Scientists dispute missing dryland forests

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Credit: Oregon State University

Scientists are disputing the possibility that a significant portion of the world's forests have been missed in an earlier accounting of ecological diversity.

Writing in the journal *Science*, a team led by Daniel Griffith, a postdoctoral scientist in the College of Forestry at Oregon State University, argues that dryland forests should not be confused with savannahs, which comprise valuable ecosystems in their own right.

Savannah ecosystems should be conserved as distinct habitats and not regarded as forests, Griffith and his co-authors wrote.

The authors responded to a paper published in May by a team led by Jean-Francois Bastin of the UN Food and Agriculture Organization. Bastin's team had reported that, through an analysis of high-resolution satellite images on Google Earth, dryland forests had been underestimated across the world. Including regions with 10 percent or more tree cover, they wrote, results in a 40 to 47 percent global increase in the extent of such forests.

However, Griffith and his colleagues suggested that Bastin's group "misclassify as dry forest many tropical regions that are in fact savannas. Savannas differ from forests in having a continuous grassy ground layer, which supports fire and grazing mammals."

Many of the savanna ecosystems that Bastin proposed to be reclassified as forests have persisted for millions of years, they noted.

"We decided to take a closer look at this issue after reading a press release written by a co-author of the original paper," said Griffith. "They claimed to have discovered 'lost' forests. We realized that the authors had applied an outdated and heavily criticized forest definition that greatly inflates forest estimates and assumes that high tree cover is a universal natural state. This misconception about tree cover is at the heart of conservation threats to savanna ecosystems, which have naturally variable tree cover."

Managing savannas as forests, Griffith's team wrote, could lead to changes in the way fires and the spread of trees are handled, with adverse consequences for these ecosystems. "Afforestation and fire suppression policies in savannas risk destroying a wealth of specialized and endemic savanna biodiversity that underpin unique ecological processes, and compromising ecosystem functions such as carbon cycling and water and energy exchange," they added.

Moreover, classifying habitats on the basis of a single criterion such as dryness or tree cover ignores key differences between vegetation types. Using the approach that the Bastin team took, they wrote, would result in reclassifying some wet neotropical forests in Ecuador, Peru and Colombia as dry forest.

"We suggest that the Bastin team's tree-cover analysis is a valuable contribution to understanding variation in woody cover, but we urge readers not to mistake the forest for the trees," Griffith said.

Co-authors of the comment include Christopher Still, associate professor in the College of Forestry at Oregon State, and researchers representing organizations in Africa, Asia, Europe, North America and South America.