

¹ Is there really such a thing as *Tropical Biology*?¹

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¹ Inspired by the provocative title of an essay by M. H. Robinson.

15 **1. INTRODUCTION**

16 “This is an interesting and useful study, but I feel the manuscript is better suited to a
17 specialized journal focusing on tropical ecosystems.”

18 Subject Editor (*name and journal redacted*)

19 This decision regarding my submission to one of our field’s well-known journals is likely
20 familiar to many members of the Association for Tropical Biology & Conservation (ATBC).
21 All three reviews were positive, with none of the referees identifying significant
22 shortcomings or requesting major changes. So why had the manuscript been rejected? My
23 only clue was in the Editor’s conclusion, from which I gathered they felt studies done *in*
24 the tropics were of limited relevance to researchers working *outside* the tropics. That’s for
25 whom a specialized journal is published, after all – a smaller community of subject-matter
26 experts – and the journal to which we had submitted our study sought to publish “broad
27 conceptual advances”. In short, the Subject Editor was drawing a distinction between
28 *Biology* and *Tropical Biology*, with the latter a specialized subdiscipline of the former.

29 This limited view of tropical research is not new. In 1963, P. W. Richards felt it
30 necessary to use his Presidential Address to the British Ecological Society to explain “what
31 the Tropics can contribute to ecology”, advocate for the tropics to be studied more
32 intensively, and to encourage students to visit “the most [biologically] exciting part of the
33 world” (Richards 1963). His reason for choosing this topic, while self-deprecating, was
34 pointed - he was concerned that a overview of his own research or recent advances in
35 tropical ecology “would probably bore the large part of my audience.” (Richards 1963).
36 That he felt doing so was necessary despite he and others having done so for decades
37 (Huxley 1927, Chapman *et al.* 1945, Park 1945, Richards 1946) was surely frustrating.

38 Sixty years on many of us find ourselves similarly frustrated. Field stations in the
39 tropics remain underfunded (Corner 1946, Eppley *et al.* 2024). Financial support for
40 tropical research continues to decline (Chapman *et al.* 1945, Sohmer 1980, Stegmann *et al.*
41 2024). And despite the tropics comprising the majority of the planet’s biodiversity (Gaston
42 2000), ~40% of its terrestrial surface area, and half the human population (Hoornweg &
43 Pope 2017), the study of tropical systems is still viewed by many as a specialization. My
44 objective in this essay is not to review the historical origins (e.g., Chazdon & Whitmore
45 2001, Raby 2017) or consequences (Zuk 2016) of this generalization, the subsequent
46 proposals to advance tropical research (Richards 1964, Buechner & Fosberg 1967, Janzen
47 1972, Robinson 1978, Janzen 1986, Bawa *et al.* 2004), or the ensuing and often contentious
48 debates about latitudinal gradients in biological processes (Robinson 1978, Moles &
49 Ollerton 2016). Instead, I will try to address the long-standing and fundamental – but to
50 date inexplicably untested – assumption underpinning the Editor’s recommendation: Is
51 there really such a thing as *Tropical Biology*?

52 **1. Why the answer is ‘No’:**

53 “In attempting to study vegetation and to arrive at generalizations... it would be more
54 logical to begin with the floristically rich vegetation of the tropics than, as we now do, with
55 the impoverished vegetation of northern Europe and North America.”

56 P. W. Richards (1946)

57 One means of assessing if *Tropical Biology* is a distinct academic discipline is by
58 considering the communities into which scientists self-organize. Scholarly societies are one
59 such community; their establishment requires both an intellectual pursuit with which
60 individuals identify and a critical mass of like-minded individuals in search of community.
61 Some of these communities coalesce around broad conceptual domains (e.g., *Evolutionary*
62 *Biology*, *Conservation Biology*, *Integrative Biology*; Figure 1A). Still others bring together
63 individuals from different conceptual domains that share an interest in a particular system
64 (e.g., *Avian Biology*, *Island Biology*; Figure 1B). Finally, some scholarly societies comprise
65 individuals grounded in a common methodological framework, though they may do so with
66 disparate study systems or to address questions in distinct conceptual domains (e.g.,
67 *Molecular Biology*, *Mathematical Biology*, *Systematic Biology*; Figure 1C).

68 *Tropical Biology* fails to align with any of these constructs. Its practitioners
69 investigate fundamental questions across conceptual domains with a broad range of
70 methodological approaches and study systems. Even the adjective that would seem be a
71 unifying thread is challenging to operationalize. ‘The Tropics’ are geographically defined as
72 the portion of the Earth’s surface receiving at least one day of direct overhead sunlight per
73 year — a band delineated by the Tropics of Capricorn ($23^{\circ}26'10.4''$ S) and Cancer
74 ($23^{\circ}26'10.4''$ N). However, the ranges of many ‘tropical’ species extend far beyond these
75 boundaries², and a review by Feeley and Stroud (2018) of over 200 scientific articles
76 identified at least eight distinct criteria by which authors defined ‘tropical’ systems. How
77 then is it that *Tropical Biology* come to be seen as a distinct subdiscipline despite the lack
78 the sharp boundaries around which scientific groups typically coalesce?

79 These contemporary perceptions of ‘The Tropics’ as distant and different are the
80 result of centuries of historical and cultural reinforcement (Arnold 1996, Driver & Yeoh
81 2000, Stepan 2001, Miller & Reill 2011). The first Europeans to visit the tropics returned
82 with vivid, captivating, and frequently pejorative descriptions of the places and people they
83 encountered (Putz & Holbrook 1988). Their stories and images established a series of
84 persistent, often contradictory tropes about tropical regions and people that were then
85 repeated and reinterpreted by subsequent visitors (Smith 1950, Stepan 2001). The historian
86 David Arnold has argued that these narratives of *Tropicality* (*sensu* Gourou 1947), and
87 even referring to this part of the globe as *The Tropics*, allowed Europeans simultaneously
88 define the region as environmentally and culturally distinct while also superimposing a
89 common identity on very distinct parts of the tropical world (Arnold 1996).

