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Publishing integrative landscape research: analysis of editorial policies of peer-reviewed journals

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ABSTRACT

Integrative research concepts such as interdisciplinarity and transdisciplinarity are gaining currency in landscape research as well as in the broader context of environmental science. Hence an increasing number of projects apply these approaches. Nonetheless, several epistemological and structural barriers hamper the operationalization of integrative research. Difficulty in publishing results from integrative research is referred to as one of the key problems for operationalization. Researchers and authors claim that it is difficult to publish findings from integrative research in international peer-reviewed journals and that suitable journals cannot be found. This paper analyses the editorial policies of international peer-reviewed journals towards publishing work resulting from integrative efforts in the field of landscape research. It investigates whether an editorial publication bias against integrative papers exists in scientific journals publishing landscape research articles. The study is based on an analysis of the aims and scope sections as published on the websites of 156 selected journals publishing landscape-related papers and on an E-mail survey of the editors of these journals. The editors were asked whether they accept integrative papers and what criteria they use for selecting reviewers. The majority of editorial policies as published on the journal websites ask explicitly or indirectly for integrative paper submissions. Almost all journal editors accept integrative papers and more than half of the editors select reviewers in part due to their knowledge of integrative research processes. We discuss the question of bias against integrative papers by editors, reviewers and authors and suggest some reasons why publishing integrative research can be difficult. This is due to the additional time needed to compile and write up integrative results, conceptual differences across research fields, lack of common terminology and difficulty in selecting the right journal. This study found no evidence to support the claim of an editorial bias against publishing integrative landscape research papers. The majority of editors of our sample welcome integrative research papers and encourage authors to submit their results from integrative landscape research to peer-reviewed journals.

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1. Introduction

Integrative research concepts such as interdisciplinarity and transdisciplinarity are gaining increasing currency in land-

scape research and environmental science in general. This is evidenced by the growing number of academic meetings, conferences and workshops that dedicate sessions or are entirely devoted to the enhancement of research cooperation

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across disciplinary boundaries on landscape- and environment-related issues. National as well as international research funding bodies prioritize projects that work towards integrating disparate disciplinary knowledge and which involve non-academic stakeholders in the research process. Environmental scientists and landscape researchers are themselves stimulated by the prospect of merging knowledge communities with expertise on landscapes in order to gain better understanding of their research subject. In consequence, the number of research projects, research teams and individuals dealing with integrative research on environmental and landscape issues is rising. Studies by Höll and Nilsson (1999), Tress et al. (2005a) and Van Kerkhoff (2005) report on the development of research programs in integrative environmental and landscape research. Brandt (2000), Klijn and Vos (2000), Moss (2000), Tress et al. (2001) and Mander et al. (2004) report from recent landscape conferences focusing on integrative research concepts. Fry (2001), Quinlan and Scogings (2004) and Tress et al. (2005b) discuss researchers' interest in and difficulties with integrative research. Wu and Hobbs (2002) define integrative research as a key priority for future landscape research, and Tress et al. (2005a) deal with policy expectations and research practice in integrative landscape research.

The keen interest in integrative research concepts has brought to the fore the many difficulties and barriers in the operationalization and realization of interdisciplinarity and transdisciplinarity in the daily research process. Studies by Duffy et al. (1997), Naiman (1999), Spanner (2001), Bruce et al. (2004), COSEPUP (2004) and Jakobsen et al. (2004) identify a number of barriers to integration: spatial distance separating research teams, additional time needed for integration, difficulties in leadership and personal chemistry, lack of common terminology, different academic traditions, different methodologies, incompatible power hierarchies between disciplines, unsuitable organizational infrastructure and the current merit system. These studies also all mention difficulties in publishing from integrative research projects.

