

Monkeys on the Edge: Ecology and Management of Long-Tailed Macaques and Their Interface With Humans

Michael D. Gumert, Agustín Fuentes, and Lisa Jones-Engel (eds.)
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This volume is a product of two international workshops on macaque-human interactions held at the 30th American Society of Primatologists meeting in 2007 and the 22nd Congress of the International Primatological Society held the following year. It includes work by more than 50 contributors and is concerned with addressing the lack of data on the population sizes and distributions of *Macaca fascicularis* throughout Southeast Asia. A need for a thorough understanding of the species' range and population sizes has been perceived because of lack of detailed information previously collected on this monkey—while the species is commonly utilized in medical research, there are relatively few in-depth studies published on the behavior and ecology of natural populations. Because long-tailed macaques are an edge species and adapted to exploiting fragmented habitats such as forest edges and habitats disturbed by human development, they can be in contact and conflict with human populations, making them vulnerable to humans despite their ability to exploit human-macaque interface environments. I was interested to read that are at least 10 known sub-species of long-tailed macaques, which thrive in a wide variety of habitats.

Part I (Chapters 1–3) includes studies on the status and distribution of *Macaca fascicularis* throughout South East Asia. In Chapter 1, Michael D. Gumert provides an introduction to the species throughout its wide geographic range. In Chapter 2, Aye Mi San and Yuzuru Hamada report on an extensive study on the distribution of *M. fascicularis aurea* in Myanmar, which involved interviews of 380 people in 184 villages and forest rangers and staff in seven protected areas. The authors have included detailed tables of the locations of sighting records of long-tailed macaque, locations of pet long-tailed macaques, where troops were encountered, and locations of conflicts with the humans, and they also have included an example of the interview survey form used. In Chapter 3, Hamada and colleagues present a study of the distribution of *M. fascicularis* in southern Laos, where there are five species of macaques, as well as lorises, other cercopithecids, colobines, and gibbons. This study also assesses the interaction between *M. fascicularis* and *M. mulatta* in the region and any possible hybridization of the two species. The authors employed the use of interviews and also visited and assessed bushmeat markets and monkey farms, and found that while there does not appear to be much hunting pressure on these spe-

cies, habitat loss and disturbance from human activities does appear to be posing a threat to macaque populations in southern Laos.

The studies in Part II (Chapters 4–7) cover the interface between *M. fascicularis* and humans and the role of these monkeys in transmitting disease. Chapter 4 includes information gathered from a study conducted at the main campus of Universiti Kebangsaan Malaysia (UKM) in Malaysia, which is surrounded by a forest reserve. Badrul Munir Md-Zain and colleagues include population surveys of the *M. fascicularis* groups on the campus, records of conflict-related behaviors of a sample of the groups, and questionnaire surveys studying the attitudes of the university's faculty and students towards the monkeys. The study found participants have a largely negative view of the monkeys, but the questionnaire results allowed the researchers to make recommendations for waste management improvements that could reduce the most significant area of human-macaque conflict on the campus. Chapter 5 is a study of *M. fascicularis* in Thailand, where continual habitat disturbance and fragmentation by human activity and development put the monkey populations at risk and increases the areas of human-macaque interface. This study uses questionnaires mailed to leaders of sub-districts in Thailand, field surveys, animal trapping/recording, and interviews of key individuals from organizations involved in areas of human-macaque interaction. The authors, Malaivijitnond, Vazquez and Hamada, have included an extensive chart listing the GPS coordinates of long-tailed macaque groups recorded, copies of their questionnaires, field survey recording forms, and an outline of their preliminary interview. The study in Chapter 6 is a bit different in focus. Fuentes and colleagues investigate long-tailed macaques in one specific study site. The site is a mixed forest temple-complex that is an area of human-macaque interface, and data on demographics and range is given, as well as in-depth information on activity patterns, diet, infanticide, dominance, and even life history details. In Chapter 7, Gregory Engel and Lisa Jones-Engel examine how long-tailed macaques possibly may play a role in human disease transmission, especially in the case of pet macaque interaction with their human owners. I was surprised to learn that *M. fascicularis* could contract some human diseases such as TB, measles, and mumps, and that measles poses a significant threat to macaques.

Part III (Chapters 8–10) investigates macaque popula-

tions which were established through human dispersal in Mauritius and Palau. Sussman, Shaffer and Guidi, in Chapter 8, present research gathered on *M. fascicularis* in Mauritius, where the species was introduced in the 16th century. Like Chapter 6, this study presents in-depth behavioral and life history data, as well as population demographics. In Chapter 9, Nada Padayatchy presents background into the history of long-tailed macaques in Mauritius and how the breeding and capture of these monkeys for use in the biomedical industry has created conservation projects that are also protecting some native flora and fauna. The conservation projects of Bioculture Mauritius Ltd, which was founded by conservationists, have helped wildlife in Mauritius, Rodrigues, and Madagascar, and the levies and trapping fees attached to the harvesting of these feral primates additionally helps to fund the government's own National Parks and Conservation Fund. This case study demonstrates how animal breeding businesses can be ethically managed. In Chapter 10, Bruce P. Wheatley discusses the long-tailed macaques of Palau. The species is a relative newcomer to Ngeaur Island, having only been introduced there by German colonists in 1909, and is considered by the government to be an invasive pest. The chapter discusses the perception of the animals in Palau, eradication programs, attempts at prevention of crop damaging activities, and recommendations for management of the population.

In Part IV (Chapter 11) Charles H. Southwick and M. Farooq Siddiqi compare *M. fascicularis* by presenting the information from 50 years of *M. mulatta* demographics tracking and research in India. The management and con-

servation of *M. fascicularis* populations where they interface with humans, and future research and conservation directions are dealt with in Part V (Chapter 12–13). In Chapter 12, Jones-Engel and colleagues discuss how sustainable human-macaque interface communities can be developed through managing landscapes, waste disposal, and the design of buildings and protective structures. The authors discuss considerations for controlling macaque population size and managing human behaviors, and detail special contexts where other considerations should be made. In Chapter 13, Gumert and colleagues make suggestions for future research and conservation projects, and discuss concepts such as the ethnoprimate approach and the evolutionary biological approach. In this volume, there are also eight smaller case studies presented in boxes in Chapters 1–3, 6, 11, and 12.

While this volume focuses on populations and conservation research, detailed behavioral and ecological information is provided and researchers of primate behavior should find this book interesting and useful. Informative primate behavior data such as group sizes, structures, social interaction, locomotion, and feeding behaviors are covered within the studies included. Any institution supporting researchers of primatology, anthropology, or conservation will find this a valuable addition to their collection. The majority of the studies included have detailed their research design and implementation and the book could be useful for students and teachers of primatological field work.