FORUM ARTICLE

Publishing by New Zealand and Australian ecologists: trends and comparisons

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Abstract: Publishing trends in the New Zealand and Australian Journals' of Ecology (NZJE and AJE) were compared (1953-97) and publishing by contemporary (1997) Australasian authors examined from mid-1995 to 1998. The NZJE published a smaller proportion (9%) of their authors total manuscripts than the AJE (13%). Both Journals' authors published almost 70% of their manuscripts in international journals and 31% (NZ) and 35% (Aust.) in their local journals. The AJE consistently contained a high proportion (80%) of papers on the fundamental ecology of native species. In contrast, the NZJE gradually increased the proportion of papers on the ecology, impacts and management of exotic species (13%, 1953-62 to 52%, 1993-97) and reduced the proportion of manuscripts investigating the fundamental ecology of native species from 67% (1953-62) to 28% (1993-97). Comparisons show that the difference between the journals is due to a fundamental difference in the emphasis of ecological research in Australia and New Zealand that can, in part, be attributed to differences in the relative contribution of government research agencies to publishing in ecology in the two countries. Government research agencies contribute relatively more to ecological publishing in and from New Zealand than they do in Australia. However, the differences were also amplified by different submission behaviour by Australian and New Zealand authors. When submitting manuscripts about the ecology of native species and ecosystems, New Zealand ecologists favoured international journals rather than the NZJE, and local journals generally. Australian ecologists, on the other hand, favoured international journals over the AJE when submitting manuscripts on the ecology, impacts and management of exotic species.

Key words: author submission behaviour, Australian Journal of Ecology, literature review, New Zealand Journal of Ecology.

Introduction

International journals, with higher citation rates, wider readership and stronger reputations, compete successfully with local journals in New Zealand (NZ) for local manuscripts. Ecologists in New Zealand publish most of their articles in international journals. Of the articles published by 1997 authors in the New Zealand Journal of Ecology (NZJE) 65% were published in journals outside Australasia. The NZJE also competes with a large number of other local journals for local manuscripts. Some local journals are more successful than others as evidenced by the frequency and thickness of their issues, some look as if they are on their "last legs", and the number of local journals continues to grow (e.g., Pacific Conservation, launched in 1995, Ecological Management & Restoration, launched in 2000). Competition between journals for local manuscripts appears to be increasing. The NZJE published only 9.3% of the articles published by its 1997 authors from 1995 to 1998. Other NZ journals published 20% of those articles.

In this manuscript we make three comparisons. Firstly, we compare what has been published by the NZ and Australian Journals of Ecology. Secondly, we compare what contemporary Australian and New Zealand ecologists publish throughout the world, where they publish to, and where they publish from. Thirdly, we compare what is published by contemporary Australian and New Zealand ecologists with what is published by their local journal of ecology.

Approach

We surveyed scientific articles and short communications in the New Zealand and Australian Journals' of Ecology from their first issues as the proceedings of their respective ecological societies in 1953 and 1966 to the end of 1997. Issues of both journals that published papers on a specialist theme were not included (thus excluding most issues of the AJE from 1966 to 1975). Scientific articles were placed into one of six categories (see caption Figure 1). The category that best represented each article was decided using the paper's title, key words and abstract. An article's emphasis on the long term management of species, whether exotic or native, superceded an article's classification into the first four categories. Papers that did not fit into one of the first five categories were placed in the "Other" category and not included in further analyses. "Other" articles made up 15.5% and 9.7% of publications in the NZJE and AJE, respectively, and were most often on paleobiology, methodological or statistical topics.

Contemporary publishing by New Zealand and Australian ecologists was sampled by compiling a list of the names of the primary authors on all articles in the AJE and NZJE in 1997. Then using the Compact Disk version of Current Contents (Institute for Scientific Information, 1998) which held journal paper listings from 27th week of 1995, we conducted computer searches for all the publications by those authors up to 18 August, 1998. Where a primary author returned no other publications the secondary author's name, where there was more than one author, was used for the search. It was never necessary to use a third author. Thus, a sample of manuscripts published throughout the world by NZ and Australian ecologists who had published in their local ecology journal in 1997 was obtained. Publishing by contemporary Australian and NZ authors were represented in this way because it provides a sample of authors that are: (i) probably contemporary readers of the NZJE and AJE, (ii) currently publishing scientific articles in ecology, and (iii) publishing work that is relevant to and probably suitable for publishing in the NZJE and AJE but has been published elsewhere. Thus, the sampling regime provides a population of authors and readers whose interests and manuscripts are of most relevance and interest to the NZJE and AJE. The articles from 1995 to 1998 by contemporary ecologists in Australia or New Zealand were placed into five categories based on the journal in which they were published; the local journal of ecology (NZJE or AJE), other local journals, journals across the Tasman, or journals from outside Australasia. The articles were also put into the three categories; university research, government research or private research, based on the primary authors postal address when the work was done.

