Advanced Ecology Discussion Questions: October 31, 2024 **Erika & Michael**

Kefi et al. (2013):

1. The authors introduced 5 types of transitions (excluding the pitchfork transition), sourced from predator-prey and harvest models. Are there any benefits/weaknesses in broadening our definition of transitions? Are any of the models more useful than others or was this another case of doing the best we can with what we have?
2. Noise can obscure catastrophic transitions, resulting in false alarms when predicting from warning signs. Does noise affect all transition models equally?
3. All 3 models showed that systems behave similarly when approaching a transition (i.e. critical slowing down). Is there value in generic early warning signs if they cannot be used to accurately predict catastrophic transitions?
4. Can this work be helpful in a management context?

Doughty et al. (2021):

1. This study used a variety of methods, including analysis of remote sensing data, which were applied to multiple study sites and at different scales. Were their methods effective?
2. The authors made several assumptions in building their model, some for very key components (i.e. T_{crit}). Do these assumptions undermine their findings or were they robust enough to be justified?
3. Is T_{crit} too simple? Authors mention it may not consider possible feed-back loops (p. 110). Or is simplicity required given the large scale of their study?
    a. Authors mention that their prediction can change drastically given uncertainty in the range of T_{crit} and in the effect of leaf death on the tree.
4. Were their findings convincing? If we assume their model is correct (T_{crit} exceeded in RCP 6.0 & 8.5), what should we do with this information? What are our next steps as scientists?

Final follow-up:

Kefi et al. (2013) was a theoretical paper, while Doughty et al. (2021) was heavily empirical. How might their findings be realistically applied to management?