources of threat to the monkeys. We interviewed local people so as to obtain information on the occurrence of *P. hosei*, the people's impressions of their abundance, and to gauge the situation concerning hunting and the threats that the species is facing.

## Results and Discussion

### Kutai National Park

Rodman (1978) carried out primate surveys in the Kutai National Park (then the Kutai Nature Reserve) in 1970–1971 (1 May 1970 to 31 July 1971) and 1975 (1 July to 24 August). His study site was on the Mentoko River, just south of the Sengata River in the northeast corner of the park (Fig. 1; location 2 in Table 1). In the 1971 study, Rodman (1978) recorded seven *P. hosei* groups (then referred to as *P. aygula*, following

Napier and Napier [1967]) in an area of 2.74 km<sup>2</sup>, estimating a density 2.6 groups/km<sup>2</sup>. From this, and based on a group size of eight, Rodman calculated a density of 20.4 individuals/km<sup>2</sup>. Berenstain (1986) reported on the aftermath of forest fires in 1982–1983; fires that destroyed 3.5 million ha of mainly forested land in East Kalimantan. Only one-quarter of the 3 km<sup>2</sup> forest at Mentoko remained, but there were still six groups of *P. hosei* there. Azuma (1988) also reported that the species could still be found in Kutai National Park. Fires again ravaged East Kalimantan's forests in 1991/1992 and 1993/1994, and the El Niño-related fires of 1997–1998 destroyed a total of 5.2±0.3 million ha in the region (Siegert *et al.* 2001). Of this about 2.6 million ha of forest was burned, with varying degrees of damage but primarily affecting recently logged forests. By the time the rains started at the beginning of May 1998 almost the entire basin area in the Kutai district had been burned (Hoffmann *et al.* 1999; Siegert *et al.* 2001) and only 5% of the national park remained forested (Meijaard and Nijman 2000). Nijman (2001) failed to locate any *P. hosei* groups in a survey in the eastern part of the Kutai National Park in 2000.

**Table.1.** Results of the survey for *Presbytis hosei canicrus* in the 9 localities in the districts of Sangkulirang and Karangan in eastern Borneo: 5 March 2008 to 6 April 2008. Also listed are other primates recorded: slow loris (*Nycticebus coucang*), long-tailed macaque (*Macaca fascicularis*), pig-tailed macaque (*M. nemestrina*), proboscis monkey (*Nasalis larvatus*), the silvery leaf monkey (*Trachypithecus cristatus*), Müller's grey gibbon (*Hylobates muelleri*), and the Bornean orangutan (*Pongo pygmaeus*).

	Locations	Transect length Coordinates	<i>P. hosei</i>	Threats/disturbance	Other primates
1	Kutai National Park - Prefab	5.5 km 00°31'54.6"N, 117°27'54.0"E	No	Forest fires, coal mining, encroachment, illegal logging, settlements, hunting, tourism	<i>M. fascicularis</i> (3 groups) <i>H. muelleri</i> (2 groups seen, 6 groups by calls) <i>P. pygmaeus</i> (9 individuals, 28 nests)
2	Kutai National Park - Mentoko	5.5 km 00°34'04.0"N, 117°25'53.0"E	No	Forest fires, coal mining, encroachment, illegal logging, settlements, hunting, tourism	<i>M. fascicularis</i> (1 group) <i>H. muelleri</i> (5 groups by calls) <i>P. pygmaeus</i> (2 individuals, 17 nests)
3	Kutai National Park - Melawan	10 km 00°30'17.3"N, 117°26'45.5"E	No	Forest fires, coal mining, encroachment, hunting, illegal logging	<i>M. fascicularis</i> (1 group) <i>M. nemestrina</i> (1 group) <i>H. muelleri</i> (2 group seen) <i>P. pygmaeus</i> (2 individuals)
4	Kutai National Park - Sangata River	16.69 km, by boat 00°26'16.1"N, 117°36'46.0"E 00°29'50.5"N, 117°31'37.4"E	No	Fish/shrimp farming, mining, settlements, hunting	<i>M. fascicularis</i> (7 groups) <i>N. larvatus</i> (5 groups) <i>T. cristatus</i> (2 groups) <i>P. pygmaeus</i> (7 nests)
5	Karangan River - Perondongan village	27.8 km, by boat 01°20'15.1"N, 117°42'14.9"E	No	Oil palm plantations, hunting, illegal logging, settlements	<i>M. fascicularis</i> (9 groups) <i>M. nemestrina</i> (4 groups) <i>N. larvatus</i> (9 groups) <i>T. cristatus</i> (2 groups) <i>H. muelleri</i> (1 group by call)
6	Baai River - Pengadan village	35.67 km, by boat 01°15'10.9"N, 117°45'20.3"E	Yes (5 ind.)	Oil palm plantations, hunting, illegal logging, settlements	<i>N. coucang</i> (1 pet) <i>M. fascicularis</i> (9 groups & 2 pets) <i>M. nemestrina</i> (3 groups) <i>N. larvatus</i> (7 groups) <i>H. muelleri</i> (2 groups by call and 1 pet) <i>P. pygmaeus</i> (1 individual, 11 nests)
7	Muara Bulan	01°15'37.2"N, 117°40'39.5"E	No	Oil palm plantations, hunting, illegal logging, settlements	<i>M. fascicularis</i> (3 pets) <i>P. pygmaeus</i> (2 pets)
8	Muara Entaik	01°11'44.9"N, 117°30'03.8"E	No	Oil palm plantations, hunting, illegal logging, settlements	<i>P. pygmaeus</i> (2 nests) <i>M. nemestrina</i> (1 group) <i>M. fascicularis</i> (4 groups)
9	NE Mt. Beriun	2.5 km 01°09'00.6"N, 117°22'48.8"E	No	Oil palm plantations, hunting, illegal logging, settlements	<i>P. pygmaeus</i> (3 individuals) <i>H. muelleri</i> (4 groups by call)

