

BEHAVIORAL, PHYSIOLOGICAL AND MORPHOLOGICAL ADAPTATIONS TO PERIODS OF FRUIT SCARCITY IN WILD BORNEAN ORANGUTANS (*PONGO PYGMAEUS WURMBII*)

E.R. Vogel^{1,2}, M.A. van Noordwijk², N.J. Dominy³, K.V. Baritell³, A. Meididit⁴, C.P. van Schaik².

¹*Center for the Advanced Study of Hominid Paleobiology, Department of Anthropology, The George Washington University,* ²*Anthropologisches Institut and Museum, Universität Zürich* ³*Department of Anthropology, University of California Santa Cruz,* ⁴*Department of Biology, Universitas Nasional Jakarta.*

Presenter's email: evogel@gwu.edu

The dipterocarp forests of Southeast Asia show extreme supraannual variation in fruit availability. The frugivores of these forests are expected to evolve mechanisms to cope with episodes of fruit scarcity. For instance, orangutans have been reported to compensate for inadequate energy intake by metabolizing fat reserves, and it has been proposed that the unique craniodental morphology of orangutans is well adapted to a diet of obdurate foods that are consumed when preferred fruit is scarce. It stands to reason that such patterns are also accompanied by complimentary changes in behavior, yet little is known of how orangutans vary their foraging behavior in response to fluctuating food properties. Here we examine supraannual variation in food selection at the Tuanan Field Station, Central Kalimantan. We predicted that during periods of fruit scarcity, orangutans would switch to a low-energy diet characterized by food items that are tougher and less elastic than preferred fruits. To help compensate for this switch, we predicted that orangutans would reduce the amount of time spent traveling between food patches, revisit feeding trees more often, increase the number of feeding bouts, and that patch profitability would decline. Indeed, during periods of low fruit availability, the orangutans switched to a more mechanically challenging diet, resulting in the reduced energetic profitability of each patch. However, ketone excretion did not mirror fruit abundance, probably because swamp forests do not experience mast fruiting. This study provides insights into the importance of integrating behavior, ecology, morphology, and physiology to understand diet selection in primates.

Keywords: diet, behavioral ecology, food-scarcity, orangutan
Preference for delivery medium: Podium Presentation