90 The view of the tropics as simultaneously ‘exotic’ and ‘other’ was prevalent during the
91 formative years of von Humboldt, Darwin, and Wallace. Those they inspired that went on
92 to formalize the fields of ecology and evolution, almost all of whom were based in Europe
93 or North America, also grew up immersed in stereotypes about the tropics. They were
94 obviously not ignorant about these locations and their biology, and many considered a trip
95 to the tropics an essential rite of passage for their students (Webb 1960). Others went even
96 further — in his 1945 Presidential Address to the Ecological Society of America,

² Perhaps the most extreme examples are migratory birds such as the northern wheatear (*Oenanthe oenanthe*), which fly over 14,000 km from sub-Saharan Africa to their breeding grounds in the Arctic (Bairlein *et al.* 2012)

97 Orlando Park impressed upon his audience the importance of the tropics and encouraged
98 ESA to establish a “full scale program in tropical ecology” and consider establishing “a
99 new journal... dealing with tropical biology in its broadest aspects” (Park 1945). But given
100 that many of the scientists that Park and Richards were addressing “have never been to
101 the tropics and never intend to do so” (Richards 1963), and how the biology of the tropics
102 quickly overwhelmed paradigms and theory developed to explain temperate patterns
103 (Corner 1946, Richards 1946, 1963, 1964), one can understand how the notion that the
104 tropics were *culturally* unique gave rise to the scientific generalization that the tropics were
105 *biologically* unique.

106 **2. Why the answer is ‘*Maybe*’:**

107 “...to this day ecology is biased by concepts and ideas appropriate mainly to the study of
108 vegetation in temperate climate.”

109 P. W. Richards (1963)

110 Even if ‘The Tropics’ are a historical construct, *Tropical Biology* could still be conceptually
111 distinct field of study if, over time, the scientific community converged on a suite of topics
112 either unique to or best studied in tropical systems. To assess this possibility, I used
113 text-mining tools to compare the content of 9,975 articles reporting research from the
114 tropics with 16,641 studies conducted in other parts of the world. These studies were
115 published from 1990-2022 in N = 8 journals (*Ecology*, *Journal of Applied Ecology*,
116 *Biotropica*, *Journal of Ecology*, *Tropical Conservation Science*, *American Naturalist*,
117 *Tropical Ecology*, *Journal of Tropical Ecology*).

118 A complete description of the methods used to gather and process these data are in
119 the *Supplementary Materials*. Briefly, I began by extracting all keywords, title words (e.g.,
120 *seed*, *species*), and title bigrams (i.e., pairs of sequential words, e.g., *seed predation*, *species*
121 *diversity*) from the entire collection of articles; this resulted in N = 52,075 keywords, N =
122 19,887 title words, and N = 72,887 bigrams. I then calculated the percentage of articles in
123 each category using each of those terms. The results below are based on the top N = 75
124 terms in each article category. Two major patterns emerge from this analysis. The first is
125 that 40% of the most frequently used keywords from ‘tropical’ articles were study systems
126 or geographic locations (e.g., *Costa Rica*, *Amazonia*, *bats*). In contrast, the overwhelming
127 majority of keywords from non-tropical articles (97%) were conceptual (e.g., *competition*,
128 *ecosystem function*, *sexual selection*; Table 1). The second is that after removing the
129 system- and location-specific keywords, there is ample conceptual overlap between tropical
130 and non-tropical studies (Table 2) that is consistent with broader trends in ecological
131 research (Carmel *et al.* 2013, McCallen *et al.* 2019, Anderson *et al.* 2021). That said, the
132 most common research topics within each article category often differ dramatically in their
133 relative rankings (Figure S1), and there are notable areas of topical divergence (Table 2).
134 Similar patterns emerge when comparing individual title words and title word bi-grams
135 (Figure S2, Figure S3).

136 One interpretation of these results is that *Tropical Biology* is indeed a subdiscipline
137 focused on problems and topics unique to or most relevant in tropical locations, and it is
138 undoubtedly true that there are some questions best addressed in or relevant to tropical
139 ecosystems. However, the observed differences could also reflect the historical relegation of

140 certain academic subjects to the tropics, which is then reinforcing by “temperate biases”
141 (*sensu* Zuk 2016) or the overrepresentation of certain research sites (Stocks *et al.* 2008), all
142 of which can shape the development of theory and determine what data are used to test it
143 (Raby 2017). A similar argument has been put forward for the social sciences by Castro
144 Torres and Alburez-Gutierrez (2022), who argue that the far greater prevalence of
145 geographic markers in the titles of articles by authors in the Global South both indicates
146 and perpetuates “an unwarranted claim on universality” by scholars from North America
147 and Europe. This parallel evidence from a different field is compelling; nevertheless, the
148 patterns presented here are insufficient for affirming the intellectual independence of
149 *Tropical Biology*.

150 **3. Why the answer is ‘Yes’:**

151 “No education complete without trip to the Tropics.”

152 J. E. Webb (1960)

153 Finally, I believe an argument can be made for treating *Tropical Biology* as a unique
154 discipline, but not one based on the reasons typically put forward by others. What sets
155 *Tropical Biology* apart is not the biology *per se* (*sensu* Robinson 1978). Rather, what
156 Tropical Biologists have in common is the broader context in which their scholarship is
157 embedded and carried out. Research anywhere is challenging, but for tropical biologists the
158 precarious infrastructure, economic volatility, limited resources, and political instability can
159 make the challenges feel insurmountable. These struggles can be compounded by having to
160 communicate one’s results in a foreign language (Amano *et al.* 2016) to the potentially
161 biased reviewers and readers (Smith *et al.* 2023) of journals that are increasingly charging
162 publications fees equivalent to several months salary (Smith *et al.* 2021). When added to
163 the physical and emotional toll of disease, crime, working in isolation, habitat loss, and the
164 potential for professional retribution or physical violence (Clancy *et al.* 2014, Ellwanger *et*
165 *al.* 2020, Palinkas & Wong 2020), tropical biology and conservation can be uniquely
166 dangerous — even deadly. Lamentably, this is also true for the heroic conservationists,
167 indigenous leaders, and journalists with whom we work (Cavalcanti *et al.* 2023).

