Short communication

The local extinction of the proboscis monkey *Nasalis larvatus* in Pulau Kaget Nature Reserve, Indonesia

Erik Meijaard and Vincent Nijman

Abstract The population of the threatened proboscis monkey *Nasalis larvatus*, a Bornean endemic, in the Pulau Kaget Nature Reserve, South Kalimantan, Indonesia, is extinct. Until 1997, this small, isolated population, estimated at *c.* 300 individuals, had been pushed towards the fringes of the reserve by illegal agricultural expansion. As food sources became depleted, the population apparently exceeded the decreasing carrying capacity of the reserve and was reported to be starving to death. As a solution, 84 animals were translocated to nearby, unprotected sites, resulting in 13 fatalities. An additional 61 animals were taken to a zoo, where 60 per cent died within 4 months of their capture. There was neither a proper pre-translocation assessment of the suitability of the release sites, nor a proper post-translocation monitoring programme for the released animals. We conclude that the Pulau Kaget reserve and its proboscis monkeys have been poorly managed. We provide some suggestions to improve the effectiveness of conservation efforts in Indonesia.

Keywords Conservation, Indonesia, *Nasalis larvatus*, primates, proboscis monkey.

Introduction

In 1976, 85 ha of the 247-ha Pulau Kaget (3°26'S, 114°31'E) (pulau = island) was gazetted by Ministerial decree No. 701/Kpts/Um/11/1976 as a Strict Nature Reserve, prohibiting all human use of the reserve's resources. The main reason for establishing the reserve was to protect its population of proboscis monkey *Nasalis larvatus*. The remainder of the island was designated for agricultural purposes. The island is situated in the middle of the Barito River delta, in South Kalimantan, only a few kilometres downstream from the provincial capital of Banjarmasin (Fig. 1). The area was a popular tourist destination because it was easy to see proboscis monkeys from the river. In 1993, the proboscis monkey was declared the provincial symbol of South Kalimantan, further adding to the apparent importance of the reserve as a conservation site for this species.

The proboscis monkey, known as *bekantan* in the Indonesian language, is endemic to the island of Borneo, where it inhabits riverine and coastal forests, including mangroves. It lives typically in groups of 3–23 individuals, dominated by a single male, and may form associations of up to 60 individuals (Bennett & Sebastian, 1988; Yeager, 1990, 1991, 1993; E.M. & V.N., pers. obs.). Reported densities vary from 1.2 to 62.6 individuals per sq km (Bennett & Sebastian, 1988; Alikodra *et al.*, 1992; Yeager & Blondal, 1992).

Proboscis monkey habitat is the most threatened of all vegetation types in Borneo because of logging and conversion to agricultural land (Rijksen & Meijaard, 1999). Habitat destruction has been identified as the major threat to the survival of the proboscis monkey (Salter & MacKenzie, 1985; MacKinnon, 1987; Meijaard & Nijman, in press) but other threats include hunting (Pfeffer, 1958; Meijaard & Nijman, in press), and, to a lesser extent, the illegal pet trade (Plate 1). In combination, these threats have reduced proboscis monkey populations in several parts of Borneo (Davies & Payne, 1982; Salter & MacKenzie, 1985; Meijaard & Nijman, in press) and it is suspected that the species is in rapid decline (Meijaard & Nijman, in press). In 1990 the number of proboscis monkeys protected in reserves was estimated at some 5000 individuals (Yeager & Blondal, 1992). The proboscis monkey is classed as Vulnerable by IUCN (1996), and as early as 1987 it was given a 'very high conservation rating' by the Primate Specialist Group (Eudey, 1987). The species is listed on Appendix I of CITES and is protected by law throughout its range.

