

Short Communication

Decline of the endemic Hose's langur *Presbytis hosei* in Kayan Mentarang National Park, East Borneo

Vincent Nijman

Abstract I present data on the decline of Hose's langur *Presbytis hosei* over a 7-year period in the Kayan Mentarang National Park in the remote northern part of East Kalimantan, Indonesia. In 1996 Hose's langurs were among the most common primates in the Nggeng Bio valley, occurring at densities of over two groups km⁻², and could be observed almost daily. A repeat census of the same area in 2003 indicated that these densities had dropped by 50–80%, and observation of the species in the valley had become a rare occurrence. During the 7-year period the forest remained in a relatively pristine condition but, despite being part of a National Park, active protection of the valley was lacking and hunting was common. From interviews with local hunters and Park staff it appeared that hunting for bezoar stones (visceral excretions found in langurs and used in traditional

medicine) was the primary reason for the observed decline in Hose's langur. In 1998 a merchant calling at a nearby village had expressed an interest in the stones and guaranteed to purchase them, and this sparked excessive hunting of Hose's langur in the area, to such an extent that 3 years later this hunting was no longer economically viable. This study demonstrates that, with increasing access to markets, hunting large vertebrates for medicinal purposes, even for short periods only, can have a dramatic impact on population numbers. In such cases, habitat protection alone does not guarantee preservation, and more active protection of wildlife is required.

Keywords Bushmeat, colobines, Hose's leaf monkey, hunting, Indonesia, Kalimantan, primate.

Hose's langur *Presbytis hosei*, otherwise known as Hose's leaf monkey, is one of a group of three grey-backed langur taxa in northern Borneo (Groves, 2001), and is restricted to the northernmost part of the Indonesian province of East Kalimantan, the Malaysian States of Sarawak (northern part only) and Sabah (western part only), and the Brunei Sultanate. Within its range the largest population in a protected area is in Kayan Mentarang National Park, East Kalimantan (Fig. 1). The species is protected by Indonesian law (Peraturan Pemerintah No. 7 1999, but specified therein by an invalid name, *P. aygula*, which may subvert prosecution), and listed as Data Deficient on the IUCN Red List (IUCN, 2004).

Over 10 weeks in September–December 1996 I assessed the habitat preferences and densities of Hose's langur in Kayan Mentarang National Park (Nijman, 2004), and over an 11-day period in June–July 2003 I conducted a rapid follow-up study. It appeared that the numbers had

declined dramatically in the intervening 7 years. From interviews with local hunters and Park staff, hunting for bezoar stones (visceral excretions found in some species of langur, and used in traditional medicine; locally the stones are known as *batu geligu*) seemed to be the primary culprit. Here I communicate these observations and explore the possible underlying causes for the apparent decline in the species.

In 1990 WWF-Indonesia initiated a research and development project for the Kayan Mentarang area, established the Lalut Birai field station in the valley of the Nggeng Bio River (2°53' N, 115°49' E) in 1992, and has since managed this station. Recently, to put emphasis on collaborative and community-based management, a management body was established in which WWF-Indonesia, the forestry department and local communities participate. One of the aims is to promote the sustainable use of the Park and its wildlife by local communities (WWF-KMP, 2002).

The study area was in the Nggeng Bio valley in the vicinity of the Lalut Birai field station. The valley has been a *tana ulen* (literally 'land [that is] restricted') of the nearby village of Long Alango, and because cultivation and collection of forest products have been mostly prohibited (Eghenter, 2000), the valley is still covered

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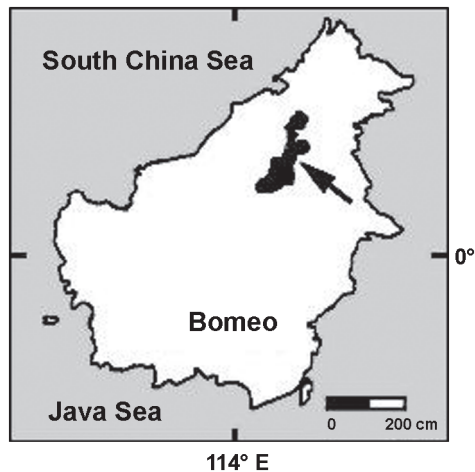


Fig. 1 Location of the Kayan Mentarang National Park in Borneo's interior. The arrow points to the study site in the Nggeng Bio River valley at Kayan Mentarang's eastern border.