168 **4. The Future of (Tropical) Biology**

169 “There are few things more presumptuous than a US scientist holding forth on the
170 future of tropical ecology”

171 D. H. Janzen (1972)

172 What if the scientific community had paid heed to Richards (1946) and properly centered
173 the tropics when drawing biological generalizations? Perhaps Universities in Europe and
174 North America would offer elective courses in “Temperate Biology”. The instructors of
175 these courses might present their research at the annual meeting of the *Association for*
176 *Temperate Biology & Conservation* (Figure 2) and publish papers in specialized journals,
177 with article titles that — in contrast to the more broadly relevant research from the tropics
178 — emphasize the systems or locations the work was done (Figure 3).

179 I prefer instead to consider what the ambiguity of my conclusions implies for how we
180 should move forward. I suggest that the future lies in neither dropping the adjective

that motivates so many of us, nor keeping it and accepting status as as specialization.
Instead, I call on ATBC members to ***reclaim and reshape the Tropical Narrative:*** to
continue taking pride and elevating what makes biology in the tropics distinct and
important — the places and context in which we work — while also working to properly
recenter tropical ecosystems as the foundation of Biology and focus of conceptual attention.
Below are six actions with which I propose anyone can contribute to this movement.

Cite with purpose. Citation is a powerful and political act; it conveys legitimacy
on the scholarship in the article being cited as well as its author, helps elevate the profile of
the author and study system, and those reading your work will cite these articles when
writing their own. For many scientists it also plays an important role in their professional
advancement. Be mindful of this impact and the opportunity it presents when choosing
whom to cite. Cite scientists whose work or approach you feel is undervalued or
overlooked. Cite scientists from countries or institutions that have been ignored by the
broader scientific community. Cite scientists whose approach to research you feel others
should emulate. Cite studies conducted in the tropics.

Teach with Purpose. All tropical biologists are teachers, whether it be in a
classroom or in a meeting with policy makers, and teaching also provides an opportunity to
elevate the scholarship of others. Be mindful of whose papers are assigned as readings, the
studies and systems used to illustrate concepts, and the scientists highlighted in
presentations. Use your syllabus as a tool to recast the narrative about the tropics and the
scientific community that studies them. Train students in the skills needed when working
in tropical systems — collaboration, facilitation, conflict resolution, and communication to
diverse audiences (Kainer *et al.* 2006, Duchelle *et al.* 2009). Teach collaboratively and
cross-nationally (Russell *et al.* 2022).

Collaborate with Purpose. International collaboration can be challenging, but
personally and professionally rewarding (Smith *et al.* 2014). Be mindful of global scientific
inequities, laws, and ‘parachute science’ (Gómez-Pompa 2004, Asase *et al.* 2022,
Ramírez-Castañeda *et al.* 2022). Allow community members to guide the development of
research priorities and questions (Kainer *et al.* 2009). Push for organizations to strengthen
collaborations with — and especially within — the Global South (Ocampo-Ariza *et al.*
2023). Return research results to the communities in which you work (Kainer *et al.* 2006).
Treat the parataxonomists, field technicians, and station staff that make our work possible
with the respect they deserve (Basset *et al.* 2004). Publish in national journals (Bruna *et
al.* 2004).

Build on public fascination with the tropics. Public fascination with the
tropics and their charismatic species (Albert *et al.* 2018) provides unparalleled
opportunities for outreach and education (Moreira & Robles 2017). Take advantage of
global sporting events (Melo *et al.* 2014), teams with tropical species as mascots
(Sartore-Baldwin & McCullough 2019), movies set in the tropics (Yong *et al.* 2011),
tropical images in fashion (Kutesko 2014), or other connections between people’s interests
and tropical biodiversity. Find ways to leverage this universal appeal into support for
tropical research and conservation.

Get in the Game. Help make the process of publishing more fair by serving as a
review or subject editor for *Biotropica*. Contribute to capacity building efforts by reviewing
student seed grants proposals or serving as a judge for student presentations at the annual

226 meeting. Join an ATBC committee or chapter and organize a webinar, workshop,
227 hackathon, or reading group. What should the Association be doing differently?
228 Communicate your ideas to the ATBC leadership or stand for election and push for change
229 as a Councillor.

230 ***Support and celebrate one another.*** Finally, remember that the work done by
231 tropical biologists addresses the “neglected problems that afflict most of the world’s
232 people” (Annan 2003). Conducting research — regardless of the subject — advances the
233 socioeconomic condition of the country in which it’s conducted. It is difficult, frustrating,
234 and not without risk. Take a moment to thank, congratulate, and support each other
235 (Rudzki *et al.* 2022, Nordseth *et al.* 2023) for your contributions and the effort and
236 resilience that they required — you’re truly making the world a better place.

Table 1

Top keywords in tropical articles, non-tropical articles, and keywords that the categories have in common. Keywords in bold refer to species, geographic locations, or systems.

Top Keywords — Tropical (rank)	Top Keywords — Nontropical (rank)	Top Keywords — Shared (rank in Tropical, Nontropical)
tropical forest (1)	phenotypic plasticity (10)	diversity (2, 3)
tropical rainforest (4)	food web (11)	seed dispersal (3, 54)
costa rica (6)	coexistence (14)	herbivory (5, 4)
brazil (7)	tradeoff (15)	disturbance (8, 12)
rainforest (11)	facilitation (16)	conservation (9, 38)
panama (12)	usa (17)	climate change (10, 2)
mexico (15)	ecosystem function (20)	species richness (13, 13)
savanna (16)	grassland (22)	competition (14, 1)
frugivory (17)	sexual selection (23)	phenology (18, 26)
seed predation (19)	survival (24)	predation (21, 8)
tropical dryforest (20)	metapopulation (27)	seed germination (22, 69)
neotropic (26)	body size (29)	pollination (23, 42)
amazon (27)	habitat selection (33)	nitrogen (24, 19)
atlantic forest (28)	predator prey interaction (34)	functional trait (25, 28)
seasonality (30)	invasive species (35)	phosphorus (29, 71)
biomass (33)	indirect effect (36)	fire (31, 73)
bci (36)	extinction (39)	succession (32, 31)
bird (37)	fitness (40)	mutualism (34, 21)
regeneration (38)	invasion (41)	dispersal (35, 5)
cerrado (39)	colonization (43)	species diversity (43, 67)
tropic (40)	stability (44)	density dependence (48, 7)
fragmentation (41)	productivity (46)	habitat fragmentation (52, 45)
amazonia (42)	biological invasion (47)	recruitment (53, 37)
africa (44)	climate (49)	drought (54, 62)
puerto rico (45)	foraging (50)	population dynamic (55, 6)
decomposition (46)	trophic cascade (51)	demography (56, 18)
litter (47)	species interaction (52)	community structure (57, 32)
beta diversity (49)	stable isotope (53)	lifehistory (59, 9)
borneo (50)	adaptation (55)	temperature (61, 30)
mortality (51)	migration (56)	community ecology (65, 48)
secondary forest (58)	plant herbivore interaction (57)	community assembly (69, 25)
deforestation (60)	metacommunity (58)	growth (75, 65)
remote sensing (62)	local adaptation (59)	
forest fragmentation (63)	coevolution (60)	
liana (64)	evolution (61)	
seedling (66)	model (63)	
ecuador (67)	metaanalysis (64)	
peru (68)	predation risk (66)	
ant (70)	reproduction (68)	
forest dynamic (71)	plant soil belowground interaction (70)	
epiphyte (72)	plant insect interaction (72)	
forest (73)	senescence (74)	
rodent (74)	natural selection (75)	

