

## **Advanced Ecology Discussion Questions, 12 Sept.**

### **Diaz & Rosenberg (2008). Spreading dead zones and consequences for marine ecosystems**

1. How do we disentangle natural hypoxic conditions in marine ecosystems from anthropogenic hypoxia?
2. What policies could address anthropogenic hypoxia (existing or hypothetical policy)?
3. This is largely a bottom-up view (nutrient loading). How does this perspective compare to other human-induced environmental changes (e.g., overfishing, dredging, etc.)?
4. Do dead zones represent alternative stable states, with a threshold in state variables as a response to system parameters and hysteresis?

### **Mumby et al. (2009). Phase shifts and the stability of macroalgal communities on caribbean coral reefs**

1. Restoring a coral-dominated stable state is unrealistic - the costs are too high. Agree or Disagree?
2. (Related to question 1) How would management strategies differ if we decide coral reefs have alternate stable states versus if we conclude they follow a continuous phase shift model?
3. This is largely a top-down view (grazer effects). How does this perspective compare to other human-induced environmental changes (e.g., nutrient loading, dead zones, etc.)?