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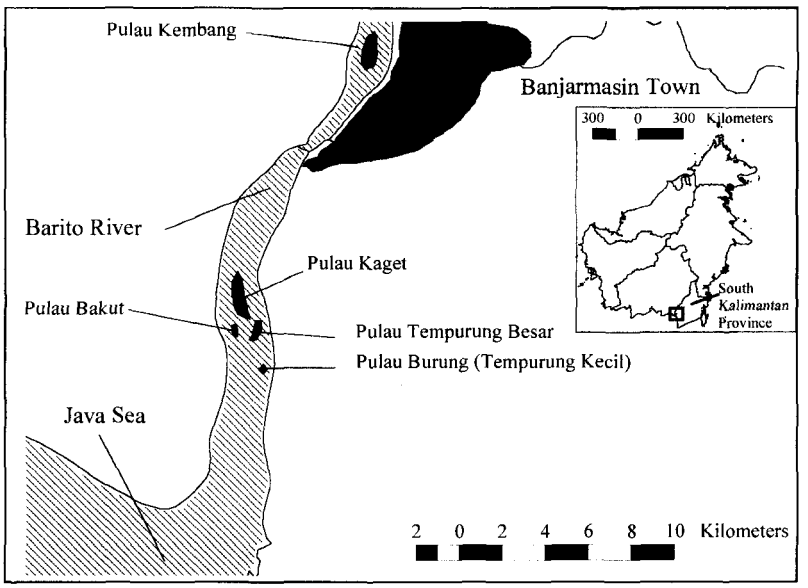

Fig. 1 The island of Borneo (insert) and the location of Pulau Kaget and adjacent islands.

The case of the Pulau Kaget proboscis monkeys

When E.M. visited Pulau Kaget in November 1996, the central part of the island, including the reserve, had been cleared for agriculture, and only a *c.* 25-m-wide fringe around the central fields was still forested. Proboscis monkeys were abundant in this strip of forest. In another part of the island, a similar narrow fringe of trees was still standing, but these trees had lost all their leaves and appeared to be dead (Plate 2). In 1996, Bismark (1999) estimated that 27 per cent of all trees in the Pulau Kaget Nature Reserve were dead. Only *c.* 10 per cent of the total land area of the reserve retained some tree cover [estimated at 5 per cent in 1993 by Yeager (1996)]. During E.M.'s visit, no guards were present in the reserve.

There appear to be several reasons for the habitat loss at Pulau Kaget. The reserve contains rich agricultural soils, and farmers from outside the reserve have entered the area for many years to grow crops, apparently unhampered by the reserve's fully protected status. According to local forestry officials, the farmers had ring-barked or poisoned many of the remaining trees, presumably to open up more land. An alternative explanation for tree death was upstream pollution from sawmills and wharves (cf. Bismark, 1999). Both the heads of the provincial Agency for the Conservation of Natural Resources and the regional office of the Forestry Department said that some 300 proboscis monkeys still survived in the remaining area, and that the present population was too large for the remaining habitat. This estimate was corroborated by Bismark's (1999) count of 288 individuals in 1996 [but for a different view see Yeager (1996), who estimated the reserve's population at 51 individuals]. These population estimates suggest an over-capacity, which may have been a third reason for the defoliation.

In 1996, the Governor of South Kalimantan and the Director General for Forest Protection and Nature Conservation also assessed the situation and promised further research. Short-term conservation measures were suggested, including the provision of leaves to the

