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Images were generated by wordle <[www.wordle.net](http://www.wordle.net)> using the 150 most frequent keywords listed in all articles indexed to the New Zealand science journals by Scopus over the period 2000–2009. Keywords were stemmed with the assistance of Google Refine <<http://code.google.com/p/google-refine/>>.

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## SUMMARY

This report describes an evaluation of the publishing services provided by the Royal Society of New Zealand, and the role of the suite of New Zealand science journals in the local research environment. In brief, the evaluation found:

The Royal Society of New Zealand operates an efficient process for editing and publishing a suite of New Zealand science journals.

Partnership with Taylor & Francis and changes to the publication model appear to have promoted the visibility and attractiveness of the journals and have significantly improved the financial security of publication. Rates of submission to the journals have improved, suggesting increasing prestige. International comparisons show a commendable turn-around to print period.

The journals also compare favourably with overseas journal titles, typically ranking in the second quartile of regional journals of a similar discipline.

The report recommends that:

The Royal Society of New Zealand and the Ministry of Science and Innovation work towards promoting recognition of the suite of journals domestically and internationally.

This evaluation satisfies a requirement of the July 2009, Services Agreement for funding New Zealand's science journals between: the Royal Society of New Zealand and the Ministry of Science and Innovation, being at the time of signing the Ministry of Research, Science and Technology. In consultation with the Ministry of Science and Innovation, a framework of six evaluative questions was developed (see appendices pg I).

The current evaluation follows a series of reviews of the journals' operations, which the Society has periodically undertaken since it assumed their administration of the New Zealand journals two decades ago.

The review found that publication was efficient; that the journals were effective in servicing New Zealand scientific research and that there was value in continuing to publish the journals. The financial model was sustainable and the publication and funding arrangements for the journals fitted with the missions of the Royal Society of New Zealand and the Ministry of Science and Innovation. The review found that prior to the formation of the Ministry of Science and Innovation, its two predecessors had not promoted, or recognised the journals as discipline-based regional journals of good international standing.

The findings of the evaluation are summarised as follows;

- 1 The publication activity of the Royal Society of New Zealand is efficient, in that:
  - the Publishing Unit of the Society operates an efficient editorial process, with a relatively rapid progression from article submission through to publication. International comparisons show that the Publishing Unit has research dissemination time durations that are in line with or better than equivalent research publication services overseas. The recent transition to academic editorship, coupled with abolition of page charges, is associated with significant increases in the rate of submissions to the titles.
- 2 New Zealand science journals published by the Royal Society of New Zealand are effective in:
  - Enhancing dissemination of research relevant to New Zealand. The journals succeed in selecting research (conducted both domestically and abroad) of relevance to New Zealand, with the majority of articles from New Zealand authors. The readership of these journals is entirely appropriate for international titles of their genera; with citation rankings showing that they rank in the second quartile, and download statistics establishing that they are internationally effective at disseminating research.
  - Providing a venue for New Zealand authors in which to publish quality research. Analysis of article authorship proves the journals' demonstrable attractiveness to researchers across all recognized types of research organization in New Zealand. Analysis of publication volume shows that publication through the Royal Society of New Zealand journals represents a significant proportion of New Zealand's total research output for the relevant disciplines, suggesting that the suite succeeds in providing opportunities for New Zealand authors to publish their research
  - Making New Zealand research readily available. In addition to continuing the availability and quality of long-established printed journals, the establishment of an efficient and well-patronised electronic vehicle for these journals have increased the ease of access to the results of New Zealand research. Readership has increased markedly since the journals became available electronically through a contract with an international publishing company, Taylor & Francis. International readership in particular has jumped as a result, with 75% of journal readership based offshore, representing a substantial increase in dissemination of New Zealand research.

3 Continued publication of the suite of journal titles derives value because the suite:

- contains titles that are of international standing
- provides an increasingly widely read vehicle for a significant volume of New Zealand research
- by its international presence, can aid science diplomacy as it is coherent, recognizable and accessible
- provides an outlet for niche research, particularly that which is based on New Zealand's unique flora and fauna, and its taxonomy.

4 The current financial model for operation of the suite of journals is sustainable.

Royal Society of New Zealand's partnership with Taylor & Francis has stabilised what has long been a precarious financial position for these journals. Ongoing costs of publication have been reduced and financial security is now expected to improve.

5 Government funding of the journals fits with the missions of the Ministry of Science & Innovation and the Royal Society of New Zealand.

Publication of the journals fits very closely with both the obligations of the Society under its Act, and the core purpose of its foundation. Assisting with publication of the journals aligned well to the purposes of the Ministry of Research, Science and Technology. While its successor, the Ministry of Science and Innovation (MSI) is newly formed, its stated goals of maximising publication rates of New Zealand's science bodies and enhancing their international reputation and linkages, suggest that this alignment will continue under the Ministry's stewardship.

6 The value of a science title is determined in part through the perceptions of its audience.

The Ministry of Research, Science and Technology and the Foundation for Research, Science and Technology had gained added value from the journals; however, these organisations do not appear to have used the journals or their articles in external communications. A long-running source of concern raised by members of the science community served by the journals is their apparent undervaluation by Government and funding and investment agencies. This undervaluation has resulted in a disincentive for local researchers to submit papers to them, in favour of non-New Zealand journals. This report provides objective evidence that New Zealand journals are viable, appropriate and of a good international standard.

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## Abbreviations used:

For the purposes of clarity, charts and tables use the following abbreviations for the titles: Journal of the Royal Society of New Zealand (JRSNZ); Kōtutui: The New Zealand Journal of the Social Sciences Online(Kōtutui); New Zealand Journal of Agricultural Research (NZJAR); New Zealand Journal of Botany (NZJB); New Zealand Journal of Crop and Horticultural Science (NZJCHS); New Zealand Journal of Geology and Geophysics (NZJGG); New Zealand Journal of Marine and Freshwater Research (NZJMR); and, New Zealand Journal of Zoology (NZJZ).

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# INTRODUCTION

The New Zealand science journals published by the Royal Society of New Zealand have a long tradition. The Society's governance has made ongoing efforts to improve the journals' viability and relevance for the national, and international, science communities

## A brief history of the titles published by the Royal Society of New Zealand

The formal dissemination of knowledge is a core business of scholarly societies, and has been a feature of the Royal Society of New Zealand since its inception as the New Zealand Institute in 1867. That year marked the incorporation of the Auckland Institute, the Wellington Philosophical Society, the Philosophical Institute of Canterbury, and the Westland Naturalists' and Acclimatization Society, amongst others. Indeed, a key reason given for the amalgamation of the existing regional science societies into the nascent national New Zealand Institute was that it should be a body:

“to give a publication medium for New Zealand scientific research, such as none of the individual societies could afford”

Sir Charles Fleming - *Science, Settlers, and Scholars* (1987).

The national organisation initially published the Transactions and Proceedings of the New Zealand Institute (Vol. 1, 1869), which, with the New Zealand Institute's reformation as the Royal Society of New Zealand in 1933 became the Transactions and Proceedings of the Royal Society of New Zealand, and currently exists in the form of the Journal of the Royal Society of New Zealand (Vol. 1, 1970–present).

In contrast, with the exception of *Kōtuitui*, the other titles currently administered by the Society have grown out of a function of the Department of Scientific and Industrial Research (DSIR), a part of a responsibility given by its forming Act (1926), which assumed publication of the Government's New Zealand Journal of Science and Technology. To meet the needs of a dramatically expanding science community, throughout 1958–1974 this title was succeeded in stages by a series of titles with mixed longevity, namely:

- the New Zealand Journal of Agricultural Research (1958–present);
- the New Zealand Journal of Geology and Geophysics (1958–present);
- the New Zealand Journal of Science (1958–1984), which became the New Zealand Journal of Science and Technology before ultimately ceasing in 1987;
- the New Zealand Journal of Botany (1963–present);
- the New Zealand Journal of Marine and Freshwater Research (1967–present);
- the New Zealand Journal of Experimental Agriculture (1973–1989), which became the New Zealand Journal of Crop and Horticultural Science (1989–present); and,
- the New Zealand Journal of Zoology (1974–present)

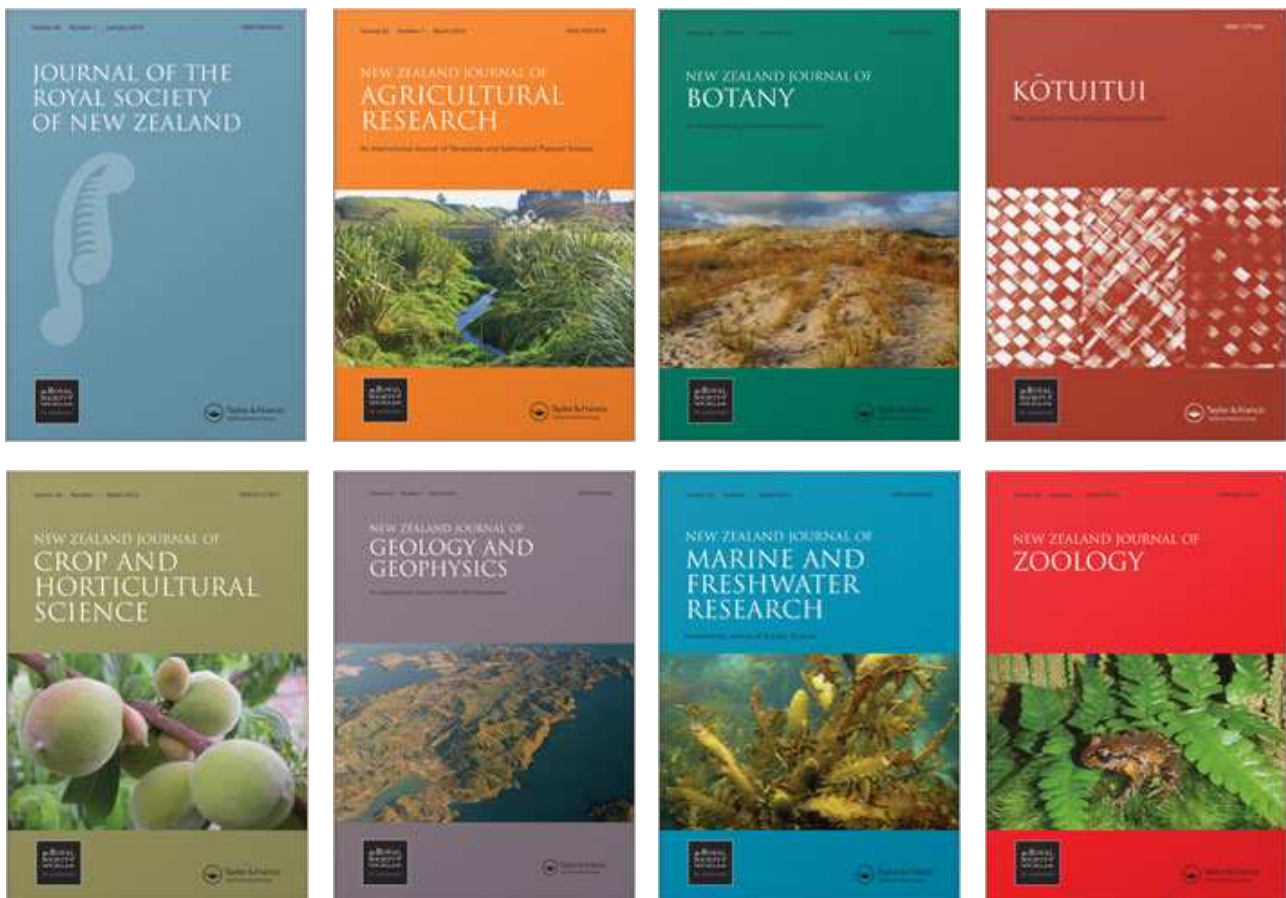
Following its restructuring in the late 80s and early 90s, the DSIR sought to cease publication of the titles on financial grounds. Government commissioned an independent evaluation which argued that continued publication of the journals was justified on the basis that they: maintain scientific self-respect; complete the scientific process; represent a clear measure of productivity; have a profound influence on the quality of research performed within their discipline; promote a sense of scientific community; preserve knowledge; provide a vehicle for publishing research primarily of regional interest and value; and finally that the cost of their publication was trivial in comparison to the cost of undertaking the research being reported. The Cabinet Committee concluded that "journal publication is an important part of the science infrastructure which provides for communicating scientific results within the scientific community, maintaining scientific knowledge and



quality, and is an integral part of the continuum of science".<sup>1</sup> The administration of the titles was then granted to the Royal Society of New Zealand in 1991, which subsumed much of the Science and Industrial Research Publishing unit, with funding supported through a contract with Government which is the subject of periodic review.<sup>2</sup>

In 2006, the Ministry, responding to community request, contracted an additional title with the Society: Kōtuitui, the New Zealand Journal of the Social Sciences Online. This brought the total number of journals published by the Society to the current eight, see Figure 1.

Figure 1. Contemporary covers of the Royal Society of New Zealand suite of science journals



For more information on the titles' aims and scope, see appendices pg IV–XI.

#### A selection of recent reviews and evaluations of publishing at the Royal Society of New Zealand

The Publishing Unit within the Society, as with all of the Society's cost centres, operates on a cost recovery basis. In part, this contributed to ongoing financial uncertainty with the unit, which led the Society to investigate a number of options to improve stability, and to reverse a perceived decline in relevance by Council, see Table 1.

