A typology of time-scale mismatches and behavioral interventions to diagnose and solve conservation problems

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Abstract

Ecological systems often operate on time scales significantly longer or shorter than the time scales typical of human decision making, which causes substantial difficulty for conservation and management in socioecological systems. For example, invasive species may move faster than humans can diagnose problems and initiate solutions, and climate systems may exhibit long-term inertia and short-term fluctuations that obscure learning about the efficacy of management efforts in many ecological systems. We adopted a management-decision framework that distinguishes decision makers within public institutions from individual actors within the social system, calls attention to the ways socioecological systems respond to decision makers’ actions, and notes institutional learning that accrues from observing these responses. We used this framework, along with insights from bedeviling conservation problems, to create a typology that identifies problematic time-scale mismatches occurring between individual decision makers in public institutions and between individual actors in the social or ecological system. We also considered solutions that involve modifying human perception and behavior at the individual level as a means of resolving these problematic mismatches. The potential solutions are derived from the behavioral economics and psychology literature on temporal challenges in decision making, such as the human tendency to discount future outcomes at irrationally high rates. These solutions range from framing environmental decisions to enhance the salience of long-term consequences, to using structured decision processes that make time scales of actions and consequences more explicit, to structural solutions aimed at altering the consequences of short-sighted behavior to make it less appealing. Additional application of these tools and long-term evaluation measures that assess not just behavioral changes but also associated changes in ecological systems are needed.

Read the full article in Conservation Biology, [1]

Associated Project:
Ecological vs. Political Time Scales for Expected Outcomes to Restoration [2]

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