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Behavioral Evidence of Wild Bornean Orangutans Navigating to Non-Fruit Foods – Implications for Fallback Foods

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In 2015, Lambert and Rothman urged primate nutritional ecologists to revise the view of fallback and optimal foods from stable traits inherent in the food to variable qualities determined by the state of the consumer. Here we provide behavioral evidence to support this revision. In primates, fruit is often the preferred food category because it is typically high-energy, high-carbohydrate, and low in fiber. Orangutans in particular, are said to consume fruit preferentially and when it is available, whereas leaves, bark, and pith are often considered fallback foods. Using movement ecology, we ask if wild Bornean orangutans (*Pongo pygmaeus wurmbii*) navigate only to fruit, or whether navigation to non-fruit foods is supported by our data. We find that orangutans do deviate from a direct fruit-to-fruit path to consume non-fruit foods (n = 54, range 8% - 84%; $p = 6.819e^{-07}$.) Next, we ask if orangutans consume non-fruit foods when in the proximity of fruit resources. We find that 25.5% of the time that orangutans eat a non-fruit food, there is an available fruit within 50m (n=308). Building on previous research finding that orangutans maintain a 10.1:1 NPE:P balance, we use this geospatial data showing that orangutans navigate to and choose non-fruit foods, even when fruit is available, to suggest that orangutans are seeking foods based on their current nutritional state and not only to maximize energy. This supports the claim that 'fallback' is not an inherent characteristic of a food, but rather is in the state-dependent eye of the consumer.

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