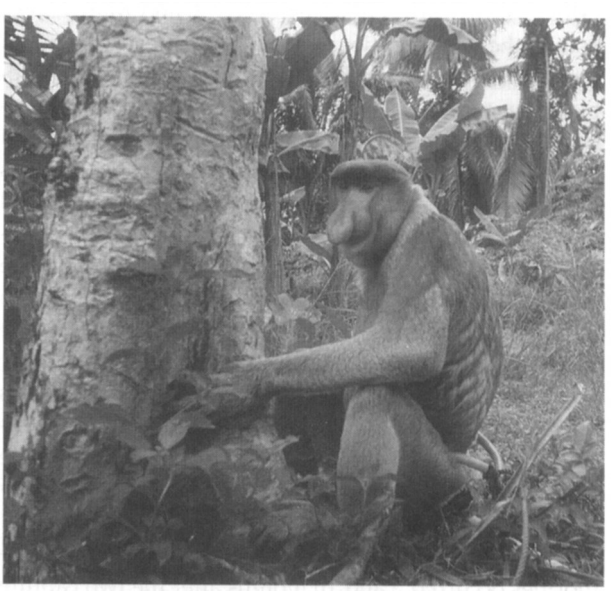

Plate 1 Male proboscis monkey in illegal private captivity (September 1996, *E. Meijaard*).

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Plate 2 Former prime proboscis monkey *Nasalis larvatus* habitat on Pulau Kaget (November 1996, *E. Meijaard*).

monkeys and the planting of some 5000 *Sonneratia* sp. seedlings, an important food source when fully grown. In the longer term, plans were put forward to downgrade the status of the area to a Wildlife Reserve, which would allow for other resource use besides conservation.

According to an Indonesian newspaper report (*Kompas*, 5 February 1999) rangers started to find dead proboscis monkeys on the island in 1997. In an attempt to prevent the local extinction of the proboscis monkey, the conservation agencies decided that the remaining animals must be translocated to the nearby, unprotected, islands of Burung (Tempurung Kecil), Tempurung Besar, Kembang and Bakut (Fig. 1), all of which had extant proboscis monkey populations. However, according to official documents [Ministry of Forestry (MoF, 1999)], between December 1996 and March 1997, before the translocations, there had already been six attempts to drive proboscis monkeys from the protected part of the island to the unprotected part. Unfortunately, the documents do not explain the logic behind these actions, which displaced a total of 205 animals into unprotected habitat (MoF, 1999). In early 1997 and late 1998, in two major capture efforts, some 84 proboscis monkeys, of which 13 died during capture, were translocated, while an additional 61 were transported to Surabaya Zoo in Java (MoF, 1999; Nursahid, 1999). The head of the provincial conservation authorities, Mar Purwasuka, was quoted as saying: 'the purpose of this relocation is to show the world that the South Kalimantan proboscis monkeys still exist, and have not become extinct, as has been rumored' (*Kompas*, 5 February 1999).

Post-translocation monitoring by the conservation authorities occurred 5 and 16 months after the two capture periods. This consisted of short visits to the islands during which suitable food trees were identified. Few proboscis monkeys were seen, and most information on the species's presence was obtained from local residents (MoF, 1999). No proboscis monkeys were encountered in the Pulau Kaget Nature Reserve, while on the unprotected part of the island there was a total estimated population of nine individuals. According to our information, no proper pre-translocation habitat assessments were conducted. Of the 61 animals that arrived in the zoo, only 24 were still alive after 4 months, a survival rate of less than 40 per cent (Nursahid, 1999; MoF, 1999). In addition to the animals removed officially, an unknown number of proboscis monkeys were smuggled out on boats (Al Fatah, 1999). Confirmation for this was provided when the police confiscated four proboscis monkeys, which were on the way to Surabaya in Java. They were purchased at Banjarmasin market on the mainland near Pulau Kaget for $US25 each (*Banjarmasin Post*, 27 June 1999). Table 1 indicates the significance of the translocation and capture of the Pulau Kaget proboscis monkeys in relation to the total protected population.

Discussion

The translocation of proboscis monkeys from a protected area to unprotected areas can hardly be considered an improvement to their survival prospects. The release sites all have high agricultural potential and are close to the town of Banjarmasin. Unless these sites are designated soon as part of the conservation area network, there is no reason to expect that the habitat in these sites will not experience the same deterioration witnessed on Pulau Kaget.

Because little is known about the translocation of proboscis monkeys, we cannot predict the socio-ecological effects of the dispersal of a once contiguous population over several small islands, where the species occurred already. We maintain that this translocation could be justified only if everything possible had been tried to save the population in the original reserve.

