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SUMMARY

FOREST (AND) PRIMATES: ECOLOGY AND CONSERVATION OF THE ENDEMIC PRIMATES OF JAVA AND BORNEO

For primates, the Sundaic region is one of the most species-rich areas in the World. Depending on the taxonomy followed it harbours some 18-20 species endemic to the area. On two of the larger islands in the region, namely Java and Borneo, three and five single island endemics are found, respectively. Six of these are colobine monkeys whereas the remaining two are gibbons. Most of these endemic primates for their survival are dependent on natural forest. Java is a densely populated area and has a long history of deforestation, whereas Borneo is a sparsely populated island in transition and altering land-use is rapidly changing the appearance of the island; until a few decades ago Borneo was still largely covered in forest. The present study aimed at collecting data on the ecology and conservation of the endemic primates of Java and Borneo. Hereto studies were conducted and surveys executed over the period 1994-2001.

The first part of the study focussed largely on testing census techniques used in primatological studies and to assess the effects of behavioural changes in the target-species brought about by various kinds of disturbance on census results. It was found that density estimates varied considerably between techniques and sites and concluded that caution is needed when comparing census data from different sites, collected by different techniques and by different researchers. Primates may alter their response to human observers in response to (habitat) disturbance and it seems likely that this in turn will have its effect in monitoring programmes, leading to either under- or overestimation of the true densities.

The second part of the study focussed on the endemic primates of Java. Firstly, it was found that the eastern populations of one of the endemics, the grizzled leaf monkey P. comata, were not diagnosably distinct from those in the west. Hence, there is no support for treating these eastern populations (described as P. c. fredericae) as a separate species. Secondly, the distribution and conservation status of the endemic primates of Java was assessed. The ebony leaf monkey T. auratus occurs throughout Java, Bali, and Lombok but, contrary to previous reports, not on the Kangean Islands. On the basis of its limited range and highly fragmented populations, and some capturing for trade, it should be considered Vulnerable according to the IUCN threat criteria. The grizzled leaf monkey is confined to the rainforests of West and Central Java and occurs from sea level to c. 2500 m a.s.l. Significant populations were found in Central Java, beyond its expected range, but given the high degree of fragmentation of its population the species is Endangered according to the IUCN threat criteria. The grizzled leaf monkey shares its habitat throughout most of its range with the Javan gibbon H. moloch. Being confined to the last remnants of floristically rich lowland forest on this densely populated island, it is the rarest of the three Javan endemics.
However, population numbers have been severely under-estimated in the past and with some 4000-4500 individuals remaining it is Endangered according to the current IUCN threat criteria.

The third part of the study focussed on the endemic primates of Borneo. The distribution and conservation status of one of the most charismatic primates of South-east Asia, the proboscis monkey *Nasalis larvatus*, was assessed. It was found not only in coastal areas and downstream parts of large rivers, as assumed previously, but throughout the Bornean interior as well. Generally, populations in the interior were small and thinly spread, a pattern most readily explained by more intense hunting in the interior than in coastal areas. The species is not adequately protected and most of the larger populations included in the protected area network are in decline. Next, we assessed the spatial patterns of primate diversity in terms of species richness and endemism for Borneo, and evaluated this in relation to patterns of human land-use and positioning of the protected area network. The tropical wet evergreen forest near large rivers in central-eastern East Kalimantan, Indonesia, covering a land surface of some 30,000 km², was the richest area both in terms of absolute species number (up to eleven sympatric species) and in the number of endemics (up to five endemics). There is hardly any overlap between the areas most rich in primates and the protected area network. Of the five protected areas most rich in primates (including endemics), three are almost completely devoid of forest, mostly due to a combination of illegal logging, mining, encroachment and arson. Two of the primates endemic to the northern three-quarters of the island, the Bornean gibbon *H. muelleri* and the Bornean leaf monkey *P. hosei* are Vulnerable to extinction according to the IUCN threat criteria, on the basis of a sharp reduction in available habitat over the last decades, aggravated by hunting. The white-fronted leaf monkey *P. frontata* is an enigmatic species. Its distribution range was found to be significantly larger than previously assumed, but over large parts of its range it seems to be one of the rarest primates, occurring at low densities. Given these findings, and given a sharp reduction of its lowland habitat over the last decades it is Vulnerable to extinction.

Conservation of primates and their forest both on Borneo and Java has proven to be problematic largely due to a lack of funds, lack of knowledge, misconceptions on ecological issues, poorly integrated planning, and lack of serious and effective commitment and political support, locally, nationally as well as internationally. If we are to conserve the endemic primates of the Sundaic region it is imperative that solutions have to be addressed in an integrated manner. Future research should focus on collecting ecological and behavioural data much needed to accurately address conservation issues, preferably through long-term monitoring programmes.