

Ecological vs. Political Time Scales for Expected Outcomes to Restoration

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Principal Investigator:

Alan Hastings, UC Davis

Lynn Maguire, Duke University

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The time scales over which ecological systems respond to signals from their environments (both human and nonhuman) are subject to physical and biological constraints—species populations can only grow so fast; coral larvae can only re-colonize devastated reefs with limited speed; rivers release nutrients stored in sediments over decades, if not millennia. Humans often take action, and expect a response, over much shorter time scales—a few months to a few decades, at most. Even when a damaging human activity can be stopped entirely (e.g., halting fishing in an depressed stock), it may take longer than a human lifespan to restore the ecosystem to levels where an economic harvest can be resumed. These mismatches of human and ecological timescales affect many of the most vexing problems in environmental management, including interventions to reverse global warming and to restore polluted water bodies.

Human attention spans are limited to just a few human generations, at most. And, environmental management decisions play out in political and economic regimes where a few months or a few years may be a long time. Support for environmental management approaches will typically require showing 'success' over the short time scales that humans can appreciate, but an ecological system may have both inertia and variability that make detecting a response over humanly relevant timescales problematic.

We will bring together a broad array of ecological and social science disciplines to look at the effects of these mismatches of ecological and human timescales on environmental management.

**Participants:**

Kathy Cottingham, Dartmouth College
Rebecca Epanchin-Niell, Resources for the Future
David Hardisty, University of British Columbia
Peter Mumby, University of Queensland
Debra Peters, New Mexico State University
Michael Runge, U.S. Geological Survey
Dean Urban, Duke University
Robyn Wilson, Ohio State University

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