A persistent lack of International representation on editorial boards in biology

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ABSTRACT

The scholars comprising journal editorial boards play a critical role in defining the trajectory of knowledge in their field. Nevertheless, studies of editorial board composition remain rare, especially those focusing on journals publishing research in the increasingly globalized fields of science, technology, engineering, and math (STEM). Using the combined membership of N = 24 editorial boards of environmental biology journals, we tested for changes in the international representation among editors 1985-2014 with metrics used to the diversity of ecological communities. Over the course of these three decades, 3831 unique scientists based in 70 countries served as editors. However, 67.06% of editors were based in the USA and UK, while editors based in the Global South were extremely rare. The number of countries in which editors were based (i.e., Geographic Richness) did increase over the 30-year survey period, but most of these newly represented countries were in Western Europe. As a result, Geographic Diversity remained unchanged from 1985-2014. This – coupled with the 420% increase in the number of editors serving each year – resulted in a significant decline in Geographic Evenness over time. We argue that this limited geographic diversity can detrimentally affect the creativity of scholarship published in journals, the progress and direction of research, the composition of the STEM workforce, and the development of science in the Global South.

Key words: bias, editorial board, geographic diversity, peer review, scientific publishing, scientometrics

INTRODUCTION

There are currently over 28,000 peer-reviewed academic journals [1], and the scholars who serve on the editorial boards of these journals play a major role in defining the trajectory and boundaries of knowledge in their disciplines [2]. Board members are responsible for coordinating the evaluation by outside experts of a manuscript's technical aspects and the "importance" or "novelty" of the research it summarizes, i.e., peer review, on which the decision to publish a manuscript is ultimately based. Editors play a central but underappreciated role in shaping the community of scholars contributing to the discourse in their field. First, by recommending the publication of an article, the editor confers legitimacy not only on the research, but also upon the individuals who carried it out [3-5]. Second, editors help choose new editors. In doing so, they confer enhanced status and visibility on a select group of scholars, who also benefit from the unique opportunities for professional advancement that board membership provides [6, 7]. Editors are, therefore, a small but powerful group of "Gatekeepers" [2] that select the scientists and ideas shaping the direction of their discipline.

The increased recognition of editor power, along with the results of studies on workforce diversity [8], have heightened concerns about how the composition of editorial boards might influence the peer-review process [9]. For example, it has been suggested that boards whose members are demographically homogenous might converge on a narrow suite of research topics and approaches they consider worthy of publication [3, 4]. This narrow vision – and the board structure driving it – could be perpetuated by editors nominating collaborators, whose perspectives and backgrounds likely match their own, for board service [7]. Indeed, this is among the principal reasons put forward to explain why women remain severely underrepresented on editorial boards across academic fields [6], which has consequences for the selection of referees and other critical aspects of the editorial process [10].

Recent decades have seen the rapid globalization of research in science, technology, engineering, and math (STEM), resulting in greater representation in international journals of authors based in the Global South, which comprises the world's 'developing' or 'emerging' economies located primarily in Latin America, Asia, Africa, and the Middle East [11, 12]. Having editorial boards that reflect such "geographic diversity" is thought to benefit both journals and disciplines in ways that parallel other forms of diversity. In field-based sciences such as ecology or geology, for example, editors based in the region where studies are conducted will be more familiar with the environmental, social, and economic context and constraints under which they were carried out [13]. This could ensure both more rigorous review and a fairer assessment of reviewer criticisms and proposed improvements. Furthermore, scientists trained in different countries can also have very different epistemological orientations. More nations represented on an editorial board could, therefore, broaden the scope of theoretical and methodological approaches a journal publishes. Ultimately, these benefits of internationalizing editorial boards could help to minimize the apparent biases in the review, publication, and citation of articles based on an author's nationality or home-country [12, 14].

The first systematic efforts to quantify the nationality of STEM editors – often by using the country in which they were based as a proxy for nationality – were carried out in the early 1980's [15, 16]. Since a small but growing number of studies have observed patterns similar to what these early ones did – individual editorial boards tend to be dominated by scholars from the United States of America (USA) and United Kingdom (UK) [9]. However, prior studies typically compared board composition of journals using data from only a single calendar year, which makes it impossible to draw conclusions about the collective of gatekeepers or to understand how this community has changed over time. Furthermore, most of the journals reviewed are from the physical sciences, medical fields, or lab-based biological sciences [4, 17]. As a result, almost nothing is known about geographic diversity of editors in field-based STEM disciplines [18] such as ecology, evolution, and natural resource management (hereafter "environmental biology", EB).

We investigated how the geographic composition of the global community of editors in environmental biology has changed over the last three decades using data on the 1985-2014 editorial boards of 24 leading journals (Text S1). To do so we used tools for describing the composition of ecological communities (Text S1), which allow for a more comprehensive and nuanced description of the editor community. For example, in addition to quantifying temporal trends in the number of countries in which editors are based (i.e., Geographic Richness), we also present metrics that consider the total number of editors based in each country (i.e., Geographic Diversity) and their relative abundance (i.e., Geographic Evenness). We then calculate the Richness, Diversity, and Evenness of the editorial community based on the distribution of editors in different World Bank geographic regions and Gross National Income categories.

How geographically diverse is the editorial community?

From 1985-2014, 3831 scientists based in 70 countries served as editors for our focal journals. At first glance it appears that this community of gatekeepers has become highly diverse geographically – by 2014 the cumulative number of countries represented by at least one editor increased 86% (N_{1985} = 34 vs. N_{2014} = 70), while the number of countries represented each year increased 52% (N_{1985} = 34 vs. N_{2014} = 52; Fig 1A). However, scientists based in the USA and UK made up an overwhelming majority of the editor community (55.29% and 11.77%, respectively; Fig 2A). This concentration of editors in only two locations is why the Geographic Diversity of the editor community has remained unchanged since 1985 (Fig 1C, Table S2). Coupled with a 420% increase in the total number of editors serving each year (Fig 1B), it also explains why Geographic Evenness decreased significantly from 1985-2014 (Fig 1D, Table S2).

These patterns are echoed when assessing representation at regional or macroeconomic levels. While the proportion of editors that are based in North America is higher than it was 30 years ago, this is due to the recruitment of proportionately more editors based in the USA rather than greater representation from Canada or Mexico. North American editors are often replaced is often by scientists from Europe, with the remainder typically from Australia, New Zealand, Japan, and other high-income countries in the East Asia/Pacific region (Fig 2B-C). Consequently, scientists from the Global South continue to represent only a fraction of editors for the journals we surveyed (Fig 2B-C). This concentration of editors in the Global North is seen at all levels of the gatekeeper hierarchy: 94% of Subject and Associate Editors, and a remarkable 98.2% of Editors-in-Chief, are based in high-income countries or Western Europe (Table 1, Text S1).

What does this lack of diversity mean and why does it matter?

We found the lack of scientists from the Global South in the community of scientific gatekeepers [sensu 18] has persisted despite its tremendous growth and global expansion. But does this lack of geographic diversity have consequences for the process of evaluating manuscripts that could ultimately limit the scope and direction of research in environmental biology? Put bluntly, do editors and reviewers from high-income regions like the USA or UK have biases – implicit or otherwise – that affect how they evaluate submissions from scientists based in the Global South? Although one journal in our survey found no evidence that reviewer or author nationality influenced the likelihood manuscripts were accepted [19, 20], this contrasts sharply with the results of prior studies in other STEM fields [21]. There is also compelling evidence that the country in which an author is based influences where their papers are ultimately published and how much they are cited [12, 22, 23]. In light of these results, and the ample data on how gender and ethnic background influence other aspects of academic evaluation [24], we recommend Editors-in-Chief work to increase the geographic representation on their boards, make editorial board members and referees aware of how biases based on author nationality can affect their editorial judgement, and conduct internal analyses of the potential factors influencing manuscript fate.

