Summary

Simonis et al. provides a mini-review of approaches to handle probabilistic forecasts in ecology. This includes tools commonly found in other fields but less well known in ecology. The authors also provide an example of some of these tools applied to a well-known time series of rodent population dynamics. Overall, I think this is a valuable contribution to the literature and the statistical reports section of Ecology is appropriate. Below I provide mostly minor comments.

Main comments

- In the abstract on line 4, the authors state "…lack a set of robust, standardized, and general mathematical tools for evaluating…". I read this thinking the authors were going to provide this new framework. I would focus on the next line which deals with the literature review being the focus. I might add a line that forecasting is important, but tools are not well known to ecologists.
- Line 29 is a bit repetitive after lines 21-22.
- On lines 36-38, it would be useful to expand the text to help conceptually organize the entire manuscript. I would note something like, "After clarifying context, notation, and terminology, we review methods to 1) assess forecast validation, 2) compare results graphically…"
    - In other words, the lines 36-38 do not line up well with the section headings used throughout which hinders the manuscript flow.
- On line 121, before introduced the notation for scoring rules, it might be helpful to conceptually explain what it is first.
- I thought using Figure 1 to describe the forecasting process was helpful and well done. I don't think panel (a) adds a whole lot though and is a bit of distraction in the current figure.
- The pocket mouse example was a bit underdeveloped in the main text. It would be useful to add details or take information from appendix B and place it in the main text.
    - Clearly distinguish how this case study relates to the White et al. 2019 paper
    - Small details on sampling design (frequency, number locations, sampling)
        - This will help with line 194 in referencing the "true origin of sample 500" as I wasn't sure what that meant until reflecting on what I know about the study design from past work by the authors
- Either in the introduction or discussion, I would also mention that previously-collected data also has uncertainty associated with it. This might not be the case for the rodent dataset, but other sampling methods using observers or mark recapture approaches have inherent uncertainties. I think it is worth pointing out that these forecasting methods are also ideal to capture that type of uncertainty
- I am not sure where the manuscript stands in terms of word count, but I think the discussion could be expanded.
    - Short paragraph on how this case study is, or is not, a good representation of forecasting in ecology in general

    - Another paragraph on next steps/future work would help the reader get a sense for where the field is going
- Not surprisingly, the authors have put together a nice open science workflow throughout with code and data available.

Minor comments

- Line 123: Missing “T” in table
- Fig 2, panels (b) and (c) instead of specifying these panels in the caption based on columns, I would just use other letter(s) to specify the 4 plots on the bottom right.

Reviewer: Easton White