with mature, tall primary forest. Small-scale illegal logging does occur along the edges of Kayan Mentarang National Park (more so in 2003 than in 1996) but not in the study area. Likewise *Aquilaria* spp. (Thymelaeaceae) trees are felled occasionally for *gaharu* (a fragrant resin produced in response to fungal attack, which is traded internationally; Soehartono & Newton, 2001). Eghenter (2000), almost certainly referring to the Nggeng Bio valley, noted that visits to the *tana ulen* by villagers was less than once a week (46 times per year) and that in 80% of these cases this was for hunting bearded pigs *Sus barbatus*. My own experiences, both in 1996 and 2003, contrasts with this view, as groups of hunters carrying guns were observed at least every other day, and frequently more than one hunting party was present at a time. Hunting was mostly for pigs, but a wide range of species (including legally protected species) are taken (cf. Puri, 1992).

Data on population numbers of Hose's langur were collected in three ways. Firstly, the same three permanent line transects in primary hill forest (the habitat type in which the species regionally attains its highest density; Nijman, 2004) were walked between 06.00–12.00 in 1996 (14, 13, and 9 repeats) and 2003 (6, 6, and 5 repeats) following methodologies described in Nijman (2004) and Lammertink *et al.* (2003). Transects were walked once per day at most, but more than one transect could be walked on 1 day. Data from 2003 are compared with those of 1996 assuming similar detection probabilities and detection distances. Secondly, all encounters (aural and visual) with Hose's langur (including those from transects) during all daylight hours were summed over periods of 11 consecutive days (there were eight such periods in 1996 and one in 2003), thus providing an average 11-day

encounter rate for both years. Thirdly, both in 1996 and 2003, with the help of 4–6 assistants, I mapped all localities within the valley (c. 5–6 km²) where they or I had observed Hose's langur within the last 30 days, both during fieldwork (primate-related and other) and at other times. This provided an estimate of the total number of langur groups in the valley. For data on past and present threats to Hose's langur I conducted interviews in Bahasa, Indonesia with staff members at the Lalut Birai field station (n = 4), hunters that frequented the valley (n = 3), and representatives of the nearby villages of Long Alango, Long Tebulo, and Long Uli (n = 4). As in earlier work (Lammertink *et al.*, 2003), each interviewee was questioned separately to ensure independence of data.

In 1996 Hose's langurs were observed 13 times along the three transect lines, corresponding to a mean density of 2.28 groups km⁻² (SD = 0.13) whereas in 2003 groups were observed only twice along the same transects, corresponding to a mean density of 0.82 groups km⁻² (SD = 1.42). In 1996 the daily encounter rate was 11.25 groups per 11 consecutive days (SD = 1.28, n = 8), whereas it had dropped to 2.00 groups per 11 consecutive days (n = 1) in 2003. In 1996 at least seven groups were known to inhabit the Nggeng Bio valley and most seemed confined to it, whereas in 2003 a maximum of four groups was present, one of which also ranged into an adjacent valley.

Interviews with staff members (some of whom were present in both 1996 and 2003) revealed that hunting of Hose's langurs in the Nggeng Bio valley had increased during 1998–2001. The general consensus was that in 1996 hunting for bezoar stones in the area was not profitable as the number of langurs carrying stones was low (the incidence of stone-carrying individuals is 1–10%, and varies geographically; Banks, 1931; Pfeffer, 1958) and there was no market for bezoar stones. Apparently in 1998 a merchant calling at Long Alango expressed interest in bezoar stones and guaranteed to purchase them. With a 1999 exchange rate of 9,000 Indonesian rupiah to 1 US \$, local prices were said to range between US \$21 g⁻¹ for small (<10 g) stones and US \$28 g⁻¹ for high quality larger (10–35 g) stones. Prices in coastal towns are typically twice as high. At these prices, and with the species still being common, it was profitable to kill Hose's langurs indiscriminately. After 2001, numbers had dropped such that only a few specialized bezoar hunters remained (those that can somehow recognize individual monkeys suffering from the ailment). Hunters and village representatives confirmed this assertion.