Internationalizing editorial boards can have positive impacts for journals in addition to mitigating possible implicit biases. First, scientists who presume their work will not be judged fairly because of their nationality or the country in which they are based [i.e., the "biased author effect", 25] may be more likely to submit their manuscripts to journals that have editors representing their region. This both increases the number and scope of submissions a journal receives, and the size and expertise of its reviewer pool. Second, a globally diverse editorial board can serve as an important signal of journal quality and connote prestige [26], especially to those tasked with evaluating individual, institutional, or national scientific productivity [17]. Third, it can enhance the profile and impact of the journal and articles published (to say nothing of justification for editors to demand more support or resources from their publishers). Finally, capacity building is often central to the mission of the academic societies. By providing editorial opportunities to scholars from emerging scientific regions, society journals can play a pivotal role in achieving this goal.

Decades of research have highlighted the positive influence of diversity on scientific research teams [27]. Although we recognize editorial boards do not operate in precisely the same way workplace teams do, we believe that geographic diversity can similarly enhance the creativity and impact of scholarship published in scientific journals. While we by no means advocate a quota system for countries or regions, we reiterate prior calls for journal leadership to strive for more geographically diverse editorial boards [18] whose composition mirrors that of their authors (Fig. S2) and where they work [13, 28]. These efforts, however, must be guided by specific plans and timetables to provide both guidance to editors and hold them accountable for their commitments [29]. Whether such plans underlie the geographic diversity we observed on a few of the editorial boards we reviewed is unknown (Appendix A). Nevertheless, these examples undermine the frequent argument that it is challenging to find and recruiting board members from the Global South with the requisite academic background, editorial experience, and time to serve. We believe that recruiting these editors is the ethical duty of a journal's leadership, especially given the impact their presence on the board can have on the global scientific community and the diffusion of the knowledge they create in the service of society. Where to find them? We humbly suggest their large and geographically diverse pool of authors is an ideal place to start.

ACKNOWLEDGEMENTS

We thank Juan Pablo Gomez for helpful discussions and assistance with data collection. This manuscript was completed while EB was Faculty-in-Residence at the University of Florida Marston Science Library. New data collected for this paper are available at the Dryad Digital Repository (accession number ---- ----). Code for reproducing analyses and figures is at -------.

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Table 1: Percentage of the editorial board members from N = 24 environmental biology journals based in different (A) World Bank Country Income Categories and (B) Global Regions. Between 1985-2014 there were N = 3831 unique editors from 70 countries. The total number of editors in each region and national income category differs due to some editors having moved between 1984-2015; similarly, one person may serve multiple editorial roles. Numbers in parentheses are the number of unique editors in each category. Abbreviations: EIC: Editor-in-Chief, AE: Associate Editor, SE: Subject Editor, SpE: Special Category Editor.

(A) World Bank National Income Category	**Total No. of Editors**	**% of EIC** (N = 171)	**% of AE** (N = 247)	**% of SE** (N = 3690)	**% of SpE** (N= 80)
High income OECD	3608	97.66	92.71	93.36	97.50
High income Non-OECD	51	0.58	1.62	1.33	1.25
Upper-middle income	152	1.75	4.45	4.01	1.25
Lower-middle income	44	0.0	1.21	1.17	0
Low income	5	0.0	0.0	0.14	0
	Total = 3860				

(B) Global Region	**Total No. of Editors**	**% of EIC** (N = 171)	**% of AE** (N = 251)	**% of SE** (N = 3729)	**% of SpE** (N = 82)
North America	2376	50.29	49.00	61.22	67.07
Europe & Central Asia	1025	45.03	35.86	25.69	23.17
East Asia & Pacific	312	2.34	8.76	7.91	7.32
Latin America & Caribbean	108	0.58	4.38	2.82	1.22
Sub-Saharan Africa	50	1.75	1.59	1.26	1.22
South Asia	24	0.0	0.40	0.62	0
Middle East & North Africa	18	0.0	0.00	0.48	0
	Total = 3911				

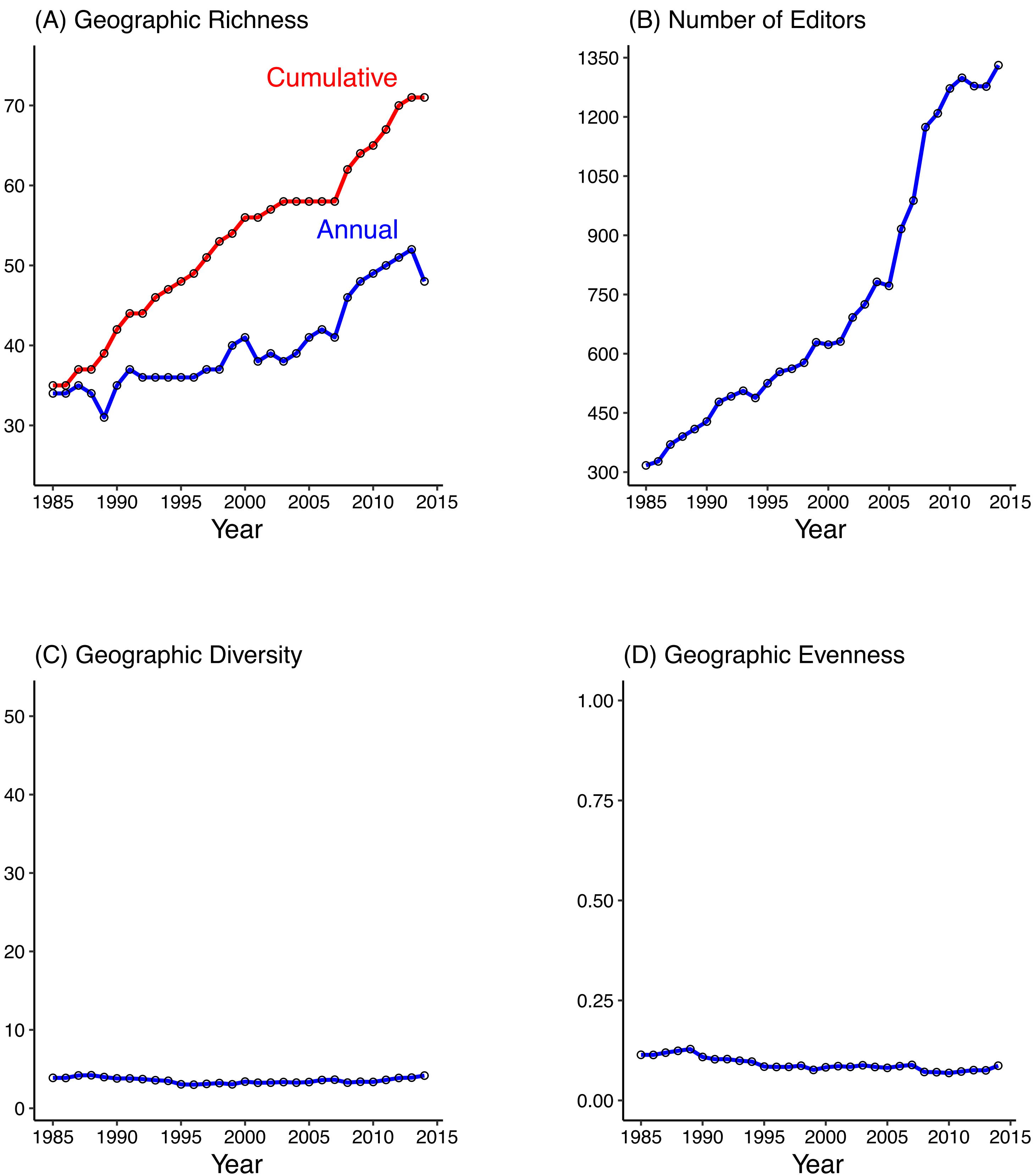
FIGURE LEGENDS

Fig 1. Community composition of editors in environmental biology (1985-2014).

