



## BOOK REVIEW

**Phillipps, Q., and K. Phillipps.** 2016. PHILLIPPS' FIELD GUIDE TO THE MAMMALS OF BORNEO AND THEIR ECOLOGY: SABAH, SARAWAK, BRUNEI, AND KALIMANTAN. John Beaufoy Publishing Ltd., Oxford, United Kingdom, 400 pp. ISBN 9780691169415, \$27.

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For anyone interested in Asian tropical ecology and mammalogy, the new “Phillipps’ Field Guide to the Mammals of Borneo and Their Ecology” is one of those books that you want to have at least 2 copies of. One copy can safely sit on your book shelves for occasional referencing and enjoyments of its excellent texts and illustrations. The other you take with you on any of your Borneo trips; it gets dirty and worn being frequently grabbed out of wet back packs in your haste to identify that species you just encountered. This is how I used the original Mammals of Borneo by [Payne et al. \(1985\)](#), with one copy now barely recognizable as a book, patched by various types of duct and other forms of tape, and a few pages unfortunately missing.

Quentin Phillipps and Karen Phillipps have done a great job reworking [Payne et al. \(1985\)](#) into a better illustrated and more informative field guide. Compared to the original book, the present version is not just an excellent guide for the identification of Bornean mammals, but also has a very useful succinct description of the ecology of Bornean forests, their mammals, and the plants and others species with which these mammals interact. Thus, it presents mammals as an integral part of Bornean ecosystems, allowing readers to understand why they look or act in certain ways, and how they fit into Borneo’s intricate ecological networks.

The importance of illustrated field guides such as this one cannot be underestimated. For example, to date, no one has taken the initiative to comprehensively describe and illustrate the mammal species of Sumatra, Java, or Sulawesi; hence there are still no useful field guides for these Indonesian islands with their rich mammalian faunas and high endemism. Without accurate guides to species identification, how can ecological study and conservation of biodiversity be implemented? Here, Borneo traditionally has had a great advantage compared to most other parts of the Malay Archipelago, which this guide further emphasizes. Thus, as a Borneo expert, I greatly welcome this book, and hope that it inspires others to develop similar illustrated guides for other parts of this evolutionary hotspot region.

Taxonomically, the book is up-to-date, much as can be expected in a region with rapidly advancing faunal inventories and ecological studies. The classification is based on the most recent phylogenetic and taxonomic insights, in which the

authors generally follow the Phylogenetic Species Concept; however, this is rather oddly defined on p. 186. Compared to the 221 species described in [Payne et al. \(1985\)](#), the present guide recognizes 247 land mammals, of which 63 are endemic to Borneo.

The species texts use the original drawings from [Payne et al. \(1985\)](#), but new illustrations and photos highlight specific morphological features that previously had not been well presented. A good example is the endemic Bornean Tufted Ground Squirrel *Rheithrosciurus macrotis*, which now shows the remarkable erect, very fluffy tail of the species much better than in the original drawings. Years of camera trapping have now provided us with a much better picture of what the species looks like, leading us to speculate as to why this species has such a voluminous tail, probably the largest tail relative to body size of all mammals ([Meijaard et al. 2014](#)).

One particularly attractive feature of this book is the strong emphasis of hunting as a driver of species abundance. This is often overlooked by mammalogists who tend to focus on environmental and ecological rather than anthropogenic factors. People have hunted mammals for over 45,000 years on Borneo ([Piper and Rabett 2009](#)), leading largely to the extinction of Giant Pangolin (*Manis paleojavanica*) and Javan Rhinoceros (*Rhinoceros sondaicus*) and the near-extinction of Sumatran Rhinoceros (*Dicerorhinus sumatrensis*). As the authors clarify, hunting also determines the distribution and density of many other species, including leaf monkeys (*Presbytis* spp.), orangutans (*Pongo pygmaeus*), gibbons (*Hylobates* spp.) and dozens of large and smaller and commercially valuable species. The book thus provides an important reminder to those studying mammals of the major impacts of the long-term coexistence between humans and mammals on many aspects of the latter’s ecology, behavior, and maybe even morphology.