Table 2

Top keywords from tropical and non-tropical articles that are unique to each category once system-specific keywords have been excluded, followed by the top keywords from each category that they have in common. Keywords in bold refer to species, geographic locations, or systems.

Top Keywords — Tropical (rank)	Top Keywords — Nontropical (rank)	Top Keywords — Shared (rank in Tropical, Non-Tropical)
frugivory (9)	phenotypic plasticity (9)	diversity (1,3)
seed predation (11)	tradeoff (11)	seed dispersal (2,52)
seasonality (18)	ecosystem function (18)	herbivory (3,4)
biomass (21)	sexual selection (21)	disturbance (4,12)
regeneration (24)	metapopulation (24)	conservation (5,36)
fragmentation (25)	habitat selection (25)	climate change (6,2)
decomposition (27)	predator-prey interaction (27)	species richness (7,13)
beta diversity (29)	indirect effect (29)	competition (8,1)
mortality (30)	fitness (30)	phenology (10,24)
deforestation (39)	extinction (39)	predation (12,8)
remote sensing (40)	invasion (40)	seed germination (13,68)
forest fragmentation (41)	colonization (41)	pollination (14,40)
forest dynamic (44)	stability (44)	nitrogen (15,18)
plant-animal interaction (46)	biological invasion (46)	functional trait (16,26)
diet (48)	trophic cascade (48)	phosphorus (17,69)
nutrient (49)	species interaction (49)	fire (19,71)
abundance (50)	stable isotope (50)	succession (20,29)
determinant plant community diversity structure (54)	adaptation (54)	mutualism (22,20)
hurricane (55)	migration (55)	dispersal (23,5)
shade tolerance (56)	plant-herbivore interaction (56)	species diversity (26,63)
species coexistence (57)	local adaptation (57)	density dependence (28,7)
protected area (58)	metacommunity (58)	drought (31,60)
allometry (61)	evolution (61)	recruitment (32,35)
forest regeneration (62)	coevolution (62)	habitat fragmentation (33,42)
seed size (63)	model (63)	population dynamic (34,6)
secondary succession (64)	metaanalysis (64)	demography (35,17)
nutrient cycling (65)	predation risk (65)	life history (36,9)
forest structure (67)	reproduction (67)	community structure (37,30)
rainfall (69)	plant-soil belowground interaction (69)	temperature (38,28)
community (70)	plant-insect interaction (70)	community ecology (42,46)
ecosystem service (71)	senescence (71)	community assembly (43,23)
canopy (72)	natural selection (72)	growth (45,65)
ant-plant interaction (74)	maternal effect (74)	invasive species (47,33)

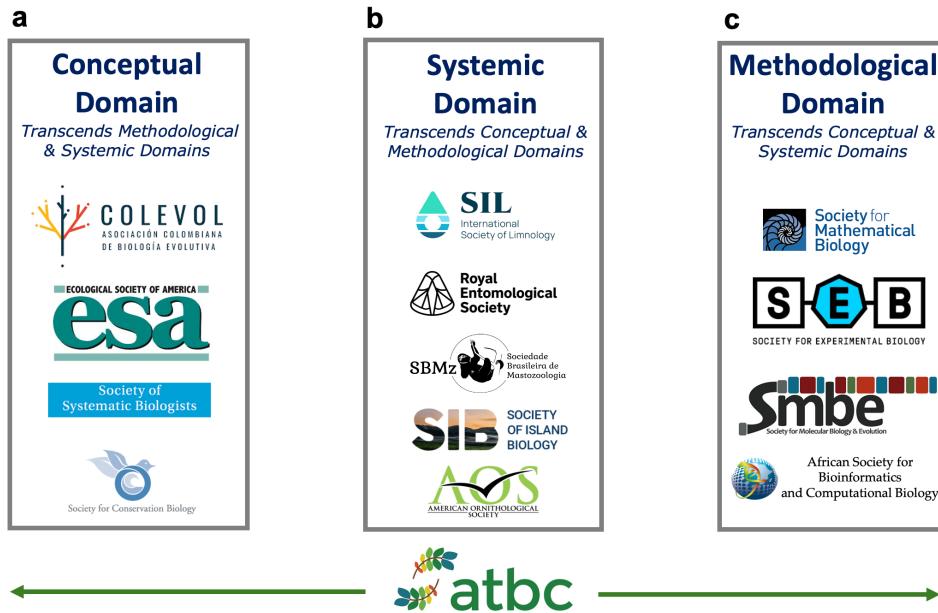


Figure 1. (A) Alternative ways in which researchers self-organize: scholarly societies focused on (a) Conceptual Domains, (b) Systemic Domains, or (c) Methodological Domains. The Association for Tropical Biology transcends these three, as it has members that study a wide variety of systems using different conceptual approaches and tools.



Figure 2. The logo for a proposed new scholarly society for researchers specializing on temperate ecosystems.