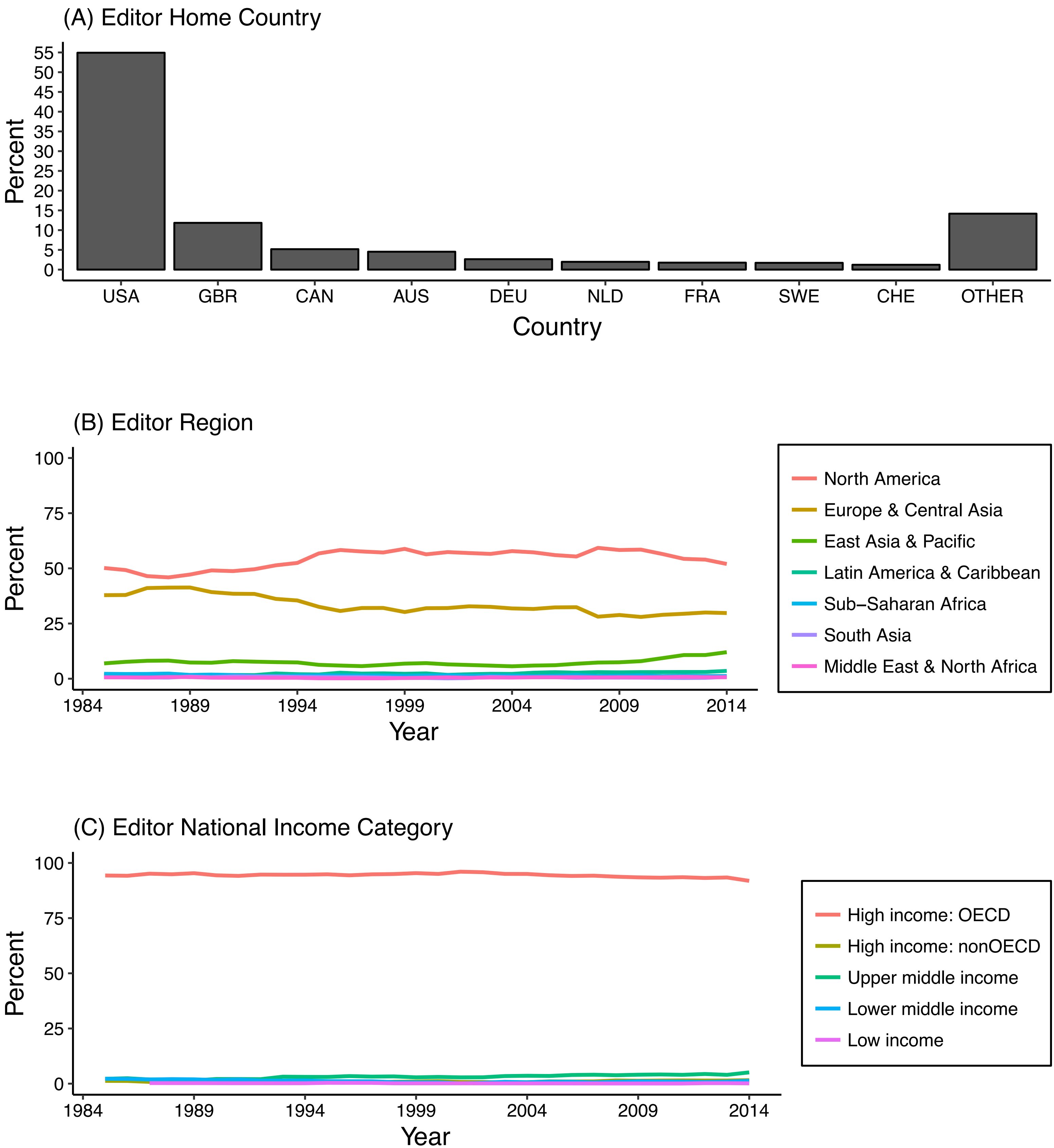
(A) Geographic Richness: Cumulative Richness is the total number of countries represented by at least one editor through each calendar year; Annual Richness is the number of countries represented by editors in each calendar year (B) The total number of unique editors serving each calendar year from 1984-2015 (C) Geographic Diversity: larger values indicate greater diversity, with the maximum possible value (N = 52) equal to the greatest number of unique countries represented in one year during our survey period (D) Geographic Evenness: values range from 0-1, with 1 indicating editors are equally distributed among all countries represented in that year.

Fig 2. The percentage of environmental biology editors based in different countries, global regions, and World Bank national income categories.

(A) Countries; Abbreviations: USA: United States of America, GBR: United Kingdom, CAN: Canada, AUS: Australia, NLD: Netherlands, FRA: France, SWE: Sweden, CHE: Switzerland. (B) World Bank global regions (C) World Bank Gross National Income categories.



(A) Geographic Richness
Cumulative
Annual
70
60
50
40
30
1985
1990
1995
2000
2005
2010
2015
Year
(B) Number of Editors
1350
1200
1050
900
750
600
450
300
1985
1990
1995
2000
2005
2010
2015
Year
(C) Geographic Diversity
50
40
30
20
10
0
1985
1990
1995
2000
2005
2010
2015
Year
(D) Geographic Evenness
1.00
0.75
0.50
0.25
0.00
1985
1990
1995
2000
2005
2010
2015
Year


(A) Editor Home Country
Percent
55
50
45
40
35
30
25
20
15
10
5
0
USA
GBR
CAN
AUS
DEU
NLD
FRA
SWE
CHE
OTHER
Country
(B) Editor Region
Percent
100
75
50
25
0
1984
1989
1994
1999
2004
2009
2014
Year
North America
Europe & Central Asia
East Asia & Pacific
Latin America & Caribbean
Sub–Saharan Africa
South Asia
Middle East & North Africa
(C) Editor National Income Category
Percent
100
75
50
25
0
1984
1989
1994
1999
2004
2009
2014
Year
High income: OECD
High income: nonOECD
Upper middle income
Lower middle income
Low income

Supporting information for:

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CONTENTS

1. METHODS

1a. Data collection: Editors

Our analyses are based on the 1985-2014 editorial boards of 24 journals (Table S1). We selected these journals because they are considered high-profile and prestigious outlets in which to publish research from a range of environmental and natural resource disciplines. Whenever possible we selected journals published by academic societies with global membership and comparable publisher-owned outlets for similar research (e.g., *Biotropica* and *Journal of Tropical Ecology*, *Conservation Biology* and *Biological Conservation*). We chose 1985 as a starting point because we wanted to determine if there had been changes in the composition of editorial boards of high-profile disciplinary journals after the emergence of new centers of scientific productivity in Latin America and Asia [1, 2]. This meant excluding several high-profile journals because they only began publishing in the past decade (e.g., *Ecology Letters, Molecular Ecology*). We did, however, include three journals that were first published in 1987: *Conservation Biology*, *Functional Ecology,* and *Landscape Ecology* (Table S1).

