

Nowhere to hide: Study finds future of Sumatran tigers threatened by human disturbances

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The availability of adequate understory cover serves as an environmental necessity for tiger habitat, regardless of location. Credit: Image courtesy of WWF

Three of the world's subspecies of tigers are now extinct. A new study found that the Sumatran tiger subspecies is nearing extinction as a result of human activities, particularly the conversion of natural forests into forestry and agricultural plantations, leading to habitat loss.

The study, conducted by Virginia Tech and [World Wildlife Fund](#) (WWF), is the first of its kind to systematically investigate the use of different land cover types — not just forests but also plantation areas — for [tiger](#) habitat.

Published in the Public Library of Science's online journal *PLoS ONE* on Jan. 23, the study was led by Sunarto, who earned his doctorate in wildlife sciences from Virginia Tech in 2011. The study was a collaboration between the university and WWF, and received support from the Indonesian Ministry of [Forestry](#).

The authors found that Sumatran tigers strongly prefer forests over plantations of acacia and oil palm trees and tend to avoid plantation areas unless they contain thick ground-level vegetation and have extremely low levels of human activities.

Within forest areas, tigers also strongly prefer sites that have low levels of human disturbance as indicated by their preference for areas closer to forest centers and farther from human activity centers such as bodies of water and forest edges.

The most notable find, however, was the tigers' strong predilection for sites with understory cover — vegetation cover at the ground level — which suggests that the availability of adequate understory cover serves as an environmental necessity for tiger habitat, regardless of location.

"As ambush hunters, tigers would find it hard to capture their prey without adequate understory cover," said Sunarto, who is now a tiger expert for WWF–Indonesia. "The lack of cover also leaves tigers vulnerable to persecution by humans, who generally perceive them as dangerous."

While the Indonesian government has set aside many areas and national parks for the conservation of endangered species, about 70 percent of tiger habitat in Sumatra remains outside these protected areas. The preservation of such habitats, which requires support from government, landowners, and concession holders, is critical for the conservation of the species, the study authors emphasize.

"Even with current legal protection for the species, tigers are not doing well in many places, especially those outside protected areas," Sunarto said. "As long as forest conversion continues, tigers will require active protection or they will quickly disappear from our planet."

"These results indicate that to thrive, tigers depend on the existence of large contiguous forest blocks," said study co-author Marcella Kelly (www.mjkelly.info/), an associate professor in Virginia Tech's Department of Fish and Wildlife Conservation and Sunarto's graduate advisor.

The study concludes that in order to protect tigers, it is critical to stop the clearing of Indonesia's remaining natural forests for plantations. With adjustments in management practices in existing plantations to include more understory and riparian forest corridors, tigers could use a mosaic of forest patches across fragmented landscapes.

"We hope that plantation managers and concession owners can use the recommendations of this report to apply best management practices to further protect Sumatran tigers from extinction," said Anwar Purwoto, director of the Forest, Freshwater, and Species Program at WWF–Indonesia.

A recently published Indonesian presidential decree on land use in Sumatra plan points out the importance of building wildlife corridors between critical areas, where commitments from concession owners are key to successful implementation.

"Ensuring that tigers are able to roam freely in natural forests and restored habitat is crucial to their survival," said co-author Sybille Klenzendorf, head of WWF's species program, who earned her master's and doctorate degrees in wildlife science from Virginia Tech. "This study is a reminder of just how important it is for us to protect the

natural forests that tigers and other animals rely on."

Tigers occupy only around 7 percent of their historic range. There are estimated to be as few as 3,200 tigers left in the wild, and fewer than 400 Sumatran tigers, which are listed as critically endangered on the International Union for Conservation of Nature Red List of Threatened Species.

More information: The *PLoS One* study is online at www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0030859

Provided by Virginia Tech

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