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Authors

Dawson, Michael N
Stigall, Alycia L
Hortal, Joaquín

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How the landscape of publishing is changing biogeography

Introduction

In a general sense, we all understand that the publishing landscape is changing: open access, predatory journals, publish or perish, alternative peer-review platforms, and reviewer over-burden have mostly come to the fore in the past decade. As we try to guide *Frontiers of Biogeography* to success, we often reflect on the journal's goals, publishing options for biogeographers, and dynamics of the discipline. Increasingly, we also find ourselves asking, more specifically, how are external changes in the broader publishing landscape influencing biogeography?

This editorial emerges from discussions with colleagues at this and other journals: some enjoying good times, some not the best of times. Our goal is to complement prior deliberations on trends by subject area, emerging topics, and representation of biogeography in select 'high profile' journals (Dawson et al. 2013, 2016, 2017) by providing an overview on the journals publishing most biogeographic research.

The bibliographic landscape

As we have observed previously (Dawson et al. 2016), the number of "biogeography" articles published each year is increasing. Our new analysis, based on a "topic search" for "biogeography" in Thomson Reuters Web of Science indexed papers since 2009, again shows this overall trend (Supplementary Documentation). More specifically, our new analysis shows the upward trend is not limited to, nor driven by, a few journals.

Over the past eight years, 63 different titles have been, for one or more years, among the 25 journals publishing most "biogeography" papers. Over one-third of the 63 journals (41%; $n = 26$) appeared in the top 25 in only one of the past nine years. Approximately one-quarter (27%; $n = 17$) of the journals appear in the top 25 for 6 or more years. These 'core' biogeography journals include familiar names such as *Ecography*, *Global*

Ecology and Biogeography (GEB), and *Journal of Biogeography (JBI)*; multidisciplinary journals such as *Proceedings of the National Academy of Sciences of the USA (PNAS)*, *Proceedings of the Royal Society B*, and *PLoS ONE*; and a suite of molecularly oriented journals (e.g., *Molecular Ecology*, *Molecular Phylogenetics and Evolution [MPE]*) or taxonomically focused journals (e.g., *ISME Journal*, *Phytotaxa*, *ZooKeys*).

A small suite of journals consistently publish a large proportion of the "biogeography" articles each year: *JBI*, *MPE*, and *Zootaxa*; *PLoS ONE* currently comes in a strong fourth, though its fortunes have been variable recently (Dawson et al. 2017). A clutch of ~20 other journals each publish ~0.5–2% of the "biogeography" articles each year. The overall patterns are robust to variation in the literature search conducted (e.g. "biogeograph*" topic search in Web of Science SCI-EXPANDED indexed papers only; see Supplementary Documentation). In general, the absolute number of biogeography articles is on an upward trajectory across all or most journals—whether they frequently or infrequently publish "biogeography"—supporting optimism about the increasing influence and reach of the discipline (Dawson et al. 2016).

Tremors

Presenting journal publication rates instead as a proportion of "biogeography" articles being published, however, emphasizes temporal variation in the share of papers among journals and that some traditional journals have been losing ground (Fig. 1). The decline could be simply mathematical if these journals maintain page or manuscript limits, and might even be considered desirable if it allows them to be more selective. But this is where the conversations with fellow editors come in: anecdotally, at least, a number of journals are observing challenging trends such as low or decreasing number and quality of submissions.

In the absence of data on submission rates,

rejection rates, and validation of editorial decisions, these anecdotal remarks are difficult to validate. But commonly used bibliometrics such as ‘journal impact factor’ provide potentially corroborating evidence (despite their many shortcomings). Consider, for example, the four journals most often associated with biogeography conferences as indicators; the journal impact factor¹ (JIF) of *GEB* declined from 7.22–7.24 in 2012–2013 to 6.85 for 2015/16 and *Diversity and Distributions (DDI)* JIF slipped from 6.12 in 2012 to 4.57 for 2015/16 while the percent share of papers in each journal decreased then recovered; *JBI* JIF declined from 4.86 in 2012 to 4.00 for 2015/16 during which period its percent share of papers also declined. *Ecography* is the only one of the four that enjoyed a stable or upward trend in both percentage share of biogeography publications and JIF (from 5.12 in 2012 to 5.36 for 2015/16) during the period. Though *DDI*, *GEB* and *Ecography* JIFs decreased in 2016/17, *JBI* experienced an uptick during the past year²; these adjustments largely reset levels to those of earlier years and long-term trends are relatively flat (Supplementary Documentation).

What are the changes in the publishing landscape influencing these medium-term declining trends? In part, it could be the shifting landscape of biogeography itself. Journals with different foci may benefit from analytical or disciplinary trends, such as the popularity of species distribution modeling and macroecology versus some other subdisciplines of biogeography (Dawson et al. 2013, 2016; which also contributes to journals’ differential representation in our analysis). In conversations with fellow editors, the influence of open access on scientific publishing often comes up.

