Functional response to fruiting seasonality by a primate seed predator, red leaf monkey (Presbytis rubicunda)

Abstract

The predator satiation hypothesis is one plausible explanation for masting in lowland dipterocarp forests in SE Asia. Hence, evaluation of behavioral patterns of seed predators have the potential to provide support fo r the predator satiation hypothesis. In order to evaluate possible mechanisms that could result in predator satiation, we studied the functional response in the seed predation behavior to fruiting seasonality of red leaf monkeys (Presbytis rubicunda Müller, 1838, Colobinae) in Danum Valley, Sabah, northern Borneo. Specifically, we sought to answer the two questions: (1) when fruit availability increases, to what extent do red leaf monkeys increase their seed eating? and (2) do red leaf monkeys change the degree to which they pursue one species of seeds in respon se to the changes in community-level fruit availability? In response to the increased fruit availability, red leaf monkeys extended their time spent feeding on seeds as much as 18 fold. This large functional response resulted from the elongated total feeding time and the preference for seeds by red leaf monkeys. Feeding time tended to increase, up to 28 % of the observation time, with increasing fruit availability. In response to increased fruiting seasonality, the monkeys increased the number of species and plant individuals upon whose seeds they depredated. Time spent feeding on seeds per species or individual, or for the most frequently eaten species or individual, was not affected by fruit availability. Similarly, the duration of one seed-feeding event was unaffected by the fruit availability. Hence, while our results demonstrate a functional response to mast fruiting, we found no support for the predator satiation hypothesis. The existence of an abundant alternative resource (young leaves) is one of several likely reasons for the weak persistence toward seeds shown by red leaf monkeys, whic h is contradictory to the assumption of the predator satiation hypothesis.