

SCIENCE

Deforestation May Threaten Majority of Amazon Tree Species, Study Finds

By NICHOLAS ST. FLEUR NOV. 20, 2015

Deforestation threatens more than half of all tree species in the Amazon, a new study suggests.

Researchers, whose work was published Friday in the journal *Science Advances*, studied the status of more than 15,000 Amazonian tree species, including the Brazil nut and the plants that produce cacao and açai palm.

By comparing maps of projected deforestation with data collected in the forest, the researchers found that at least 36 percent and up to 57 percent of the Amazon's tree species should qualify as threatened on the International Union for Conservation of Nature's Red List, the most widely recognized authority on threats to species conservation.

Their findings suggest that the number of globally threatened plant species could increase by about 22 percent, and globally threatened tree species by 36 percent.

"We've never had a good idea of how many Amazonian species were vulnerable," said Nigel Pitman, a tropical ecologist at the Field Museum in Chicago. "And now, with this study, we've got an estimate."

Dr. Pitman is one of more than 150 researchers from nearly 100 institutions listed as authors of the paper. Almost every scientist trekked into the Amazon to measure tree diameters and collect leaves, branches, flowers and fruits. The scientists recorded information from 1,485 plots of forest, each about two acres.

The conservation union has several criteria for conferring Red List status, and it considers both historical and projected population loss. To date, it has assessed more than 76,000 species, including all birds, amphibians and mammals, and has labeled more than 22,000 animals, fungi and plants as being at risk for extinction.

After collecting the data, the team constructed a computer model to analyze it under two scenarios. The first scenario, called the “business as usual” model, estimated that by 2050, about 40 percent of the original Amazon forests would disappear. The second scenario, in which governments enacted stronger preservation regulations, estimated that 21 percent of the forest would be destroyed by 2050.

Under the “business as usual” model, 8,690 of today’s tree species should be classified as threatened, and under the second model, 5,515 should be, the team reported.

“Fortunately, deforestation rates in the Brazilian Amazon, which represents about 60 percent of the total Amazon area, have decreased by about 75 percent since 2005,” Timothy J. Killeen, a botanist at Agteca-Amazonica in Santa Cruz, Bolivia, said during a news conference with reporters.

Dr. Killeen said current estimates showed that the Amazon was doing better than the researchers’ best-case scenario had predicted, for which the team credits recent efforts to expand parks and protected areas. The researchers added that their estimates of threatened species were valid, despite the current condition of the Amazon, because government policies can change quickly and put

those species at risk.

“If we can keep these reserves from suffering degradation, then we can actually protect a substantial part of the diversity in the Amazon,” said Hans ter Steege, a tropical ecologist at Naturalis Biodiversity Center in the Netherlands and lead author of the paper.

Stephen P. Hubbell, a tropical forest ecologist at the University of California, Los Angeles, who was not involved in the study, said that he was impressed by the data the researchers had collected, but that it was difficult to extrapolate the findings to the entirety of the Amazon.

“It’s a first-class study, but the data are still hard to test,” he said. “Even with all the samples that they had across the Amazon, it’s still a truly tiny fraction of the total area.”

Kenneth J. Feeley, a tropical ecologist at Florida International University, said the study underscored the importance for the Amazon of establishing protected areas, and of making sure those protections are enforced.

“This is a major problem in conservation. It’s very easy for governments to draw a line on the map and declare an area protected,” he said. “It’s much harder to make that area effectively protected.”

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