Comparing the abundance of Hose's langurs in 2003 with that of 1996 shows that there has been a drop of 50–80% in the number of groups in the Nggeng Bio

valley. Is this decline real or an artefact of the methodology employed, and, if real, what are its underlying causes? Like all *Presbytis* langurs so far studied, Hose's langur are sedentary and occupy year-round home ranges of c. 40 ha (Bennett & Davies, 1994; Mitchell, 1994). In congeners, groups do not migrate out of their home ranges either during or after major habitat disturbances (pale-thighed langur *P. siamensis*, Johns, 1985; grizzled langur *P. comata*, V. Nijman, unpubl. data). It is therefore unlikely that the groups present in 1996 had simply moved to adjacent valleys and were therefore not available for observation in 2003. Human presence in the area may have affected the ranging behaviour of *Presbytis* langurs and detectability. Although there has been an increase in human activity in the forest between 1996 and 2003, overall few people enter the forest, and I did not observe people along the transects during primate surveys in either 1996 or 2003. Seasonal differences in detectability are also unlikely to have played a role as groups are stable year-round, and a few days after the 2003 assessment in an area 15 km to the south, outside the Park boundaries, I observed Hose's langurs daily. Taken together, these facts suggest that the decline is real.

In 2003 the forest in the valley was still relatively pristine and there were no signs of past logging along any of the transects. It is therefore unlikely that changes in forest condition between 1996 and 2003 caused a lowering of carrying capacity. Hunting of wildlife is common throughout Borneo's interior, and there are few dietary restrictions for wildlife consumption (Nijman, 2001). In both 1996 and 2003 the Nggeng Bio valley was a popular entry point for hunting trips into the National Park, although most hunting parties spent little time in the study area. By Indonesian law, hunting of both protected and non-protected species inside a conservation area (in this case a National Park) is not permitted, and hunting with guns requires a special permit. These laws were not, however, enforced in Kayan Mentarang National Park, and few if any restrictions were imposed on hunters. Either on their way in or out of the Park, hunting parties would frequently call at the Lalut Birai field station. Staff members would buy meat from them (mostly pigs or sambar deer *Cervus unicolor*, and even Hose's langur; D. Augeri, pers. comm.), to be served at the field station. The common assumption that one of the added benefits of the presence of research field stations in protected areas is an increase in protection of wildlife from hunting (Marsh *et al.*, 1999) does not apply to Kayan Mentarang National Park. The boom in bezoar hunting coincided in part with felling of trees for *gaharu* in 1998–1999 (Eghenter, 2000), and economic activities in the forest must have been at an all time high.

People living in the Kayan Mentarang area are largely dependent on subsistence farming and hunting (Jessup 1991) and, living in such a remote area, there are few opportunities to obtain cash. The high prices offered for bezoar stones (a small stone can fetch six times the official provincial minimum monthly wage), and the presence of a guaranteed buyer, made hunting of Hose's langurs appealing. The langurs can be hunted by hiding near *sungans* (salt seepage) after a few rainless days, or opportunistically.

The situation in the Nggeng Bio valley is not unique, as several cases from East Kalimantan illustrate. There have been large-scale killings of Hose's langurs in the Data Dian area, in the southernmost part of Kayan Mentarang, by the addition of poison to *sungans* (A. Rachmat, pers. comm., 1996). P. Levang (pers. comm., 2003) reported the killing of 270 white-fronted langurs *Presbytis frontata* in the Apo Kayan area, south of Kayan Mentarang, by two specialized bezoar hunters, allegedly resulting in only three stones. G.M. Fredriksson (unpubl. data) reported excessive hunting of white-fronted langurs in the Upper Mahakam region, in westernmost East Kalimantan, with one hunter having obtained c. 100 stones; this occurred after a trader had entered this remote area and offered to buy stones at high prices.

The experiences with Hose's langur in Kayan Mentarang National Park demonstrate that, with increasing access to markets, hunting large vertebrates for medicinal purposes, even for short periods only, can have a dramatic impact on population numbers (cf. Cowlshaw & Dunbar, 2000), and that habitat protection alone does not provide guarantee preservation. It is of paramount importance that the management of Kayan Mentarang National Park changes its policy from one of passive protection of a 'paper park' to more active protection of habitats and species.

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Biographical sketch

Vincent Nijman studies the ecology and conservation of endemic primates in western Indonesia, and has been working in the country since 1994. His research is centred on the effects of human-induced disturbances on tropical ecosystems, with birds and primates being used as model groups.