Thousands of plant species likely to go extinct in Amazon

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As many as 4,550 of the more than 50,000 plant species in the Amazon will likely disappear because of land-use changes and habitat loss within the next 40 years, according to a new study by two Wake Forest University researchers.

The study appears in the current issue of the Proceedings of the National Academy of Sciences and is co-authored by Kenneth Feeley, post-doctoral research fellow, and Miles Silman, associate professor of biology at Wake Forest.

The researchers examined several hundred thousand individual plant records to map the distributions of more than 40,000 species found in the Amazon. Using these maps in conjunction with predictions of future deforestation and land-use change, they estimate habitat loss and extinction risks individually for nearly 80 percent of all Amazonian plant species—something that has never been done.

“While previous studies have indicated that we are in danger of losing large numbers of species, they were limited in not providing specific enough results to aid in the design of conservation strategies,” Feeley says.

The current study provides detailed information that can be used to target conservation action toward individual species that are at high risk of extinction or at specific areas that are especially important to preservation of diversity.

"We predict that 5 to 9 percent of the trees and other plant species studied here will become extinct by 2050 as more land is used to raise crops and livestock and habitat is lost," Feeley says. The estimate is dramatically lower than rates predicted in other recent studies.

Previous studies likely overestimated species loss because they have assumed that all species are equal and are spread evenly throughout the Amazon basin, according to Feeley and Silman. The Wake Forest study takes into account that the highest species diversity is found in the Western Amazon basin, close to the Andes, and also along the main course of the Amazon River.

"The good news from this study is that the areas with highest species diversity are, for the most part, the areas least likely to be threatened by development in the near future," Silman says. "The most rapid rates of land-use change will likely occur in the so-called 'arc of deforestation' in the southern Amazon rain forest and the vast grassland and forest mosaics of the Cerrado in southeastern Brazil."

If realistic conservation actions are employed to reduce rates of land-use change, the rate of species loss could be cut in half, say the researchers. They considered two scenarios, one that looked at extinction rates based on land-use changes continuing at the present rate and another looking at the rates if something were done to intervene.

"While we are almost certain to lose some species, we still have time to save several thousand species from extinction," Feeley says. "Although the number of threatened species is less than estimated in some previous studies, we stress that ongoing and future land-use changes pose serious threats to Amazonian biodiversity."

The study does not address other threats to Amazonian plant species such as fires, hunting and harvesting, and climate change, the authors of

the study are careful to point out. All are factors that could lead to increased rates of extinction.

“Although this study is a significant step in the right direction, there is still a lot that we don’t know,” says Feeley, who works with the Andes Biodiversity and Ecosystem Research Group at Wake Forest. “I think that one of the most important outcomes of this study is that it will serve as motivation for future research on the distributions of tropical plant species and the potential impacts of human activities on these species.”

Provided by Wake Forest University (news : web)