Using the first issue of the journal published in each calendar year, we recorded the names of all editorial board members, their editorial positions, their institutions (when given), and the country in which they were based. The 1985-2013 data from 10 of these journals were collected by Cho et al. [3] and archived at the Dryad Digital Repository [4].

Journals often have different titles for positions with similar responsibilities, these titles can change over time, and new positions are frequently created or eliminated. We therefore used the same definitions as Cho et al. [3] to assign editorial board members to one of four categories based on their primary responsibilities. These categories were:

1) ***Editor-in-Chief (EIC).*** The EIC oversees the journal and is ultimately responsible for editorial policy, standards, and practices, including nominating or appointing new Editorial board members. Some journals have co-Editors-in-Chief (e.g., *North American Journal of Fisheries Management*, *Oecologia*).
2) ***Associate Editors (AE).*** AEs assist the EIC with their responsibilities and often take the lead on some aspects of journal administration. Some AEs oversee all submissions in a specific subject area or about a geographic region. Not all journals have AEs, and some had AEs for only a subset of the survey period.
3) ***Subject Editors (SE).*** SEs oversee manuscript review. SEs for some journals make final decisions on manuscripts after receiving reviewer feedback (e.g., *Ecology*) while SEs for other journals provide recommendations upon on which a senior editor (i.e., EIC, AE) makes the final decision (e.g., *Biotropica, J. Ecology*). They also provide feedback on journal policy and administration. SEs are sometimes referred to by other names, including Handling Editors, the Board of Editors (e.g., *Ecology, Biological Conservation*) and the Editorial Committee (e.g., *Annual Review of Ecology, Evolution, and Systematic, American Journal of Botany*). In addition, two journals used the title of "Associate Editor" for Board members with SE responsibilities (i.e., *American Journal of Botany*, *North American Journal of Fisheries Management*); they were considered SEs in our analyses.
4) ***Special Editors (SpE):*** Special Editors include editors tasked with soliciting papers for special article categories, organizing special sections or volumes,

reviewing data archives or computer code, or coordinating reviews of recently published books. Examples of special Editors include those responsible for the "Biological Flora" section of the *Journal of Ecology*, editors for *Ecology's* "Concept Section", "Data Archive", "Special Features", and "Invited Papers", the Editors of "Natural History Miscellany" for the *American Naturalist*, and "Commentary" Editors for *Biotropica*. For many journals the Special Editors also serve as the Subject Editors of "standard" manuscript submissions.

We standardized the countries in which editor institutions were based by converting them to their respective ISO 3166-1 alpha-3 codes (ISO 2016). Note that as per [5] we count editors based in territories or overseas departments separately from those in the sovereign state (e.g., Editors based in Puerto Rico or French Guiana are counted separately from those in, respectively, the USA and France). In cases where the name of the country changed between 1985 and 2014 we used for analyses the contemporary name for the country where the editor's home institution was based (e.g., an editor based in before 1993 would be assigned to Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia, or Slovenia as appropriate).

We also assigned the country in which each editor was based to its World Bank Global Region and National Income category [6]. The geographic regions are: (1) Europe/Central Asia (2) East Asia/Pacific, (3) Latin America/Caribbean, (4) Sub-Saharan Africa, (5) South Asia, (6) Middle East/North Africa, (7) North America (i.e., Canada and the United States). The National Income categories are: (1) high-income Organization for Economic Cooperation and Development (OECD) member (*per capita* GNI $\geq$ \$12476), (2) high-income non-OECD member (*per capita* GNI $\geq$ \$12476) (3) upper-middle income (*per capita* GNI $4036-$12475), (4) lower-middle income (*per capita* GNI $1026-$4035), (5) low-income (*per capita* GNI ≤ $1025) [6].

Finally, we note that throughout the text we use the terms “Global North” and “Global South”. The term Global North refers to the group of economically developed countries with high per capita Gross Domestic Product (GDP) that collectively concentrate most global wealth. Because national development is a product of cultural and political history, not all countries in this classification are in the Northern Hemisphere (e.g., Australia, New Zealand). The “Global South” comprises the world’s ‘developing’ or ‘emerging’ economies, most of which are in Latin America, Asia, Africa, and the Middle East [7].

1b. Data collection: Authors

We also collected data on the country in which authors of all papers published in our focal journals from 1985-2014 were based. For each year *X* we did a Thomson-Reuters Web of Science (WOS) search with the following search string:

SO=(Agronomy Journal OR American Journal of Botany OR Journal of Applied Ecology OR American Naturalist OR Journal of Biogeography OR Annual Review of Ecology, OR Journal of Ecology OR Biological Conservation OR Journal of Tropical Ecology OR Biotropica OR Journal of Zoology OR Conservation Biology OR Landscape Ecology OR Ecography OR Holarctic Ecology OR Ecology OR New Phytologist OR Evolution OR North American Journal of Fisheries Management OR Forest Ecology and Management OR Oecologia OR Functional*

Ecology OR Oikos OR Journal of Animal Ecology OR Plant Ecology OR Vegetatio) AND PY=(X)

We then downloaded the WOS-generated frequency table reporting the countries in which the authors of the articles published in year *X* were based and standardized the author nationalities using same methods we did for editors. It is important to note that these frequency tables do not provide the total number of authors from each country, only how many times a country was represented in a set of articles. Consequently, the data can be used for analyses of Author Geographic Richness but not to calculate frequency based metrics such as Diversity and Evenness. Furthermore, all author institutional addresses are counted towards the national totals, e.g., a paper with an author listing a primary address is in the USA and a secondary address is in Panama results in both Panama and the USA being "credited" for that author; which could result in an overestimate of the total number of countries represented by authors.

1c. Analyses: Overview

Because our primary goal was to assess the geographic diversity of the community of scientists serving as editors – rather than quantify and compare journal-level metrics – we pooled the data from the N=24 journals for our analyses and assigned each editor a unique ID number. Editors serving on multiple boards in the same year were only counted once. We conducted our analyses using all four editor categories – EIC, AE, SE, and SpE – and use the term 'editorial board' to refer to the collection of scientists comprising all four categories. As per Cho et al. [3] we did not include advisors without editorial responsibilities, such as the *American Journal of*

Botany's "Section Representatives" or the "Publication Board" for *Oikos*, nor the staff primarily responsible for the administrative aspects of journal publishing (e.g., production editors, managing editors, editorial assistants, etc.).

1d. Analyses: Metrics of community composition

While "diversity" is often used colloquially to mean "the representation of different groups in a focal population or workplace", ecologists define the "diversity" of a site quantitatively using a combination of how many species are found in a site (i.e., "species richness") and the local abundance of each species. These data are also used to calculate "evenness", which is an index of species' relative abundance (e.g., the evenness of a site with 20 species is far greater if all species are similarly abundant than if the 1-2 are very common while the remainder are found at low abundance) [8].