The research reported on here deals with this last-mentioned barrier, the aspect of publishing integrative research. The study is part of the INTELS (=Interdisciplinarity and Transdisciplinarity in Environmental and Landscape Studies) project, which investigates interdisciplinarity and transdisciplinarity in environmental and landscape studies. The INTELS project's specific aims are to analyse the state of the art, identify a good code of practice and develop instruments by which to support and evaluate integrative research. The motivation for this paper stems from an earlier survey conducted as part of the INTELS project revealing that landscape researchers perceive a publications bias against articles from integrative research (Tress et al., 2005a). Interviewees said that it is more difficult to publish from integrative projects than from other projects. They also perceived a lack of journals suited for integrative landscape research papers. Bruce et al. (2004) found a similar perception amongst authors in environmental studies. A lack of opportunities to publish results in high-ranking refereed journals is seen as a factor that discourages interdisciplinary research. Bruce et al. (2004) even mention that researchers felt there was discrimination against interdisciplinary papers by editors and referees.

As publications are an important research output and serve as an evaluation instrument within current academic merit systems, and as they are demanded by most funding bodies that provide grants for research projects, we investigated whether journals do have an editorial bias against integrative papers. If there is a bias against papers from integrative landscape research in the scientific literature then it could be critically questioned how integrative landscape research can contribute to academic advancement in environmental science.

The objectives of this paper are, therefore, to identify international peer-reviewed journals that invite integrative papers and to analyse the editorial policies of those journals towards publishing results from integrative efforts in the field of landscape research. The paper also investigates the criteria that editors apply for reviewer selection. Additionally, it discusses potential difficulties related to publishing integrative landscape research. Making this information available to researchers who are interested in publishing work from integrative research efforts may help to improve publication performance within the integrative landscape research field.

In general, Sohn (1996) as well as Møller and Jennions (2001) consider a publication bias to exist when the published literature does not reflect finished research projects in a particular subject area. Publication bias occurs whenever the strength or direction of the results of published and unpublished studies differ. Besides editors, authors and reviewers can be responsible for creating a biased scientific literature. Another bias can occur in the dissemination of published manuscripts. Publication bias was first identified as a problem in the social sciences and is most discussed and analysed in the medical literature (Sterling, 1959; Dickersin, 1990; Dickersin and Min, 1993; Olson et al., 2002; Preston et al., 2004). For this paper we investigated only a potential bias of editors against integrative papers. An editorial publication bias can be said to exist if of all papers submitted to peer-reviewed journals those papers resulting from integrative research are represented proportionally less in the published papers compared to the submitted papers. An editorial publication bias is thus a systematic exclusion of certain types of papers – here, papers from integrative landscape research – from the published literature (Boissel and Haugh, 1993; Sohn, 1996).

To avoid confusion of terms, we define the key concepts used in this paper following Tress et al. (2005c). By *interdisciplinarity* we mean that several unrelated academic disciplines are involved in the research project in a way that forces them to cross subject boundaries. The concerned disciplines integrate disciplinary knowledge in order to create new knowledge and theory and achieve a common research goal. Unrelated means they have contrasting research paradigms. By *transdisciplinarity* we mean a research project that involves academic researchers from different unrelated disciplines as well as non-academic participants to create new knowledge theory and to research a common question. Transdisciplinarity combines interdisciplinarity with a participatory approach. The expression *integrative research* encapsulates the concepts of interdisciplinarity and transdisciplinarity. For a detailed discussion of integrative concepts we refer to

Jantsch (1970), Klein (1990), Weingart and Stehr (2000), Latucca (2001), Winder (2003), Balsiger (2004), COSEPUP (2004), Tress et al. (2005a, 2005c), and Van Kerckhoff (2005).

We consider *landscape research* as a field of environmental science that includes all research activities carried out with the landscape as a basis for the investigation of mutual abiotic, biotic and cultural processes or studies with strong relations to landscapes in general. This includes research in landscape ecology, landscape planning, landscape architecture, geography and other fields dealing with land use and land cover change, management, planning and design of landscapes, landscape conservation, biodiversity, ecosystems, landscape history, cultural landscapes, agricultural landscapes, suburban and urban landscapes, tourism and landscape, and landscape preferences.

2. Methods

For this study we gathered information from three sources using a step-wise approach. First, we gathered information from scientific journals publishing landscape-related papers. Second, we analysed the aims and scope sections of these journals. Third, we surveyed the editors of the selected journals. All surveys were conducted between March and August 2003.