<sup>1</sup> Report of the Cabinet Committee on Education, Science, and Technology (1991) reported in 'RSNZ Publishing—A case for the national research journals'

<sup>2</sup> For a fuller account of the history of science publishing in New Zealand from which this material is adapted, see Jasperse J. (1997) Science Journal Publishing pg 124–127 in Book & Print in New Zealand: A Guide to Print Culture in Aotearoa Ed. Maslen K. et al. VUW Press. ecopy available <[http://www.nzetc.org/tm/scholarly/tei-GriBook-\\_div3-N11C3E.html](http://www.nzetc.org/tm/scholarly/tei-GriBook-_div3-N11C3E.html)>

In just the last decade, in addition to the monitoring and reporting requirements of its contract with Government, the Society has run surveys and consultations with relevant research communities, often spurred by financial crises, as in 2003 when Council took a vote on cessation of the Journal of the Royal Society of New Zealand.

Table 1. Recent policy and evaluation efforts addressing the journals

Year	Activity
2002/03	Community surveys for the New Zealand Journal of Crop and Horticultural Science and the New Zealand Journal of Marine and Freshwater Research
2003	Report requested by Ministry: 'RSNZ Publishing—A case for the national research journals'
2003/04	Independent review: 'Study on the Royal Society of New Zealand's Journals' <sup>3</sup>
2006	Submission of a paper to Council recommending revitalization of RSNZ publishing
2007/08	Publishing Consultative Committee
2008	Publishing Implementation Committee, 'Review of the RSNZ Journal Publishing: A report for the Council of the Royal Society of New Zealand'

Together these reviews have considered options ranging from abolition of many of the titles, to migration to open-access online-only publication. For the longevity of the current title list, it is with some good fortune that a solution appears to have been found through partnership with the third-party publisher Taylor & Francis, in 2010. These subjects form the topics of a later sections of this report: notably 'the financial sustainability of publishing the New Zealand science journals', pg 18, and 'the value of continued publication of the New Zealand science journals', pg 15.

<sup>3</sup> Published as Rowland F. (2004) The RSNZ's journals: how can they cope with the changing serials environment. *Serials* 17: 67-75. <<http://uksg.metapress.com/openurl.asp?genre=article&issn=0953-0460&volume=17&issue=1&page=69>>

### **Methodological approach and sources for the current evaluation of publishing at the Royal Society of New Zealand**

The approaches adopted by this evaluation were guided by the evaluative framework (see appendices pg I), and references to the specific sources used can be found in the footnotes of the relevant sections; however, in brief the evaluation involved the following strategies:

In addressing the efficiency of the Publishing Unit, the primary sources used were accounts of submission and publication times reported in the Six-Month Reports to the Ministry specified by the Society's contract. These reports were supplemented with more recent information produced by automated reports provided by request from Taylor & Francis's manuscript management system. This quantitative information was informed through unstructured interviews with Publishing Unit staff, and a desk-based review of contemporary turnaround-times and submission rates to science journals. The role of the journals in disseminating research of relevance to New Zealand was investigated through review of the published 'Aims' and 'Scope of submissions' for each journal, and their application in practice, analysed by collating authorship nationality through extraction of this data from the citation-enhanced indexing service, Scopus.

In seeking to assess the effectiveness of the journals, the primary sources were third-party journal ranking metrics for the titles, namely the Journal Impact Factor (JIF) and the JIF-based disciplinary ranks—collated by Thomson Reuters, and provided on request by Taylor & Francis—, and the publicly available SCImago Journal Rank, and the disciplinary rankings based on this metric. Where possible these metrics were also determined for a collection of titles published within New Zealand, or in relevant disciplines to the Society journals, to act as counterfactuals. Further insight into the effectiveness of the titles was sought through a report on the volume and origin of downloads of journal content from the academic publication provider, informaworld™, and provided on request to the Society by Taylor & Francis.

In addition to the quantitative citation-based metrics and readership indicators, the value of the journals was investigated through review of reports from, and submissions to, previous reviews of publishing undertaken by the Society, especially the seventy submissions received by the Society's Publishing Consultative Committee and Publishing Implementation Committee throughout 2007–2008.

Insight into the financial history of the Publishing Unit was primarily sought through interrogations of the Society's financial management records.

The assessment of the fit of publication of the journals with the mission of the Ministry of Science and Innovation was informed by review of the Ministry's recent strategy documents, most notably 'Igniting Potential', whereas the principle source for the fit with the Society's functions was the Society's Act.

A review of policy and practice surrounding the journals was principally achieved through a combination of a desk-based review of publicly available documents from Government and Government's funding and investment agents, and informal interviews with Society and Science Media Centre staff. These approaches were guided by the relevant themes present in commentary regarding the publications that had been received by the Society, either spontaneously or as part of its consultations.

Where appropriate, subsections have been added describing the methodology used in that section in greater detail.

# THE EFFICIENCY OF ROYAL SOCIETY OF NEW ZEALAND PUBLISHING

The Royal Society of New Zealand Publishing Unit operates an efficient editorial process, with a relatively rapid progression from article submission through to publication. The transition from professional to academic editorship, coupled with abolition of page charges, appears to have significantly spurred the rate of submissions to the titles.

Efficiency of the Society's Publishing Unit is a question of how well the Unit effects the dissemination of research relevant to New Zealand, how well it provides opportunities for New Zealand authors to publish their research, and the extent to which its actions make New Zealand research readily available to national and international audiences. Answers to these questions were sought through collation of archival reports with material obtained from ScholarOne, the manuscript management system supplied by Taylor & Francis, and used by the Publishing Unit for all the journals.

The titles exhibit a broad spread in the times taken from submission, to the decision to publish or reject (18–37 weeks), and the articles' eventual manifestation in print form (33–52 weeks), see Figure 2. Of note, the period from 'Decision' to publication is relatively constant, with the variability in the whole process being largely in the components of the editorial process which the Society has limited control over, e.g., finding peers and collating their review, and waiting for authors to revise their manuscripts. In addition, this delay is softened by the practice of the Unit to publish authoritative electronic copy of an article in advance, if it passes review in a period where there would be significant delay until the next print issue.<sup>4</sup>

The rarity with which journals advertise their turnaround statistics makes it difficult to determine the extent to which the Society journals are unusual in this regard; however, a tentative comparison is possible. Comparison with a collection of 47 titles (ranging from 'Science' to 'Environment, Development and Sustainability')<sup>5</sup> suggests that the New Zealand science journals have typical turnaround times to online publication, but appear to perform very well for their turnaround to print, see Figure 3.

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<sup>4</sup> A facility Taylor & Francis promote as iFirst

<sup>5</sup> Kareiva P., Yuan-Farrell C. (2006) Where to Publish - A handbook of journal outlets for contributors to conservation science. Santa Clara University, Environmental Studies Institute.

<[http://www.scu.edu/cas/environmentalstudies/upload/Where\\_to\\_Publish.pdf](http://www.scu.edu/cas/environmentalstudies/upload/Where_to_Publish.pdf)>

Figure 2. Time from submission to editorial milestones for the journals over 2008–2010

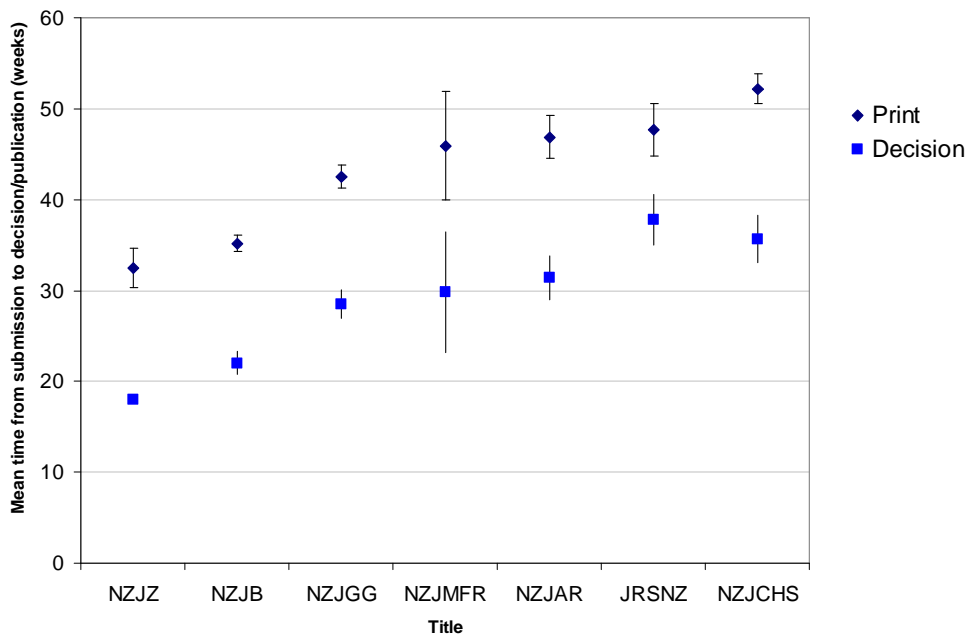
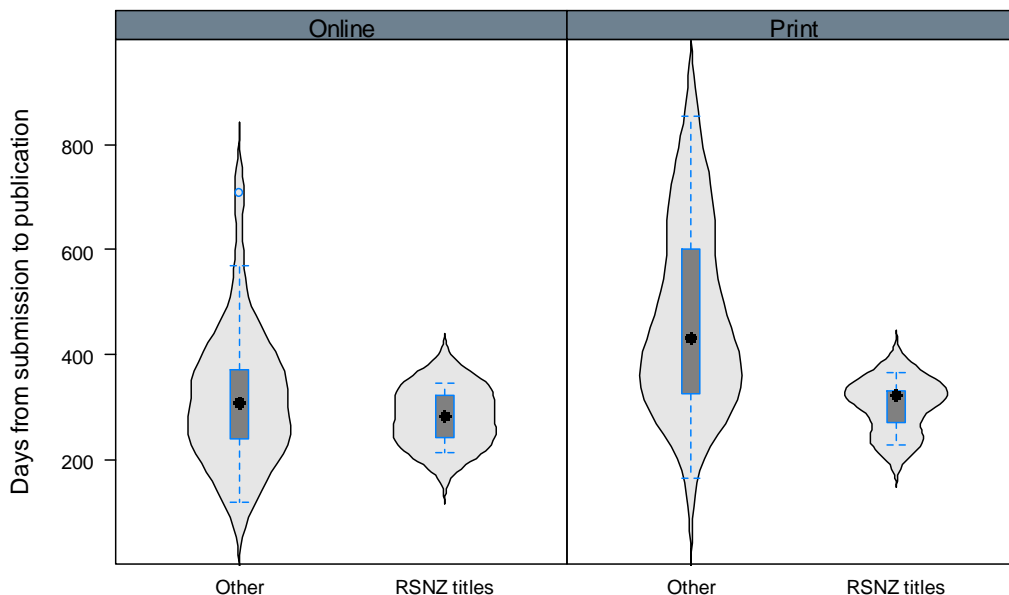
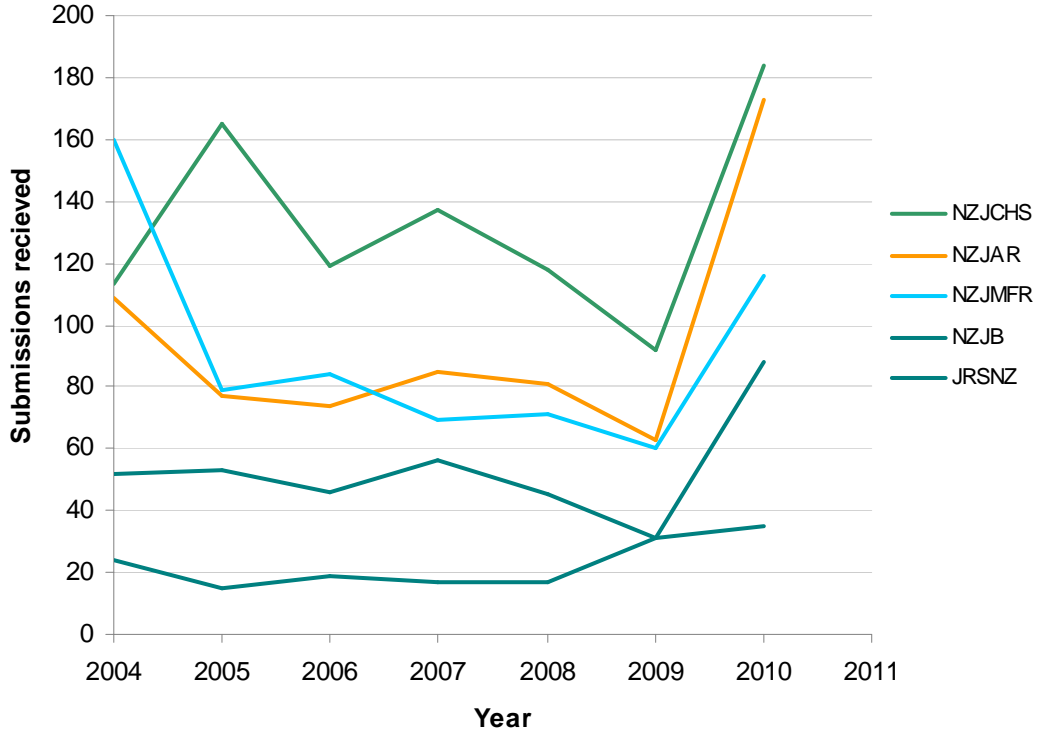


Figure 3. Time from submission to publication for journals reported in "Where to publish" compared with the Royal Society of New Zealand suite