We used this approach to describe the editorial community and how it changed over time. For each year of our survey we calculated the editorial community's Geographic Richness (GR, i.e., the number of countries represented), Geographic Diversity (GD, i.e., the combination of geographic richness and abundance of editors from different countries) and "Geographic Evenness" (GE, i.e., the relative representation of different countries in the editorial community). To calculate the geographic diversity of editors in each year from t_{initial} to t_{final} we used Simpson's Dominance Index, D_2:

$$D_2 = \frac{1}{\sum_{i-1}^{R} p_i^2}$$

where R is the greatest value of geographic richness recorded in any year between t_{initial} and t_{final} and p_i is the proportional abundance of the ith country in year t. D_2 is also known as the Inverse or Reciprocal Simpson's Index, and we chose to use it as our measurement of diversity for two reasons [8]. First, it is simpler to interpret than other common diversity indices: larger values indicate greater diversity, with the maximum potential diversity equal to the greatest number of countries represented in any one year of the sample period. Second, it allows for the mathematical independence of Diversity and Evenness, such that Evenness can be calculated using D_2 and R as follows:

$$E = \frac{D_2}{R}$$

Evenness ranges from 0-1, with 1 being a completely even distribution (i.e., when $E = 1$ editors are equally distributed among all countries observed during the survey period). Note that the independence of diversity and evenness means that a community can have low diversity but high evenness.

1d. Analyses: statistics

All data were organized, analyzed, and visualized using the `tidyr`, `dplyr`, and `ggplot2` libraries [9] for the R statistical programming language [10]. To determine of there were temporal trends in the composition of the editorial community, we first calculated the Geographic Richness, Diversity, and Evenness of each year's community of editors using the `vegan` library [11]. We then tested for changes in these three metrics over time with linear models, fit with Generalized Linear Squares (GLS). We used this approach because it allows testing for and removing the effects of potential temporal autocorrelation resulting from editors serving terms of multiple, consecutive years.

We constructed models in which the dependent variable was the value of each metric in each year, Year and the Number of Editors in a year were included as factors (independently and in combination). Preliminary analyses indicated that there was autocorrelation in all response variables, so we included it in all models as an auto-regressive moving average (ARMA) process with $p = 1$ and $q = 0$. We then used Akaike Information Criteria corrected for smaller sample sizes (i.e., AICc) to identify the model whose combination of main effects and interactions provided best fit the data. A significant effect of Year, either alone or in combination with Editor Number, would indicate a change over time in Richness, Diversity, and Evenness. These analyses were carried out using the libraries `nlme` [12] and `MuMIn` [13].

Finally, we used χ^2 tests to compare the number of unique editors (all years combined) based in each World Bank global region and national income category.

2. RESULTS

We identified N = 3829 scientists from N = 71 countries that served as editors for our focal journals from 1985 to 2014. Over the course of our survey period the size of the editor community serving each year increased almost 420% (N=316 in 1985 vs. N=1340 in 2014). The number of countries represented per year increased from N=34 in 1985 to N=49 in 2015.

After accounting for autocorrelation, the increase in Geographic Richness over time was best explained by the number of editors (Table A in S1 Text, Fig A in S1 Text). In contrast, the best fit for the data on Geographic Diversity was the model that included only the intercept, indicating no increase in diversity over the course of our survey period or as might be expected from the increasing number of editors (Table A in S1 Text). In contrast, the models that best fit the data on Geographic Evenness included Year as a main effect. Even after removing the effect of temporal autocorrelation, evenness declined over our survey period – despite starting at an already low value ($Evenness_{1984}$ = 0.11) – due to a significant effect of editor number (Table A in S1 Text). Finally, there was a significant difference in the frequency of editors representing different national income categories (χ^2 = 13038, *df* = 4, *p* < 0.0001) and geographic regions (χ^2 = 8263, *df* = 6, *p* < 0.0001). Editors were overwhelmingly from High-income OIECD countries or North America and Europe/Central Asia (Fig 2).

From 1985-2014 there were 113,816 articles (including editorials, notes, etc.) published in our focal journals. In 1985, the authors of articles in our focal journals were based in 65 countries. By 2014 authors from N = 189 countries had published in the 24 journals (Fig. S2).

TABLE A. Model selection for the effect of Year (model 2), the Total Number of Editors (model 3), both Year and Total Number of Editors (model 4), and Year, Editor Number, and their Interaction (Model 5) on three metrics of editor community composition fit to 30 observations (i.e., total degrees of freedom). All models included an ARMA(1) autocorrelation term. The best-fit model is indicated in bold.

Geographic Richness

Model	dAIC	df	weight
1 Intercept	17.44	3	0
2 Year	11.34	4	0.003
3 No. of Editors	**0**	**4**	**0.75**
4 Year + No. of Editors	2.76	5	0.19
5 Year * No. of Editors	5.29	6	0.05

Geographic Diversity

Model	dAIC	df	weight
1 Intercept	**0**	**3**	**0.45**
2 Year	2.66	4	0.12
3 No. of Editors	2.65	4	0.12
4 Year + No. of Editors	5.17	5	0.03
5 Year * No. of Editors	0.93	6	0.28

Geographic Evenness

Model	dAIC	df	weight
1 Intercept	2.59	3	0.08
2 Year	0.4	4	0.30
3 No. of Editors	0.1	4	0.29
4 Year + No. of Editors	2.87	5	0.07
5 Year * No. of Editors	**0**	**6**	**0.30**

Fig. A. Relationship between Geographic Richness and the size of the Editor community (1995-2014, pooled data from N=24 journals).

