

Advanced Ecology Discussion Questions 10/22/24

Hillebrand et al. 2020:

1. This article discusses the use of “safe operating spaces” in ecology and environmental science, and the precautionary principle as direct consequences of a conservation framework which assumes threshold responses in ecosystems. Do these concepts have any validity if science lacks quantitative evidence for thresholds?
2. If minor variances in environmental responses are enough to prevent the detection of thresholds from data, should scientists continue looking for them?
3. Does science “marginalize the importance” of small environmental changes when considering the possibility of tipping points, critical transitions, and alternative stable states?

Möllmann et al. 2021:

1. How do breakpoints (Fig. 3) help contribute to the understanding of tipping points within cod fisheries? Is the concept of breakpoints beneficial when looking at regime shifts regardless of scale, or does it work better when applied to certain scales?
2. Stochastic cusp modeling or SCM (Fig. 4), while being a relatively new model to ecology, is a key part of the author's argument about ocean warming and pressures from fishing affecting the state of the Western Baltic cod stock. Do you agree with this model being beneficial in looking at tipping points?
3. The authors discuss different approaches for management of fisheries and climate change at the end of the article. Are there other management processes that could help mitigate the collapse of these fisheries? Could these management practices have impacts that spread outside the EU fisheries?