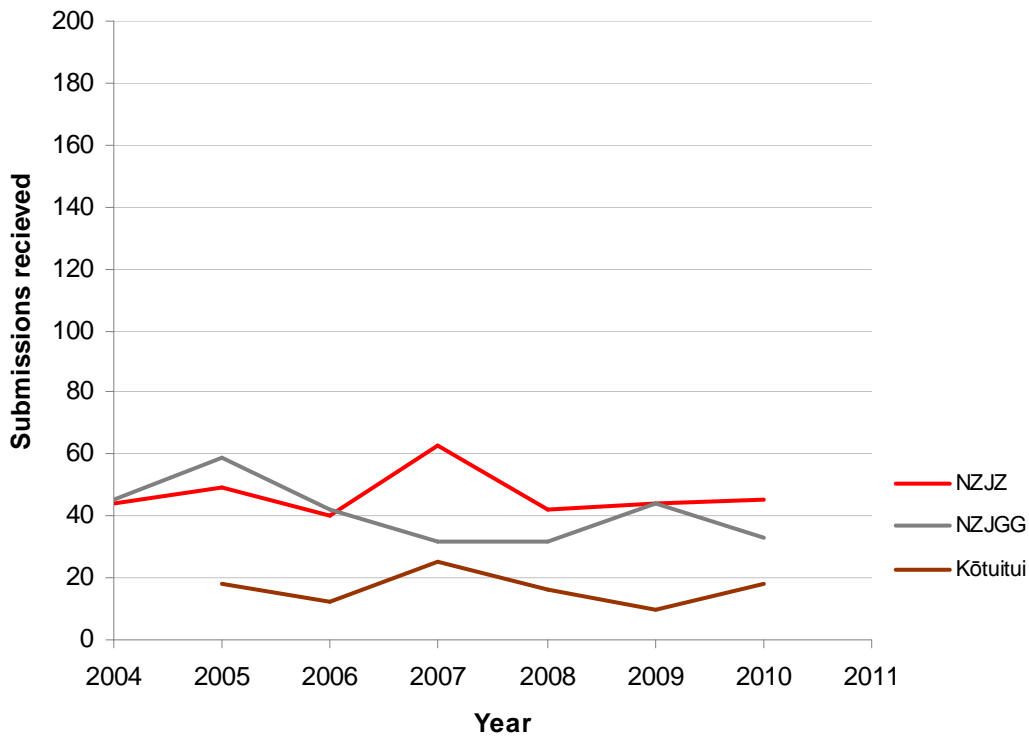


A journal feature which also has relevance for the value of the titles is their submission rate. As an indirect proxy for the journals' prestige, it is encouraging that the titles appear to be experiencing a dramatic increase in submissions coincident with the adoption of academic editors. In 2010, four of the titles observed their highest number of submissions for at least the last six years, with all but one title showing an increase over 2009, see Figure 4. It should also be mentioned that a contributing factor in the rate of submissions, in addition to the activism of the new academic editors, may be a consequence of the removal of page charges. These charges, which were introduced, universally in 2003, as a means of generating revenue to support the journals, were a frequent source of complaint to the Society and have been removed under the new relationship with Taylor & Francis.

Figure 4. Number of submissions received by the journals, 2004–10  
 Panel A: Titles exhibiting increased submissions in 2010



Panel B: Titles exhibiting flat submissions over the period



As will be argued later (pg 21), this higher rate of submissions is expected to allow the selection of higher quality research for publication and, together with encouraging readership statistics, this result promises some improvement in traditional journal metrics over the years to come.

# THE EFFECTIVENESS OF THE NEW ZEALAND SCIENCE JOURNALS

Journals published by the Society largely, but not universally, source the majority of their articles from New Zealand authors. Article authorship demonstrates the journals' attractiveness to researchers across the spectrum of recognized types of research organisation in New Zealand. The measured impact of the journals is entirely appropriate for international titles of their discipline. In addition, publication volume and readership statistics show the titles are effective in providing New Zealand's researchers with a venue in which to publish, and a vehicle to make their research visible.

## Methodology

In order to address the question of the effectiveness of the journals in providing an opportunity for New Zealand authors to publish their research, content for all articles identified by Scopus as belonging to the titles for the most recent complete year, 2009, and the preceding decade were downloaded, and entered into a database for analysis. The institutional affiliations for each author to the 3143 articles that this represented were deduplicated using a list of identifications prepared in the generation of the 2002-2007 National Bibliometric Report.<sup>6</sup> Institutions which did not match at the first pass were manually checked for their affiliation. Institutions were further coded by type according to the classification used in the RST Scorecard.<sup>7</sup> The collaboration networks revealed by this data were characterised with the use of the social network analysis tool, Pajek.<sup>8</sup>

The effectiveness of the journals in disseminating research relevant to New Zealand was investigated through collation of third-party journal ranking metrics for the titles, namely the Journal Impact Factor (JIF)<sup>9</sup> and the JIF-based disciplinary ranks, which were provided on request by Taylor & Francis, the Subject Normalised Impact per Paper (SNIP)<sup>10</sup> published by Scopus, and the publicly available SCImago Journal Rank (SJR)<sup>11</sup>, which is also prepared using Scopus data, together with the disciplinary rankings based on this metric. To act as counterfactuals, where possible these metrics were also determined for a collection of research titles, which were selected on the basis that they were also published within New Zealand, or were regional titles serving the same subjects as the Society's journals (see appendices pgs XII–XXII, for more detail). Download volume and origin statistics presented on pages 16–19 are also relevant to this question.

<sup>6</sup> Gush J., King S., Ramsden A. (2010) National Bibliometric Report 2002-2007: National and International Benchmarking of New Zealand Peer-Reviewed Research Publication. Ministry of Research, Science and Technology. <<http://www.morst.govt.nz/publications/a-z/b/bibliometric-studies/National-Bibliometric-Report-2002-2007/>>

<sup>7</sup> That is: NZ Central Government agency; District Health Board; Local/Regional Government; NZ University/TEO; Crown Research Institute; Private NZ based firms; Private NZ industry/sector associations &/or private non-profit organization; Other NZ research organisations (not already listed); Overseas organisation (excluding research organisation); Overseas researchers or research organization; NZ community and/or voluntary group; and, Other

<sup>8</sup> Batagelj, V, Mrvar, A. Pajek - Program for Large Network Analysis <<http://vlado.fmf.uni-lj.si/pub/networks/pajek/>>

<sup>9</sup> for Journal Impact Factor see Garfield, E (2005) The Agony and the Ecstasy—The History and the Meaning of the Journal Impact Factor. <<http://garfield.library.upenn.edu/papers/jifchicago2005.pdf>>

<sup>10</sup> for Subject Normalised Impact per Paper see Moed, H (2009) Measuring contextual citation impact of scientific journals. <arXiv:0911.2632v1>

<sup>11</sup> González-Pereira, B *et al.* (2009) The SJR indicator: A new indicator of journals' scientific prestige. <arXiv:0912.4141v1>

### Findings

The four most common sources for authorship were, in decreasing frequency, the Crown research institutes, the universities, overseas universities, and other international research organizations, see Table 2; together these types account for some 80% of all articles to the journals over the period. For a further breakdown of the institutions comprising the business and private sector associations, see appendix, pg XXIII.

This preferential result in favour of the Crown research institutes is in keeping with the journals' Crown origins, but is also a little unexpected given the much higher proportion of publications attributable to the universities in New Zealand's publication output.<sup>12</sup>

The affiliation and collaboration information revealed are shown in the tables below:

Table 2. Authorship by category of organisation that they were affiliated with, 2000–2009

Source title	JRSNZ	Kōtuitui	NZJAR	NZJB	NZJCHS	NZJGG	NZJMR	NZJZ	Total
Total articles	254	22	584	455	415	388	688	337	3143
Institution Type									
Crown Research Institute	37.0		42.0	43.7	37.3	43.3	55.1	26.4	42.3
NZ University	45.3	86.4	22.9	36.0	14.7	51.3	36.2	49.0	35.2
Overseas University	20.9	13.6	37.0	20.0	47.7	28.6	8.1	21.7	25.5
Overseas Other	11.4		22.8	13.8	18.6	17.0	7.3	16.9	15.1
Private NZ-based firm	11.4	9.1	9.4	6.8	2.4	5.7	6.3	6.2	6.8
NZ Central Government	9.8	4.5	0.3	13.4	0.5	0.8	6.7	15.7	6.1
Private	8.3	4.5	2.7	4.6	1.4	4.9	3.2	9.8	4.4
NZ Museum	6.7			5.9		0.8	2.0	6.5	2.6
No Affiliation	0.8		2.1	4.0	1.9	0.8	1.7	0.9	1.8
Other research organisation	0.4		0.9	0.2		1.0	5.8		1.6
Local/Regional Government	1.6	4.5	0.7	0.2	0.2	0.5	4.9		1.5
TEO	1.6		1.0	2.9	1.9		0.4	0.3	1.1
Private NZ industry/sector association			4.3		0.2		0.6	0.3	1.0
NZ Community/voluntary group	1.2			0.9		0.3	0.9	0.9	0.5

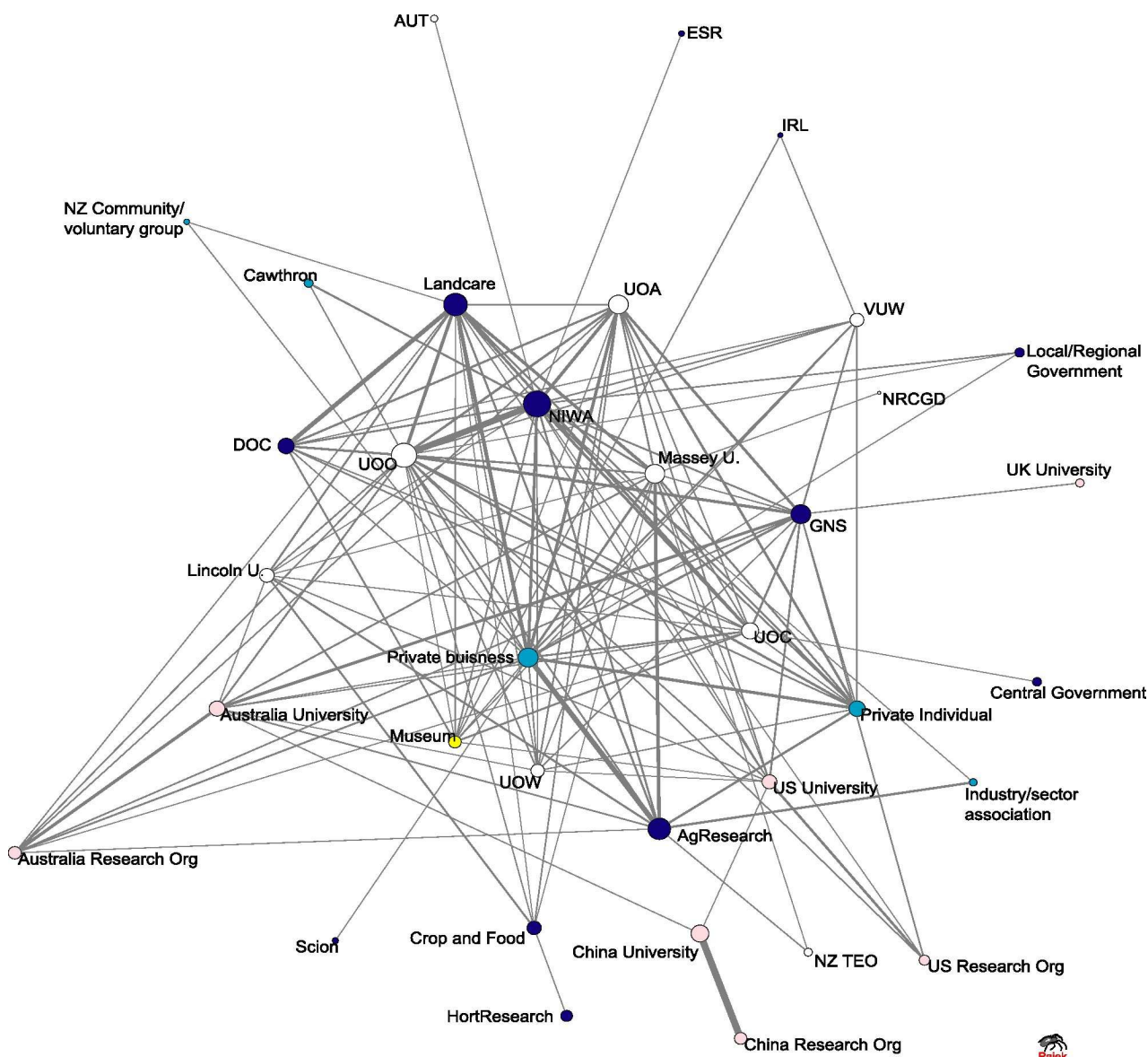
NB: Totals sum to greater than 100% as articles can be, and are, co-authored by multiple authors and each author may have their own unique affiliation.

<sup>12</sup> 2002-2007 National Bibliometric Report, op cit.



Of note, the majority of articles published by the journals are the results of research collaborations between two or more institutions. Together, the co-authorship network (Figure 5) shows that the journals provide a opportunity for tangible recognition of research linkages between New Zealand's research organisations.

Figure 5. Network graph of institution collaboration evidenced in co-authorship links in the journals over 2000–2009



Vertices are coloured by their organization type: Government/CRI, dark blue; TEO, white; Overseas, grey; Private, blue; and the lone mix of government/independent Museums, yellow. Vertex diameter is proportional to the volume of publications affiliated to the organization. Linkage width is proportional to the number of articles co-authored between the two organizations. Note for clarity, all institutions that did not show collaboration with another organization in at least 5 articles over 2000-2009 have been removed.

