

Advanced Ecology Discussion Questions: September 17, 2024

Suding and Hobbs (2009):

1. Consider Figure 1 – The article mentions the difference between discontinuous threshold models without hysteresis and hysteresis threshold models. Which model would be more applicable to real-world situations?
2. “To increase response diversity and ecological resilience, management will often need to create restoration mixes with many seemingly ‘redundant’ species from a wider range of environments...” (p. 274).
Can we truly expect an increase in ecosystem resilience from this approach?
3. The authors explain that understanding mechanisms that control recovery or resilience can inform management action. Which should we be prioritizing, building and maintaining resilience or restoring “degraded” ecosystems?
4. Can management interventions be effective for systems with tightly connected cross-scale interactions?
5. The authors suggest different ways to include threshold dynamics in restoration frameworks (pattern-based knowledge, including stochasticity, and considering interactions that might affect an environment’s resilience or cause shifts). Is the authors’ framework applicable?

Lenton (2011):

1. How do the terms “threshold” and “tipping point” differ (Box 1)?
2. Can we accurately model climate tipping elements and predict tipping points?
3. “The best prospects for early warning are for bifurcation-type tipping points, even though noise will usually cause a system to exit its present state before a bifurcation is reached.” Then, why try modelling for early warning signs at all? If noise-induced transitions are unpredictable, why include them when discussing warning systems?
4. False alarms and missed alarms are both mentioned limitations of early warning systems. Do these limitations negatively affect how these warning systems are perceived?