Work on outlining the discussion and filling in with text

Sudden, unexpected regime shifts represent a growing threat to aquatic systems as human impact on aquatic systems grows and erodes system resilience. Our relatively simple model of a multispecies recreational fishery describes how understanding the ecological interactions between species can allow a manager to creatively manage a system to reach desired outcomes where a single species management approach is infeasible or unable to reach those outcomes.

1. Managers are limited in what they can do
   1. What can we do? –with respect to fisheries, or more broadly in aquatic systems?
      1. Stock
      2. Harvest regulation (length & bag)
      3. Close fishing
      4. Habitat modification
   2. These things often don’t work because we don’t think about interactions between species
      1. Examples – talk about non-linearity & counterintuitive effects
2. Understanding species interactions provides more avenues for influencing the system to meet our goals
   1. Tradeoffs between directly managing a species or indirectly through its competitor
   2. Example – stocking is often ineffective; can we achieve better outcomes at lower cost through managing a competitor?
      1. Ecological interactions are one reason stocking doesn’t work out the way we want it to
3. Zoom out / caveats
   1. While our model focuses on a relatively simple two species model, ultimately the theory presented here on the nonlinear management action should be applied in more complex systems.
   2. Understanding species interactions can help us creatively manage systems which will be necessary as our impacts on them continue in grow and their resilience continues to decline.
      1. Call out to data paper on cultivation effects in centrarchids
   3. It’s important to remember our goals for managing a system and what the ideal system states is are based on human desires
      1. Call out to paper on angler heterogeneity and species switching – is this the right place to do this?
4. Conclusion?