Open Preprints in Ecology & Evolution

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I. INTRODUCTION

Open preprints servers allow authors to make their manuscripts publicly available before, or in parallel to, submitting them to journals for traditional peer-review. This idea gained popularity 20 years ago with the advent of arXiv, an open preprint server, widely used in the physical sciences [**?**]. The idea behind pre-print servers is fundamentally simple: to make the results of a scientific endavour available to the scientific community as soon as possible rather than wait until the peer-review process is fully completed. The point of arXiv and open preprints servers is not to avoid the peer-review. Almost all manuscripts submitted to arXiv undergo formal peer-review at a journal. The point is to open an important phase of the publication cycle ...

In this article, we will first highlight the advantages of open preprints servers for both scientists and publishers. We will also debunk a few misconceptions, discuss the policies of major publishers in ecology an evolution, and briefly review the most popular open preprint servers.

II. THE CASE FOR OPEN PREPRINTS

The first and most often discussed advantage of arXiv and open preprints is speed 1. The time between submission and the official publication of a manuscript can be measured in months, sometime in years. For all this time, the research is only known to a select few: colleagues, editors, reviewers. Thus, the science cannot be used, discussed, or reviewed by the wider scientific community. ...

The review process as a whole is critically over-loaded, because the number of active scientists increases, because the pressure to publish increases, and because of an effect dubbed "the tragedy of the reviewers commons" REF. In the same times, rejection rates are high in most journals (REF), and when the not invited to submit a revisions, authors are left with the impression that they must start the whole process all over again. It's thus no surprise that different initiatives emerged over the last few years, to decrease the time spent in review. XXX et coll. (REF) called for the recycling and reuse of peer-reviews: by attaching previous reviews, and detailed replies, to a new submission, both the editor and the referees can gauge the work done on the manuscript, and perhaps evaluate it with less prejudice. In a similar way, the *Peerage of Science* initiative allows authors to seek anonymous pre-review by their peers. Some journals (LIST?) now accept to publish papers which received good evaluations, effectively outsourcing the review process. A widespread use of preprint servers can achieve the same goal of reducing the time spent in review. By putting a manuscript out there for open comments and criticisms, the authors will receive valuable feedback, and can improve the version which will be submitted. With a rich enough community of scientists depositing preprints, and commenting on them, the process of an open pre- review can become widespread, and will overall increase the quality of first submissions.

Some of the responses to public preprints are surprising since they are, essentially, the same as exchanging preprints among colleagues. Prepublication reviews by a small network of colleagues is an important part of the scientific process, which is attested by the fact that nearly all published papers acknowledge comments by people not listed as co-authors. Preprints servers simply offer a way to extend this network of colleagues to the entire scientific community. It ensures that science is not constrained by small networks of scientists exchanging ideas. Ginsparg made arXiv.org in part for democratic reasons: he wanted everyone from graduate students in small universities to Princeton professors to have access to the most recent scientific *ideas*. Ginsparg revolutionary idea was simply to use the power of the internet for preprints, not just for the end product, so the process can be open from A to Z, instead of being just open at the end of the process (and often not open at all).

Preprint servers also establish priority in a fair way. Since some manuscripts will spend much more time in the review process, public preprints servers offer a fairer way to establish intellectual priority by making the work available when done. Surprisingly, there is perception

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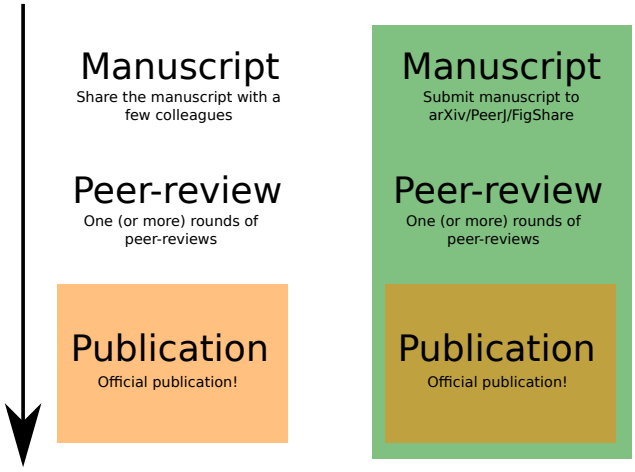

