



## Book Review

**Eat or be Eaten. Predator Sensitive Foraging among Primates.** Edited by *Lynne E. Miller*, Cambridge University Press, Cambridge, UK, *xi* + 297 pp. 2002, US\$110.00 (hardback); US\$40.00 (paperback).

Survival requires food. Accordingly, students of primatology have long sought and found ties between diet, behavior, and anatomical design. However, the life-dinner principle holds that selective pressures will be greatest on traits that reduce the likelihood of predation. Though intuitive, the last three decades have produced comparatively few studies of predator sensitive foraging among primates. Of course, this is due not to a lack of interest on the part of primatologists, but instead to the difficulty of defining, recognizing, and quantifying predator sensitive behaviors. Besides, determining what primates eat, as well as how and why foods are eaten, is requisite before tackling the subtleties of how such needs are balanced with predator avoidance. *Eat or be Eaten* is thus a welcome compendium. It is divided into sections on biological, social, and environmental variables, and, collectively, reports on nearly 28 years of observational data from 22 species (6 prosimians and 16 anthropoids).

Biological variables are defined as those largely or completely under genetic control. Chapters consider the nocturnal activities of Mysore slender lorises and southern lesser galagos (Bearder, Nekaris, and Buzzell), the risk-associated behaviors of saddle-backed and red-bellied tamarins (Prescott and Buchanan-Smith), the variation of color perception in Geoffroy's marmosets (Caine), and the costs associated with reproduction in Thomas langurs (Sterck). Perhaps most fitting is the chapter by Caine, who considers the hypothesis that dichromatic color vision may improve the detection of camouflaged targets, such as food or predators. Although the evidence is meager, dichromatic color vision may afford such advantages. I suspect this study will encourage more research on selective pressures maintaining M/L cone opsin polymorphism in primates.

Social variables form the heart of this volume and revolve around a central theme: group size. In both wedge-capped capuchins (Miller) and

ring-tailed lemurs (Sauther), larger groups tend to risk terrestrial foraging to a greater degree. Smaller groups -and female-offspring dyads (Sterck)-tend to reduce risk by foraging arboreally. Similarly, large groups of Milne Edward's sifakas and rufus lemurs forage in riskier areas than smaller groups of red-bellied lemurs (Overdorff, Strait, and Seltzer). Accordingly, the collective increase in group size achieved by mixed-species associations is often hypothesized to reduce predator susceptibility. Among tamarins, however, Garber and Bicca-Marques report no evidence for cooperative vigilance or increased predator-sensitive behavior during mixed associations. Their literature review also reveals inconsistent predation rates between mixed- and single-species tamarin groups. Such results encourage the reevaluation of conventional models. Indeed, predators may not greatly influence the spatial dispersion of a group (Isbell and Enstam) or the foraging success of peripheral individuals (Gleason and Norconk).

Lastly, the environment may govern patterns of predator-sensitive foraging. For example, primate vigilance varies both between (Hill and Cowshaw) and within foraging environments (Treves; Di Fiore). Contrary to convention, vigilance increases with the degree of visual obstruction (Treves; Di Fiore), indicating that perceived apparency is linked to the likelihood of predator detection. Food rewards, however, may be high in areas where primates are conspicuous (Cords) or perceptibly more vulnerable (Uhde and Sommer). To eat or be eaten, then, clearly requires a degree of behavioral plasticity with respect to environmental variance.

In summary, the publication of *Eat or be Eaten* is well timed to kick off an important decade in primatology. This volume not only fills a data dearth, but also provides a sound theoretical basis for current and future generations of graduate students. It sets priorities for future work and establishes that predator-sensitive foraging adaptations are fundamental topics in the study of primates.

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