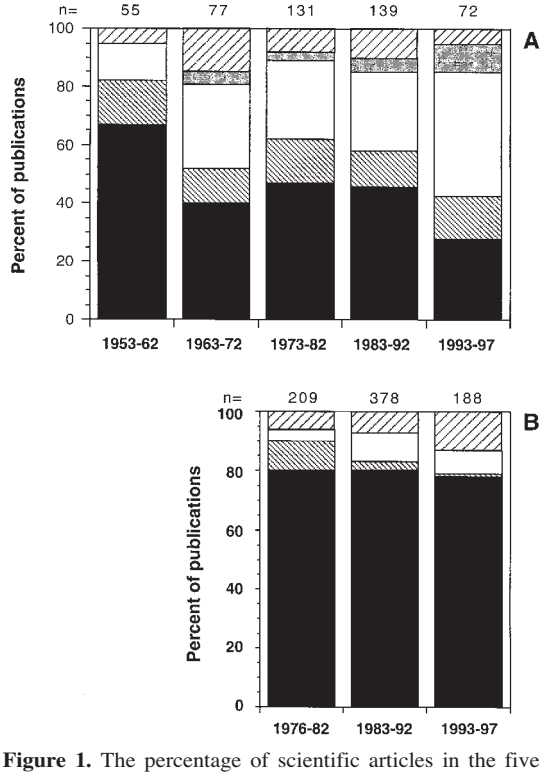

Figure 1. The percentage of scientific articles in the five subject categories; fundamental ecology of native species and ecosystems (black; i.e., basic ecology and natural history of native species), fundamental ecology of exotic species (\\\\; i.e., basic ecology and natural history of exotic species), impacts of exotic species on native ecosystems and their species (white; i.e., the impact of exotic species on community structure and functioning and native species abundance), eradication technologies (grey; i.e., management techniques that cause the death of the majority of individuals in a population and most often employ the wide spread broadcasting of poisons), and long term management of ecosystems and species (////; i.e., cf. eradication technologies these articles discuss management techniques that involve less intensive and sustainable long term management with prolonged effects and benefits) published in the *New Zealand Journal of Ecology* (A) and *Australian Journal of Ecology* (B) since their inception.

Historical change and recent differences

The Australian and New Zealand Journals of Ecology were once more similar in content than they are now. The difference results from a change in emphasis in the NZJE over the last 50 years (Figure 1). The percentage

(number of articles in brackets) of articles on the fundamental ecology of native species and ecosystems in the NZJE declined from 67% (37) in its first ten years to 28% (20) in the mid-1990s. In contrast the proportion of manuscripts on the impacts of exotic species and eradication techniques increased from 13% (7) to 52% (37) of articles (Figure 1a). In contrast, the AJE has not changed the types of manuscript it has published and has consistently published a large proportion of manuscripts on the fundamental ecology of native species and ecosystems (Figure 1b). Consequently, while the AJE has remained a specialist of ecological research on native Australian species and ecosystems, the NZJE has become a specialist in the ecology and management of exotic species. The evolved difference between the two journals might reflect:
(i) changes in the emphasis of ecological research between the two countries,
(ii) recent differences in the submission behaviour of Australian and New Zealand ecologists, or
(iii) the different editorial preferences of the journals.

A difference in research emphasis?

New Zealand ecologists, like the NZJE, published a lower proportion of manuscripts on the fundamental ecology of native species and ecosystems, but a larger proportion of manuscripts on exotic species ecology, impacts, and eradication compared to their Australian counterparts. Differences in the contents of the journals therefore appear to reflect similar differences in the emphasis of ecological research between the two countries (Figure 2). Clout and Sarre (1998) demonstrated the same difference when comparing research on a single species, the brushtail possum (*Trichosurus vulpecula*: Phalangeridae), in Australia and New Zealand. Thus, the difference they observed may not just be associated with animals that have dramatically different conservation values in the two countries, but may represent a difference in emphasis between the research communities.

