Reviewing a manuscript

Homework #6

FISH 521 - Proposal Writing and Professional Development

13 February 2023

Instructions: Write a peer review of the preprint article by Purgar et al. titled *Identify, quantify, act: tackling the unused potential of ecological research*, which has been posted to the EcoEvoRxiv Preprint server and you can download [here](https://sr320.github.io/course-fish521-2023/homework/week_06/Purgar_preprint_unused_research.pdf). This paper is written in more of an essay format, but it is general enough that everyone in class should be able to read, undertand, and comment on it.

Your review should follow the template provided below.

Submission

When you are finished, submit via your GitHub Repository.

**Comments to the editor**

This paper focuses on an important, often overlooked, aspect of ecological research: research waste. Some of the methods used for analysis are a bit unclear and could benefit from further refinement. Also, a few claims made in the beginning could benefit from support from a reference. Otherwise, this paper is well done.

**General comments**

This paper raises the important issue of research waste in ecology, and attempts to characterize and quantify this waste through an examination of meta-studies. It then provides suggestions on several ways to systematically reduce this waste. The importance of this issue is successfully made clear, and the recommendations are reasonable. Further, the inclusion of appendices and links to code enhance the overall quality of this paper.

* *Scientific quality*:

Types of waste:

* Limiting the causes of *core waste* to only two sources seems shortsighted. I would think that transaction costs associated with the research and publishing process as well as other systemic, institutional barriers besides bias also lead to core waste. This should be at least mentioned, if not also examined.
* The definition of *exploitative waste* is unclear, and requires further elaboration.

Calculations of waste:

* Since some unpublished work is of poor quality and thus would be even more detrimental if published (as mentioned in the paper), it seems odd that this aspect of waste is not handled differently in the calculation of overall waste. This type of research should be handled differently in the calculations, or a clear explanation should be given to why this is not the case.
* There seems to be a worrying amount of overlap between exploitative and core waste with respect to low quality. The distinctions here need to be made clearer to avoid double-counting.

Reference to previous studies:

This section is quite brief and seems odd to claim, without much elaboration, that ecology is falling behind in this category since basically every paper in ecology contains a literature review section.

Outlook:

* *metascience* should be defined since this term is used repeatedly in the paper.
* *Writing and presentation*: your general plea for instigating a movement throughout the scientific community to implement policies that reduce research waste is quite clear. There are several instances throughout the paper where this message seems unnecessarily restated.

**Specific comments**

Line 12: the phrasing uses present tense, yet goes on to say that since that statement was made, improvements have occurred. This is confusing, I would suggest switching to past tense and providing a date that anchors the 85% claim.

Line15: the statement that no estimate of research waste in other fields exists is bold. It would be good to back this claim up with a reference of some sort.

Line 21: insert ‘the’ before *organisms*.

Line 36: insert ‘a’ before *quantitative*.

Line 37: last sentence is unnecessary.

Line 43: last sentence is repetitive as this message was already stated in line 36.

Lines 44-48: Thrust of this paragraph is confusing; are you saying ideally we measure and focus on *unused potential of research* but cannot, and thus this paper works with data on waste; or are you saying that this paper defines a proxy for *unused potential of research*, and thus can help redirect attention towards this more constructive aspect of the waste issue?

The *components of research waste* section could benefit from the use of bulleted lists to improve clarity.

Fig. 1: why is *exploitative waste* shown twice in two different colors?

Line 225: insert ‘a’ in front of *few*.

Line 263: change *similar* to ‘similarly’.