The first step was the identification and selection of scientific journals to be included in the analysis. Selection criteria were six:

- the journal had to have published papers on landscape issues within the past 5 years,
- the journal had to publish in English and have an international audience,
- the journal had to be peer-reviewed,
- volumes of the journal had to be available electronically through the Internet,
- the journal had to be published by one of the following large international publishers: Arnold, Blackwell, Elsevier, Kluwer, Oxford, Sage, Springer, Taylor & Francis, and Wiley,
- the journal paper had to apply the word “landscape” in a meaning, which was related to our definition of landscape research (see Section 1). Journals that had papers included with a clearly different meaning (such as “the hospital landscape”, “the marketing landscape”, “the political landscape”) were excluded.

From all of the circa 5500 journals of the nine chosen international publishers, we searched the volumes published since 1998 for contributions related to landscape research as defined in the introduction. Additionally, we found and included three journals with the keyword “landscape” in the journal title that met all other selection criteria but were not published by these nine publishers. These were included because we considered them as being important outlets for the field of landscape research.

For all journals, we used “landscape” to search in the title, keywords and abstracts. At least one landscape-related contribution had to be published by a journal in order for it to be selected for our survey. Through this process, we

identified 168 journals that had published landscape-related manuscripts since 1998. However, 12 of the identified journals could not be included in the survey because they no longer existed in 2003, had merged with another journal that was already selected or had no contact details available on their journal website. We thus identified 156 journals for the survey. According to our selection criteria, the sample does not include all journals with papers published on landscapes. We limited our survey to the analysis of our sample of 156 journals, which we believed to cover most of the journals where landscape papers are regularly published. All selected journals were codified (J-001, J-002, J-003, etc.). The results section of this paper uses these codes instead of the journal names to avoid the long journal names in the manuscript text and tables. [Appendix \(online available\)](#) presents a list of the selected journals along with the codes.

In the second step of our survey, we identified and analysed the aims and scope sections of the journals as presented on the journal websites between April and June 2003. For eight of the selected journals, no aims and scope section could be found on the website.

In the third step, we conducted an E-mail survey of the editors of the 156 journals. The aim was to find out the editors’ personal policies towards publishing papers from integrative research. E-mail survey techniques have proven both efficient and rapid, as reported by [Bachmann et al. \(1996\)](#) and [Schaefer and Dillman \(1998\)](#). Since all of our journal editors had E-mail access, the risk of coverage error was eliminated. We asked the editors to answer two questions:

- (1) “Does your journal accept scientific papers that result from interdisciplinary/transdisciplinary research efforts (provided their subject area is within the scope of the journal)?”
- (2) “If yes, please describe the criteria you use in selecting reviewers for interdisciplinary/transdisciplinary articles.”

The E-mail introduced briefly the study and included the two questions with space for additional remarks. Editors could justify their answer and make additional comments on both questions. All E-mails were sent as personal messages to the journal editors to maximize the return rate ([Schaefer and Dillman, 1998](#)). The editors were asked to respond within 10 days by E-mail, fax or post. Three responses were returned by fax, three by regular mail and the others by E-mail. The average response time from the day the E-mails were sent was 16.4 days. About 39% of the responses were returned within the first 5 days. We sent out reminders once after 4 weeks. The results reported in this paper refer to 97 responses out of 156 contacted journal editors (=62.1%). This return rate is within the range reported by [Dillman \(1999\)](#) as acceptable for mail and Internet surveys. A similar survey on the editorial policies of scientific journals conducted by [De Marchi and Rocchi \(2001\)](#) had a return rate of only 9.5%, which they explain by the fact that editorial offices considered the requested information confidential. We had a different experience with our survey. Editors were open to sharing the requested information. We assigned the 97 responding editors a code (E-01, E-02, E-03, etc.) to ensure their anonymity in the results section of this paper.

