

Endangered orangutans face a new threat

October 14 2015, by Robin Lally



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Poachers have killed mother orangutans so their young could be taken and sold.
Credit: Alexandra Hofner

The loss of habitats is the greatest threat to the endangered orangutans, and now a new study says their existence could be further jeopardized if conservation efforts don't include reintroducing these great apes into natural environments with enough high-energy food for them to survive.

In the study, published on October 14 in *PLOS ONE*, Rutgers researchers found that the density of Bornean orangutans is almost two times greater in an Indonesian peat-swamp forest - just 39 miles from similar surroundings where orangutans must survive on thousands of calories less each day for most of the year.

"This study gives us a better understanding of how living in an unpredictable environment can influence the population density of large animals that spend the majority of their time in tress," said Erin Vogel, an evolutionary anthropologist at Rutgers University. "If animals can't obtain enough energy, reproductive output and population sizes will suffer."

The Rutgers study is the first to compare variations of food and nutrition at similar tropical rain forest sites - some of the oldest forests on Earth - that are in close proximity. Vogel and her colleague from the University of Leicester, Mark Harrison, found that the orangutans living in the Tuanan Forest, located in Central Kalimantan, Indonesia, consumed almost 2,500 more calories each day when the availability of fruit was high and more than 800 calories in times of scarcity - compared to orangutans inhabiting the nearby Sabangau Forest, which has a thicker

layer of acidic peat that prevents fewer nutrients from reaching the vegetation.

"Walking through the forest you wouldn't be able to tell the difference," said Vogel, an assistant professor in the Department of Anthropology who has spent the last decade studying the relationship between orangutan nutrition and health. "The sites look the same, but one of the habitats appears to support a healthier population."



Erin Vogel in the Tuanan Forest, Indonesia. Credit: Alexandra Hofner

This is important because orangutans - closely related to humans, with 97 percent of DNA in common - could become extinct in the next decade if the destruction to their habitats does not stop. Rapid deforestation, mainly due to the oil palm industry and other agricultural plantations, illegal pet trade and poaching by killing mothers so their young can be taken, has resulted in the population in Borneo decreasing by more than 50 percent. Many orangutans, forced from their forest homes, have been taken to rehabilitation centers and are now scheduled to be reintroduced into the wild.

Vogel says if the orangutan population is to increase, conservationists must know which habitats will enable these great apes to thrive and reproduce successfully. The orangutan populations followed in this study are two of the largest remaining populations of orangutans in Borneo.

"If you want to increase the populations of this endangered species, you need to make sure that they are being reintroduced into suitable habitats," said Vogel. "It means looking at forests carefully, making sure they are productive, and that there is enough food to eat in terms of caloric gain."

These long-haired, orange-colored apes depend on low-protein fruit to survive and store fat when food is abundant, so they can survive on these fat reserves when food is scarce. Female orangutans give birth to one offspring only every seven to nine years. Reproductive success, Vogel said, is linked to the nutritional quality of orangutan diets and can have an impact on the density of the population.

"This work not only helps us understand why orangutan abundance

varies between sites, but also suggests a mechanism through which forest degradation may reduce the number of [orangutans](#) that can be supported in an area because of the quality of foods available," said Harrison, managing director of the Orangutan Tropical Peatland Project and an honorary visiting fellow at the University of Leicester. "Such considerations are likely to become increasingly important as orangutan habitat continues to be lost and damaged across Borneo and Sumatra, including by the dreadful [forest](#) fires currently blighting the region."

More information: *PLOS ONE*, journals.plos.org/plosone/article?id=10.1371/journal.pone.0138612

Provided by Rutgers University

Citation: Endangered orangutans face a new threat (2015, October 14) retrieved 8 May 2024 from <https://phys.org/news/2015-10-endangered-orangutans-threat.html>

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