Birds and mammals of the Bukit Barisan Selatan National Park, Sumatra, Indonesia

Timothy G. O'Brien and Margaret F. Kinnaird

Bukit Barisan Selatan National Park in south-west Sumatra is one of the largest protected areas in Sumatra and thus of considerable importance to the conservation of biodiversity in Indonesia. Until recently, little was known of the wildlife in the park. The authors' surveys document the presence of an intact community of the birds and mammals known to occur in lowland Sumatran rain forests. While hunting and collection of forest products threaten a number of plant and animal species in the park, the primary threat to the park's integrity is from agricultural encroachment and expansion of enclaves beyond their boundaries. The future survival of Bukit Barisan National Park and its wildlife requires that active measures be taken to curb non-sustainable exploitation of plants and wildlife. It will also be necessary to resolve land-use conflicts with communities in, and adjacent to, the park.

Introduction

Bukit Barisan Selatan National Park (BBSNP) is the third largest protected area (3568 sq km) on the Indonesian island of Sumatra. Located in the extreme south-west of Sumatra (104°E, 50°S), the park spans two provinces, Lampung and Bengkulu, extending from the southern tip at Tanjung Cina to more than 120 km north along the Barisan Mountain Range (Figure 1). The BBSNP contains some of the largest intact tracts of lowland rain forest remaining in Sumatra and serves as the primary watershed for south-west Sumatra (FAO, 1981). Most of the Park (82 per cent) lies in Lampung Province, the most densely populated, poorest province of Sumatra, and one undergoing the most rapid forest conversion (Whitten et al., 1987). The park's long, thin shape results in c. 700 km of boundaries, and encroachment by illegal logging and cultivation are recurrent problems.

Despite its large size and importance, BBSNP has not been surveyed systematically for mammals or birds; however, it is believed to be an important refuge for a major portion of Sumatra's mammal and bird fauna (FAO, 1981). Early reports indicate the presence of Sumatran rhinoceros*, Asian elephant, tiger, clouded leopard, Malayan sun bear, serow and Indian wild dog (FAO, 1981). Surveys for Sumatran rhinoceros in 1990 in a small area of the southern peninsula indicated 13-18 animals (AsRSG, 1995). If accurate, BBSNP may contain a substantial number of the estimated 200-300 Sumatran rhinos believed to remain in Indonesia. MacKinnon and Phillips (1993) reported that 121 bird species have been recorded in BBSNP, but suggest that the low figure is due to a lack of surveys in the area. The primary objectives of this survey were to develop baseline data on the presence and diversity of birds and mammals in protected lowland forest habitats of BBSNP.

Methods

We conducted surveys in BBSNP between 7 and 24 March 1995, at the end of the rainy season. We surveyed areas on foot between Tampang and Tanjung Belimbing (25 km), T. Belimbing to the Paya River (20 km), T.

* Scientific names of animals mentioned in the text are given in Table 1, and Appendices 1 and 2.
Belimbing to T. Cina (32 km), Way Heni to Way Haru (40 km), and forests north of Rata Agung (15 km) (Figure 1). Surveys were conducted along established forest trails or elephant trails, and normally followed rivers or traversed areas between rivers. At each site, we recorded birds and mammals seen as well as indirect evidence (tracks, faeces, rooting). Indirect evidence is often the only indication that secretive forest mammals are present (Schemnitz, 1980; Rabinowitz, 1993). We also interviewed forest guards, hunters and collectors of forest products for information on tiger, clouded leopard, elephant and Sumatran rhinoceros. Finally, we surveyed literature for examples of faunal inventories in the region that might not have wide circulation.

Results

We verified the presence of 22 medium-sized to large mammals in areas surveyed (Table 1). Eleven mammals were recorded at most survey sites and the remaining 11 species were recorded at one or two survey sites. An additional 33 species have been reported from adjacent forests and agroforestry lands (Sibuea and Herdimansyah, 1993; Appendix 1).