3. Results

3.1. Journals' aims and scope

Our analysis of the aims and scope sections of the 156 selected journals revealed that 48 journals explicitly mention interdisciplinarity and/or transdisciplinarity in their scope, using the terms directly. Thirty-two journals mention interdisciplinarity and/or transdisciplinarity indirectly in their scope. They do not use the terms “interdisciplinary” or “transdisciplinary” but invite papers that bridge disciplinary boundaries, academic traditions or derive from cooperation between different disciplines. The aims and scope sections of these journals use terms such as “integrative”, “integrated”, “cross-disciplin-

ary” and “a variety of backgrounds” in their call for papers. Most of the journals (62) do not specify their editorial policy towards interdisciplinarity/transdisciplinarity in their scope. Only six journals state a scope that is clearly disciplinary oriented. We conclude that, based on information in the aims and scope sections of these journals, the majority welcome manuscripts resulting from integrative research. Table 1 presents excerpts from aims and scope sections that explicitly or indirectly invite integrative research papers.

3.2. Editors' appraisal of integrative papers

Of the 97 journal editors who responded to our survey, the overwhelming majority (99%) answered “yes” to the first

Table 1 – Examples of attitudes towards publishing integrative research papers, from the aims and scope sections of journal websites

No.	Excerpts from the aims and scope sections of journals ^a	Journal
Focus 1: Journal welcomes integrative papers explicitly		
1	“Preference is given to papers that develop and apply interdisciplinarity, bridge scientific disciplines, integrate scientific analyses derived from different perspectives of agroecosystem sustainability”	(J-004)
2	“Interdisciplinary journal in the field of regional and urban studies. ... publishes papers which make a new or substantial contribution to the body of knowledge in which the spatial dimension plays a fundamental role”	(J-006)
3	“A unique feature of the journal is its interdisciplinary focus since the scientific dimensions of conservation are inextricably linked to the politics and economics of effective conservation”	(J-019)
4	“Interdisciplinary approaches are encouraged”	(J-025)
5	“The journal is transdisciplinary in spirit and methodologically open”	(J-026)
6	“Is an interdisciplinary journal that aims to bring the humanities and the biological sciences closer together”	(J-036)
7	“Interdisciplinary journal of urban and regional research”	(J-037)
8	“Interdisciplinary journal that discusses the relation between society and space”	(J-040)
9	“The purpose of the journal is to encourage interdisciplinary works of environmental economics, environmental policy studies, and related fields of environmental issues”	(J-045)
10	“Seeks to advance interdisciplinary research of policy relevance on environmental issues”	(J-050)
11	“Interdisciplinary journal, global in outlook, and integrative in approach”	(J-060)
12	“Interdisciplinary journal covering policy and decision-making relating to environmental assessment in the broadest”	(J-084)
13	“Covers all aspects of environmental planning and management, integrated and interdisciplinary studies”	(J-087)
14	“An important goal of the journal is to encourage interdisciplinary communication and research, especially when spatial analysis, spatial theory and spatial decision systems are the themes”	(J-093)
15	“Journal features articles on specific disciplines and interdisciplinary studies”	(J-101)
16	“Interdisciplinary journal concerned with the social, economic, political, legal, physical, and planning aspects of urban and rural land use”	(J-107)
17	“Landscape ecology is a broad, interdisciplinary topic, the journal is open to contributions that consider the landscape as the basis of integration of knowledge”	(J-110)
18	“Provides cutting edge research that explores interdisciplinary approaches relevant for rural development”	(J-132)
19	“Interdisciplinary forum bringing social science research and research on environmental and natural resources issues together”	(J-139)
20	“Provides an interdisciplinary forum for theoretical and practical articles in the broad area encompassed by environmental ethics”	(J-147)
21	“All topics related to transportation, environment and policy. There are no disciplinary boundaries to work considered and submissions of an interdisciplinary nature are welcomed”	(J-151)
Focus 2: Journal welcomes integrative papers indirectly		
22	“Solicits papers that strive to integrate the various disciplines and issues within the broad field of ecology”	(J-011)
23	“Journal seeks papers that are novel, integrative and written in a way that is accessible to a wide audience”	(J-021)
24	“Publishes integrated analyses of natural, social and management systems”	(J-034)
25	“The journal encourages communication between scientists in disparate fields who share a common interest in ecology and natural resource management”	(J-056)
26	“Journal for integrated research and management of the coastal zone. It covers both natural and human sciences as required for a thorough understanding of coastal systems”	(J-080)
27	“Preference to papers that extend the limit of a single discipline”	(J-097)
28	“Intend to bring together discussions between the disciplines on issues such as space, place, and the environment”	(J-121)