We surveyed three sites in Kutai National Park (Mentoko, Prefab, Melawan) and conducted a river-boat survey along the Sangata River over 20 days. We were unable to find any evidence that *P. hosei* could still be found there. In Mentoko the forests were entirely secondary, recovering after the forest fires. They were dominated mostly by species of *Macaranga* (Euphorbiaceae, and typically pioneer) and shrubs, and showed extensive and frequent clearings. The forests of Prefab and Melawan were also largely destroyed, although small primary forest patches remained, some not entirely burned and some relatively intact. These forest patches still supported other primates such as orangutans, Müller's gibbons, and pigtail macaques (Table 1). Besides the major loss of forest, there was significant disturbance from hunting, as well as forest degradation resulting from mining activities (the biggest coal mining corporation in east Kutai) close to Mentoko. Encroachment, illegal logging, hunting and illegal settlement are serious threats to Kutai National Park's future.

"Berangat" is the local vernacular name of *Presbytis hosei*, although our interviews showed that they can confuse them with other langur species. People we interviewed in Kabojaya village reported that *P. hosei* was frequently hunted until the late 1990s. They would hunt them for food and especially bezoar stones or "batu geliga" (intestinal concretions

valued for traditional medicine, see Nijman 2004). The price of these stones can reach US\$20–30 per gram.

The Sangata River, a refuge for wildlife since the forest fire (Berenstain 1986), has also been largely devastated. There are many illegal settlements and the riparian forest and mangroves along the Sangata River, from the town of Sangata lama to the mouth, have been converted for fish and shrimp farming and for agriculture. We found five groups of "Bekantan" (*Nasalis larvatus*) and also, in fields and plantations even, the silvery leaf monkey (*Trachypithecus cristatus*). Although sparse, vegetation in some areas would appear to still provide sufficient habitat for primates; orangutan nests were found in some places.

Hunting by immigrants that arrived with the logging, oil and coal companies undoubtedly contributed to the rarity of *P. hosei* in the Kutai region towards the end of the 1990s, but we believe that the massive forest fires of 1997–1998 were the main cause of the extirpation of the species in the areas of Kutai National Park that we surveyed. At 198,629 ha, the park is very large (Tresina *et al.* 2005) and of course more surveys are needed, and it is possible that *P. hosei* is still surviving in more remote forest patches.