Orogeny, erosion

Our analyses suggest that the journals enjoying the largest positive trends—increasing share of biogeography publications and increasing JIF—are open access journals (Fig. 1). Particularly, large

advances have been made in recent years by open access ‘mega-journals’ with simplified criteria for publication such as “technically sound and scientifically valid”³ (Fig. 1): *PLoS ONE* from 2006–2013 (Dawson et al. 2017) and more recently *Ecology & Evolution*, *PeerJ*, *Scientific Reports*, and *Zookeys*. These journals also provide authors with open access at lower cost than most traditional journals offering single article open access options (Fig. 1). This seems to suggest that many papers, the most influential papers, and/or the readership may be shifting to novel venues which, coupled with the growth of biogeography in higher ‘impact’ journals such as *PNAS* since the mid-aughts (Dawson et al. 2016), is perceptibly reshaping the landscape for publishing biogeographic research and how that landscape is viewed.

It is possible to interpret these patterns in many ways, and as neutral, positive, or negative for the discipline. Changes could be merely meanderings and zero sum in the long-term. Alternatively, to the extent that emergence of new publishing venues reflects increasing reach, relevance, and multi-disciplinarity, the observed patterns hint at a vibrant discipline. But, if an increase in journals and expansion of publishing mores is accompanied by erosion of the historical core of the discipline, might a more patchy and fragmented discipline emerge?

A new plateau

From the fault lines appearing across the publishing landscape, we see opportunities emerging for *Frontiers of Biogeography*. Particularly, we believe the available evidence indicates that a somewhat rarefied place exists for a vigorous hybrid of ‘old world’ and ‘new world’ approaches to scientific publishing.

In terms of ‘old world’ legacy strengths, we follow in the tradition of society-based journals of yore, bringing disciplinary strengths focused on building and enriching a community of which we are part. *Frontiers* is a journal produced by biogeographers for biogeographers, not a journal

1 Impact factor data from <http://www.scijournal.org/impact-factor-of-PLOS-ONE.shtml>

2 2016 Impact Factors released July 2017: *Ecography* 4.902; *DDI* 4.391; *GEB* 6.045; *JBI* 4.248.

3 <https://www.nature.com/srep/journal-policies/peer-review>

produced by a publishing house to generate profit. The old model, from which many journals have moved, often provided options for subsidizing affordable publishing and engaging community, for which we aim too. We also adhere to the principles of collaborative constructive peer review, preferring the role of “guides” rather than “gatekeepers” (Dawson et al. 2014).

In terms of ‘new world’ emerging strengths, the journal has some of the best open access credentials around. Full gold libre open access has been a distinctive characteristic of the journal from its very beginning, the journal is listed in the *Directory of Open Access Journals (DOAJ)* under the more stringent criteria introduced in 2014, and we recently received the *DOAJ’s* Seal of Ap-

