

Tree planting can harm ecosystems

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Credit: Wikipedia.

The world's grassy biomes are key contributors to biodiversity and ecosystem services, and are under immense pressure from conversion to agriculture and tree planting, report Joseph W. Veldman, of Iowa State University, and his colleagues in an article for the October issue of [BioScience](#). The authors argue that forest- and tree-focused environmental policies and conservation initiatives have potentially dire ecological consequences for undervalued ecosystems, such as grasslands, savannas, and open-canopy woodlands.

To illustrate this forest bias and its consequences, Veldman and colleagues review the World Resources Institute and International Union for Conservation of Nature's Atlas of Forest Landscape Restoration Opportunities, created as a tool to achieve the Bonn Challenge to restore 150 million hectares of deforested and degraded lands by 2020. The BioScience authors' global analysis suggests that the Atlas erroneously mapped 9 million square kilometers as providing "opportunities" for forest restoration. These errors arose largely because "the Atlas producers considered any nonforest area where climate could

permit forest development to be deforested." Problems such as this one, combined with the failure of United Nations environmental policymakers to recognize grassy biomes for protection, constitute a significant threat to biodiversity, Veldman and his coauthors write.

Furthermore, the authors highlight the importance of grassy biomes' carbon storage capabilities, stating that "where grassy biomes are protected, their largely belowground carbon stocks, which store as much carbon as forests do globally, are secure." In contrast, aboveground forest carbon storage may be vulnerable to release by fire or logging.

The authors make a number of recommendations aimed at protecting the world's grassy biomes. These include identifying vulnerable grasslands through precise mapping, recognizing the value of vegetation heterogeneity, integrating [forest](#) and grassy biome conservation initiatives, and changing international policies to preserve naturally nonforest ecosystems. Even with such measures, the authors caution, "So long as carbon stored in trees is valued above other [ecosystem services](#), the conservation values of grassy biomes will remain threatened by agricultural conversion, fire exclusion, and ill-placed tree planting."

Provided by American Institute of Biological Sciences

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