

Fluctuations of population density in Bornean orangutans (*Pongo pygmaeus morio*) related to fruit availability in the Danum Valley, Sabah, Malaysia: a 10-year record including two mast fruitings and three other peak fruitings

Abstract

We investigated the population density of Bornean orangutans (*Pongo pygmaeus morio*) and fruit availability for 10 years (2005–2014), in primary lowland dipterocarp forests in the Danum Valley, Sabah, Malaysia. During the research period, two mast fruitings and three other peak fruiting events of different scales occurred in the study area. The orangutan population density, estimated every 2 months by the marked nest count method, changed between 0.3 and 4.4 ind/km² and the mean population density was 1.3 ind/km² ± SE 0.1 ($n = 56$). The population density increased markedly during mast and peak fruiting periods. A significant positive correlation was observed between the population density and fruit availability in the study period (Spearman, $R = 0.3$, $P < 0.01$, $n = 56$). During non-fruiting periods, however, no significant correlation was observed between them. These results suggest that the spatial difference in fruit availability during mast and peak fruiting periods was larger than during non-fruiting periods, and many orangutans temporarily moved to the study site from the surrounding areas seeking fruit.