

UNDER PRESSURE: RESOURCE SCARCITY AND ORANG-UTAN ENERGETICS IN A BORNEAN PEAT-SWAMP FOREST

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Understanding the influence of resource scarcity on orang-utans in non-masting peat-swamp forests is important, as (i) it provides insight into the generality of previously observed strategies for coping with resource scarcity in masting habitats, which show very different patterns of fruit availability, and (ii) peat-swamp forests contain the largest remaining populations of this endangered ape. In this paper, we assess the effects of periods of resource scarcity on orang-utan energetics in the non-masting Sabangau peat-swamp forest, Indonesian Borneo for the period 2003-2009, and compare this to the results of previous studies in masting habitats in the region. We made field observations of foods eaten and feeding rates, and conducted nutritional analysis of food items, to calculate energy intake. Energy balance was assessed by collecting urine and testing for the production of ketone bodies (by-products of fat metabolism, excreted in times of starvation) using Multistix 10 SG urinalysis strips. In doing so, we demonstrate that orang-utans in the Sabangau peat-swamp forest frequently enter negative energy balance, which is likely to be related to the depauperate nature of this habitat and average levels of fruit availability similar to those during “crunch” periods of fruit scarcity between masting events in masting habitats. This study highlights the importance of coping with resource scarcity for orang-utans and implies that this has been a key factor driving orang-utan evolution. Furthermore, it indicates that degradation of deep peat-swamp forests may have catastrophic effects on the large populations of orang-utans inhabiting these areas.

Keywords: Orang-utan, peat-swamp forest, energetics, resource scarcity