*Sumatran rhinoceros*

We encountered recent rhino signs at three locations along the survey transects. In the vicinity of the Blambangan River we found footprints of at least two individuals, as well as scrapes and wallows. This area is a mosaic of open marshy areas, swamp forest and low-
land forest on low ridges. Another set of prints was found at Tanjung Belimbing, adjacent to a proposed hunting concession on the park’s eastern border. At the Paya River we found one set of prints that were less than 24 hours old; our guide said prints in three size classes are normally found in this area. No signs of rhino were found north of Paya River, although rhino tracks were found in damar Shorea javanica gardens near Krui in 1993 (Sibuea and Herdimansyah, 1993). Interviewees in Rata Agung said there had been no reports of rhino in the area for many years.

Asian elephant

Fresh elephant signs were encountered on every trail and elephants were seen and heard on several occasions. More elephant signs were encountered in the southern peninsula. Prints and faeces of young animals were seen on three surveys. Evidence was usually of lone individuals or groups of two or three animals. Based on interviews, we estimate approximately 100–150 elephants in the park.

Table 1. Mammal species identified in Bukit Barisan Selatan National Park

<table>
<thead>
<tr>
<th>Common name</th>
<th>Scientific name</th>
<th>Method of identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flying fox</td>
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<td>Presbytis cristata</td>
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<td>Banded langur</td>
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<td>Dark-handed gibbon</td>
<td>Hylobates agilis</td>
<td>Visual/vocalization</td>
</tr>
<tr>
<td>Siamang</td>
<td>Hylobates syndactylus</td>
<td>Visual/vocalization</td>
</tr>
<tr>
<td>Malayan sun bear</td>
<td>Helarctos malayanus</td>
<td>Visual/tree damage</td>
</tr>
<tr>
<td>Hairy-nosed otter</td>
<td>Lutra sumatrana</td>
<td>Visual/tracks</td>
</tr>
<tr>
<td>Tiger</td>
<td>Panthera tigris</td>
<td>Local report</td>
</tr>
<tr>
<td>Clouded leopard</td>
<td>Neofelis nebulae</td>
<td>Tracks</td>
</tr>
<tr>
<td>Unidentified small cat</td>
<td>Felis sp.</td>
<td>Local report</td>
</tr>
<tr>
<td>Asian elephant</td>
<td>Elephas maximus</td>
<td>Visual/faeces/tracks</td>
</tr>
<tr>
<td>Malayan tapir</td>
<td>Tapirus indicus</td>
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</tr>
<tr>
<td>Sumatran rhinoceros</td>
<td>Dicerorhinus sumatrensis</td>
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<td>Wild pig</td>
<td>Sus scrofa</td>
<td>Visual/tracks</td>
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<td>Tragulus javanicus</td>
<td>Visual/tracks</td>
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<td>Red muntjac</td>
<td>Muntiacus muntjak</td>
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<td>Sambar deer</td>
<td>Cervus unicolor</td>
<td>Tracks/vocalization</td>
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<td>Domestic water buffalo</td>
<td>Bubalus bubalis</td>
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<td>Ratufa bicolor</td>
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<td>Plantain squirrel</td>
<td>Callosciurus notatus</td>
<td>Visual</td>
</tr>
<tr>
<td>Common porcupine</td>
<td>Hystris brachura</td>
<td>Quills</td>
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</tbody>
</table>

Cats

We found no tracks of tigers or clouded leopards during our survey. On two transects we found tracks of small, unidentified forest cats. There are periodic reports of tigers killing dogs and goats in the Belimbing and Way Heni areas, and tracks of tiger and clouded leopard have been reported in damar gardens near Krui on the edge of the park.

Primates

Siamang were abundant in all areas surveyed and family groups ranged from three to seven individuals. Less common were dark-handed gibbons, which we encountered only in the Paya River, Canguk River and Rata Agung areas. Lack of gibbons in the southern peninsula may reflect their need for continuous canopy forest. Small groups of banded langurs and silvered langurs were present in every site surveyed. Long-tailed macaques were most common in the southern peninsula. Pig-tailed macaques and the western tarsier were not
observed or heard, but both species have been
reported in BBSNP and southern Sumatra
(Payne et al., 1985; Whitten et al., 1987).