The features of the co-authorship network reveal a central core of four entities: NIWA; the universities, Massey and Otago; and New Zealand’s private businesses. A ring of the remaining universities, CRIs, and central/regional government organizations make the outer core, with the periphery being comprised of infrequent sources of authorship and overseas researchers. As has been observed for New Zealand's authorship in general, collaborations appear to occur much more

frequently between organisations of different types. Also somewhat unexpected, is the observation that foreign agencies publishing in the Journals were likely to have their strongest ties with another overseas organization rather than a local one.

The centrality of private business within this network is partly an artefact of collapsing the 151 separate businesses that have published in the Society journals over 2000–2009 into a single entity. The most frequent entities found fall into the agricultural and geophysical domains, see appendices pg XXIII for detail on the top 25 business contributors to the journals. While this focus is unsurprising given these subject fall within the scope of the majority of the Society titles, it is also of note that these publications show evidence of research-active businesses outside the high-value manufacturing and materials domain, which is typically recognised as being the most corporate-linked research sphere.

Table 3. National source of authorship, 2000–2009

Nation	JRSNZ	Kōtuitui	NZJAR	NZJB	NZJCHS	NZJGG	NZJMFR	NZJZ	Total All titles
New Zealand	84.3	100	59.9	78.5	47.7	85.6	87.4	81.0	74.7
Australia	10.6	9.1	6.2	6.8	6.5	11.9	0.9	6.5	6.3
China	1.2		24.7	2.4	4.8	1.5	0.6	0.6	6.0
USA	6.7		4.5	7.3	2.4	11.6	0.9	5.6	5.0
Turkey			3.8		17.3			1.8	3.2
United Kingdom	3.5		0.9	2.0	0.7	5.7	0.7	5.3	2.3
Canada	3.1	4.5		1.5	1.2	2.6	3.8	2.1	2.0
No Affiliation	0.8		2.1	4.0	1.9	0.8	1.7	0.9	1.8
Argentina	0.8		2.1	3.1	1.9			1.2	1.3
Japan	0.4		1.4	0.4	1.0	1.8	1.3	0.3	1.0
Germany	2.0		0.3	1.5	0.5	1.0	0.7	1.8	1.0
Chile	0.8		0.2	1.8	0.2	0.5	1.9	0.9	1.0
Italy			0.2	0.4	3.6	0.8	0.3	1.8	0.9
Spain	0.4		1.5	0.2	2.9	0.5		0.3	0.8
South Africa	1.2		0.2	0.4	2.4	0.3	0.3		0.6
France	0.4		0.9	0.2	0.5	1.8		0.6	0.6
Greece			0.3		2.9			0.3	0.5
Poland	0.4				0.5	0.3		3.0	0.4
Brazil			0.5	0.2	1.2				0.3
Fiji	0.4			0.4	0.2		0.4	0.6	0.3
Mexico			0.3		0.7	0.3	0.4		0.3
46 Other Nations	2.0	0.0	3.6	5.3	11.3	5.4	2.0	6.8	4.9

Unsurprisingly, the journals publish a majority of articles from authors based in New Zealand, see Table 3. All titles have an absolute majority in New Zealand authorship, with the sole exception of New Zealand Journal of Crop and Horticultural Science, in which slightly fewer than half the articles are of local origin. The national origins of authors to the titles are broadly in line with our national ties (i.e., with Australia), the relative strengths of the local research systems (e.g., USA), and international trends (e.g., the radical growth in research output from China<sup>13</sup>). The unusual prominence of

<sup>13</sup> Knowledge, networks and nations: Global scientific collaboration in the 21st century (2010) A report of the Royal Society London

<<http://royalsociety.org/policy/reports/knowledge-networks-nations/>>

Turkish researchers in the titles can in part be explained by the temperate Turkish climate allowing their regional research to be within the scope of these journals.

Aside from authorship measures, an inescapable part of journal comparison is the impact metrics. The oldest of the measures is the Journal Impact Factor, which measures for a reference year, the average number of times an article published in the preceding two years is cited in the reference year. As a consequence the Journal Impact Factor favours subjects with a strong culture of citation, and immediacy, neither of which are a strong features of the subjects served by the Society titles. This indicator for journals over the most recent available reference year and the preceding five years is show in Table 4, notably none of the trends over this period are significant (see appendix pg XII). Journal Impact Factors for the titles range from a low with New Zealand Journal of Crop and Horticultural Science at ~0.3 and a high for the Journal of the Royal Society of New Zealand at roughly 0.9 .

Table 4. Journal Impact Factors for the Royal Society of New Zealand suite over 2004–2009

Title	Journal Impact Factor						Average (2004-2009)
	2004	2005	2006	2007	2008	2009	
Journal of the Royal Society of New Zealand	0.57	0.74	1.00	1.00	1.04	0.85	0.87
Kōtuitui	Not indexed						
New Zealand Journal of Agricultural Research	0.66	0.55	0.53	0.62	0.32	0.52	0.53
New Zealand Journal of Botany	0.57	0.81	0.56	0.86	0.69	0.83	0.72
New Zealand Journal of Crop and Horticultural Science	0.34	0.34	0.17	0.25	0.30	0.48	0.31
New Zealand Journal of Geology and Geophysics	0.80	0.66	0.82	0.80	0.62	1.17	0.81
New Zealand Journal of Marine and Freshwater Research	0.95	0.77	0.93	0.76	0.60	0.69	0.78
New Zealand Journal of Zoology	0.62	0.73	0.59	0.75	0.61	0.85	0.69

Given that impact factors vary over a factor of 60-fold between highest impact subjects to the lowest, a more appropriate measure of a journal's utility is its placement within the set of titles within the same discipline, see Table 5.

Table 5. Journal Impact Factor Ranking of the Royal Society of New Zealand suite of titles for 2009

Title	Cited $t^{1/2}$	Quartile	JIF ranking (# of total titles indexed in subject)	
Journal of the Royal Society of New Zealand	>10 years	Q2	22 of 50	Multidisciplinary
Kōtuitui	Not indexed			
New Zealand Journal of Agricultural Research	>10 years	Q2	20 of 45	Agriculture, Multidisciplinary
New Zealand Journal of Botany	>10 years	Q3	112 of 173	Plant Science
New Zealand Journal of Crop and Horticultural Science	9.7 years	Q3	18 of 30	Horticulture
New Zealand Journal of Geology and Geophysics	>10 years	Q2	18 of 49	Geology
New Zealand Journal of Marine and Freshwater Research	>10 years	Q4	69 of 88	Marine and Freshwater Biology
New Zealand Journal of Zoology	>10 years	Q3	83 of 129	Zoology

A notable feature of the Royal Society of New Zealand titles is their long citation half-lives, which are typically greater than ten years, i.e., half of all citations to the title in the reference year are to articles at, or more, than ten years old. As well as demonstrating that articles of the Society suite continue to have utility over significant periods of time, that the majority of citation activity for the New Zealand science journal articles occurs at periods outside the traditional impact measures, i.e., 2-years for Journal Impact Factor, 3-years for SCImago Journal Rank and Subject Normalised Impact per Paper, implies that the journals have a higher utility than these metrics would suggest.

Use of the larger Scopus dataset, rather than that derived from the Web of Science, provides a broader view of a title's position in the universe of contemporary research journals<sup>14</sup>, Table 6. Although the direction of movement in a title's quartile placement between the two metrics is not uniform, in general the Royal Society of New Zealand journals rank slightly better by SCImago Journal Rank largely thanks to the much larger title list for their disciplines that is covered by Scopus, e.g., 324 Plant Science titles compared to the 173 indexed in Web of Science.

Table 6. SCImago Journal Ranking of Royal Society of New Zealand suite of titles for 2009

	Quartile	SJR ranking (# of total titles indexed in subject)	
Journal of the Royal Society of New Zealand	Q2	21 of 79	Multidisciplinary
Kōtuitui	Q4	326 of 366	Social Sciences (Misc)
New Zealand Journal of Agricultural Research	Q3	142 of 266	Agricultural and Biological Sciences (Misc)
New Zealand Journal of Botany	Q2	135 of 324	Plant Science
New Zealand Journal of Crop and Horticultural Science	Q2	74 of 182	Agronomy and Crop Science
New Zealand Journal of Geology and Geophysics	Q1	13 of 155	Geology
New Zealand Journal of Marine and Freshwater Research	Q2	41 of 96	Oceanography
New Zealand Journal of Zoology	Q2	124 of 314	Animal Science and Zoology

As placement within these indexes is not a guaranteed feature for a title, the presence of Kōtuitui within Scopus can be regarded as something of an achievement for this young title. It's low, initial, placement in the SJR rankings for Social Sciences (Misc) should not be taken to imply the title is poor, and is instead a consequence of the fact that Scopus started indexed this title in 2009. Two more years of citation information is necessary before the title can be assigned an SCImago Journal Rank, which will allow it to be placed with any accuracy within this scheme.

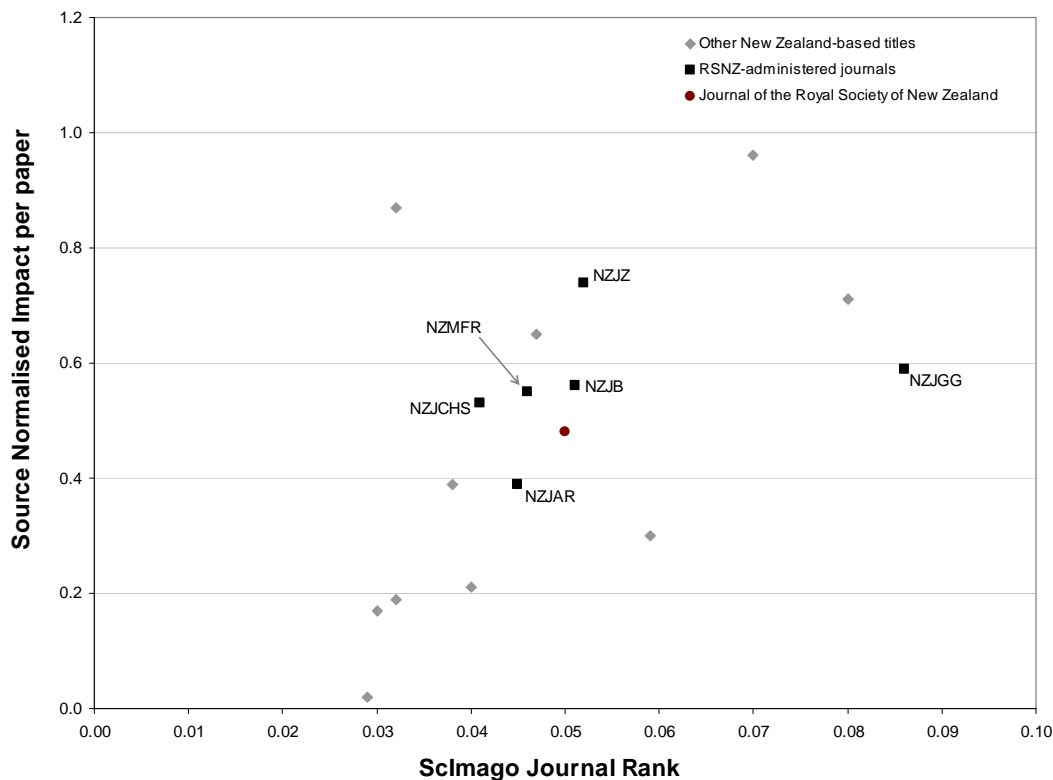
<sup>14</sup> At the time of preparation, Web of Science reports coverage of approximately 11,000 journals across the Science, Social Science, and Arts & Humanities Citation Indices, see the Master Journal List <[science.thomsonreuters.com/mjl/](http://science.thomsonreuters.com/mjl/)>, cf. ~18,000 active titles indexed claimed by Scopus <[http://www.info.sciverse.com/UserFiles/2508.SciVerse.Scopus\\_Facts\\_Figures%28LR%29.pdf](http://www.info.sciverse.com/UserFiles/2508.SciVerse.Scopus_Facts_Figures%28LR%29.pdf)>

In addition to the Royal Society of New Zealand suite, the range of titles published in New Zealand appear to be largely sound, quality, journals for research within their respective disciplines, Table 7. The Society suite appears typical for New Zealand titles, see Figure 6, which are in turn, from the rankings, typical for journals in the global science publishing scene.

Table 7. SCImago Journal Ranking of miscellaneous contemporary New Zealand science titles

	Publisher	Quartile	SJR (# of total titles indexed in subject)
New Zealand Journal of Ecology	NZ Ecological Society	Q2	65 of 223 Ecology
New Zealand Journal of Forestry Science	Scion	Q2	35 of 105 Forestry
New Zealand Journal of Forestry	NZ Institute of Forestry	Not Ranked	
New Zealand Veterinary Journal	NZ Veterinary Association	Q2	29 of 125 Veterinary (Misc)
New Zealand Medical Journal	NZ Medical Association	Q2	502 of 1618 Medicine (Misc)
Journal of Hydrology: New Zealand	NZ Hydrological Society	Q3	58 of 110 Water Science and Technology
New Zealand Plant Protection	NZ Plant Protection Society	Q3	106 of 182 Multidisciplinary
Social Policy Journal of New Zealand	Ministry of Social Development	Not Ranked	

Figure 6. Scopus derived journal metrics for New Zealand science titles



# THE VALUE OF CONTINUED PUBLICATION OF THE NEW ZEALAND SCIENCE JOURNALS

Together, the Royal Society of New Zealand journal suite represents an increasingly widely read vehicle for a significant volume of New Zealand's research. Their international presence has the potential of providing an unanticipated catalyst for New Zealand's science diplomacy.