Government research agencies are more likely to be involved in applied research, such as exotic animal impacts and management, while universities are more likely to be involved in fundamental and theoretical research topics on native species. Therefore, the difference in the emphasis of the ecological research communities in Australia and New Zealand could be driven by differences in the relative contribution of government research agencies and universities to publishing in the two countries. A significantly larger proportion of the articles published worldwide out of New Zealand came from authors in New Zealand's government research agencies (e.g., Landcare Research) compared with Australia. The contribution

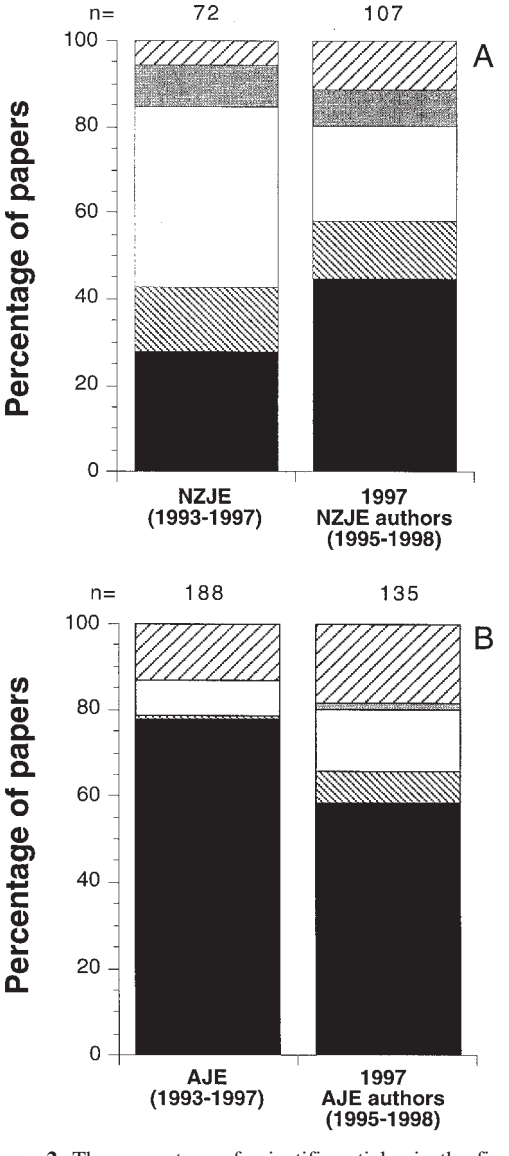

Figure 2. The percentage of scientific articles in the five subject categories; fundamental ecology of native species and ecosystems (black), fundamental ecology of exotic species (\\\\\), impacts of exotic species on native ecosystems and their species (white), eradication technologies (grey), and long term management of ecosystems and species (////) published by the New Zealand (A) and Australian (B) Journals of Ecology from 1993 to 1997 compared to the percentage of scientific articles published by their contemporary (1997) authors from 1995 to 1998. Note: significant differences in publishing emphasis by New Zealand and Australian ecologists (χ^2=14.8, df=4, P<0.01) and between what each journal published and what its authors published (NZJE versus New Zealand authors: χ^2=10.3, df=4, P<0.05; AJE versus Australian authors: χ^2=19.6, df=4, P<0.01).