Some of the texts in the ecology section are rather speculative, although perhaps this raises curiosity, encouraging investigation of these ideas. For example, are the tails of Banded Linsangs (*Prionodon linsang*) really banded black and white, because this resembles a poisonous snake, and thus prevents it from being predated on by other snakes when asleep during the day? Since snakes primarily hunt using smell and infrared perception, I am not convinced that mimicry would help the linsang much in avoiding snake predation. Ringed tails in carnivores are generally associated with a nocturnal and arboreal lifestyle in closed habitats and forests ([Ortolani 1999](#)). As a nocturnal predator, the Banded Linsang may use its black and white markings and banded tail to blend into the forest undergrowth when stalking its own prey. Behavioral study of the species may one day show which explanation is most valid.

More generally I take issue with the frequent reference of mimicry to explain colors or color patterns in Bornean mammals. For example, the authors explain the reddish color of Red Langurs *Presbytis rubicunda* as a means to avoid predation by Clouded Leopard *Neofelis diardi* as it makes them look like the much larger Orangutans (p. 156–157). It might be the correct causal explanation but it seems rather speculative. The evolution of a particular color or pattern can be driven by various mechanisms, including Batesian and Müllerian mimicry, but also camouflage, interspecies communication, aposematism, temperature regulation or genetic drift. Individual causal mechanisms, i.e., *P. rubicunda* looking like *P. pygmaeus* to escape predation, might be too simplistic, especially when considering that the orangutan has a much larger (former) distribution range than *P. rubicunda* including southern China, Indochina, as well as Java. Why are there not many more red monkeys in that region? It is more likely that the *Presbytis* leaf monkeys need to differentiate themselves from other co-occurring *Presbytis* species, like the grey and white *P. hosei*, the black and white *P. frontata*, and the red, black, and white *P. chrysomelas*. I have similar objections to the untested hypothesis of mimicry driving facial coloration patterns in the 4 species of Slow Loris (*Nycticebus* spp.) on Borneo by making them look like sympatric owls. The authors are trying to explain too many variations in external morphology through mimicry-related hypotheses. Within the limited color-space, each species needs to find its own color-niche to survive or minimize hybridization with other species, and there are many mechanisms that drive these species into certain color and pattern directions.

I am grateful that the authors have made the guide as user friendly as possible. This includes changing some of the common names originally used by Payne et al. (1985), which they suggest should help identification and memorization of the species. But I disagree with some of these suggested changes. For example, why call a species the Sarawak Langur when half its populations occur outside Malaysian Sarawak in Indonesian West Kalimantan? The authors justify because: “the distribution has always centred on Sarawak, and the continued survival of the Sarawak Langur depends entirely on the good will of the people of Sarawak and the future policies of the Sarawak government” (p. 170). This is a bit odd because West Kalimantan is certainly part of the historic range. I have seen photographic evidence of the species in West Kalimantan about a decade ago, and considering that Indonesia is far more poorly surveyed than Malaysian Borneo, I would think it is a bit early to give up on the occurrence of this species in

Indonesia. Calling this effectively a Malaysian endemic certainly will not encourage the Indonesian government to support its improved protection.

Where I do agree with new common names is in the section on “Grey Langurs.” Seeing the former species *P. hosei* (now split into three species) juxtaposed to *P. frontata* clarifies that indeed all these species are of common ancestry (Meijaard and Groves 2004) and have undergone allopatric speciation, primarily expressed through changes in coat patterns.

Even though I have worked on the conservation of Bornean species for nearly 25 years, I found the book a great reminder of the importance of the many plant–animal relationships that are being interrupted by deforestation, removal of certain tree species from forests, and general ecological homogenization in Bornean forests. If orangutans indeed use the calls of barbets (*Megalaima* spp.) to locate fruiting trees, how is their food search efficiency affected now that Borneo’s forests are being cleaned out for the pet bird trade? And what about the many plant species with large fruits, like *Eusideroxylon zwageri* or *Rafflesia* spp. that depend for their seed dispersal on species such as the once common but now nearly extinct Sumatran rhinoceros?

In sum, this is an excellent field guide to the mammals of Borneo, with much relevance to anyone studying mammals in South-East Asia. I would hope that a translation into Indonesian can soon be developed, which would greatly help fill in many of the knowledge gaps about Bornean species on the Indonesian versus the Malaysian part of the island.

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