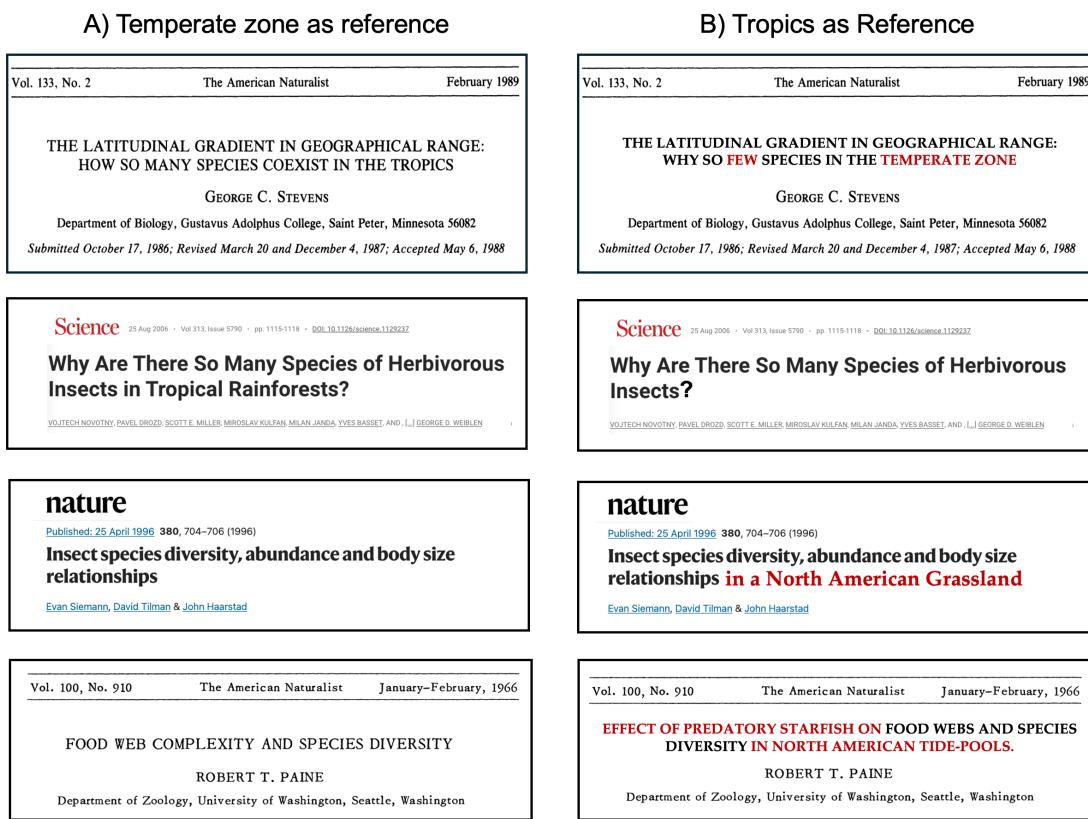


Figure 3. Alternative publication titles whose framing assumes the 'reference' ecosystem is (A) the Temperate Zone (B) the Tropics.

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242 DATA AVAILABILITY STATEMENT

243 The complete data set used in this article is available in Dryad at <*DOI added upon*
244 *acceptance*>. The version of the code used to review, correct, and prepare this archive
245 (version 1.0.0) is available at Zenodo at <*DOI added upon acceptance*>. The code used to
246 prepare this publication, including statistical summaries reported in the text, tables, and
247 figures, is available at Zenodo at <*DOI added upon acceptance*>.

248 DISCLOSURE STATEMENT

249 The author confirms that there have been no involvements that might raise the
250 question of bias in the work reported or in the conclusions, implications, or opinions stated.

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SUPPLEMENTARY MATERIALS**METHODS**

1. Bibliometric analysis. To identify the conceptual domains studied by researchers working in ‘Tropical’ and “non-Tropical” locations, I used information extracted from the bibliographic records of articles published These studies were published from 1990-2022 in N = 8 journals (*Ecology, Journal of Applied Ecology, Biotropica, Journal of Ecology, Tropical Conservation Science, American Naturalist, Tropical Ecology, Journal of Tropical Ecology*). Specifically, I compared (1) article keywords, (2) individual words in article titles (e.g., *seed, species*), and (3) title bigrams (i.e., pairs of sequential words in titles, e.g., *seed predation, species diversity*). Below I describe how the article records were identified, downloaded, processed, and assigned to the ‘Tropical’ and”non-Tropical” categories using code written in the R statistical programming language (R Core Team 2023) and available at Github (https://github.com/BrunaLab/atbc2022_plenary_talk).

On 8 February 2023, I downloaded all bibliographic data available in SCOPUS and the Web of Science ‘Core Collection’ for all articles published in the focal journals; both SCOPUS and the Web of Science were queried because they differ in the years indexed for each journal. I then used the `refsplitr` package to process the records and remove any duplicates. After removing all stopwords from article titles (Benoit *et al.* 2021) and keywords, I spell-checked, stemmed, and lemmatized all of the keywords and title words. I also extracted bigrams from titles with the `tidytext` library (Silge & Robinson 2016). Finally, I identified each article as either ‘Tropical’ or ‘non-Tropical’; all articles published in (*Ecology, Journal of Applied Ecology, Biotropica, Journal of Ecology, Tropical Conservation Science, American Naturalist, Tropical Ecology, Journal of Tropical Ecology*) were assigned to the ‘Tropical’ category, while articles published in the other journals were assigned to one of these categories based on a search of the titles, keywords, or abstracts for a list of domain-specific terms (e.g., tropical: *amazon, andes, congo, bci, chamela*; non-tropical: *finland, boreal, eastern decid, arctic, polar*). These procedures resulted in N = 26,616 total articles published, of which N = 9,975 reported research conducted in the tropics and N = 16,641 were based on work conducted in other locations. Collectively, these articles used N = 52,075, N = 19,887 unique title words, and N = 72,887 title bigrams.

2. Visualization. The number of articles varies widely between journals, as does the number of keywords per article. Comparing counts of keyword frequency in tropical and non-tropical articles could therefore bias results towards the content published a small number of journals. To correct for this, I calculated the percentage of articles in each geographic category that using each keyword, title word, or bigram. I then selected the N = 75 most frequently used terms in each geographic category, and identified (a) any terms that ‘tropical’ and ‘non-tropical’ articles had in common, and (b) any terms that were unique to each article category.