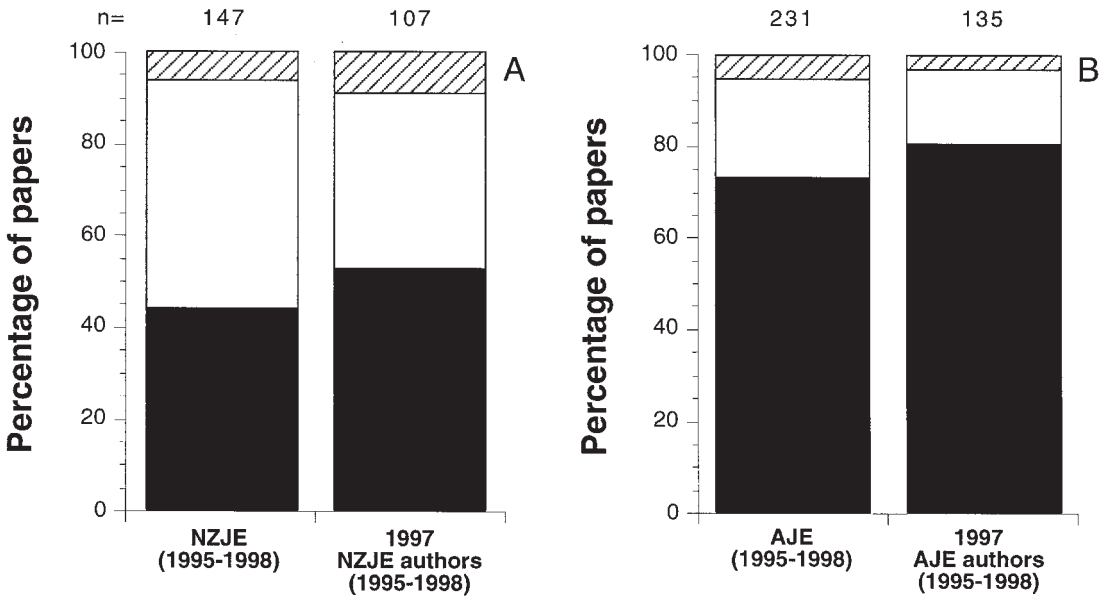

Figure 3. The percentage of scientific articles published by the *New Zealand Journal of Ecology* (NZJE); A) and the *Australian Journal of Ecology* (AJE; B) from 1995 to 1998 that originated from work by the primary author at a university (black), government research agency (white), or private research agency (////) compared to the origins of all manuscripts published by contemporary (1997) New Zealand and Australian authors from 1995 to 1998. Note: a larger proportion of articles published worldwide out of New Zealand came from authors working in government research agencies than in Australia (χ^2=22.9, df=2, P<0.001) and the NZJE published a larger proportion of articles from government agencies and less from universities than the AJE (χ^2=37.6, df=2, P<0.001).

of universities, government research agencies and private research institutes to the total amount published from 1995 to 1998 by New Zealand and Australian authors is almost exactly reflected by the NZ and Australian Journal's of Ecology (Figure 3). Therefore, differences in the relative contribution of government versus university research groups in the two countries are reflected in the local ecology journal's and contribute to differences in their research emphasis.

Nevertheless, the work that Australian and New Zealand ecologists are publishing in all journals is more similar than the contents of the Australian and New Zealand Journals' of Ecology (Figure 2). New Zealand authors published a larger proportion of articles on the fundamental ecology of native species and ecosystems than the NZJE does (Figure 2a). In contrast, Australian authors in ecology published a larger proportion of articles on the fundamental ecology of exotic species, impacts of exotic species, and eradication techniques than the AJE published (Figure 2b). Therefore, although the journals reflect fundamental differences in the emphasis of ecological research in the two countries it appears that author submission behaviour and/or editorial preferences are amplifying the difference between the journals.

Differences in author submission behaviour?

Do New Zealand and Australian authors show different preferences for publishing in international versus local journals based on the content of their manuscript? There was no significant difference in the relative proportions of articles on the fundamental ecology of native species and ecosystems published by contemporary New Zealand and Australian authors. However, Australian ecologists were more likely to publish these manuscripts in the AJE than New Zealand ecologists were to publish them in the NZJE (Figure 4a). Contemporary New Zealand ecologists published only 4% of their articles on the ecology of native species and ecosystems in the NZJE but Australian authors published 12% of such articles in the AJE. Moreover, New Zealand ecologists were more likely to publish work on exotic species ecology (a combination of fundamental ecology of exotic species,