^a The excerpts presented are quoted from journal websites as available between April and June 2003.

question, “Does your journal accept scientific papers that result from interdisciplinary/transdisciplinary research efforts (provided their subject area is within the scope of the journal)?” Only one journal editor responded “no”.

Twenty-six of the 97 editors made additional comments. We summarized the comments according to content into six general statements (for details see Table 2):

- (S1) The journal itself is interdisciplinary/transdisciplinary.
- (S2) The subject area itself is interdisciplinary/transdisciplinary.
- (S3) Integrative papers are a priority for the journal.
- (S4) Only a few integrative papers are submitted.
- (S5) The journal has a disciplinary focus, but integrative papers are welcome.
- (S6) Integrative papers are not welcome here.

Concerning the first statement, 12 editors said that they consider their journals to be explicitly interdisciplinary or transdisciplinary (E-22, E-26, E-30, E-34, E-35, E-41, E-48, E-49, E-

54, E-55, E-91, E-92). Table 2 presents comments related to statements 2–6.

No journals were found where the aims and scope section invited integrative papers but the editor did not. Three journals were found where the aims and scope presented on the website favoured a disciplinary research perspective, but the journal editors welcomed integrative papers anyway. Of the 59 journals where the editors did not respond to our E-mail survey, 25 either explicitly or indirectly welcomed integrative papers in the aims and scope presented on the journal website. Thus, an even greater support for the submission of integrative papers can be concluded from the results of our survey of journal editors than from the analysis of the aims and scope sections of the journals.

3.3. Criteria for reviewer selection

The survey asked editors to describe their criteria for selecting reviewers for integrative papers. Multiple criteria could be stated. Eighty-eight of the editors (91%) said they choose a

Table 2 – Editors’ comments on publishing integrative papers

No.	Editors’ comments	Code
Statement 2: Subject area itself is interdisciplinary		
1	“The journal publishes only articles related to agroforestry, and agroforestry, by definition, is very interdisciplinary”	(E-03)
2	“It is difficult to avoid interdisciplinary papers in soil science”	(E-08)
3	“Urban and regional studies/policies is a transdisciplinary subject”	(E-30)
4	“Geoarchaeology is by nature interdisciplinary (geoscience + archaeology)”	(E-35)
5	“In the field of hydrogeology, much of the work is interdisciplinary, by definition. It can typically combine, geology, hydraulics, chemistry, biology, economics, engineering, etc.”	(E-42)
6	“The journal I am editor of is focusing on regional studies, which in character nearly always is interdisciplinary”	(E-84)
7	“Restoration ecology is by nature interdisciplinary, coupling soil science, hydrology, ecology, planning, economics”	(E-85)
8	“It lies within the concept of urban forestry and urban greening that most research is interdisciplinary by nature. Therefore, many actors within this field are knowledgeable, and familiar with interdisciplinary research”	(E-96)
Statement 3: Integrative papers are of priority for the journal		
9	“Papers in conservation science must show linkage to societal issues and social science papers must show connection with conservation science issues”	(E-10)
10	“The field of conservation biology largely is or needs to be interdisciplinary, so this is a priority for us”	(E-11)
11	“These papers are an increasing part of our publication”	(E-15)
12	“Please be assured that ‘by definition’ Environmental Modeling and Assessment accepts a lot of inter- and trans-disciplinary papers”	(E-26)
13	“Of course; it is the nature of the field”	(E-69)
14	“We are trying to promote more publication of inter- and transdisciplinary articles”	(E-75)
Statement 4: Only a few integrative papers are submitted		
15	“I should add that the issue for us is not that we don’t publish interdisciplinary studies – we welcome them – we just don’t get many submitted, wish we got more”	(E-07)
16	“We would accept interdisciplinary papers with strong biological or biophysical character if we received them. In the past 12 years I have received only a few”	(E-32)
Statement 5: Journal has disciplinary focus, but integrative papers are welcome		
17	“The audience for planning theory papers is, largely, other planning theorists. These may well have a variety of original disciplinary backgrounds, and may still be reading more sociology, or whatever, than psychology or anthropology, but they are united in an interest in planning theory. They are engaged in dialogues with people with other disciplinary backgrounds, but the primary concern is understanding planning better”	(E-81)
18	“Our journal is essentially a social science journal and we publish very few genuinely interdisciplinary papers that breach the social science/physical science divide unless the specific focus of the paper is seeking ways of exploring the ontological justification for such a divide”	(E-88)
Statement 6: Integrative papers not welcome here		
19	“The aim of Forest Policy and Economics is to support social and economic sciences in forestry research. Many papers in forestry sciences are inter- or transdisciplinary and most forestry journals are open for such papers. In forestry interdisciplinary papers are quite common but disciplinary papers with a high scientific standard are rare”	(E-33)