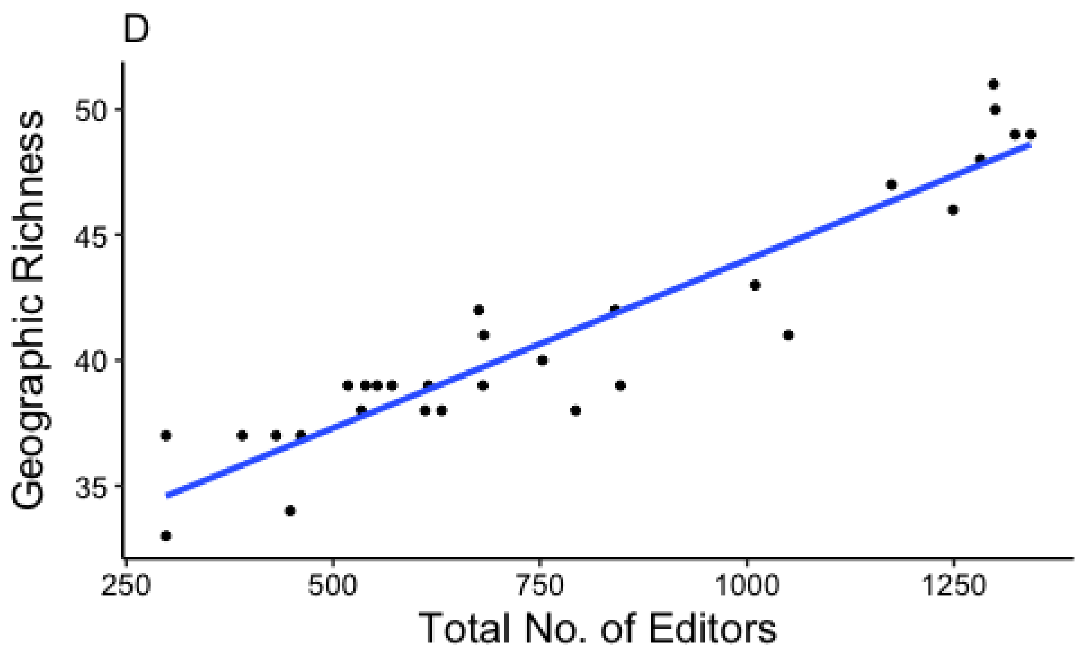

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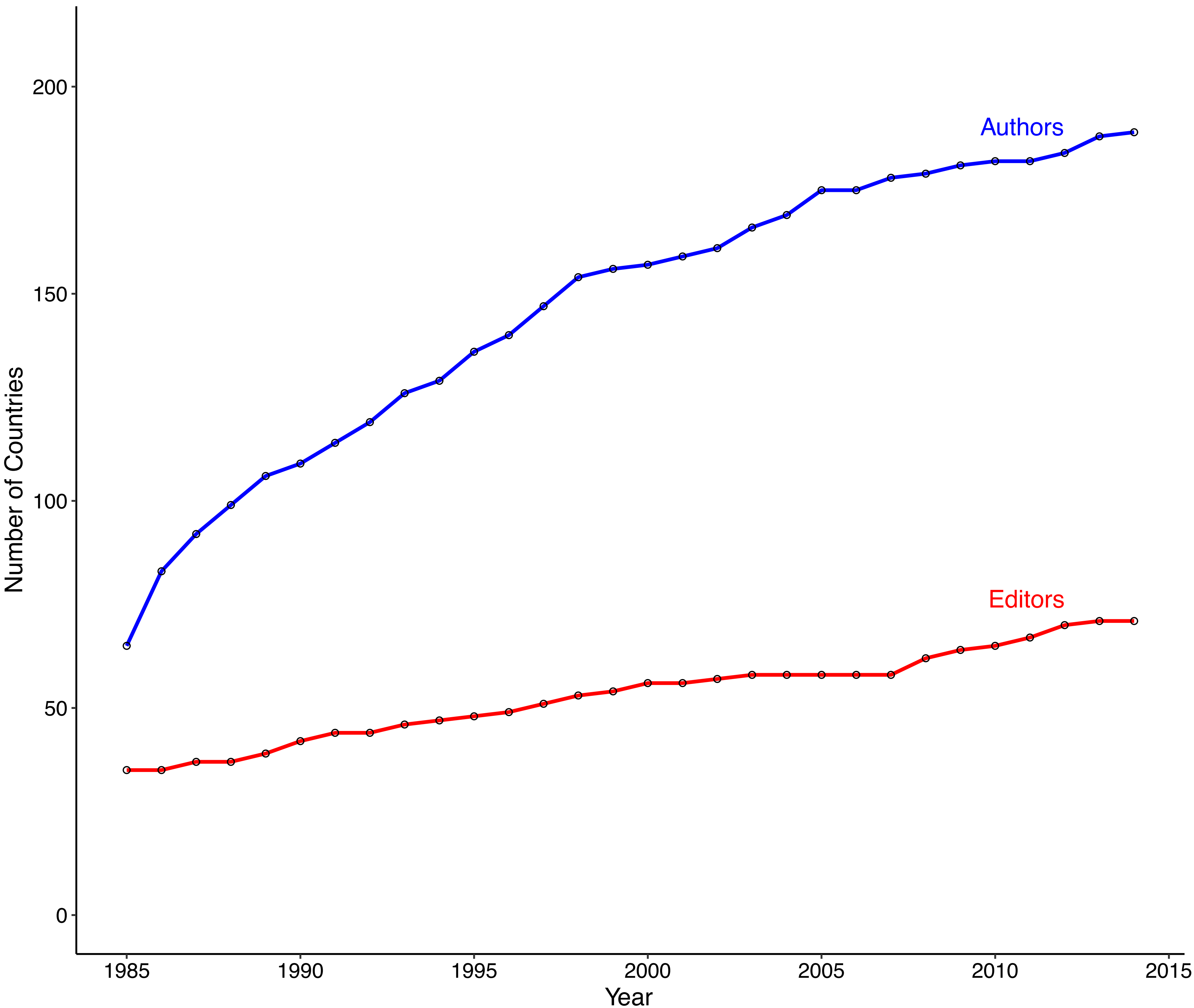
Table S1. Data on the N=24 environmental biology journals used in our survey of editorial board geography.

Journal	Editors 1985	Countries 1985	Editors 2014	Countries 2014	Total Editors 1985-2014	Total Countries 1985-2014
Agronomy Journal	43	1	127	16	525	24
American Journal of Botany	6	1	48	7	116	8
American Naturalist	5	1	66	10	290	18
Annual Review of Ecology, Evolution, & Systematics[1]	8	1	9	3	42	3
Biological Conservation	28	18	49	13	135	24
Biotropica	3	1	48	19	181	35
Conservation Biology	26*	6*	70	17	219	23
Ecography[2]	5	1	34	14	58	16
Ecology	23	2	130	13	423	17
Evolution	16	3	63	11	417	20
Forest Ecology and Management	27	12	51	16	170	34
Functional Ecology	22*	7*	63	16	137	21
Journal of Animal Ecology	11	4	65	14	135	18
Journal of Applied Ecology	16	3	58	15	146	20
Journal of Biogeography	25	8	54	19	123	20
Journal of Ecology	10	1	68	18	145	23
Journal of Tropical Ecology	11	9	14	6	36	20
Journal of Zoology	1	1	29	11	81	15
Landscape Ecology	19*	10*	57	16	156	25
New Phytologist	10	1	38	12	68	13
N. Am. J. of Fisheries Management	16	2	25	3	252	4
Oecologia	24	8	136	26	314	30
Oikos	12	4	60	19	122	20
Plant Ecology[3]	18	12	47	15	174	32