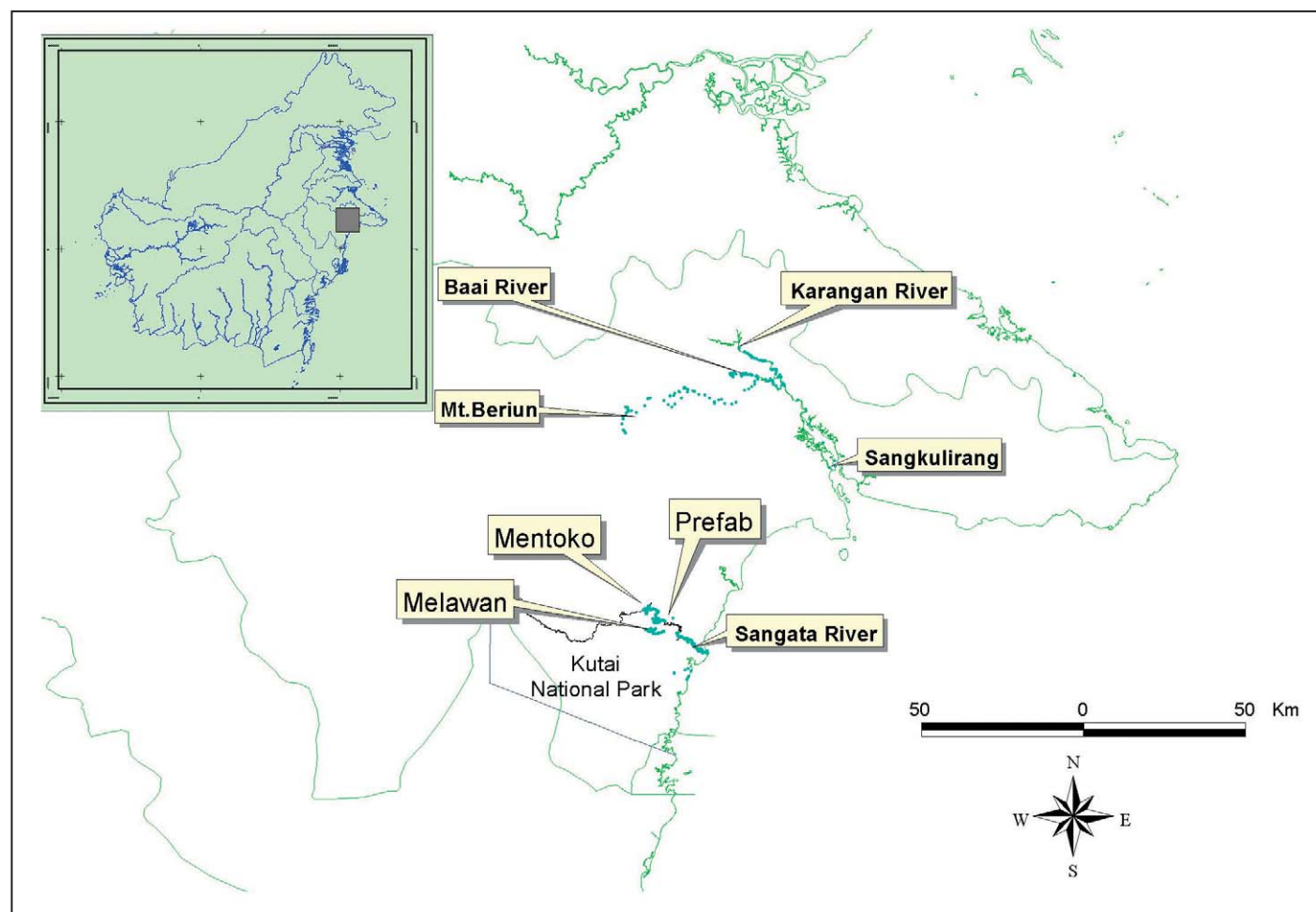


Figure 1. Survey sites for *Presbytis hosei canicrus* in the districts of Sangkulirang and Karang in eastern Borneo.



### Sangkulirang and Karangan

These areas are more than 100 km to the northeast of Kutai National Park. The occurrence of *Presbytis hosei canicrus* there was reported by Supriatna and Wahyono (2000). We were unable to find any forest along the road from Sangata (Kutai National Park) to Sangkulirang bay: the area was dominated by grassland, there is coal mining in the area, and also burgeoning oil palm plantations. Upstream of Sangkulirang River there are two major rivers, the Karangan River and Baai River (also called Pangadan River because it flows through the village of Pangadan). Karst mountains comprise the catchment area of these rivers. We took at least ten days to travel the Baai River (35.67 km), a portion of the Karangan River (27.8 km), and the area in the interior northeast of Gunung Beriun along a logging road belonging to PT. Penambangan logging company.

We found just one group of *P. hosei canicrus*. It was on the banks of the Baai River (01°15'10.9"N, 117°45'20.3"E), near the village of Pangadan. It was composed of five individuals (four adults and a juvenile). They were predominantly grey on the back and whitish on the ventral surface of the tail, on the abdomen and chest up to the neck, and lower face. Black hairs on the upper part of the cheeks and white hairs from the lower lips to the ears give the appearance of two angled lines of long black and white hairs extending back along the side of the face from the mouth to the ears. Their calls are grunt-like and distinct from other members of the genus *Presbytis* in the region (*P. fredericae* and *P. rubicunda*). *Presbytis hosei canicrus* was seen in a small patch of mangrove at the river edge. The vegetation included such as *Rhizophora apiculata*, *Nypa* sp. and *Bruguiera parviflora* near the water, and *Macaranga* sp., *Ficus* sp., and planted mango trees behind the mangrove. There was widespread clearance for oil palm cultivation in the area, and the group was surrounded by plantations. The chances of survival for the group seemed slim. They would evidently need to travel along the ground to reach other forest patches, and in doing so would be susceptible to dogs or to capture for their bezoar stones.

Deforestation is not limited to the lowlands, and extends to the higher elevations such as Gunung Beriun. There the forests have been replaced by *Acacia* and *Gmelina* plantations, and there is legal and illegal logging, and also clear cutting for oil palm plantations. These forests have no protected status, but it is possible that *P. hosei* still exists in remnant patches there. Hunting is evident in this area judging by the number of pets we found (orangutan, gibbon, macaque, and slow loris) (Table 1). Muarabulan villagers informed us that hunting for bezoar stones occurred in the distant past before they became Moslem, but that now the "stone monkey" (*P. hosei*) is so very rare that they believed it could no longer be found in the forests there.

### Conclusion

It is quite probable that *Presbytis hosei canicrus* is already locally extinct in Kutai National Park due to the forest fires and hunting. Our surveys in the park and in Sangkulirang and Karangan lead us to conclude that the natural habitat of *Presbytis hosei canicrus* is also disappearing very rapidly due to the expansion of oil palm plantations. Surveys of the remaining areas where it may still occur in east Kalimantan are urgently needed in order to provide for a true assessment of this species which we now believe to be extremely endangered.

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