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**Journal title abbreviations should be eliminated in the digital age**

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15 **Abstract**

16 Journal title abbreviations in articles' lists of citations are troublesome for authors,  
17 editors, librarians, and researchers. While the origin of these abbreviations in the mid-  
18 17th century, and their propagation to modern times was likely the result of a desire to  
19 save space in articles, or as shorthand, we argue that in the digital age, such practices  
20 should be changed. We show that a journal's choice to abbreviate journal titles in its  
21 literature cited section is purely arbitrary, and that the costs of abbreviating outweigh the  
22 benefits. Scientific journals in particular are prone to abbreviate journal titles, and this  
23 could hamper interdisciplinary research by creating an "in-group" mentality, however  
24 small.

25

26 **Introduction**

27 As long as there have been scientific journals, there have been abbreviations for  
28 their titles, the first appearing in a report by the early scientist Sir Robert Boyle in the  
29 Royal Society's Philosophical Transactions (Boyle 1666). Over the next 100 years or so,  
30 The Philosophical Transactions was referenced by no less than 15 different abbreviations  
31 (see <http://www.lib.uwaterloo.ca/society/history/abbrevproblems.html>). As with all  
32 abbreviations and acronyms, journal title abbreviations likely arose as shorthand for  
33 lengthy titles, but they have long been recognized as problematic for librarians, scientists,  
34 and editors alike (Shields 1938; Smith 1977). In an era of card catalogues, complete  
35 bibliographic information needed to fit on an index card. As with many other aspects of  
36 librarianship, standards arose to attempt to ensure abbreviations were consistent and  
37 uniform (Stratton 1965; Anonymous 1971), culminating in the use of the ISO 4 standard  
38 (International Standards Organization 1997), administered by the ISSN International  
39 Centre (see <http://www.issn.org/2-22661-LTWA-online.php>). Although this list is  
40 available online, it is truly only helpful to the many cataloguers who work in the back-  
41 end of libraries. Scientists generally would not spend the time parsing through the list to  
42 piece together a title from its abbreviations. Furthermore, editors and authors do not  
43 necessarily follow these standards consistently. We must re-evaluate why researchers in  
44 general, and scientists in particular, continue to use journal title abbreviations in  
45 publications, and whether the benefits outweigh the costs. Now that the card catalogue  
46 has been replaced by online versions, we ask why the practice of title abbreviations  
47 continues.

48           There are no benefits of journal title abbreviations to the author, and there is often  
49 a cost associated with ensuring the accuracy and consistency of citations in one's  
50 manuscript. From the perspective of journal editors, it could be argued that journal title  
51 abbreviations save much-needed space in print journals. Previous work has shown that,  
52 contrary to this notion, the number of articles requiring an additional page to  
53 accommodate full titles is less than 8% (Roberts 1969). This cost is further reduced as  
54 journals reduce printed issues in favour of online versions. The cost to editors (and  
55 reviewers) is in policing these abbreviations to maintain a high degree of consistency for  
56 their journal, or in a lack of consistency should editors leave it to authors to ensure the  
57 accuracy of journal title abbreviations.

58           Furthermore, by using abbreviations, an “in-group” is created, resulting in  
59 challenges for those outside the general area or in interdisciplinary work when  
60 deciphering citations. This is particularly the case when foreign-language titles are  
61 abbreviated, an increasing phenomenon as global scientific literature becomes more  
62 accessible. By reducing the availability and accessibility of information, even in this  
63 seemingly small way, scientists maintain a proprietary hold on their field, preventing  
64 access by anyone not part of the “in-group”(Gödan 1995). One could argue that those  
65 who are engaged continually in interdisciplinary or inter-language work quickly learn the  
66 abbreviations they encounter frequently, but what about a researcher who is involved  
67 infrequently with other disciplines or languages? This lack of open information may  
68 defeat serendipitous moments where information is located after browsing in a new  
69 direction.

70 Not all journals require title abbreviations in their articles' citations. Our goal  
71 was therefore to ascertain what bibliographic factors, if any, influenced whether or not  
72 journals use full titles, or abbreviations.

73

#### 74 **Methods**

75 In April 2010, we examined 177 English-language journals in ecology and  
76 zoology ranked by Eigenfactor, an index of the journal's prestige similar to the Impact  
77 Factor (Fersht 2009). We then determined the journal's ISO standardized abbreviation,  
78 the ratio of the length journal's full title to the length of its abbreviation, and whether or  
79 not the journal required full titles or abbreviations in its articles' list of citations. Finally,  
80 we used a binomial generalized linear model in SPSS 21 (IBM Inc.) to examine the  
81 relationships between whether the journal required title abbreviations, and the metrics  
82 outlined above.

83

#### 84 **Results**

85 Neither the journal's Eigenfactor rank, length of its own title or abbreviation, nor  
86 the ratio of title to abbreviation length had an effect on whether abbreviations or titles  
87 were used (binomial generalized linear model, all  $p > 0.46$ ). We must therefore conclude  
88 that journals' use of abbreviations is likely arbitrary, and a result of historical practice.

89

90 **Discussion**

91 The costs of abbreviating journal titles outweigh the benefits to authors, editors,  
92 librarians, and researchers, and journal title abbreviations should be eliminated. We are  
93 not the first to advocate such a position (Smith 1977). Furthermore, the continued use of  
94 title abbreviations is a result of historical trends, and is not based on any analysis of  
95 cost/benefit, either informational, or financial.

96 From a practical standpoint, journal abbreviation, and their accompanying  
97 mistakes, create problems using online indexing services, such as Thompson Reuters'  
98 "Web of Knowledge" where even changes in capitalization (e.g., "PLOS ONE" vs. "Plos  
99 one") creates two entries for the same article. When individual-level metrics, like the  
100 Hirsch Index, or h-index (Hirsch 2005) are used increasingly when evaluating and hiring  
101 research staff, duplicate entries serve to penalize researchers by diluting the entries over  
102 which citations to individual articles are spread, and therefore lower researchers' h-index.

103 "Workers in all groups of organisms (or disciplines) have their own  
104 terminologies, which they use casually amongst themselves but which require some  
105 explanation for wider comprehension."(Savile 1984: 226).

106 To make science more accessible to non-specialists, to increase the access to  
107 scientific literature among scientists internationally, to remove a needless, often-onerous  
108 detail from the dissemination of science by researchers, and to accurately record scientific  
109 output, we urge journals to eliminate journal title abbreviations.

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