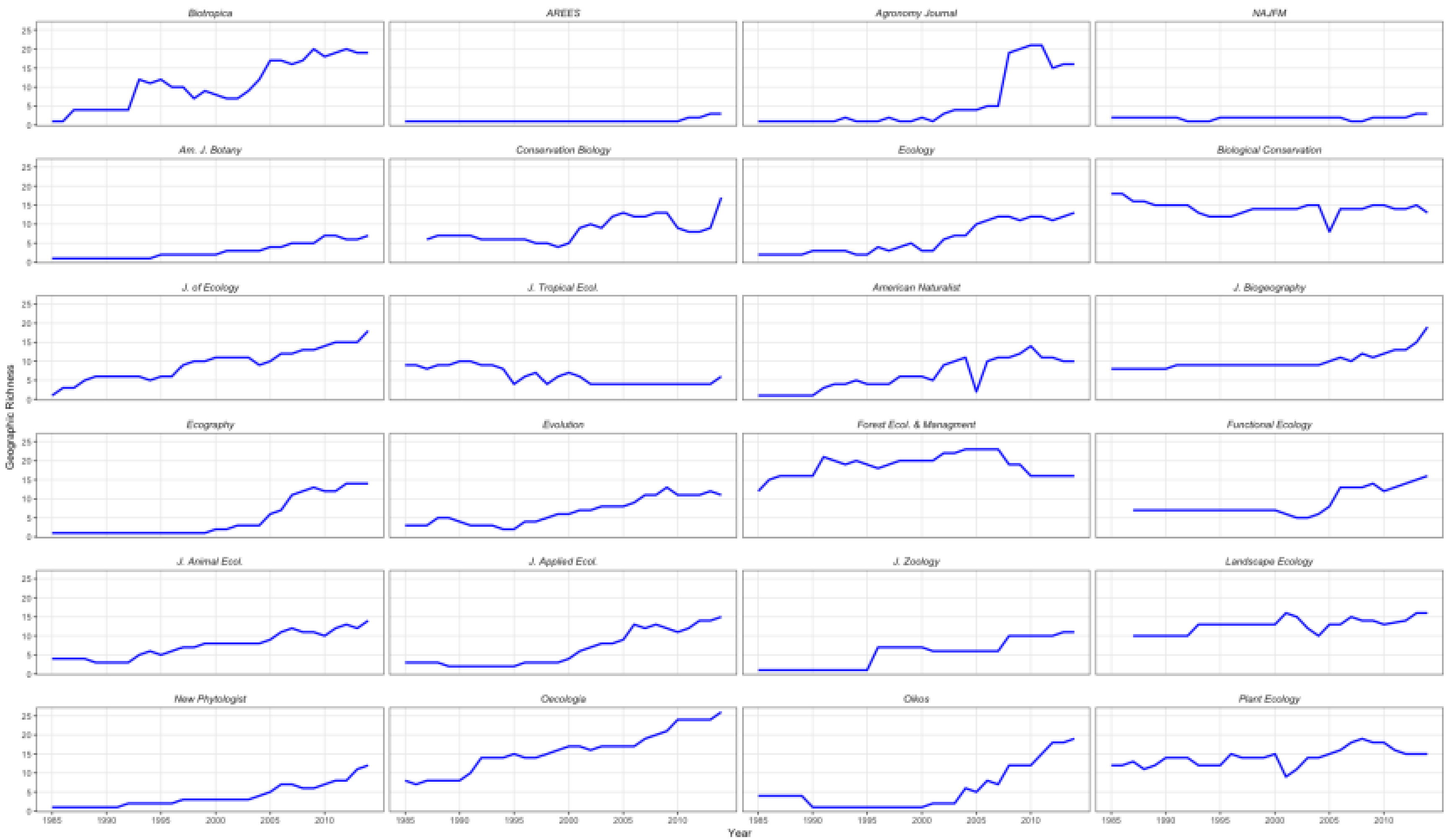
[1]Named *Annual Review of Ecology & Systematics* through 2002. [2]Named *Holarctic Ecology* through 1991 [3]Named *Vegetatio* through 1996 [4]Values for 1987, the first year the journal was published

Fig S2. Cumulative Geographic Richness from 1985–2014 of the editors for N = 24 environmental biology journals and of the authors publishing in those journals during the same time perior (N = 113,816 articles).

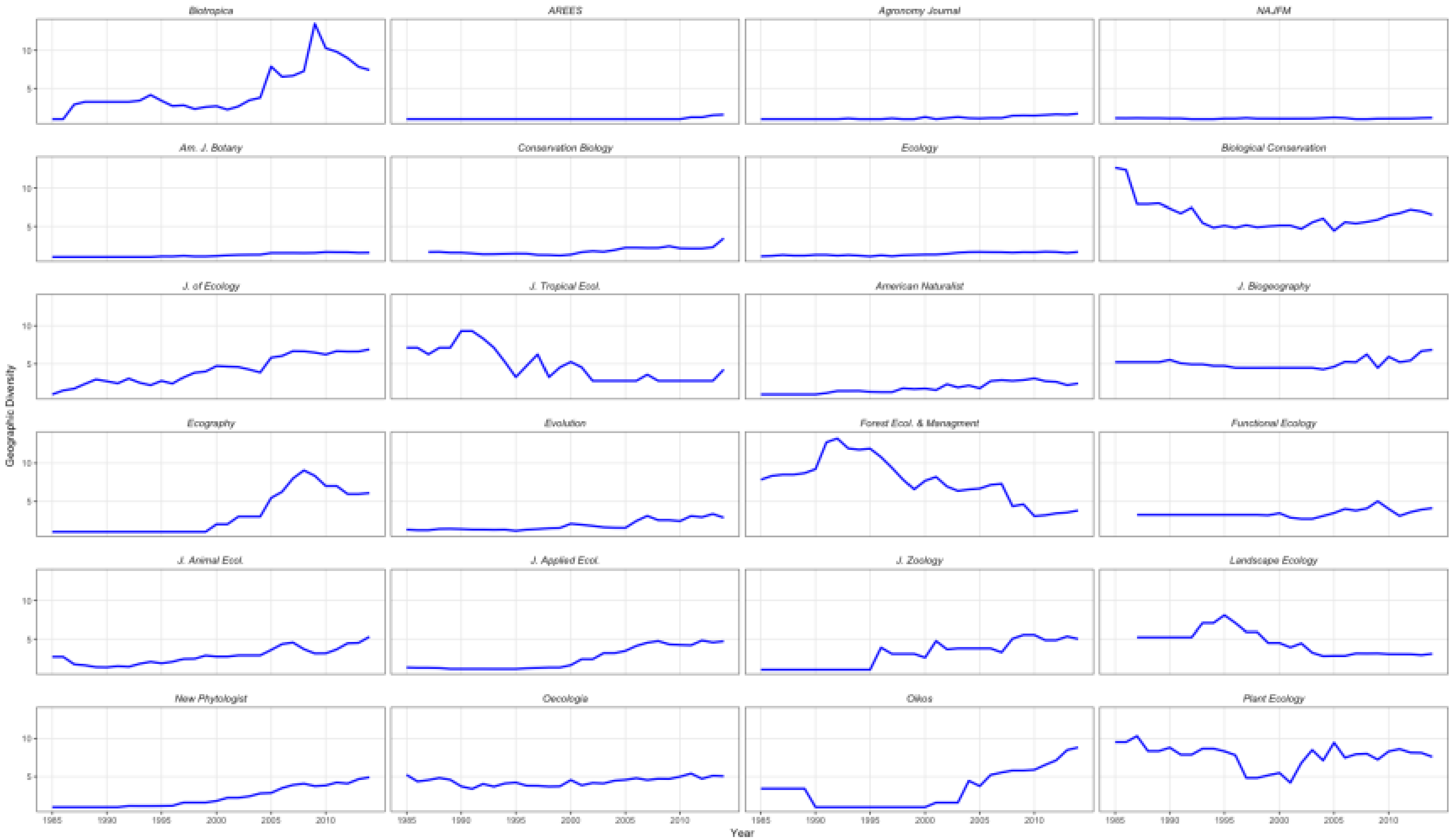


APPENDIX A: Geographic Richness, Diversity, and Evenness of N = 24 editorial boards from 1985-2014 (A-C) and the percentage of board members from different geographic regions and World Bank National Income classifications (D-E).