The titles provide a niche in which to publish research of special regional interest to New Zealanders, which would have difficulty being published elsewhere. Given the explicit rules of its international nomenclature committees, this need is most strongly demonstrated in the domains of botanical and zoological taxonomy.

## Methodology

One of the key measures of the value of the Journals is the extent to which they act as vehicles for the publication of New Zealand research. This question was addressed through identification within Scopus of the subjects favoured by New Zealand authors, which were cross-referenced with subject categorization of the local science journals to determine the proportion of publication volume that they represent, see Table 8. For an analysis of the characteristics of authorship, data was exported from Scopus and used to construct a database, which was interrogated according to the framework developed for the 'National Bibliometric Report 2002–2007'.

Data on downloads of the journals' content through the online provider, informaworld™, were provided on request by Taylor & Francis.

The relevance of the International Codes of Botanical and Zoological Nomenclature for the continued existence of the journals has been made apparent through survey responses to the editor of the New Zealand Journal of Crop and Horticultural Science and the New Zealand Journal of Marine and Freshwater Research in 2003, and submissions to the Publishing Implementation Committee of the Society in 2008.

## Findings

Notably, of the seven subjects with the highest volume of visible researcher effort for New Zealand, the only subjects without dedicated New Zealand-based journals are evolution/systematics and biochemistry. Arguably, while these subjects are demonstrable research strengths in New Zealand, their extra-regional focus may make local titles less critical for these research communities.

Table 8. Contribution to New Zealand's volume of research publication over 2002–2007

Rank	Subject	New Zealand Total # articles	New Zealand published title(s)	#Articles (% of total)	
Freq.				RSNZ	Other NZ
1	Medicine (all)	4245	New Zealand Medical Journal		948 (22%)
2	Ecology	1860	New Zealand Journal of Ecology		155 (8%)
3	Ecology, Evolution, Behaviour and Systematics	1734			
4	Plant Science	1572	New Zealand Journal of Botany New Zealand Journal of Forestry Science	230 (15%)	93 (6%)
5	Aquatic Science	1501	New Zealand Journal of Marine and Freshwater Research	291 (19%)	
6	Biochemistry	1397			
7	Animal Science and Zoology	1375	New Zealand Journal of Zoology	153 (11%)	
10	Veterinary (all)	960	New Zealand Veterinary Journal		331 (35%)
15	Oceanography	896	New Zealand Journal of Marine and Freshwater Research	291 (33%)	
16	Earth and Planetary Sciences (miscellaneous)	868	New Zealand Journal of Geology and Geophysics	220 (25%)	
20	Geography, Planning and Development	747	New Zealand Geographer		70 (9%)
21	Geology	742	New Zealand Journal of Geology and Geophysics	220 (30%)	
32	Agricultural and Biological Sciences (miscellaneous)	663	New Zealand Journal of Agricultural Research	204 (31%)	
36	Education	629	New Zealand Journal of Education		78 (12%)
40	Psychology (all)	605	New Zealand Journal of Psychology		76 (13%)
51	Earth and Planetary Sciences (all)	499	New Zealand Geographer		70 (14%)
59	Horticulture	451	New Zealand Journal of Crop and Horticultural Science	125 (28%)	

While the Royal Society of New Zealand journal suite were unremarkable in terms of their impact compared to New Zealand titles in general (Figure 6), they are unusual in that the typical journal administered by the Society appears to play a larger role in the publication output for its New Zealand research community than the typical non-Society title.

Building on the journals' property of being a significant venue for New Zealand's publication, as shown above, partnership with Taylor & Francis also appears to be providing a significant boost to the international readership of the journals. It is worthy of note that access to the titles appears to have significantly increased over the period that the titles have been operated in partnership with Taylor & Francis, although due to serial changes in the online hosting arrangements for the journals prior to this partnership, it is not possible to perform an apples-to-apples comparison. However, over the ten month period for which data was provided, the titles received at least 90,000 downloads, demonstrating a more than twelve-fold increase over the highest ever page view figure recorded by the Society, which was ~7000 for the annual total in 2009.<sup>15</sup>

<sup>15</sup> Lohnert B. (2009) Website analysis: a technical report. Being an interns analysis of the usage of [www.royalsociety.org.nz](http://www.royalsociety.org.nz). Royal Society of New Zealand.

Another unusual feature of the electronic readership is that in contrast to the statistics for the titles while they were hosted at the Royal Society, where New Zealand access accounted for 40-60% of a titles readership, for all titles the proportion is now approximately 20%. In contrast to its low impact, the New Zealand Journal of Crop and Horticultural Science is the second most widely read in electronic form and the most international of the titles; having fewer than 5% of its downloads originating from within New Zealand.

Institutional sources of downloads show that on an individual basis, New Zealand institutional libraries are the most frequent institutions accessing articles, although 11 of the top-25 users are of international origin. Journal preference also appears to be as expected given the organisations' subject specializations, at least for the institutions of New Zealand origin. The most notable surprise is that despite being the most frequent contributors, the Crown research institutes do not appear to be particularly frequent readers, at least via this route of acquisition.

As noted (pg 3), efforts to merge or disestablish titles in response to financial and perceived quality issues were vigorously investigated throughout 2007-2008. This facet of the plan essentially ran aground when community researchers highlighted a need for a recognized set of journal to meet the regulations of the international taxonomic bodies for the official recognition of new taxa. The bodies rules for the lodgement of physical copies in recognized institutions, also put some impediment in progressing plans for the titles to assume a digital only existence, for example the International Code of Zoological Nomenclature requires that:

8.1.3. it must have been produced in an edition containing simultaneously obtainable copies by a method that assures numerous identical and durable copies...

8.6. Works produced after 1999 by a method that does not employ printing on paper. For a work produced after 1999 by a method other than printing on paper to be accepted as published within the meaning of the Code, It must contain a statement that copies (in the form in which it is published) have been deposited in at least 5 major publicly accessible libraries which are identified by name in the work itself.<sup>16</sup>

With similar rules obtaining for botanical nomenclature.<sup>17</sup>

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<sup>16</sup> International Code of Zoological Nomenclature 4th Ed. <<http://www.nhm.ac.uk/hosted-sites/iczn/code/index.jsp>>

<sup>17</sup> International Code of Botanical Nomenclature (Vienna Code) <<http://ibot.sav.sk/icbn/main.htm>>



# THE FINANCIAL SUSTAINABILITY OF PUBLISHING THE NEW ZEALAND SCIENCE JOURNALS

A fortuitous partnership with Taylor & Francis has significantly improved the security prospects of publishing within the Society. Previously publishing within the Royal Society of New Zealand had frequently been at the point of crisis. This, historical, instability formed the most visible of the spurs for the ongoing reviews of, and community consultations towards, the Society's publishing services.

## **Findings**

As noted previously, finances within the publishing unit have often been the source of both immediate crisis and longer term review within the Society, e.g., a deficit in 2002–03 saw the Council determining whether it could continue to afford to publish the Journal of the Royal Society of New Zealand. Short-term solutions were achieved through increases in the level of funding by Government, namely; in 2003–04 in response to "RSNZ Publishing—A case for the national research journals", and in 2006–07 in order to support a new title, Kōtuitui, at the Ministry's request.

The declining subscriptions to the journals, coupled with the steadily reduced rates of submission to many of the titles, led the Society to believe that the existing business model of the journals operation was becoming increasingly unsustainable. Partnership with Taylor & Francis has provided stability and security, ensuring the journals' future in their current state.

# PUBLICATION OF THE JOURNALS APPROPRIATELY FITS WITHIN THE MISSIONS OF THE MINISTRY OF SCIENCE AND INNOVATION, AND THE ROYAL SOCIETY OF NEW ZEALAND

Publication of the New Zealand science journals matches with the historical and anticipated activities of the Ministry, and provides a simple means by which the Society is able to effect obligations of its Act.

In a real sense, the Royal Society of New Zealand owes at least part of its long history of existence as a national academy to its formation in order to provide resources for the publication of the Transactions and Proceedings of the New Zealand Institute. In addition to this historical connection, the journals give effect to several functions of the Society as made explicit within its current Act, namely:

For the purpose of advancing and promoting science and technology in New Zealand, the functions of the Society are

To foster in the New Zealand community a culture that supports science and technology, including (without limitation)

- (i) The promotion of public awareness, knowledge, and understanding of science and technology; and
- (ii) The advancement of science and technology education...

(c) To provide an infrastructure and other support for the professional needs and development of scientists and technologists:...

Royal Society of New Zealand Act 1997

The Ministry of Science and Innovation's justification for support of the journals is somewhat different from the Society's. Perhaps the two most cogent reasons for the Ministry's support are that, firstly, the journals demonstrably form a key piece of research infrastructure, offering tangible milestones marking the completion of research funded through the Vote. Secondly, the journals offer necessary recognition of New Zealand's unique flora and fauna, and its study, providing a means of satisfying international obligations which would otherwise be difficult to achieve.

# PRACTICAL IMPROVEMENTS OF POLICY AND PRACTICE TO PROMOTE VALUE ADDED FROM THE JOURNALS

The value of a science title is determined in part through the perceptions of its audience. A continual source of concern raised by members of the science community served by the suite of journals, is their apparent low valuation by government and government's funding and investment agencies. Improvement in recognition of the titles as viable, and appropriate vehicles for the publication of publicly-funded research would assist in their ongoing relevance.

An historic relationship between the Society's publishing team and the Science Media Centre promoted early dissemination of journal content to local journalists. A serendipitous finding of this review was that this activity ceased as an unanticipated consequence of the partnership with Taylor & Francis. With improvements in communication between Taylor & Francis and the Society, and between the publishing arm of the Society and the Science Media Centre, this practice can be re-established, which should both promote valuable public exposure for the titles, and provide rich, locally-relevant content for the Science Media Centre.

Since the 80s, the national and international research environments have undergone significant developments. Ongoing efforts to ensure value for money within funding instruments, combined with national assessments of research quality, have put increasing scrutiny on the amount of research that individuals and institutions publish, and to differing extents where this research is published.

A feature which has frequently appeared in contact between the Royal Society of New Zealand and the community that the journals serve, are reports of something akin to cultural cringe regarding the titles. This issue appears when titles are

presented as adjuncts to "international" titles, and in some instances a bias against the titles is reported as having been made explicit by government staff and in government publications, e.g.:

"Main outputs were publication in international journals, conference presentations (both published and oral), and workshop presentations. Nearly all programmes reported outputs in every category. There was also publication in New Zealand journals, and as books or chapters."<sup>18</sup>

PUBLIC GOOD SCIENCE FUND: Evaluation

"A comment for what its worth – I thought the advent of FRST was extremely damaging for NZ science journals because they used the phrase “publish in international journals” so scientists looked off shore so as not to incur the wrath of FRST or their managers – despite the high profile of NZ journals at the time.”

Unsolicited email to RSNZ Editor, 2011

“FRST policy on publications credit has contributed to a decreasing number of publications coming to [the New Zealand journals] from an increasing total of science publications generated. [A] more integrated view of this issue across the FRST-MoRST spectrum would be helpful.”

Researcher response to Society journal surveys, 2003

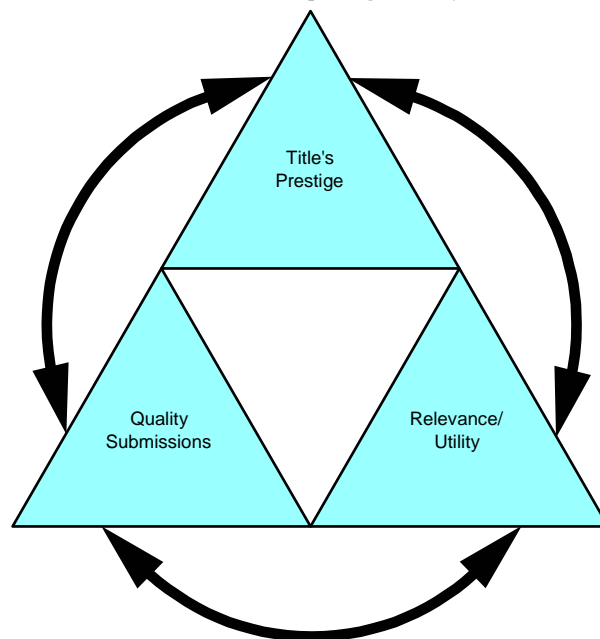
In other cases, bias appears to have been internalised by the research community, e.g.:

“For University researchers the PBRF ranking is now top priority. High ranking is attained by publishing in International journals (which is interpreted as “overseas” not NZ) ... As a manager of academic staff, I have little option but to advise staff to publish off shore.”

Submission to Publishing Implementation Committee, 2008

As shown in Figure 7, there is good evidence for simple feedback relationships between the perception of a journal and its performance, at least as measured indirectly in the form of traditional journal metrics. Authors rationally seek to place their work in journals that are well regarded within their discipline; to a lesser extent it appears that if given a choice of sources, authors choose to cite work from higher impact titles. In return, the prestige of a title influences the number of submissions it receives<sup>19</sup>, and thus if its editorial processes function effectively, the utility of the title to the research community that it serves will increase.

Figure 7. Model of interactions between a title's prestige, utility, and the rate/quality of the submissions it receives



<sup>18</sup> Piric A., Reeve N. (1998) THE PUBLIC GOOD SCIENCE FUND: Evaluation - an Overview. Ministry of Research, Science and Technology.

<<http://www.morst.govt.nz/templates/publication.aspx?id=694>>

<sup>19</sup> Aarssen L., et al. (2008) Bang for Your Buck: rejection rates and impact factors in ecological journals. The Open Ecology Journal 1: 14-19.