Other mammals

Tracks of sambar deer, red muntjac (barking
deer) and mouse deer were found regularly
on all surveys, and deer were observed on
several occasions. In the north deer are hunted
regularly but in the south no one admitted to
hunting, possibly because we travelled with
park guards. Wild pig Sus scrofa tracks and
signs of rooting were also abundant at all
sites. Domestic water buffalo were common
from T. Belimbing to the Blambangan River.
We found tracks of three or more Malayan
tapir only in the Tampang-T. Belimbing area.
Otter tracks were found at T. Belimbing and
eight hairy-nosed otters, including one albino,
were observed near Way Haru. We encoun-
tered Malayan sun bears only between Way
Hen and Way Haru and north of Rata Agung,
although we received reports of their presence
at all survey sites. We did not encounter signs
of Indian wild dog, although it was believed
common in BBSNP during the late 1970s. We
also saw no evidence of civets, weasels,
martens or badgers along the survey routes.

Hornbills and other birds

We confirmed the presence of seven species of
hornbills in BBSNP. All sites contained at least
five species. Most common were the helmeted,
oriental pied, great and rhinoceros hornbills.
Other surveys (Appendix 2) include two more
species (white-crowned hornbill and wrinkled
hornbill) making a total of nine species for the
park. We located one active nest of the
wreathed hornbill near the Paya River.

Our surveys contributed 58 new species to
the list of known occurrences in BBSNP. The
total bird list for BBSNP is 276 species out of
397 species believed to occur in Sumatra
(Appendix 2). Most of the additions were for-
est interior birds. The diversity of lowland
habitats (forest, swamp, coastal, marsh) pro-
vides habitat for a rich avian community in
the park and we found relatively high diver-
sity at all sites surveyed. Notably lacking from
this list are nocturnal birds and montane
species, which probably occur in the park.

Human activity in the park

Because of BBSNP's long border, patrolling is
difficult and access to the park is relatively
easy. Along the boundary near Tampang we
encountered pit-sawing activity and most of
the large dipterocarp trees were gone. Rattan
was conspicuously absent at all sites surveyed
and we encountered collectors of rattan and
gaharu (fragrant resin from heartwood of
Aquilaria spp.) in the forest near Rata Agung.
There was evidence of expansion of agricul-
tural lands across park boundaries at the en-
clave of Pemakahan and reports of illegal land
clearance near the Kabuperahu enclave. We
observed agricultural encroachment at Rata
Agung and heard reports of similar problems
near Krui. Residents of the enclave at Way
Haru recently attempted to cut a road through
the park but were stopped halfway by the
Ministry of Forestry. On a larger scale, the
construction of paved roads by the provincial
government has been accompanied by exten-
sive logging and resulted in the division of the
park into three parts.

Human–wildlife interactions in BBSNP
vary. Because there is no buffer zone, agricul-
tural lands are immediately adjacent to, or in-
side the park. Livestock predation by tigers
and clouded leopards occurs occasionally.
Elephant depredation to rice paddies and cof-
fee gardens is among the most pressing prob-
lems. This problem receives a great deal of
publicity and there is pressure to institute
culling and capture programmes to control
elephants that move out of reserves (Jakarta
Post, 1994; Pak Panjaitan, PHPA, pers.
comm.). Hunting for local consumption occurs
(especially deer species and great argus pheas-
ant) but we heard of no instances of elephant
or rhino poaching.

There is widespread local trade in edible
swiftlet nests from the area. The Ministry of
Forestry has issued collecting permits for sus-
tainable exploitation at two sites, but most
caves in the region are not owned and nests
are freely collected and sold. Capturing wild birds for local bird trade is also common; one guide admitted to collecting hornbill chicks for sale.

Discussion

We consider the wildlife communities of lowland forests in BBSNP to be representative of intact lowland tropical rain forest. Surveys carried out in forests and damar gardens adjacent to the park indicate the presence of at least 52 forest mammal species, including Sumatran rhino, tiger and clouded leopard (Sibuea and Herdimansyah, 1993). We presume these species also occur within the park. The bird community is quite diverse, with approximately 70 per cent of Sumatra’s avifauna occurring in the park’s lowland forests.

The indigenous mammalian herbivore community in BBSNP is represented by Sumatran rhinoceros, Malayan tapir, Asian elephant, serow, wild pig and several deer species. The Sumatran rhinoceros may be more widespread than previously believed, but appears to be absent from the Rata Agung area. The BBSNP rhino population may be one of the most important remaining populations of this seriously endangered species. The elephant population appears to be healthy; it is widespread and breeding, and poaching is probably not a serious problem at this time. Although we lack population information for other herbivores, the survey indicates the continued survival of these species in the park.