Table 3 – Comments by journal editors on the criteria for selecting reviewers for specifically integrative papers

No.	Editors' comment	Code
1	"I choose Associate Editors to handle papers, not the reviewers. I choose editors who have some affinity for the subject, rather than the component disciplines and who know the community of expert reviewers. Knowledge of trans- and interdisciplinary research processes is a major consideration"	(E-15)
2	"We do not have a separate policy on such [inter- and transdisciplinary] papers. Basically, each paper is assessed on its merit and the decision to publish depends critically on answers to questions such as: Is the contribution new? Is it important? Is it useful or merely an academic exercise and if the latter is the conceptual contribution worthwhile? Is there a wide (or at least a niche) audience for this kind of paper? Is the exposition good enough? Is there evidence that the study has followed 'best practice' principles of its area?"	(E-26)
3	"I try to get at least two reviewers with different expertise as reviewers"	(E-27)
4	"When I have such [inter- and transdisciplinary] papers I select a subject area reviewer from the editorial board to get an idea of the suitability of the paper for the journal and a reviewer familiar with interdisciplinary research to get a view of the quality of the paper"	(E-32)
5	"I use at least three reviewers. In cross disciplinary papers, I try to represent the disciplines and the methodology"	(E-64)
6	"We would normally select two referees, each with a different and complementary specialism. We would be careful – and here we do exercise very judicious selectivity – to choose referees who were sympathetic to the general approach. Also, we have chosen our Editorial Advisory Board from people we know to take an 'inclusive' approach to landscape, and we often draw on them to review papers"	(E-71)
7	"I select reviewers from several disciplines, as inter/transdisciplinary reviewers cannot be found for all topics"	(E-85)
8	"I would select four or five referees ensuring that I covered the detail area of the paper, interdisciplinary issues and someone who could comment on the 'fit' within the context of a geography journal"	(E-94)

reviewer with knowledge of the subject area of the paper; 53 editors (55%) consider reviewers that have knowledge of interdisciplinary/transdisciplinary research processes; two journal editors (2%) did not specify their criteria for selecting reviewers. Several editors stated additional criteria for reviewer selection, including relevance to geographical focus, being a member of the editorial board, suggestions made by the authors, representatives of different countries, reliability in the past or a person who might use the results/findings of the paper. Some editors commented on how they select reviewers for specifically integrative papers, as shown in Table 3.

4. Discussion

4.1. Evaluating the responses of journal editors

For many researchers, it might be a surprise to read that so many journal editors welcome papers reporting integrative landscape research. The results of our survey suggest that there are good opportunities to publish the results of integrative landscape research. However, this cannot be interpreted as claiming that all papers reporting integrative landscape research will be accepted for publication. The results of the E-mail survey are based on the personal judgements of the editors-in-chief of the journals. It is possible that not all associated journal editors and reviewers share this view. In addition, some editors may feel pressure to provide a politically correct answer that is in favour of integrative research papers and current research policy. Metzger and Zare (1999) called this proactive attitude towards interdisciplinarity the "mantra of science policy", which is not necessarily always followed up by supporting actions. However, as journal editors are respected, critical and independent scholars in their fields, we cannot ignore the message of so many editors with positive attitudes towards integrative papers. Even when considering that our survey did not include all journals publishing papers on landscape, but only journals from nine international publish-

ers, we can conclude that the majority of editors from our sample are willing to accept integrative papers.