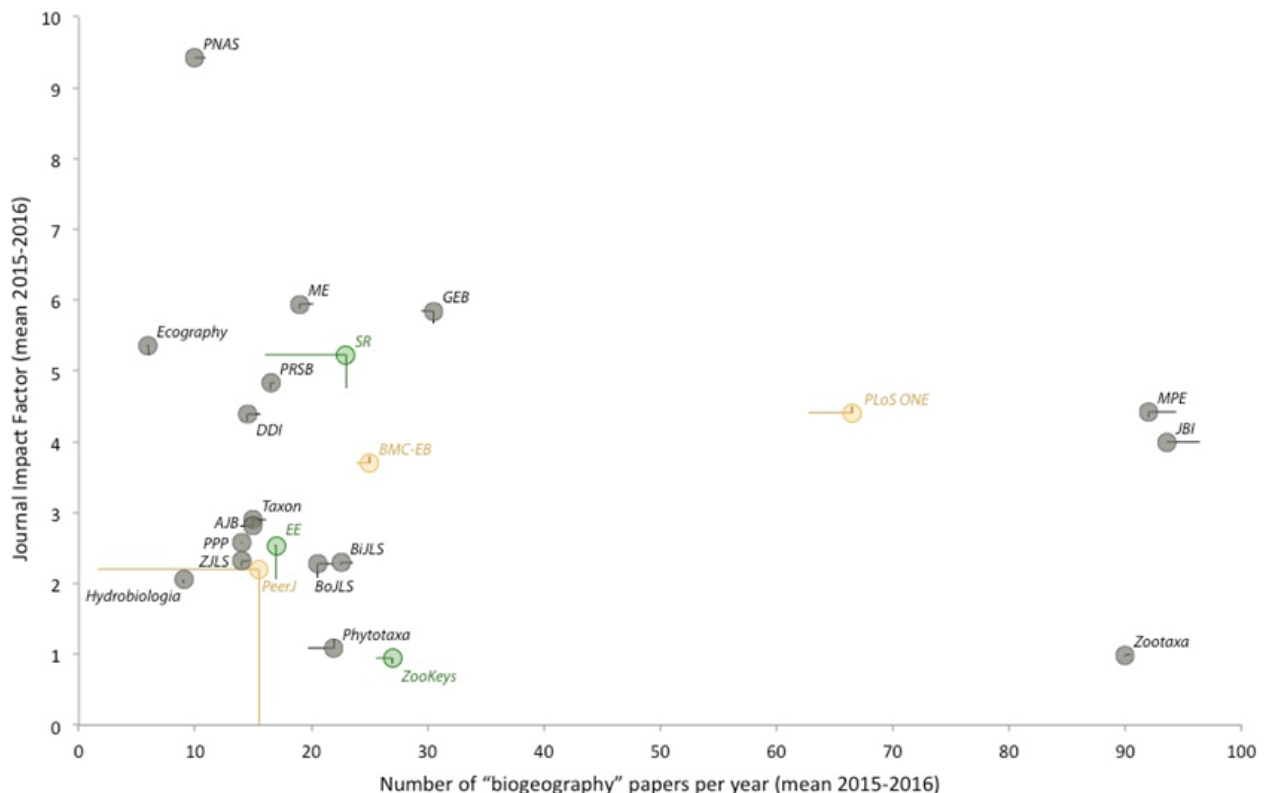


Figure 1. The current biogeography publishing landscape, and how it has been recently reshaped. Twenty-three journals publishing most biogeographic research in at least six of the past nine years (or since launch), based on a “topic search” for “biogeography” in Thomson Reuters Web of Science, for which Journal Impact Factor information is also available. Gold: journal awarded the *DOAJ* Seal of Approval. Green: journal listed in the *Directory of Open Access Journals (DOAJ)* under more stringent criteria introduced in 2014. Grey, other. Lines to points show direction of trend (least squares line of best fit) for the journal; if a line is to the left or below then the journal’s stats are overall increasing, and the magnitude of the line illustrates the relative rate of increase (or decrease if lines are above or to the right). Article processing fees indicated in parenthesis after journal name as (subscription/open access at full cost; *na* indicates option not available): *AJB* – *American Journal of Botany* (\$0/\$1500); *BIJLS* – *Biological Journal of the Linnean Society* (\$0/\$2800); *BMC-EB* – *BMC Evolutionary Biology* (*na*/\$2145); *BoJLS* – *Botanical Journal of the Linnean Society* (\$0/\$2800); *DDI* – *Diversity and Distributions* (\$0/\$4200); *Ecography* (\$0/\$2000); *EE* – *Ecology and Evolution* (*na*/\$1950); *GEB* – *Global Ecology and Biogeography* (\$0/\$4300); *Hydrobiologia* (\$0/\$3000); *JBI* – *Journal of Biogeography* (\$0/\$4200); *ME* – *Molecular Ecology* (\$0/\$4500); *MPE* – *Molecular Phylogenetics and Evolution* (\$0/\$3800); *PeerJ* (*na*/\$1095); *PPP* – *Palaeogeography Palaeoclimatology Palaeoecology* (\$0/\$2850); *PLoS ONE* (\$0/\$1490); *PNAS* – *Proceedings of the National Academy of Sciences of the USA* (\$1700/\$2150); *PRSB* – *Proceedings of the Royal Society B* (\$0/\$2380); *Phytotaxa* (\$0/\$20 per page); *SR* – *Scientific Reports* (*na*/\$1675); *Taxon* (\$0/\$2000); *ZJLS* – *Zoological Journal of the Linnean Society* (\$0/\$3000); *ZooKeys* (*na*/\$625); *Zootaxa* (\$0/\$20 per page). *Frontiers of Biogeography’s* (\$0/\$200) position on the landscape can be estimated using Harzing’s Publish or Perish software, which estimates impact (mean citations per paper for articles published in 2014 & 2015) to be 2.03; *Frontiers of Biogeography* published 18 research papers in 2016 (Monographs; Opinions, Perspectives, and Reviews; Research Articles; Research Letters) plus a variety of other article types.

proval (see icons at the foot of this page). Only three other periodicals categorized under 'biogeography' in *DOAJ* currently have this high level of commitment to open access.

Navigating successfully from *Frontiers of Biogeography's* current location in the publishing landscape to that future elevated position is likely to require course corrections and adaptation in a dynamic environment. It also will require a long-term view on the history and future of biogeographic publishing that is not hyper-responsive to meanderings. Moreover, to the extent possible, we believe the journal should drive changes in the landscape, not only respond to them.

Michael N Dawson¹, Alycia L. Stigall² and Joaquín Hortal³

Frontiers of Biogeography Editors-in-Chief

¹University of California–Merced, USA,
mdawson@ucmerced.edu;

²Ohio University, USA, stigall@ohio.edu;

³Museo Nacional de Ciencias Naturales (MNCN-CSIC),
Spain, jhortal@mncn.csic.es

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