Our surveys failed to find much evidence of mammalian carnivores in the primary forests of BBSNP, although we know that at least nine species occur in and around the park. One problem with a generalized survey of this nature is that most carnivore species are nocturnal and our surveys were diurnal. Civets may have been underrepresented because we did not sample secondary forest and edge habitats. Overall, however, the lack of signs (e.g. footprints, scrapes, faeces) indicates low densities for most carnivore species. It is possible that Indian wild dog, tiger and cloud leopard have been hunted heavily in the lowland forests or that densities have always been low in this region. More intensive surveys are needed to resolve the status of mammalian carnivores.

Bird diversity is high in the forests of BBSNP, and is comparable to the island of Java. Thiollay (1995) recorded more than 150 species during a short, but intensive survey of avian diversity in forests north of Rata Agung. BBSNP has avian diversity similar to well-studied lowland sites in Borneo (MacKinnon and Phillipps, 1993), such as Danum Valley Conservation Area, Sabah, Malaysia (240 species), Kutai National Park, East Kalimantan, Indonesia (236 species) and Barito Ulu Research Area, Central Kalimantan, Indonesia (230 species). In Sumatra, only Gunung Leuser National Park exceeds the richness of BBSNP (>325 species; Griffiths, 1994). Avian diversity in BBSNP may be comparable to Gunung Leuser NP once the nocturnal and montane birds are sampled.

Presence/absence data are useful for assessing the potential of an area for biodiversity conservation. They do not, however, reveal information concerning the population status of birds and mammals in these parks. Populations of exploited species, such as the tiger and Sumatran rhinoceros, may be present but under severe pressure and, possibly, facing local extinction. Populations of straw-headed bulbuls and white-rumped shamas are almost certainly declining due to capture for the bird trade, but trend data are lacking.

Apart from large-scale destruction of forests during the 1970s and 1980s, the interior forests of BBSNP appeared to be in very good shape. Pit-sawing and collecting local forest products are having impacts on certain species (e.g. trees of Dipterocarpaceae, rattan) along the borders. Encroachment will continue to be a problem around the park until issues of population growth and migration into the area are addressed. Currently, the Ministry of Forestry has neither the manpower, enforcement capability nor the training to address these land-use conflicts (USAID, 1994). Park headquarters are more than 20 km from the park and park guards do not live near the sites they are assigned to patrol. Most of the collectors and...
farmers we talked to believed that it was their right to use or cut forest as the need arose. Reconciliation of local needs with conservation is urgently needed in the area. Protection and management activities should focus on illegal encroachment, non-sustainable exploitation of wildlife and forest products, and implementation of land-use zoning. Constructive relationships between park staff and local communities should be initiated, such that local communities develop an appreciation and support for the conservation of BBSNP. Because the Ministry of Forestry lacks the finances and expertise to implement most of these recommendations, they might concentrate their resources on patrolling and securing the park boundaries. Meanwhile, international assistance is necessary to develop monitoring capabilities, park management, staff training and community education programmes. Such an approach is imperative if Bukit Barisan Selatan National Park is to retain its splendour as a repository of biodiversity in Indonesia.

Acknowledgements

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References

Sibuea, T.H. and Herdimansyah, D. 1993. The Variety of Mammal Species in the Agroforest Areas of Krui (Lampung), Muara Bungo (Jambi), and Maninjau (West Sumatra). ORSTROM-BIOTROP Report, Bogor.

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Appendix 1. Mammals known to occur in forests and agroforests adjacent to Bukit Barisan Selatan National Park

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<th>Family/species</th>
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Data from Sibuea and Herdimansyah (1993); nomenclature follows Payne et al. (1985).
### Appendix 2. Preliminary bird list for Bukit Barisan Selatan National Park

<table>
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<th>Family/species</th>
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<tr>
<td>Motacilla cinerea</td>
<td>Grey wagtail</td>
<td>Zosteropidae</td>
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<td>Motacilla flava</td>
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<td>Black-headed</td>
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