3. Data and Code. Questions regarding the data set or code should be posted as Issues on the project’s Github Repository (<https://github.com/BrunaLab/----/issues>) or referred to E. M. Bruna. Summaries of any post-publication updates will be posted to the NEWS.md file of the Github Repository (<https://github.com/BrunaLab/--->)

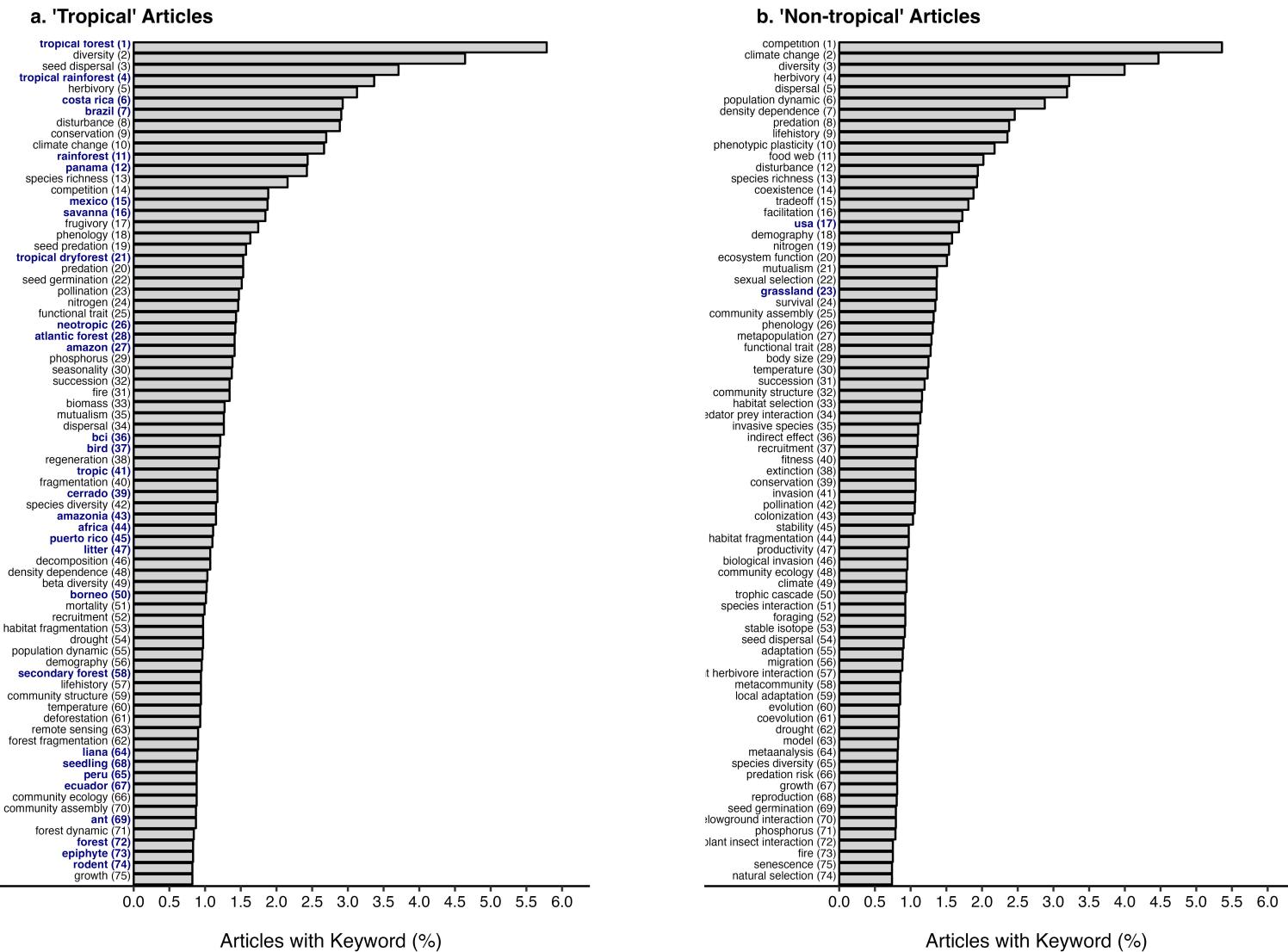


Figure S1. The top keywords from articles based on research conducted in (a) the tropics and (b) non-tropical regions and the percentage of articles in each category with those keywords. Keywords based reflecting taxonomy, study systems, and geographic locations are in bold.