Given these relationships, explicitly stating research should not be published, or implying a title is substandard, could be expected to do a significant amounts of damage to a title. By directly, or indirectly, diminishing submissions figures of authority can put the ultimate utility of a title at risk.

Fortunately there does not appear to be any explicit instruction to avoid the New Zealand journals, the closest reference that can be found in print are infrequent comments in Foundation of Research, Science and Technology and Ministry of Research, Science and Technology documents, which could be interpreted as implying that New Zealand titles are lower quality than international titles. If this bias against the New Zealand journals currently exists, it may simply be a result of too narrow an interpretation of what it means to be an international journal.

Obviously the titles must stand or fall on their merits with the research community; however, given the high ranking of some of the journals, they should be considered for whether any are included in the top 25 international journals judged as relevant to the scope of the Crown Research Institutes as outlined in their respective, Statements of Corporate Intent.<sup>20</sup>

Under the earlier operation model of the journals, there was a relatively close relationship between the—Ministry of Science and Innovation-funded—Science Media Centre and the Royal Society of New Zealand. This relationship comprised of the Society's publishing team informing the Centre of particularly noteworthy or topical articles that were about to appear in the upcoming issue of the titles. The Science Media Centre would then select appropriate articles for inclusion, under embargo, in briefing packs to Centre-registered journalists.

During an unstructured interview with the Centre's manager, the apparent cessation of this practise was raised. The apparent cause for the break was an interruption in provision of content from the Society while the new publishing arrangements were being formed; however, after their finalisation this particular communication was not re-established. On bringing this situation to the Society's attention, it was revealed that the relationship was a casualty of two features of the new operation with Taylor & Francis: an apparent reluctance to provide articles under embargo; and, insufficient lead times in notification of publication to the Society for articles to be provided in advance.

The first function of the Society given by its Act is to "foster in the New Zealand community a culture that supports science and technology, including ...[t]he promotion of public awareness, knowledge, and understanding of science and technology".<sup>21</sup> As dissemination of high quality local research to the community is an activity that fits securely within the functions of the Society, adds value to the titles, and provides content directly relevant to the role of the Science Media Centre<sup>22</sup>, the intended re-establishment of this practice would appear to benefit all involved parties and should be pursued.

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<sup>20</sup> NZ Government (2010) Guidance for CRI Statements of Corporate Intent.

<<http://www.morst.govt.nz/Documents/cri-taskforce/guidance-for-cri-statements-of-corporate-intent.pdf>>

<sup>21</sup> Section 6, The Royal Society of New Zealand Act 1997.

<sup>22</sup> Section 2, New Zealand Science Media Centre – Terms of reference <<http://www.sciencemediacentre.co.nz/about/>>

## RECOMMENDATIONS

It is recommended that the Ministry of Science and Innovation ensure that an evidence-based perspective is employed in determining the prestige of science journals, for example in recommending suitable journals for publication of government-funded research. Operationally, this evaluation collates evidence suggesting that the titles are not appropriately valued as "international journals" by Government agents, and that this bias could contribute to a self-defeating decline in the journals' value.

During this review, a breakdown in the communication relationship between the Publishing Unit of the Society and the Science Media Centre was discovered, and explained as an early unanticipated consequence of the partnership with Taylor & Francis. As rebuilding of this relationship with the Science Media Centre promises to provide additional value for the titles, and the Centre, it is recommended that efforts to this end be progressed.

It is recommended that any review of the titles be timed to allow a rational assessment of the recent changes to the publishing model. Many of the traditional metrics for science journals appear to be improving, at least in part, thanks to the partnership with Taylor & Francis; however, impact measures for the titles will not reflect on this regime until 2013–2014 at the earliest. In addition, it is recommended that download statistics be adopted in favour of individual subscription numbers as a more appropriate indicator of the journals' utility in the current publishing environment.

# APPENDICES

# Terms of reference

## Evaluation of RSNZ publishing services 2011

### Introduction

This document is the terms of reference for the 2011 evaluation of the Royal Society of New Zealand (RSNZ) publishing services agreement which runs from 2009 to 2012.

### Current services agreement

The Ministry of Research, Science and Technology (MoRST) agreed to continue to fund the Royal Society of New Zealand (RSNZ) to publish science journals. The RSNZ took over the Department of Scientific and Industrial Research (DSIR) publishing role in 1991.

Financial viability of the journals is of high importance: the contract contains provision to cease publication for reasons of financial viability, and the RSNZ is required to manage the journals, as it sees fit, in accordance with best practice publishing, in order to ensure financial viability.

The RSNZ was charged with determining appropriate publishing models and distribution methods, and obtaining all revenue required in addition to the funding provided by the Government. Maximum outputs (journal issues) and time delays (for publication) were set.

The RSNZ is required to provide six-monthly reports to MoRST containing specified data, and both parties agreed to attend quarterly minuted meetings to discuss achievements and review objectives. The Society is also required to keep records of submissions to the journals, demand for the journals and financial viability trends for the purpose of an evaluation.

The Ministry for Science and Innovation (MSI) superseded MoRST on 1 February 2011.

### Objectives of the services contract

The objectives of a contract (or policy) are essentially the intended outcomes. Sometimes, the objectives are more 'output descriptions' than 'outcome statements'.

The current services agreement for funding New Zealand's Science Journals between MoRST and the RSNZ 1 July 2009 – 30 June 2012 has the following objective:

"Publication of the Journals enhances dissemination of research relevant to New Zealand, provides opportunities for New Zealand authors to publish their research, and makes such information readily available."

### Evaluation specification in the services contract

MoRST, in consultation with the RSNZ, is to determine the exact terms of reference for an evaluation of the services which will be conducted by the RSNZ after 31 December 2010.

The evaluation is expected to focus on the outcomes and value derived from continued publication of the journals, and the extent to which the journals (outputs) and publishing (activity) contributed towards or achieved the objective.

### Objective of the evaluation

To evaluate the efficiency and effectiveness of the RSNZ publishing activity and journals produced, and to review the relevance and coherence of journal funding in the MSI context.

The evaluation will provide accountability evidence and learning for future policy improvements.

MSI and RSNZ recognise that the publishing service has undergone significant change, and that some planned benefits of the change will not be visible in publishing metrics at this time.



## Approach

The evaluation will work from the evaluation framework below which was developed from the contract document and from international science and technology evaluation guidelines.

The RSNZ evaluator will use the evaluation framework to develop specific investigative questions. These questions will be answered on the basis of data collected for monitoring and evaluation, and minutes of monitoring meetings as described in the contract for services. In addition, the evaluator will carry out some document review, expert interviews (including, but not limited to RSNZ and MSI) and where possible comparative analysis of the publication activity and journal reach, output and impact of the RSNZ and similar journals.

MSI will assist with supply of evidence, in particular for questions five and six. MSI and RSNZ will use their established practices for secure storage of 'commercially sensitive' data.

The evaluator will, in consultation with the project manager, analyse the evidence and synthesise judgements with respect to the evaluation questions.

The evaluator will provide relevant, realistic and impartial recommendations aimed at maximising the efficiency and effectiveness of the publication activity. The evaluator may provide recommendations aimed at identifying adjustments to MSI policy to improve the relevance of the funding to the missions of MSI and the RSNZ and the coherence between MSI policy and the RSNZ-published journals.

## Final deliverable

Written report due to MSI 19 May 2011. The report will provide MSI and RSNZ with evidence-based findings and recommendations that are relevant to New Zealand science system and MSI strategic priorities. The final report will be 'ready for publication' – that is, it does not contain commercially sensitive evidence e.g. to support judgements on question four. Such information is to be provided in a separate marked document.

## Success criteria

The project will be successful if it is produced to the specified time frame and succinctly answers the evaluative questions, using a strong evidence base, and provides recommendations are relevant, realistic and impartial, without becoming a policy 'think piece'.

## Scope

INCLUDES	DOES NOT INCLUDE
Eight journals funded by this contract Taylor & Francis activities related to the journals, and relevant comparisons with other T&F titles Data readily available on, appropriate, counterfactual journals	Other RSNZ publications e.g. Alpha, Gamma Interviews or specially prepared data on counterfactual

## Timeline

STAGE	0	1	2	3	4
Description	Inception and set up	Development of project plan	Collection of evidence	Analysis of evidence	Confirmation and response
Duration	January 2011	February 2011	March-April 2011	April 2011	Due 19 May 2011
Review/sign off	IPG leadership approval	Joint MSI GM and RSNZ CE	MSI project manager	MSI project manager	MSI Director Evaluation
Deliverable/milestone	Project brief	Terms of Reference	Evidence file	Preliminary report	Final report to MSI cc to RSNZ

Variation to the timeline may be agreed by the MSI project manager and RSNZ evaluator.

### **Evaluative Framework**

These are the questions that will be answered in the final report. Questions one to four are drawn from the contract for services, and questions five and six look at relevance and coherence of the policy.

- 1 To what extent is the publication activity of the RSNZ efficient in:
  - enhancing dissemination of research relevant to New Zealand,
  - providing opportunities for New Zealand authors to publish their research,
  - making New Zealand research readily available?
- 2 To what extent are the New Zealand science journals effective in:
  - enhancing dissemination of research relevant to New Zealand,
  - providing opportunities for New Zealand authors to publish their research,
  - making New Zealand research readily available?
- 3 What value is derived from continued publication of the New Zealand science journals?
- 4 To what extent is the current financial model sustainable?
- 5 How well does government funding of the journals fit with the missions of MSI and the RSNZ?
- 6 How well does MSI policy and practice promote value added from the journals?

**Investigative questions (lower level) will be designed as part of the project design phase.**

















New Zealand Journal of Zoology



Senior Editor: Carolyn King (UOW)

Associate Editors: Jonathan Banks (UOW)  
Alison Cree (UOO)  
John Marris (LIU)  
Grant Norbury (LCR)  
Stuart Parsons (UOA)  
Cor Vink (AGR)

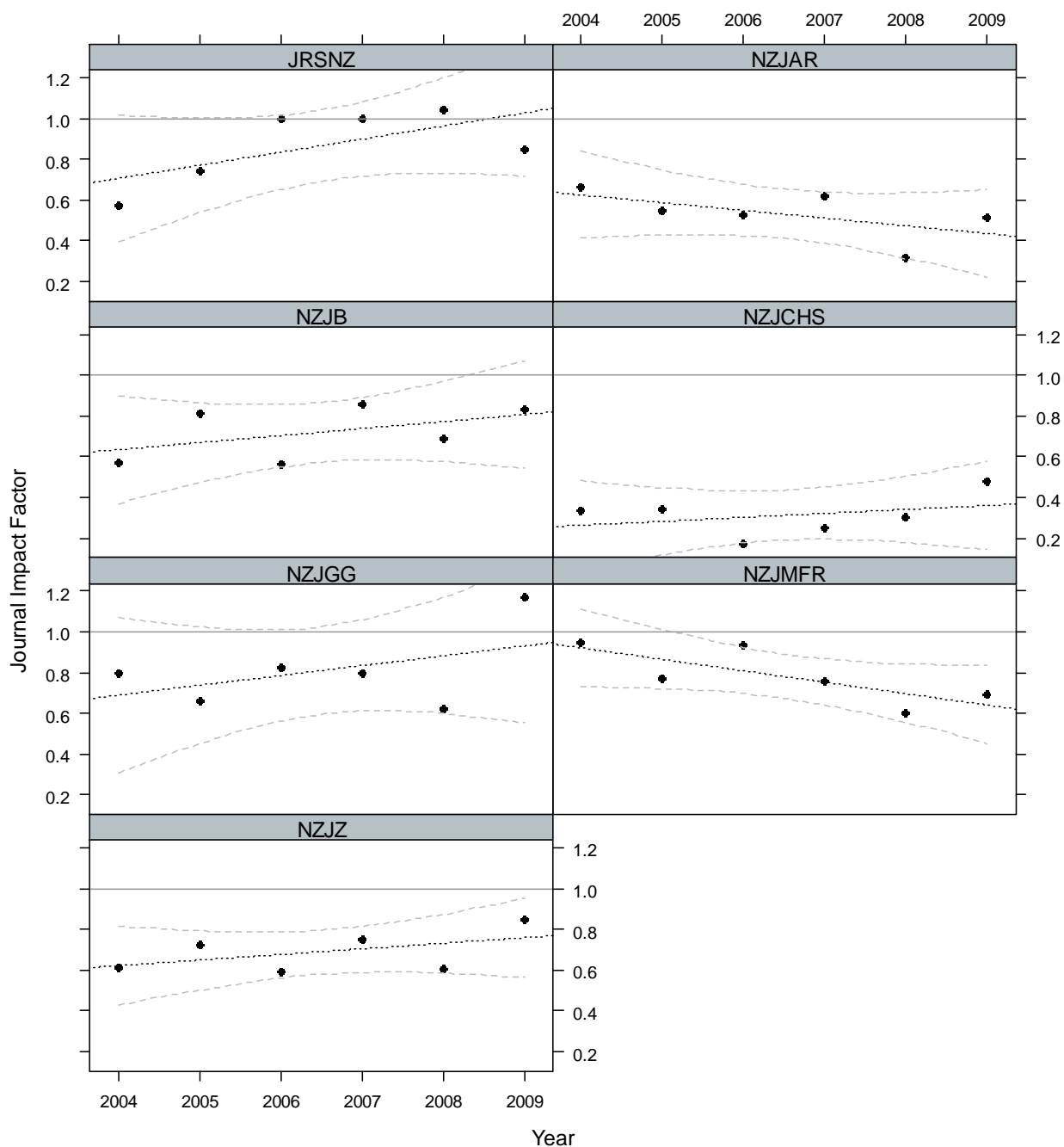
An international journal of the zoological science of New Zealand, the Pacific Basin, and Antarctica

**Aims:** The diversity of the fauna of the southern continents and oceans is of worldwide interest to researchers in universities, museums, and other centres. The New Zealand Journal of Zoology plays an important role in disseminating information on field-based, experimental, and theoretical research on the zoology of the region.

