

Foraging efficiency and ecological risk aversion in juvenile Bornean orangutans

CHERYL D. KNOTT and KAELIN DELONG. Department of Anthropology, Boston University.

For species with low mortality and high reproductive costs, like primates, rather than maximize reproduction, natural selection should favor slow growth and slow reproductive rates. Orangutans, because of their slow life history, and the extreme fluctuations in their food supply, are hypothesized to have been selected for slow juvenile development to avoid ecological risk. Juveniles are predicted to be particularly vulnerable during periods of low food availability because of lower foraging success. Thus, we tested the hypothesis that juvenile orangutans are less efficient foragers than adults and that they are less able to both access and digest important fall-back foods. Data were collected on wild orangutans in Gunung Palung National Park, Borneo, Indonesia between 1994-2016. Analyses are drawn from 468 matched follows of mother-offspring pairs in which more than 75% of the diet has been analyzed. We found that juveniles ate fruit when their mother's ate fruit during 98.3% of bouts. However, for other food items, juveniles were much less likely to eat the same food items (insects = 65.2%, leaves 76.5, bark 70.0%, flowers 75.0%, pith 65.8%). As expected, we found that juveniles ate significantly fewer calories than did adults overall, but this difference was particularly pronounced during periods of low food availability ($p < 0.001$). We show that these results were due to constraints on both the processing and digesting of fall-back foods. Thus, the long period of orangutan growth and dependency may reflect a risk-averse growth strategy in this forest characterized by dramatic fluctuations in preferred fruits.

Principle supporters: National Science Foundation (0936199 and 1638823); National Geographic Society; Leakey Foundation; US Fish and Wildlife (F12AP00369); Disney Conservation Fund; Orangutan Conservancy; Conservation, Food and Health Foundation.