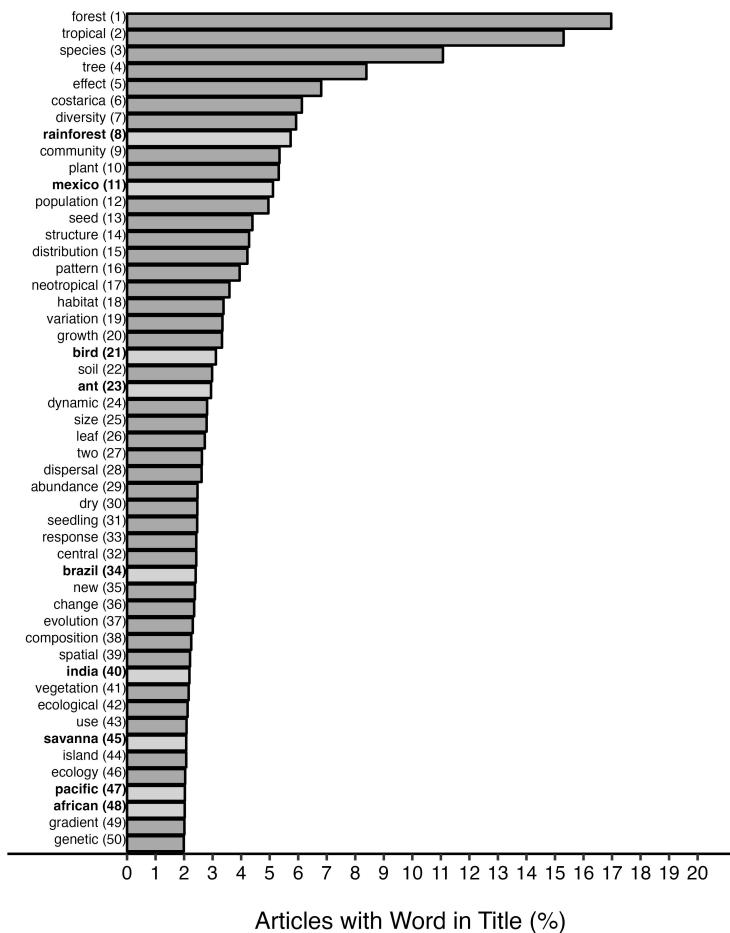
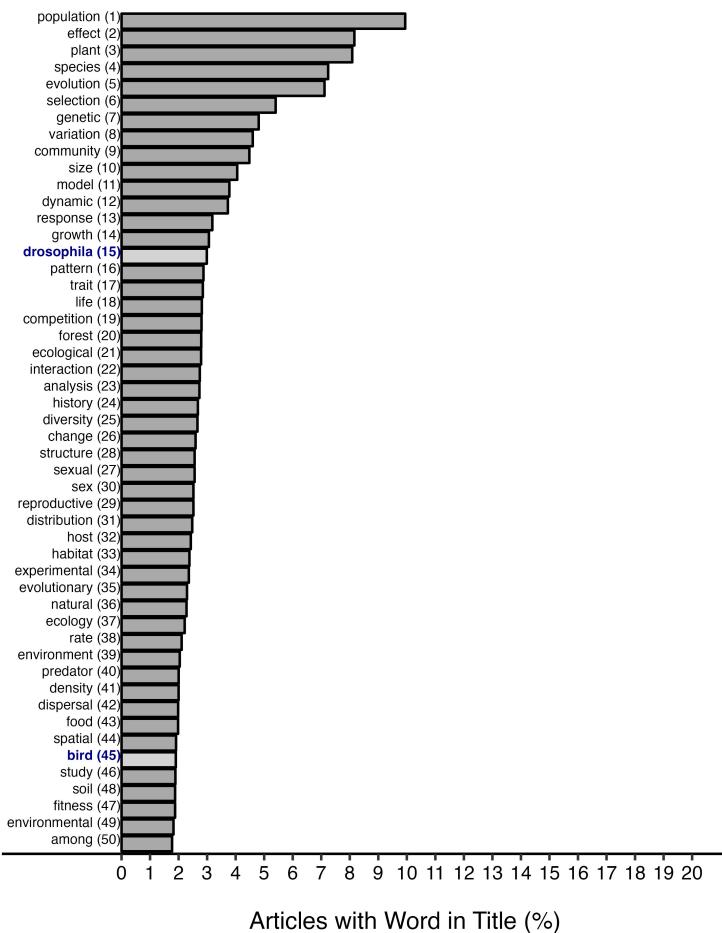
A) Tropics**B) Non-Tropical**

Figure S2. The top individual title words from articles based on research conducted in (a) the tropics and (b) non-tropical regions and the percentage of articles in each category with those keywords. Title words based reflecting taxonomy, study systems, and geographic locations are in bold.

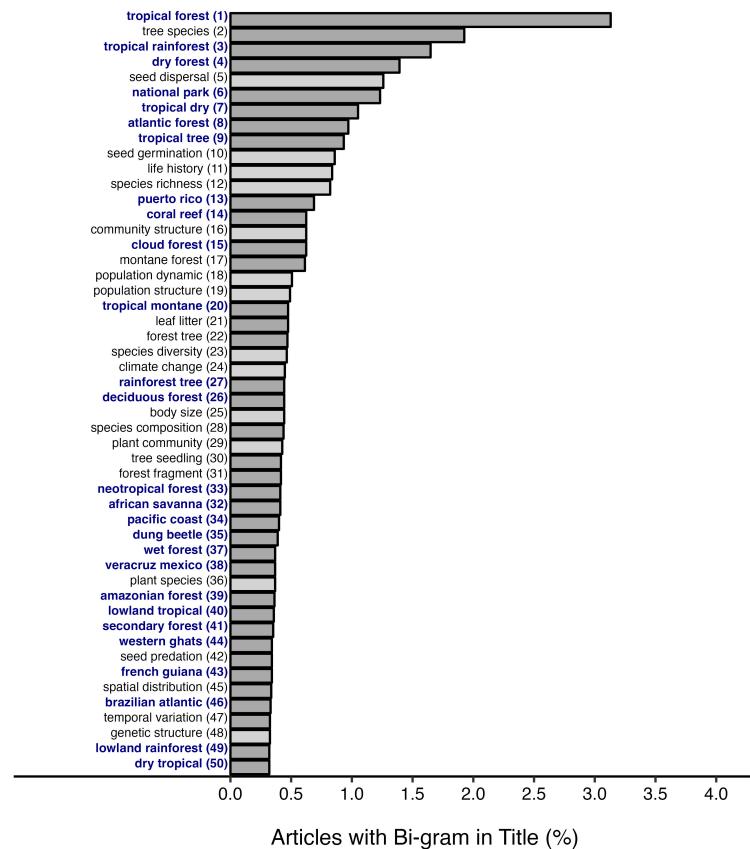
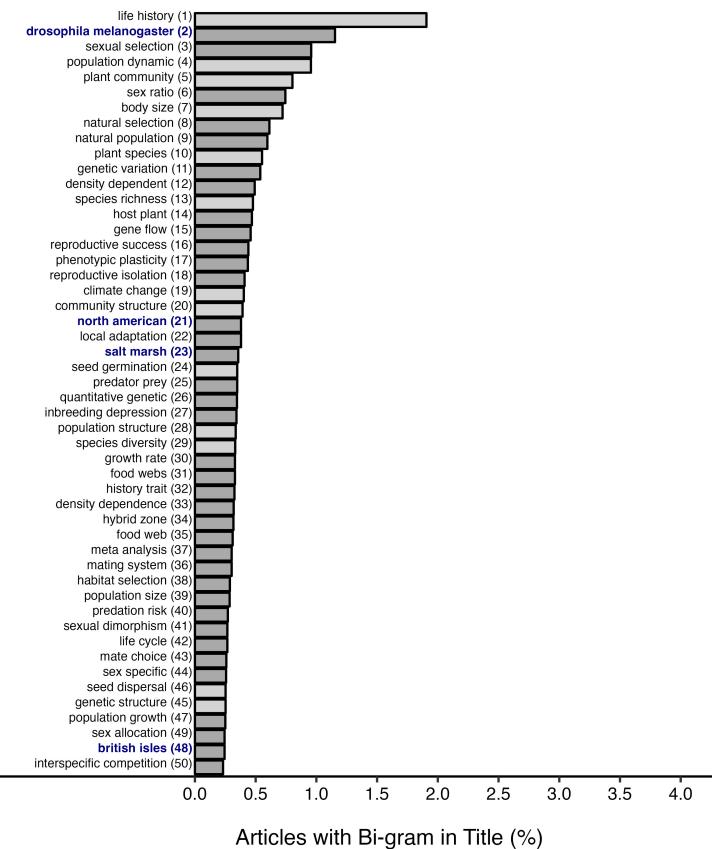
A) Tropics**B) Non-Tropical**