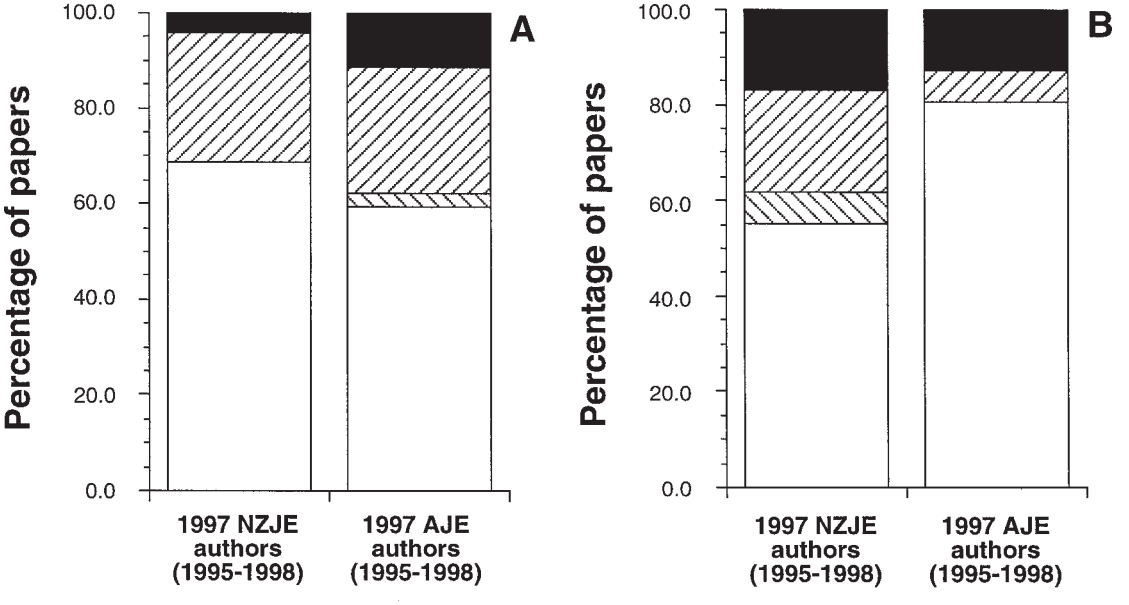

Figure 4. A comparison of the percentage of scientific articles published by contemporary (1997) New Zealand and Australian authors in international journals (white; i.e., outside of Australia and New Zealand), journals across in the Tasman (\\\\; e.g., *New Zealand Journal of Botany* for Australian authors, *Wildlife Research* for New Zealand authors), other local journals (////; e.g., *New Zealand Journal of Zoology* for New Zealand authors, *Australian Journal of Marine and Freshwater Research* for Australian authors) and the local journal of ecology (black; i.e., NZJE for NZ authors, AJE for Australian authors) in the 2 subject categories; fundamental ecology of native ecosystems and their species (A), and ecology and management of exotic species (B, a combination of the categories; fundamental ecology of exotic species, impacts of exotic species on native species and ecosystems, and eradication technologies), from mid-1995 to August 1998. Note: No difference in the placement of articles on the fundamental ecology of native species and ecosystems between Australian and New Zealand authors (χ^2=2.1, df=2, P>0.10) but Australian authors were more likely to publish papers on exotic species ecology in international journals (χ^2=5.95, df=2, P<0.10).

impact of exotic species, and eradication techniques categories) in their local journals than Australian ecologists were (New Zealand authors 38%, Australian authors 19%; Fig 4b). Thus, ecologists in New Zealand and Australia have different submission behaviour. When submitting manuscripts they discriminate differently between international and local journals depending on the content of their manuscript.

Editorial preferences?

Are the differences in author submission behaviour solely author motivated or are editors and reviewers encouraging the trend? Without access to journal records of manuscripts received and reviewed versus those actually published, this possibility cannot be assessed. However, it is not necessary to invoke editorial selectivity to explain the differences described above, because editorial preferences can only operate secondarily to the disparities created firstly by contrasts in the work done between the two countries [i.e., (i) above)] and, secondly, by journal submission preferences by the authors [i.e., (ii) above]. Therefore, we expect the influence of editorial preferences to be less important for the patterns observed.

Conclusions

There are interesting differences in the emphasis of the Australian and New Zealand Journals of Ecology that reflect differences in the emphasis of ecological research in the two countries, due partly to the greater relative contribution by government research agencies to ecological research in New Zealand. The difference results from a change in the type of ecological research done in New Zealand over the previous 50 years. The NZJE has come to specialise in the ecology and management of exotic species and their impacts whereas the AJE remains a specialist on the fundamental ecology of Australian native species.

The trend appears to be reinforced by differences in author submission behaviour between the two countries. Around 70% of publications on the fundamental ecology of native species and ecosystems from New Zealand ecologists were sent to journals published outside Australasia and the NZJE published only 4% of these manuscripts between mid-1995 and mid-1998. In Australia the pattern is reversed. Australian ecologists published over 80% of their articles on the ecology and management of exotic species in journals outside of Australasia and the AJE rarely publishes such manuscripts. Moreover, Australian ecologists never published such articles in the NZJE, although it is a field that this journal now specialises in.

Knowing trends in publishing topics and author submission behaviour is necessary information when planning a journal's future. In light of the information provided here we ask; How could the NZJE compete more successfully with international journals for local manuscripts on the ecology of its native flora and fauna? Alternatively, how might the NZJE attract manuscripts in its specialist fields from other research communities, particularly in Australia but also from other Pacific rim nations?

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