**Scope of submissions:** The New Zealand Journal of Zoology publishes original research papers, review papers, short communications, book reviews, letters, and forum articles. We welcome submissions in all fields of zoological science concerning New Zealand, the Pacific Basin, and Antarctica. Particular strengths include conservation biology, insect taxonomy and pest control, but the journal's subject matter also includes ecology, physiology, pathology, behaviour, genetics, and taxonomy.

URL: <http://www.royalsociety.org.nz/nzjz/>  
<http://www.tandf.co.uk/journals/TNZZ>

## Trends in Journal Impact Factor for the journals over 2004–2009



The above collection of charts describes the Journal Impact Factor by each year from 2004 through to the most recent available reference year, 2009. Each of the seven titles measured by this indicator is displayed in its own panel although all axes are to the same scale across panels. Overlaid on the charts is the linear trend line, with the associated 95% confidence envelope, and a solid grey line at the Journal Impact Factor of 1.0 is provided as a visual guide. No journal shows a significant relationship between year and JIF over this period.

## SCImago journal metrics for the Royal Society of New Zealand suite and selected counter-factual titles

A list of titles with broad comparability with the Royal Society of New Zealand suite was sourced with the help of members of the Publishing unit. The primary condition for consideration was that the counterfactual publications must be addressing a similar disciplinary audience to the New Zealand science journals, and where possible, be of a regional focus. In order to provide a broader view, a range of titles publishing in New Zealand, and those directly serving much larger research communities, e.g., Australia, were also considered. All metrics sourced from SCImago<sup>23</sup>.

Description of metrics:

SCImago Journal Rank	A measure of the journal's impact, influence or prestige. It expresses the average number of weighted citations received in the selected year by the documents published in the journal in the three previous years.
Total Documents	Documents published in the year from indexed title
Total Cites (3years)	Citations in Year received by journal's documents published during the 3 previous years (Year-1, Year-2 and Year-3)
Self Cites (3years)	Journal's self-citations in Year to its own documents published during the 3 previous years (Year-1, Year-2 and Year-3)
Citable Docs. (3years)	Citable documents published in the 3 previous years (Year-1, Year-2 and Year-3). Citable documents include: articles, reviews and conference papers
Cites / Doc. (4years)	Average citation per document in a 4 year period
Cites / Doc. (3years)	Average citation per document in a 3 year period
Cites / Doc. (2years)	Average citation per document in a 2 year period: <b>NB</b> this 2-year metric follows the methodology of Thomson Reuter's Journal Impact Factor (JIF), but differs to a minor extent in being calculated from a different data source, i.e., Scopus cf. Web of Science.
Cited Docs.	Documents published during the 3 previous years (Year-1, Year-2 and Year-3) that have been cited at least once
Uncited Docs.	Documents published during the 3 previous years (Year-1, Year-2 and Year-3) that have never been cited
% International Collaboration	Publication Ratio whose affiliation includes more than one country address

<sup>23</sup> SCImago. (2007). SJR — SCImago Journal & Country Rank. Retrieved April 05, 2011, from <http://www.scimagojr.com>  
[www.royalsociety.org.nz](http://www.royalsociety.org.nz)

## EVALUATION OF RSNZ PUBLISHING

Journal of the Royal Society of New Zealand (Q2 in Multidisciplinary, #21 of 79 titles)

	Publisher	Nation	Indexed	SCImago reference URL
JRSNZ	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=23030&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=23030&amp;tip=sid</a>
The South Pacific Journal of Natural and Applied Sciences	CSIRO	Australia/ Fiji	No	Not covered
Polish Journal of Natural Sciences	Versita	Poland	Yes, from 2009	<a href="http://www.scimagojr.com/journalsearch.php?q=18200156705&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=18200156705&amp;tip=sid</a>
The Ohio Journal of Sciences	Ohio Academy of Science	USA	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=22176&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=22176&amp;tip=sid</a>

Indicators	JRSNZ	Polish JNSci.	Ohio JSci (2008)
SCImago Journal Rank	0.05	0	0.035
Total Documents	30	25	15
Total Cites (3years)	33	0	9
Self Cites (3years)	2	0	1
Citable Docs. (3years)	40	0	63
Cites / Doc. (4years)	0.91	0	0.2
Cites / Doc. (3years)	0.83	0	0.14
Cites / Doc. (2years)	0.81	0	0.09
Cited Docs.	22	0	9
Uncited Docs.	21	0	54
% International Collaboration	20	28	6.67

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
16	Scientist	Q1	0.060	13	0.29	United States
17	Current Science	Q2	0.058	47	0.74	India
18	International Journal of Bifurcation and Chaos in Applied Sciences and Engineering	Q2	0.056	55	0.98	Singapore
19	Discrete Dynamics in Nature and Society	Q2	0.055	13	1.22	United States
20	Johns Hopkins APL Technical Digest	Q2	0.052	15	0.07	United States
21	Journal of the Royal Society of New Zealand	Q2	0.050	22	0.81	New Zealand
22	Issues in Science and Technology	Q2	0.050	11	0.34	United States
23	Pacific Science	Q2	0.049	20	0.91	United States
24	Fractals	Q2	0.047	22	0.57	Singapore
25	Progress in Natural Science	Q2	0,047	16	0,79	United Kingdom
26	Science in China, Series A: Mathematics, Physics, Astronomy	Q2	0,040	19	0,50	China

EVALUATION OF RSNZ PUBLISHING

Kōtuitui: The New Zealand Journal of the Social Sciences (Q4 in Social Sciences (Misc) #326 of 366)

	Publisher	Nation	Indexed	SCImago reference URL
Kōtuitui	RSNZ	NZ	Yes, from 2009	<a href="http://www.scimagojr.com/journalsearch.php?q=17600155136&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=17600155136&amp;tip=sid</a>
Social Policy Journal of New Zealand	MSD	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=5700165357&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=5700165357&amp;tip=sid</a>
Polish Sociological Review	Polskie Towarzystwo Socjologiczne	Poland	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=5600153242&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=5600153242&amp;tip=sid</a>
Australian Journal of Social Issues	Australian Council of Social Service	Australia	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=28625&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=28625&amp;tip=sid</a>
Canadian Journal of Sociology	University of Toronto Press	Canada	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=17587&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=17587&amp;tip=sid</a>

Indicators	Kōtuitui	SPJNZ	Polish Soc. Rev.	Aust. JSI	Can. JSociol.
SCImago Journal Rank	0	0	0.031	0.037	0.035
Total Documents	17	19	34	23	28
Total Cites (3years)	0	40	1033	970	1646
Self Cites (3years)	0	0	1	5	5
Citable Docs. (3years)	0	39	74	104	60
Cites / Doc. (4years)	0	0	0.014	0.47	0.50
Cites / Doc. (3years)	0	0	0.014	0.44	0.48
Cites / Doc. (2years)	0	0	0.02	0.44	0.38
Cited Docs.	0	0	9	35	23
Uncited Docs.	0	40	69	73	47
% International Collaboration	17.65	15.79	11.76	0	0

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
321	New Design	Q4	0.029	1	0.00	United Kingdom
322	Homme et la Societe	Q4	0.029	1	0.02	France
323	CyberGeo	Q4	0.029	1	0.00	France
324	Kasetsart Journal - Social Sciences East Asian Science, Technology and Society	Q4	0.029	1	0.00	Thailand
325	Kōtuitui	Q4	0	2	0.00	Germany
326	Kōtuitui	Q4	0	1	0.00	NZ
327	Police Practice and Research	Q4	0	2	0.00	United Kingdom
328	Social Sciences Tydskrift vir	Q4	0	2	0.00	Russia
329	Geesteswetenskappe	Q4	0	1	0.00	South Africa
330	Advances in Group Processes	NC*	NC*	9	0.72	USA
331	Advances in Program Evaluation	NC*	NC*	1	0.06	USA

## EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Agricultural Research (Q3 in Agricultural and Biological Sciences (Misc) #142 of 266)

	Publisher	Nation	Indexed	SCImago reference URL
NZJAR	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=80601&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=80601&amp;tip=sid</a>
Irish Journal of Agricultural and Food Research	Teagasc	Ireland	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=34765&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=34765&amp;tip=sid</a>
Agricultural and Food Science	Scientific Agricultural Society of Finland		Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=96395&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=96395&amp;tip=sid</a>
Jordan Journal of Agricultural Sciences	University of Jordan		No	Not covered
Electronic Journal of Polish Agricultural Universities	University of Jordan		No	Not covered
Animal Production Science	CSIRO		Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=16900154706&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=16900154706&amp;tip=sid</a>

Indicators	NZJAR	IJAAR	Ag. Food Sci.	Anim. Prod Sci.
SCImago Journal Rank	0.045	0.040	0.048	0.53
Total Documents	48	35	39	127
Total Cites (3years)	1709	780	1456	4323
Self Cites (3years)	26	3	20	118
Citable Docs. (3years)	246	48	98	650
Cites / Doc. (4years)	0.53	0.82	0.88	0.99
Cites / Doc. (3years)	0.50	0.65	0.92	0.96
Cites / Doc. (2years)	0.49	0.74	0.96	0.87
Cited Docs.	78	15	48	292
Uncited Docs.	180	33	57	361
% International Collaboration	22.92	25.71	28.21	14.96

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
137	Agricultural and Food Science	Q3	0.048	16	0.96	Finland
138	Web Ecology	Q3	0.046	9	0.65	United Kingdom
139	Environmental Ethics	Q3	0.046	17	0.93	Netherlands
140	Economics	Q3	0.046	24	0.77	United Kingdom
141	Plant, Soil and Environment	Q3	0.046	16	0.73	Czech
142	New Zealand Journal of Agricultural Research	Q3	0.045	23	0.49	NZ
143	Journal of Natural History	Q3	0.045	23	0.70	United Kingdom
144	Journal of Forest Research	Q3	0.044	16	0.87	Germany
145	EPPO Bulletin	Q3	0.044	10	0.35	France
146	Journal of Agricultural and Food Industrial Organization	Q3	0.044	6	0.88	USA
147	Caryologia	Q3	0.044	15	0.43	Italy

EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Botany (Q2 in Agronomy and Crop Science #74 of 182)

	Publisher	Nation	Indexed	SCImago reference URL
NZJB	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=19911&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=19911&amp;tip=sid</a> <a href="http://www.scimagojr.com/journalsearch.php?q=17999&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=17999&amp;tip=sid</a>
Edinburgh Journal of Botany	Cambridge University Press	United Kingdom	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=19937&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=19937&amp;tip=sid</a>
Nordic Journal of Botany	Council for Nordic Publication in Botany	Denmark	Yes	
Australian Journal of Botany	CSIRO	Australia	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=16784&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=16784&amp;tip=sid</a>
Polish Botanical Journal	Polska Akademia Nauk	Poland	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=16648&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=16648&amp;tip=sid</a>
South African Journal of Botany	Elsevier- South African Association of South Botanists	Africa	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=17257&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=17257&amp;tip=sid</a>

Indicators	NZJB	Edin. JB	Nordic JB	Aust. JB	Polish BJ	Sth Afr. JB
SCImago Journal Rank	0.051	0.036	0.041	0.110	0.037	0.052
Total Documents	31	25	92	74	14	91
Total Cites (3years)	794	704	2341	3064	647	3019
Self Cites (3years)	28	9	46	46	3	44
Citable Docs. (3years)	107	81	166	225	65	279
Cites / Doc. (4years)	0.86	0.39	0.64	1.72	0.27	0.99
Cites / Doc. (3years)	0.83	0.38	0.64	1.96	0.29	10.5
Cites / Doc. (2years)	0.83	0.29	0.68	1.93	0.21	0.95
Cited Docs.	52	19	73	148	15	150
Uncited Docs.	57	63	99	78	50	134
% International Collaboration	6.45	64	16.3	18.92	21.43	24.18

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
130	Weed Biology and Management	Q2	0.053	15	0.78	United Kingdom
131	Cryptogamie, Algologie	Q2	0.053	15	0.5	France
132	Weed Technology	Q2	0.053	35	0.87	USA
133	South African Journal of Botany	Q2	0.052	21	0.95	South Africa
134	Dendrochronologia	Q2	0.052	15	1.67	Italy
135	New Zealand Journal of Botany	Q2	0.051	23	0.83	NZ
136	Pharmaceutical Biology	Q2	0.051	23	0.82	Netherlands
137	Journal of Asian Natural Products Research	Q2	0.051	14	0.44	United Kingdom
138	Plant Genetic Resources: Characterisation and Utilisation	Q2	0.05	11	0.58	United Kingdom
139	Botanica Helvetica	Q2	0.05	12	0.96	Switzerland
140	Plant Species Biology	Q2	0.05	20	0.71	United Kingdom



EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Crop and Horticultural Research (Q2 in Agronomy and Crop Science #74 of 182)

