

iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

7 p.m. CDT; 8 p.m. EDT; Midnight GMT (April 22); 8 a.m. Beijing (April 22)

Wednesday, April 21, 2021



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Alan Hastings is a Distinguished Professor Emeritus in the Department of Environmental Science and Policy at the University of California, Davis. He has published over 300 papers on theoretical ecology, including ecosystem management using a variety of mathematical approaches. He is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, the Ecological Society of America, Society for Industrial and Applied Mathematics and the Society for Mathematical Biology. He is also a recipient of the Robert H. MacArthur Award from the Ecological Society of America. He is founding editor-in-chief of *Theoretical Ecology*, co-editor in chief of the *Bulletin of Mathematical Biology* and co-edited the *Encyclopedia of Theoretical Ecology*.

Transients and the dynamics of ecological systems

I will show how understanding transient behavior is important for understanding the dynamics and for managing ecological systems and discuss recent results that provide a general framework for understanding transient dynamics, including the role of stochasticity. The simplest transients arise in linear systems, where the cessation of fishing after implementation of a marine reserve provides an example that is both illustrative and important. I will discuss how dynamics after or near a 'tipping point' are another key example. I will emphasize how the need to understand dynamics on different time scales makes an understanding of transients essential and illustrate this and other aspects with examples. I will show how human-environmental systems are typically a mix of different time scales, which makes transients likely. Other challenges for understanding ecological systems when subject to changing environmental conditions will also be considered.



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Register for the Zoom conference at www.ou.edu/ieg/seminars

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