

BOOK REVIEW

Patchy Foraging

Review of *Adaptations for Foraging in Nonhuman Primates: Contributions to an Organismal Biology of Prosimians, Monkeys and Apes* edited by Peter S. Rodman and John G. H. Cant. New York, Columbia University Press, 1984, 351 pp, \$35.00 cloth; \$18.50 paper.

This volume is the result of a symposium on "Foraging in Nonhuman Primates" organized by Peter Rodman and John Cant at the 1980 meetings of the American Association of Physical Anthropologists. Its 11 essays share a concern with foraging, but are not obviously linked in other ways. The first four chapters (Kay, Grand, Crompton, Garber) deal with comparative morphology, and the rest deal with comparative socioecology (Rodman, Ghiglieri, Waser, Temerin et al, Milton, Post, Cant & Temerin). Articles include both empirical studies and abstract theory. Despite the title of the book, several chapters focus more heavily on the consequences, rather than the causes, of foraging adaptations. Thus, this is a mixed bag.

Two useful chapters review species-specific adaptations for foraging. Kay discusses how data on living primates can reveal the feeding behavior of fossil species. He shows that in living species there are reasonably good correlations between tooth morphology and diets, such as between long molar shearing crests and the tendency to eat leaves or insects. The correlations are shown to be strong enough for the exceptions to be worth investigating. For instance, gibbons have poorly developed shearing crests yet eat substantial quantities of leaves. Kay uses this example to ask for more sensitive ways to classify dietary items, as well as for a better understanding of species differences in digestive ability. This article makes valuable teaching material because the review is backed by extensive data.

Milton's chapter contributes to satisfying one of Kay's requests. She reviews our rather limited knowledge of species differences in digestive physiology and reports the results of experiments designed to measure the rate of food passage through primate guts. In this preliminary study using 14 species in captivity, Milton shows that in relation to body size, food passage rates vary significantly and are likely to be a critical variable influencing the nutritional value of a given food item. We can expect much more work in this area.

Two chapters report field data on the way environmental factors affect locomotion. Crompton deals with *Galago crassicaudatus* and *G. senegalensis* and shows how food distribution and seasonal changes are responsible for species differences in ecology and activity. Garber shows that *Saguinus oedipus* move in different ways depending on what they are eating. Both studies would have been better published in journals.

Three studies explore ecological influences on behavior. Waser compares the arboreal *Cercocebus albigena* in Uganda with the terrestrial *C. galeritus* studied by Kathy Homewood in Kenya. The habitats occupied by these two mangabeys have striking differences, yet many aspects of feeding, ranging, and grouping behavior

are similar. Why? Waser identifies the problem nicely, but concludes that no answer is possible until more sophisticated measures of food production are available. Ghiglieri analyses chimpanzee feeding and sociality in Kibale, Uganda. These forest chimpanzees appear very similar in social organization to those in the more open habitats of western Tanzania. The most striking difference is that Kibale females appear to associate with each other at higher rates than elsewhere, but the reasons are unclear. Finally, Rodman compares the socioecology of chimpanzees and orangutans. He argues that a key difference is that chimpanzees use smaller food patches than orangutans, a proposal well worth investigating.

These last three articles show that it is easier to present data than to reach clear conceptual conclusions. The remaining chapters echo the difficulty of defining the causes or consequences of foraging patterns. Given that foraging adaptations have long been assumed to be responsible for many characteristics of primates, it is remarkable that only a low level of precision has yet been achieved. *Adaptations for Foraging in Nonhuman Primates* is useful in showing what needs to be done, but only a specialist will feel it has to be on her shelf.

Richard Wrangham
Department of Anthropology
University of Michigan, Ann Arbor