



## EDITORIAL

# Eating plants and planting forests for the climate

We welcome the IPCC's Special Report on Climate Change and Land (IPCC, 2019), which addresses the closely coupled relationship between land use and climate change. Balancing food production for a growing population with biodiversity conservation and carbon sequestration is the critical challenge facing humanity. While afforestation has major climate change mitigation potential, it may increase demand for land, competing with food production unless dramatic transformations in land use are implemented (Bastin et al., 2019; IPCC, 2019). Such transformations are particularly important in the livestock sector given that Earth's nearly four billion domesticated ruminants require two thirds of agricultural land, are a major driver of deforestation, and account for approximately half of production-related agricultural greenhouse gas (GHG) emissions (Ripple et al., 2014; Searchinger et al., 2019).

In addition to emphasizing the importance of efficiency in livestock production, the report mentions the role of dietary choices in reducing demand for land conversion. Although massive social change toward plant-based diets can reduce deforestation and methane production by domesticated ruminants, a suite of technological and policy changes is also necessary. Along with behavioral changes, scalable solutions to reduce demand include high-quality meat analogues (Heffernan, 2017) and policy solutions, such as international agreements that require imported beef and feed crops to be deforestation free. On the supply side, increased agricultural and livestock production efficiency will require technological solutions to enable further intensification that spares existing forests and allows for afforestation—both of which promote biodiversity and carbon sequestration (IPCC, 2019). Thus, supply- and demand-side solutions that facilitate dietary shifts and afforestation together can reduce GHG emissions from ruminant livestock (Ripple et al., 2014), increase CO<sub>2</sub> sequestration by forests, improve human health where Western diets are prevalent (Willett et al., 2019), and provide primary and secondary habitat to support native biodiversity. It is imperative that the agenda at the upcoming 2019 United Nations Climate Change Conference in Santiago, Chile focus on mitigating the negative effects of land use change via widespread shifts in diets, agricultural intensification, and restoration and conservation of forests.

Christopher Wolf<sup>1</sup>   
 William J. Ripple<sup>1</sup>  
 Matthew G. Betts<sup>1</sup>   
 Taal Levi<sup>1</sup>  
 Carlos A. Peres<sup>2</sup>

<sup>1</sup>Forest Biodiversity Research Network, Department of Forest Ecosystems and Society, Oregon State University, Corvallis, OR, USA

<sup>2</sup>Center for Ecology, Evolution & Conservation, School of Environmental Sciences, University of East Anglia, Norwich, UK

## Correspondence

Christopher Wolf, Forest Biodiversity Research Network,  
 Department of Forest Ecosystems and Society, Oregon State  
 University, Corvallis, OR 97331, USA.  
 Email: christopher.wolf@oregonstate.edu

## ORCID

Christopher Wolf <https://orcid.org/0000-0002-5519-3845>

Matthew G. Betts <https://orcid.org/0000-0002-7100-2551>

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