Table 1 Summary of the numbers of proboscis monkeys involved in the Pulau Kaget translocations

Total protected population (1990)	5000
Population at Pulau Kaget (1996) and percentage of total protected population	288 (6%)
Minimum no. translocated animals	84
Total no. animals taken to Surabaya Zoo	61
No. of Pulau Kaget animals that died in Surabaya Zoo or during translocations	50
Estimated population size of Pulau Kaget island after the translocations (1999)	9
Estimated population size of Pulau Kaget Nature Reserve after the translocations (1999)	0

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Considering that as early as 1993, primatologists warned the authorities of the deteriorating situation of Pulau Kaget (Yeager, 1996) and nothing constructive was done since then, we have to conclude that the situation was not handled adequately. If a translocation was the only feasible solution, it should have fulfilled at least the standard criteria (e.g. Vié, 1999; Yeager & Silver, in press). It is clear that few of these conditions were met. The transfer of the remaining animals to Surabaya Zoo is also unlikely to contribute to the preservation of the species in the wild. Proboscis monkeys require a highly specialized diet and are difficult to keep in captivity (Collins & Roberts, 1978; K. Brouwer *in litt.*, 12 November 1997). Relatively few proboscis monkeys are kept in captivity in international zoos, and mortality rates are high (K. Brouwer *in litt.*, 12 November 1997). As long as habitat destruction cannot be controlled, *ex-situ* conservation will contribute little or nothing to the survival of the species in the wild.

In our opinion, the conservation authorities failed to address adequately the causes of habitat loss in Pulau Kaget Nature Reserve, leading to the demise of its proboscis monkey population. A possible solution would have been to restore the habitat or provide *in-situ* support of the population, and buffer the populations from human impact by establishing and implementing a no-access zone. However, the authorities instigated and executed the complete removal of the population from the reserve.

Conclusion

The situation on Pulau Kaget is not exceptional because suitable proboscis monkey habitat is disappearing at a rapid rate throughout the species's range. In five of the six protected areas in Indonesia where the species is represented by at least several hundred individuals, populations are in decline (Meijaard & Nijman, in press). It appears that the Indonesian conservation authorities are neither able to carry out species protection nor protect the species's habitat within reserves against the activities of plantation developers, timber concessions, farmers and hunters (Rijksen & Meijaard, 1999). If these protective measures cannot be handled for a relatively small and accessible strict nature reserve, what can be expected for the extensive areas of unprotected habitat and remote reserves? Indeed, most of this unprotected habitat is scheduled for conversion into agricultural land and plantations, leaving almost none for the proboscis monkey (Meijaard & Nijman, in press).

The reasons why the Indonesian authorities are failing to address conservation issues are complex. They include institutional deficiencies, a lack of funds, lack of knowledge, misconceptions of ecological issues and poorly integrated planning. Solutions have to be found that include: improvement of the legal framework; reorganization and technical training of the responsible institutions; education and awareness campaigns; appropriate integration of development and conservation; expansion of the protected-area network; and the alleviation of financial impediments (cf. Rijksen & Meijaard, 1999). What are needed most of all, however, are serious and effective commitment and political support, both nationally and internationally, for solving conservation problems.

Within the context of the present political and economic situation in Indonesia, the conservation community cannot rely solely on the present Indonesian conservation authorities to prevent the further decline of the proboscis monkey, and probably many other endangered species. A new approach is required, for instance, along the lines of the Orangutan Survival Programme (Rijksen & Meijaard, 1999), in which a dedicated, well-financed and fully mandated conservation body co-ordinates the work of conservation authorities, local government, non-governmental organizations, businesses and international donors, with the specific aim of protecting a species and its habitat. We hope that the current wave of openness and political reform in Indonesia will provide such opportunities for improved and effective conservation.

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