iFAST: The International Forum on Advanced Environmental Sciences and Technology

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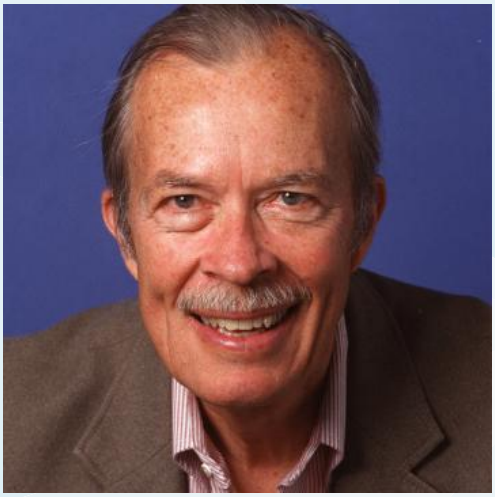
8 a.m. CDT; 9 a.m. EDT; 1 p.m. GMT; 9 p.m. Beijing

Wednesday, Mar. 24, 2021



John Terborgh

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https://scholars.duke.edu/person/manu

John Terborgh is James B. Duke Professor Emeritus of Environmental Science at Duke University (USA) and has current affiliations with the University of Florida, Gainesville, and James Cook University, Cairns, Australia. His work focuses on tropical ecology, particularly plant-animal interactions and trophic cascades. He has conducted research in the West Indies, South America, Africa, Malaysia and New Guinea and has published more than 300 articles and eight books. He is a member of the American Academy of Arts and Sciences and the National Academy of Sciences. He was awarded a Pew Fellowship In 1992 and became a MacArthur Fellow in the same year. He was awarded the Daniel Geraud Elliot Medal by the National Academy of Sciences in 1996. He has served on the boards of numerous conservation organizations and in 1999 he founded ParksWatch, an organization dedicated to monitoring and publicizing the status of parks in developing countries. He remains active in research and conservation to the present day.

Zoned vs. mixed plant communities: how top-down and bottom-up forcing structures plant communities around the globe

The diversity of natural plant communities responds to environmental circumstances over a wide range of values from monospecific stands to rainforests containing over 1,000 tree species per hectare with intermediate states across the spectrum. Faced with the challenge of explaining plant diversity in its many manifestations, theoreticians have proposed a large number of models, several of which have merit but none of which covers all community types. Progress has been slow because models are not mutually exclusive and apply to different circumstances. I shall examine two models that bound the range of possibilities: Lotka-Volterra, a bottom-up model based on 'pure' competition, and Janzen-Connell, a top-down model in which competition is absent as a feature. Competition resolves as zonation, in which monodominant stands abruptly replace one another on environmental gradients. Under Janzen-Connell, all species are rare and community composition changes gradually, rather than abruptly, on environmental gradients. I shall illustrate the predicted outcomes of both models with photos of natural plant communities and speculate on the types of models that might apply in other circumstances. Understanding the drivers of plant community diversity will be essential in designing effective conservation strategies.

INSTITUTE FOR ENVIRONMENTAL GENOMICS
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Organizing Committee Chair: Jizhong Zhou (University of Oklahoma, USA; https://www.ou.edu/ieg)
Xueduan Liu (Central South University, China)