

## November 12, 2019 Theory Working Group Call

Attendees: Will Pearse, Peter Adler, Jody Peters

Agenda:

1. We want to set up clear goals for this group. Moving forward it would be good to set up hypotheses to focus on paper ideas.
  - Need to find grad student/post-doc to lead the paper (someone who has time)
  - Theory & Synthesis section of STC - stop short of writing specific hypotheses. Want this group to come up with a few hypotheses. Peter has his paper about one hypothesis (see link below).
  - Do we want individual papers for each different hypothesis?
  - Will Pearse: want to write an empirical paper. But not sure about the timeline
    - One idea for a product for the group - could be another conceptual type paper. But would be nice to do an empirical test. Traits and phylogeny would be easy for Will to do. The spatial/temporal analyses are interesting too.
    - Traits - lots of models applied to multiple species. Does species share parameters and does it evolve. See if the predictability of species shows phylogenetic structure.
    - Scale across different models and put into context of phylogeny to see if there is a pattern. See if it gives us insight into how species are evolving.
    - Ethan's breeding birds paper. Harris et al. Short forecast horizon models to lots of different bird species. Wonder if they have enough species to do. But it is of richness.
    - Use phylogeny subbing in the forecasting process. Share parameters and interact traits to make a better model. Look at parameters across phylogeny. Not sure if we have enough models at this scale that will make this appropriate. Ask Ethan to see if he has the infrastructure to see if he can fit a lot of models to lots of species.
    - It would be good to have a summary metric of how a forecast is predicting species and see environmental correlates. See what ecological space we do well or that we do poorly. Rapidly diversifying clades (e.g., grasses) will be doing their own kind of thing. Could reconstruct the patterns. Here are species that aren't being forecasted well - see what phylogenetic patterns are for these.
    - Integrate applied and biogeography. But if you find no correlates then it isn't as interesting
    - **Jody look for the hypotheses we talked about in the last year. Send Peter link to old doc and start new doc.**
      - Peter will distill the hypotheses and then we can send it out to the group to get folks to add comments before the Dec 3 call.

- Ask the group - do we need a junior person to push this through or do we want to write it by committee. Will thinks that having a junior person push will make this more effective.
- Put on Slack to get input from the larger group

## 2. Product ideas

- Ecological Forecasting Hypotheses Paper
  - See Peter's paper for one hypothesis: <https://www.biorxiv.org/content/10.1101/807057v1>
  - This is a whole paper about 1 hypothesis. Different horizons will dominate forecasts
- Primer on dynamic models for ecologists
- Examples of other published Standards
  - [Darwin Core](#),
  - [Humboldt Core](#),
  - [MsTMIP](#)
- Other paper/product ideas?
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## 3. Prep for the December Joint Forecasting Standards Call

- Continue to refine Standards.
  - **Mike needs help cleaning up the Standards Doc text before Dec call.**
  - Peter does not know enough about standards to provide any more input.
  - Will Pearse will look at the Google doc to see if he can add anything
- Next steps
  - Share papers that are examples of standards (e.g., Darwin Core, Humboldt Core, MsTMIP)
  - Form subgroup to take a look at the EML standard to take a first pass at proposing Tiers
  - Confront the draft standard with some real-world examples and get feedback (e.g., Ethan Portal, Quinn Smart Reservoirs, Mike Willow Creek, NOAA Monterey EcoCast, Matt Atlantic Sturgeon, etc)