

Why did the orangutan come down from the trees?

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A fully flanged adult male strides across the forest floor in the Sabangau Forest, southern Borneo. Credit: © OuTrop-WildCRU (Orangutan Tropical Peatland Project/Wildlife Conservation Research Unit, University of Oxford)

Orang-utans come down from the trees and spend more time on the ground than previously realised – but this behaviour may be partly influenced by man, a new study has found.

Dr Mark Harrison, based in the Department of Geography at the University of Leicester and Managing Director of the Orang-utan Tropical Peatland Project (OuTrop) has, along with international colleagues, published results of a seven year study of orang-utans in Borneo in the journal *Scientific Reports*.

The research, conducted between June 2006 and March 2013, is based on a large-scale analysis of orang-utan terrestriality using comprehensive camera-trapping data from 16 sites across Borneo. In total there were 641 independent orang-utan records taken at 1,409 camera trap stations over 159,152 trap days.

The Bornean orang-utan (*Pongo pygmaeus*) is the world's largest arboreal (tree-dwelling) mammal. Records of terrestrial behaviour are rare and tend to be associated with habitat disturbance.

Marc Ancrenaz, from the HUTAN / Kinabatangan Orang-utan Conservation Programme in Malaysia, and colleagues conducted the study. Dr Harrison, said: "We've known for some time that orang-utans use the ground to travel and search for food, but the influence of anthropogenic disturbances in driving this behaviour has been unclear. This is crucial to understand in this age of rampant forest loss and fragmentation, which is slicing up the orang-utan's jungle home.



An adult male wades through the flooded Sabangau peat-swamp forest. Credit: © OuTrop-WildCRU (Orangutan Tropical Peatland Project/Wildlife Conservation Research Unit, University of Oxford)

"We found that although the degree of forest disturbance and canopy gap size influenced terrestriality, orang-utans were recorded on the ground as often in heavily degraded habitats as in primary forests.

"All age-sex classes were recorded on the ground, but flanged males - those with distinctive cheek pads and throat pouches – travel on the ground more. This suggests that terrestrial locomotion is a greater part of the Bornean orang-utan's natural behavioural repertoire than previously understood and is only modified by habitat disturbance."

Dr Harrison added: "The capacity of orang-utans to come down from the

trees may increase their ability to cope with at least smaller-scale forest fragmentation, and to cross moderately open spaces in mosaic landscapes, although the extent of this versatility remains to be investigated."

The authors report that more than 70% of orang-utans occur in fragmented multiple-use and human-modified forests that have lost many of their original ecological characteristics. Modified orang-utan behaviour which sees them increasingly spending time on the ground therefore has its pros and cons:



A young male travels on the ground in the Sabangau Forest. Credit: © OuTrop-WildCRU (Orangutan Tropical Peatland Project/Wildlife Conservation Research Unit, University of Oxford)

Dr Harrison explains that "Increased terrestriality is expected to increase predation risk, interactions with and persecution by humans, and exposure to novel diseases. Unlike in Sumatra, where tigers are present, predation is less of a concern in Borneo, although infants might be at risk from bearded pigs and clouded leopards. In recent history, their biggest predator has been man, who is actually more likely to pick orang-utans off in the trees: orang-utans make a lot of noise and so are very obvious in the trees, whereas they can move with almost no noise and so more easily get away on the ground."

The scientists report that terrestrial behaviour therefore could also facilitate movement and dispersal, especially in degraded or fragmented landscapes as a result of natural or man-made processes. This could also create new opportunities to access different food sources."

Dr Harrison concludes: "Ultimately, a better understanding of what drives orang-utan terrestriality, how this influences their dispersal, movement and survival in a human-modified landscapes is important for designing effective management strategies for conservation of this endangered species in Borneo."

More information: [dx.doi.org/10.1038/srep04024](https://doi.org/10.1038/srep04024)

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