Figure S3. The top title bigrams from articles based on research conducted in (a) the tropics and (b) non-tropical regions and the percentage of articles in each category with those keywords. Bigrams reflecting taxonomy, study systems, and geographic locations are in bold.

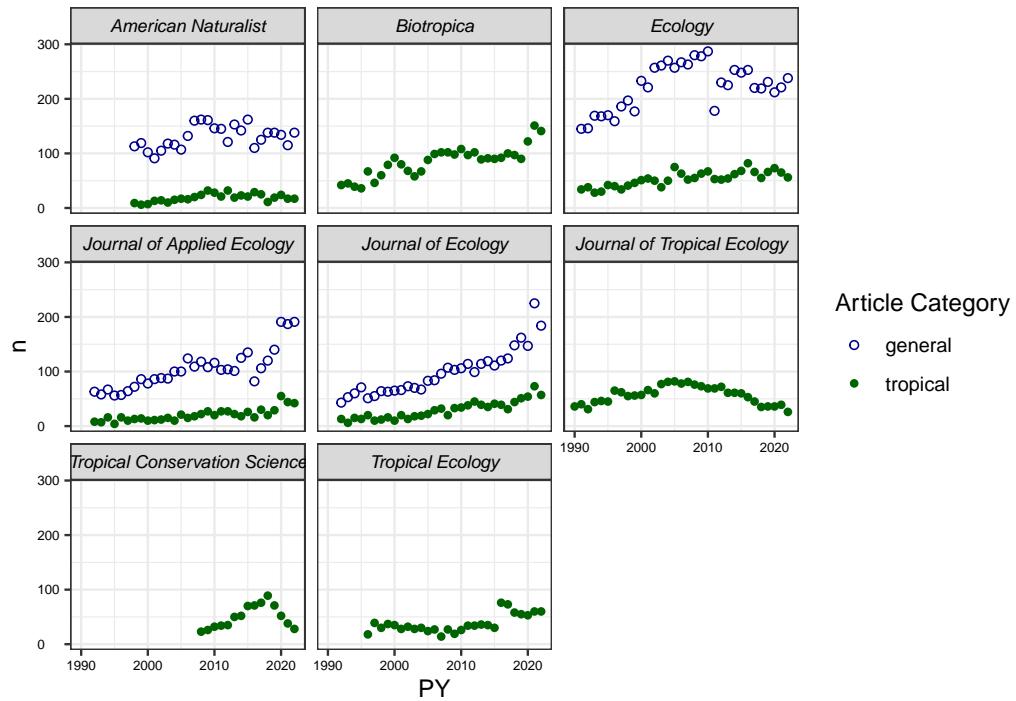


Figure S4. For each journal, the number of articles per year from each category that were included in the keyword analysis.

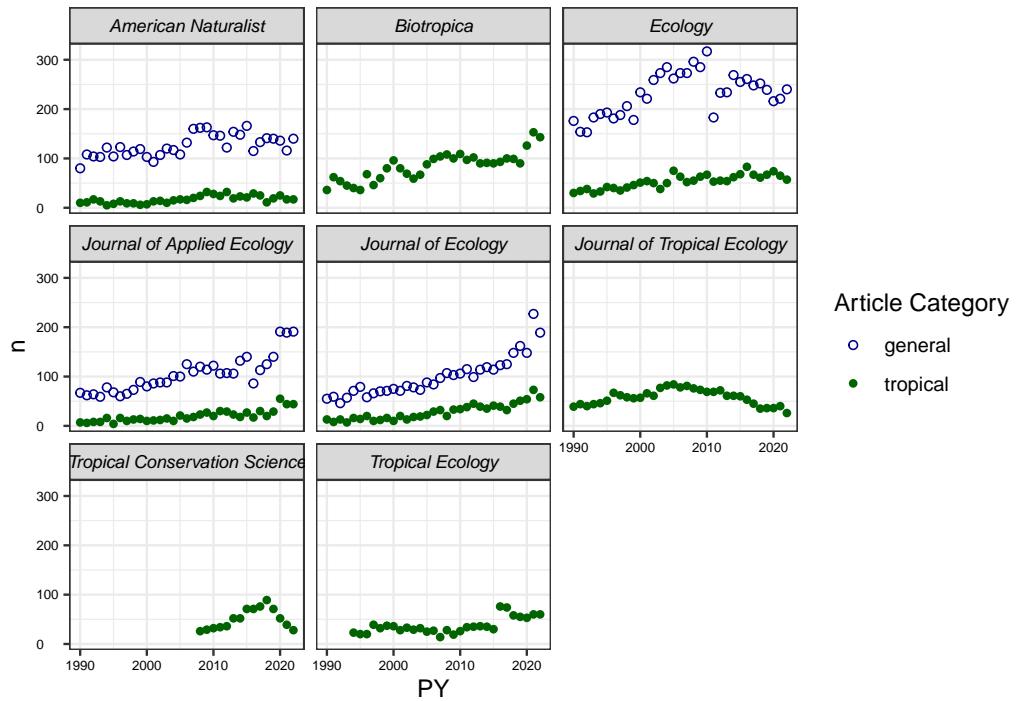


Figure S5. For each journal, the number of articles per year from each category that were included in the title word analysis.

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