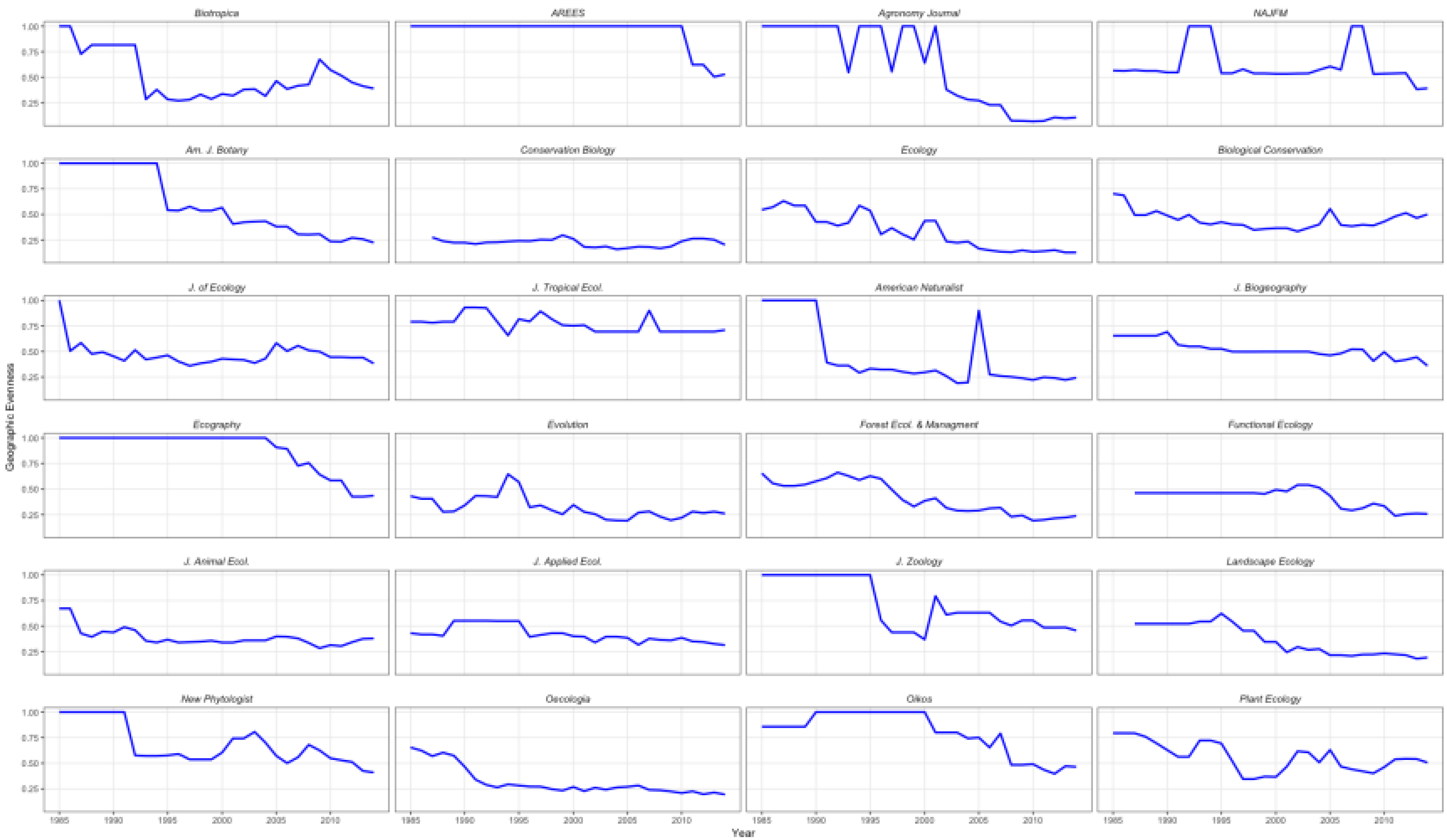
(A) Geographic Richness from 1985-2014 of N=24 editorial boards in environmental biology.



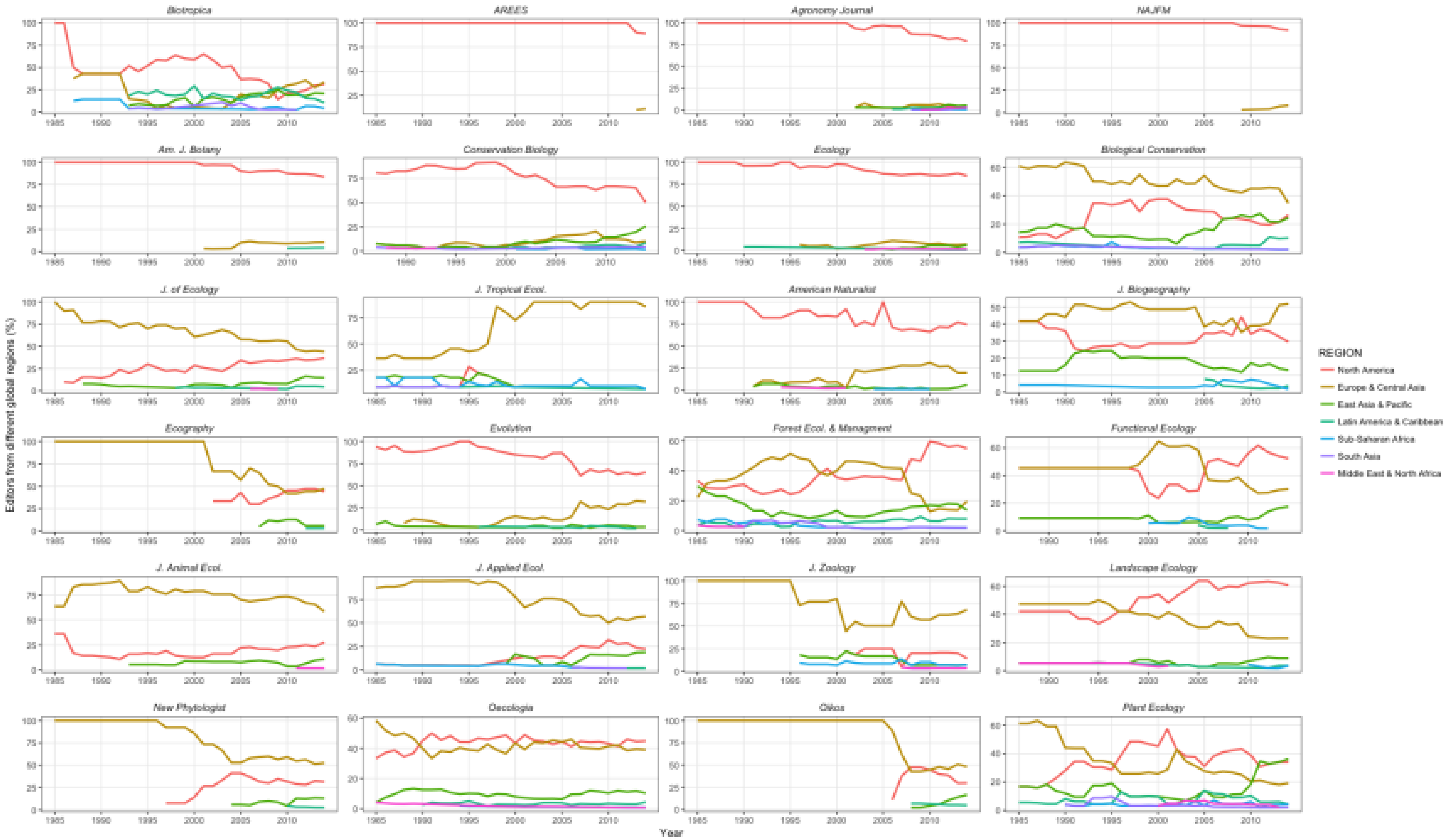
(B) Geographic Diversity from 1985-2014 of N=24 editorial boards in environmental biology.



(C). Geographic Evenness from 1985-2014 of N=24 editorial boards in environmental biology.



(D). Percentage of members of N=24 editorial boards based in different global regions (1985-2014).



(E). Percentage of members of N=24 editorial boards based in each World Bank National Income category (1985-2014).