4.2. Lack of common terminology of integrative research concepts

We also need to consider misunderstandings that might occur due to different interpretations of integrative research concepts. Studies by Tress et al. (2005a, 2005c) and Van Kerkhoff (2005) show that researchers and funding bodies have different understandings of the concepts interdisciplinarity and transdisciplinarity. Lack of a common terminology among researchers causes difficulties in comparing, evaluating and communicating integrative research results. We can assume that editors differ in their understandings of what interdisciplinarity and transdisciplinarity mean. Van Kerkhoff (2005) presents 12 different categories of how integration could be understood and applied. Editors do not specify what they mean by integrative research concepts, nor do the aims and scope sections give information about this. In consequence, what one editor considers to be an integrative approach might not be considered integrative by another editor. We therefore take this lack of clarity into account when interpreting our data because our data do not allow us to differentiate between editors' different understandings of integrative concepts. The same differences in understanding may appear between authors and editors. Clarification of terminology is recommended to avoid misunderstandings and misplaced expectations towards publication. Aims and scope sections of journals as well as journal contributions should state explicitly what they mean by integrative research concepts.

4.3. Problems with publishing integrative research

Several editors said that despite a positive editorial policy few integrative papers were submitted and consequently few could be published. Naiman (1999) considered the difficulty of

publishing results from integrative work to be one of the key problems related to interdisciplinarity; while Antrop (2001) found very few papers in landscape journals that deal with or are derived from integrative research. Yet the results of our survey reveal that this is not because the journals do not accept integrative papers. Why then are so few integrative papers submitted? Fry (2001) suggests that integrative papers may be more difficult to write. Writing up results can be especially challenging if a study was conducted as a series of parallel projects which come together at the end. In addition, different disciplines working together may lack a common theoretical base and have different strategies for analysing data.

Naiman (1999) stressed that it takes longer to publish integrative papers due to the increased number of authors and styles involved. Also, conflicts over first authorship and “ownership” of data may play a role in slowing integrative publication rates. Having more authors makes it more difficult to decide these questions. Moreover, integrative research projects may be oriented towards problem-solving, instead of being aimed mainly at gaining academic merit. Consequently, the results may not be original research or generic knowledge and thus be difficult to publish. Ferguson (2003) suggests that the natural and human sciences might have different views and traditions on publishing, which might hamper publication across this border.

4.3.1. Selecting reviewers

The selection of reviewers is another problem related to publishing integrative research. Authors may claim that editors select inappropriate reviewers, ones who are not open to integrative approaches. Therefore, this study aimed to identify editorial bias including that in the review process by taking into account the editors' criteria for selecting reviewers. The main task of the reviewer is to ensure the quality of the paper. When reviewing integrative papers involving several disciplines this means assessing whether methods from, for example, the natural sciences and social sciences have been applied properly and that the manuscript fulfils the quality criteria of the involved disciplines. In the view of Daily and Ehrlich (1999), reviewers for integrative papers need to be not only open to integrative approaches but also well-rooted in disciplinary bases. Although maintaining standards might be more difficult in integrative research, it is not impossible, according to Daily and Ehrlich (1999).

Our survey results show that more than half of the editors consider the reviewers' knowledge of integrative research processes when selecting referees. Daily and Ehrlich (1999) suggest that integrative papers need more reviewers, and require more time and attention from both editors and reviewers. Because the criteria for acceptance of papers varies between different disciplinary cultures, more disagreement can be expected between reviewers' evaluations than with single-discipline papers. When this happens, the editor's role and perspective becomes even more important.