	Publisher	Nation	Indexed	SCImago reference URL
NZJCHS	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=35539&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=35539&amp;tip=sid</a> <a href="http://www.scimagojr.com/journalsearch.php?q=6900154707&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=6900154707&amp;tip=sid</a>
Crop and Pasture Science	CSIRO	Australia	Yes	
Horticultural Science	Czech Academy of Agricultural Sciences	Czech	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=5400152632&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=5400152632&amp;tip=sid</a>
Journal of the Japanese Society for Horticultural Science	Japanese Society for Horticultural Science	Japan	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=25393&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=25393&amp;tip=sid</a>
European Journal of Horticultural Science	Verlag Eugen Ulmer GmbH	Germany	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=85975&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=85975&amp;tip=sid</a>
Advances in Horticultural Science	Firenze University Press	Italy	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=26210&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=26210&amp;tip=sid</a>

Indicators	NZJCHS	Crop Past. Sci	Hort. Sci.	JJSHS	Euro. JHS	Adv. Hort. Sci.
SCImago Journal Rank	0.041	0.087	0.036	0.053	0.040	0.035
Total Documents	41	119	23	66	43	41
Total Cites (3years)	1250	5787	423	2047	1285	1117
Self Cites (3years)	7	82	1	66	9	5
Citable Docs. (3years)	129	400	45	182	135	140
Cites / Doc. (4years)	0.55	1.55	0.6	0.81	0.56	0.32
Cites / Doc. (3years)	0.53	1.39	0.6	0.90	0.53	0.34
Cites / Doc. (2years)	0.58	1.28	0.6	1.08	0.46	0.36
Cited Docs.	45	237	17	86	49	35
Uncited Docs.	86	165	28	96	86	106
% International Collaboration	14.63	20.17	4.35	12.12	27.91	7.32

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
69	NJAS - Wageningen Journal of Life Sciences	Q2	0.042	12	0.6	Netherlands
70	Communications in Soil Science and Plant Analysis	Q2	0.042	30	0.45	USA
71	Spanish Journal of Agricultural Research	Q2	0.041	5	0.42	Spain
72	Stewart Postharvest Review	Q2	0.041	5	0.57	United Kingdom
73	Irrigation and Drainage	Q2	0.041	13	0.82	USA
74	New Zealand Journal of Crop and Horticultural Science	Q2	0.041	15	0.58	NZ
75	Agricultural Sciences in China	Q2	0.041	6	0.28	China
76	Experimental Agriculture	Q2	0.04	19	0.63	United Kingdom
77	International Journal of Agricultural Sustainability	Q3	0.04	4	0.89	United Kingdom
78	Journal fur Verbraucherschutz und Lebensmittelsicherheit	Q3	0.04	7	0.31	Germany
79	Revista Brasileira de Ciencia do Solo	Q3	0.039	16	0.69	Brazil
...						
106	New Zealand Plant Protection	Q3	0.034	4	0.36	NZ

EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Geology and Geophysics (Q1 in Earth and Planetary Sciences (Misc) #34 of 244, Geology #13 of 155, Geophysics #13 of 64)

	Publisher	Nation	Indexed	SCImago reference URL
NZJGG	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=25160&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=25160&amp;tip=sid</a> <a href="http://www.scimagojr.com/journalsearch.php?q=23207&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=23207&amp;tip=sid</a>
Irish Journal of Earth Sciences	Royal Irish Academy	Ireland	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=26317&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=26317&amp;tip=sid</a>
Scottish Journal of Geology	Geological Society Publishing House	United Kingdom	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=11400153329&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=11400153329&amp;tip=sid</a>
Transactions of the Royal Society of Edinburgh. Earth and Environmental Sciences	Royal Society of Edinburgh Scotland Foundation	United Kingdom	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=26507&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=26507&amp;tip=sid</a>
Bulletin of the Geological Society of Finland.	Geological Society of Finland.	Finland	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=24686&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=24686&amp;tip=sid</a>
Australian Journal of Earth Sciences	Taylor & Francis	Australia	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=24686&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=24686&amp;tip=sid</a>

Indicators	NZJGG	Irish JES	Scot. JGeol.	TRSE:EES	BGSFinland	Aust.JES
SCImago Journal Rank	0.086	0.037	0.039	0.102	0.045	0.072
Total Documents	24	2	20	15	7	72
Total Cites (3years)	1320	59	704	977	389	4002
Self Cites (3years)	32	0	7	0	8	38
Citable Docs. (3years)	94	15	49	71	25	195
Cites / Doc. (4years)	1.10	0.25	0.52	0.7	1.09	1.19
Cites / Doc. (3years)	1.05	0.2	0.53	0.76	1.12	1.23
Cites / Doc. (2years)	1.00	0.2	0.55	0.53	1.18	1.07
Cited Docs.	48	3	17	28	16	114
Uncited Docs.	49	12	34	46	9	97
% International Collaboration	33.33	50	20	60	28.57	25

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
8	Journal of Metamorphic Geology	Q1	0.111	62	4.01	GB
9	Geostandards and Geoanalytical Research	Q1	0.1	34	1.89	FR
10	Journal of Sedimentary Research	Q1	0.097	41	1.92	US
11	Natural Hazards Review	Q1	0.09	14	1.77	US
12	Sedimentary Geology	Q1	0.088	49	1.9	NL
13	New Zealand Journal of Geology, and Geophysics	Q1	0.086	31	1	NZ
14	Journal of Structural Geology	Q1	0.083	58	1.71	NL
15	Sedimentology	Q1	0.082	51	2.01	GB
16	Petroleum Exploration and Development	Q1	0.081	8	1.57	GB
17	Permafrost and Periglacial Processes	Q1	0.074	34	2.21	US
18	Newsletters on Stratigraphy	Q1	0.067	15	1.1	DE

EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Marine and Freshwater Research (Q2 in Oceanography #41 of 96)

	Publisher	Nation	Indexed	SCImago reference URL
NZJMFR	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=27910&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=27910&amp;tip=sid</a>
Marine and Freshwater Research				<a href="http://www.scimagojr.com/journalsearch.php?q=27846&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=27846&amp;tip=sid</a>
	CSIRO	Australia	Yes	
Marine Ecology	Blackwell	Italy	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=12167&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=12167&amp;tip=sid</a>
	Sea Fisheries Research Institute (DAFF)	South Africa	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=34412&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=34412&amp;tip=sid</a>
African Journal of Marine Science				
Canadian Journal of Fisheries and Aquatic Science	NRC Research Press	Canada	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=12016&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=12016&amp;tip=sid</a>
	National Water Research Institute	Canada	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=24564&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=24564&amp;tip=sid</a>

Indicators	NZJMFR	MFR	Marine Ecol.	AJMS (2008)	CJFAS	Water Res.
SCImago Journal Rank	0.046	0.07	0.066	0.060	0.109	0.047
Total Documents	82	129	43	49	186	115
Total Cites (3years)	3445	5739	23883	2257	9135	1304
Self Cites (3years)	18	75	15	58	125	6
Citable Docs. (3years)	129	286	160	207	621	112
Cites / Doc. (4years)	1.06	1.70	1.35	1.28	2.29	0.65
Cites / Doc. (3years)	0.82	1.70	1.43	1.24	2.14	0.57
Cites / Doc. (2years)	0.71	1.51	1.4	1.22	1.67	0.28
Cited Docs.	61	194	99	114	465	37
Uncited Docs.	72	102	68	94	170	78
% International Collaboration	25.61	25.58	23.26	44.9	24.19	12.50

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
	Marine and Freshwater Behaviour and Physiology					United Kingdom
36		Q2	0.057	17	0.58	
37	Ocean and Coastal Management	Q2	0.054	28	0.83	Netherlands
						United Kingdom
38	Marine Geodesy	Q2	0.05	18	1.13	
39	Oceanologia	Q2	0.048	19	0.5	Poland
	Izvestiya - Atmospheric and Oceanic Physics					Russia
40		Q2	0.047	10	0.2	
41	New Zealand Journal of Marine and Freshwater Research	Q2	0.046	32	0.71	NZ
42	Atoll Research Bulletin	Q3	0.045	12	0.23	USA
43	Plankton and Benthos Research	Q3	0.044	5	0.67	Japan
	Terrestrial, Atmospheric and Oceanic Sciences					Taiwan
44		Q3	0.042	25	0.57	United Kingdom
45	Journal of Navigation	Q3	0.04	13	0.93	
46	Acta Adriatica	Q3	0.039	8	0.4	Croatia

EVALUATION OF RSNZ PUBLISHING

New Zealand Journal of Zoology (Q2 in Animal Science and Zoology #124 of 314)

Publisher	Nation	Indexed	SCImago reference URL	
NZJZ	RSNZ	NZ	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=23257&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=23257&amp;tip=sid</a>
Norwegian Journal of Zoology/ Fauna Norvegica	Norwegian Zoological Society	Norway	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=21515&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=21515&amp;tip=sid</a>
Australian Journal of Zoology	CSIRO	Australia	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=24682&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=24682&amp;tip=sid</a>
Turkish Journal of Zoology	Tubitak	Turkey	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=24033&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=24033&amp;tip=sid</a>

Indicators	NZJZ	Norwegian JZ	Aust. JZ	Turk. JZ
SCImago Journal Rank	0.052	0.031	0.057	0.035
Total Documents	41	2	46	49
Total Cites (3years)	1933	170	2022	1162
Self Cites (3years)	17	0	10	11
Citable Docs. (3years)	105	3	139	189
Cites / Doc. (4years)	0.87	0.25	0.88	0.49
Cites / Doc. (3years)	0.94	0.33	0.81	0.47
Cites / Doc. (2years)	0.84	0.33	0.79	0.38
Cited Docs.	56	1	67	58
Uncited Docs.	51	3	73	131
% International Collaboration	21.95	50	26.09	14.29

Rank	Title	Quartile	SJR	H index	Cites / Doc. (2years)	Nation
119	Journal of Field Ornithology	Q2	0.054	25	0.83	USA
120	Anthrozoos	Q2	0.054	16	1.48	USA
121	Animal Production Science	Q2	0.053	37	0.87	Australia
122	Acta Ornithologica	Q2	0.053	14	1.02	Poland
123	Bird Conservation International	Q2	0.053	18	0.9	United Kingdom
124	New Zealand Journal of Zoology	Q2	0.052	22	0.84	NZ
125	Emu	Q2	0.051	21	0.86	Australia
126	Mammalian Biology	Q2	0.051	19	0.95	Netherlands
127	Canadian Journal of Animal Science	Q2	0.051	31	0.69	Canada
128	Czech Journal of Animal Science	Q2	0.051	13	1.1	Czech
129	Zoo Biology	Q2	0.05	27	0.61	USA

## EVALUATION OF RSNZ PUBLISHING

Miscellaneous NZ titles, not already described.

	Publisher	Indexed	SCImago reference URL
NZ J of Ecology	NZ Ecological Society	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=12883&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=12883&amp;tip=sid</a>
Antarctic Journal	NZ Antarctic Society	No	Not covered
NZ J of Forestry Science	Scion	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=23028&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=23028&amp;tip=sid</a>
NZ J of Forestry	New Zealand Institute of Forestry	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=23027&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=23027&amp;tip=sid</a>
New Zealand Veterinary Journal	New Zealand Veterinary Association	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=18355&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=18355&amp;tip=sid</a>
New Zealand Medical Journal	New Zealand Medical Association	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=15876&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=15876&amp;tip=sid</a>
Journal of Hydrology: New Zealand	New Zealand Hydrological Society	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=29538&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=29538&amp;tip=sid</a>
New Zealand Plant Protection	New Zealand Plant Protection Society	Yes	<a href="http://www.scimagojr.com/journalsearch.php?q=7700153231&amp;tip=sid">http://www.scimagojr.com/journalsearch.php?q=7700153231&amp;tip=sid</a>

Indicators	NZJ Ecol.	NZJ For. Sci	NZJ For.	NZ Vet. J	NZ Med. J	J Hydrol. NZ	NZ Plant Prot.
SCImago Journal Rank	0.08	0.047	0	0.07	0.059	0.04	0.034
Total Documents	21	25	45	69	361	7	65
Total Cites (3years)	1078	971	390	2057	5080	195	981
Self Cites (3years)	8	5	0	72	115	4	27
Citable Docs. (3years)	90	74	61	174	765	23	116
Cites / Doc. (4years)	1.13	0.68	0.24	1.33	0.69	0.6	0.36
Cites / Doc. (3years)	1.1	0.76	0.13	1.39	0.65	0.57	0.36
Cites / Doc. (2years)	1.1	0.7	0.05	1.08	0.69	0.27	0.36
Cited Docs.	51	32	7	91	305	10	33
Uncited Docs.	45	47	88	100	1057	14	84
% International Collaboration	9.52	16	4.44	36.23	11.91	28.57	6.15

## Frequency of sector and private business authorship in the Royal Society of New Zealand science journals

Sector Association	#Authors
DairyNZ	35
Fonterra Cooperative	9
Livestock Improvement Corporation	4
Coal Research Association of New Zealand	2
Deer Industry New Zealand	2
Meat and Wool New Zealand	2
14 separate entities, 62 authors	

Private NZ-based businesses	#Authors
Dexcel	20
Palaeofaunal Surveys	19
Lincoln Botanical	14
Ravensdown Fertiliser Co-operative	14
CRL Energy	11
Ecological Research Associates of New Zealand	11
Ballance AgriNutrients	10
Palaeocol Research	10
Microfossil Research	8
Geomarine Research	5
Gold Mines of New Zealand	5
Grasslanz Technology	5
Maurice Gray and Associates	5
Solid Energy New Zealand	5
ASR	4
Ecosystems Consultants	4
Ensis	4
Kingett Mitchell & Associates	4
Kotare Bioethics	4
Stratigraphic Solutions	4
Biodiscovery	3
Carter Holt Harvey	3
Ian R Brown Associates	3
Natural Resource Assessors	3
New Zealand Oil & Gas	3
Shell Todd Oil Services	3
151 separate entities, 337 authors	