FIG. 1: It can take several months, and even a few years, before a submitted paper is officially published and citable. During this time, few people are aware of the research that has been done (typically, close colleagues are given access to the preprints). With public preprint servers, the science is immediately available and can be openly discussed, analysed, and integrated into current research. It benefits both science and publishers. Both want the papers to be well-known and cited, and public preprints make it possible to integrate research even before publication, greatly improving immediacy.

in biology that public preprints make it easier to steal ideas, while mathematicians and physicists have embraced arXiv in part to establish intellectual priority in a fair way [**?**].

Preprint servers also provide additional opportunities for review, often from members outside the list of authors or their immediate peers (cite). This process can further improve the quality of a manuscript before it reaches potential reviewers. pre-prints servers can therefore reduce reviewer load/burden by opening up oppportunities for additional feedback.

III. PREPRINTS, ECOLOGY & EVOLUTION

While submitting to public preprints servers is still uncommon in ecology and evolution, preprints are becoming more common in biological sciences. The quantitative biology section in arXiv is experiencing faster growth in submissions than any other fields [**?**]. Also, most scientific journals are preprint-friendly: Nature, PLOS, BMC, PNAS, Science (mostly) I, and all the journals from Elsevier and Springer. Very recently, the Ecological Society of America amended its policy to allow public preprints (REF). In our field, few scientific publications will not consider a manuscript submitted to arXiv. Still, many ecology & evolution journals adopt a "by default" hostile attitude towards preprints, mostly due to the lack of clear policy of the publishers. As an example, Wiley-Blackwell, which publishes some of the leading journal in the field, has no official policy on the subject I.

IV. CURRENT OFFER

We briefly discuss the main options to submit preprints to open servers: arXiv.org, Figshare, and the upcoming PeerJ and F1000Research.

A. arXiv

arXiv (http://arxiv.org/). arXiv is funded by a network of universities.

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B. Figshare

Figshare (http://figshare.com/) is an open servers that allow scientists to submit any research output: manuscript, figures, datasets, videos, theses, presentations, and so on. There are no rules to limit what constitutes a research output: anything

All figshare content (article, figures, datasets) have a unique digital object identifier (DOI) like any journal article.

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C. PeerJ

D. F1000Research

F1000Research is not a public preprint server like the previous three servers. Whereas arXiv, Figshare, and PeerJ offer an option to submit a manuscript without having it reviewed, papers submitted to F1000Research will eventually be reviewed. Thus, F1000Research offers a hybrid model with publicly available manuscripts at time of submission and standard peer-reviews. Manuscripts are considered "accepted" and will only be indexed after two positive referee response.

V. CONCLUSION

Responding to the rumour that they refused manuscripts submitted to arXiv, Nature responded that "Nature never wishes to stand in the way of communication between researchers. We seek rather to add value for authors and the community at large in our peer review, selection and editing" [**?**].

Open preprints server offer a great opportunity for open science, especially if the community embrace the

Publisher	Policy
Springer	Accept
BMC	Accept
Elsevier	Accept
Nature Publishing Group	Accept
Public Library of Science	Accept
Royal Society	Accept
National Academy of Science (USA)	Accept
Ecological Society of America	Accept
Science	Accept/Ambiguous
Wiley-Blackwell	No general policy
British Ecological Society	?

TABLE I: Policies for important publishers in ecology and evolution.

idea of discussing preprints. Initiatives like Haldane's Sieve (http://haldanessieve.org/), a new blog discussing arXiv papers in population genetics, will help make arXiv attractive for scientists looking to promote their work. These initiatives are important to fully exploit the potential of open preprints servers.