4.3.2. Citation delay of integrative papers

A different type of problem related to publishing from integrative research is the delay in interdisciplinary knowledge exchange, as recorded for all subject fields in the study by

Rinia et al. (2001). Citations of works in one's own disciplinary field show less of a time lag than citations of works published in a distant discipline. Citations reflect the use made of documented knowledge by researchers; a citation delay is thus an indication of a real delay in interdisciplinary knowledge transfer. For evaluation purposes, this means that the short-term impact of integrative publications is less than that of disciplinary publications.

4.3.3. Selecting the appropriate journal and target group

A final difficulty related to publishing integrative research is the selection of the right journal and target group. In what type of journal should an integrative paper be published? For this study, we asked journal editors their views on interdisciplinary and transdisciplinary manuscripts. Several editors characterized their journals as being interdisciplinary, and we would encourage authors to try to publish integrative papers in these journals. Alternatively, authors might consider publishing in one of the many multidisciplinary or specialized journals that state they welcome integrative research papers. Despite the fact that interdisciplinary journals can be identified, it is possible that certain integrative papers will not fit into these journals or that authors are not interested in publishing in these journals because they are not read by their own peer group. For authors, a useful exercise is to define their target readerships and the journals that serve these readerships. These might be better served by publishing in a multidisciplinary or specialized journal.

Yet identifying the right journal can be more difficult for an interdisciplinary research group than for a disciplinary team. Spanner (2001) stressed that authors from different disciplines need to agree on a common terminology that can be understood by their different peer-groups and used in the selected journal. Additionally, writing an article for a journal in a distant academic field may not be as rewarding as writing for one's own peer-group. Daily and Ehrlich (1999) suggest that most journals that publish integrative research are either relatively new or do not (yet) have large readerships and a world-class reputation. This makes it difficult to reach certain target audiences and acquire merit for promotion and tenure, especially for young researchers. According to Wear (1999) this makes publishing in those journals less attractive.

4.4. An editorial publication bias against integrative landscape research papers?

Our survey found no systematic negative bias to the acceptance of integrative papers as reflected in the editors' responses and journal policies. However, mechanisms may still exist that disfavour the publishing of integrative papers, as shown by Møller and Jennions (2001), who analysed a potential bias by reviewers, authors and dissemination channels. Naiman (1999) believes that only a few of the obstacles to publication are external to the research team, and Møller and Jennions (2001) suggest that researchers themselves are the main cause of not being published, because they fail to write and submit (or re-submit) research findings. Thus, the failure to be published might be because: (i) the papers of integrative research never get written or (ii) the researchers did not consider their results interesting enough to submit for

publication. Both of these reasons could explain journal editors' claim that few integrative papers get submitted. The results of this survey do reveal, however, that editors encourage researchers involved in integrative landscape research to submit their manuscripts.

4.5. Consequences for landscape research

Many leading landscape researchers from landscape ecology, landscape planning, landscape architecture, geography and other fields are increasingly demanding application of interdisciplinary and transdisciplinary approaches. In the past decade, researchers including Burel and Baudry (1995), Nassauer (1995), Naveh (1995), Ahern (1999), Antrop (2000), Décamps (2000), Moss (2000), Opdam et al. (2002), Wu and Hobbs (2002) and Musacchio and Wu (2004) have called for greater integration of approaches and disciplines in landscape research. With the current increase in numbers of integrative landscape projects this request seems to be reaching fulfillment. In this situation, it is a positive signal that such a large number of peer-reviewed journals are interested in publishing results from integrative efforts thus disseminating their findings to the wider scientific community. This will help researchers to exchange experiences from integrative landscape projects thus refining integrative methods and approaches in environmental sciences.

5. Conclusion

Publishing results is important for research evaluation and to justify the investments made in integrative landscape research. According to earlier research, authors claim that it is more difficult to publish the results of integrative landscape research than of disciplinary research efforts. Although authors perceive a negative editorial bias from journals towards publication of integrative papers, our study found no evidence to support this view. The majority of the international peer-reviewed journals sampled here invite integrative manuscript submissions through the aims and scope sections published on journal websites. Authors can often identify journals' editorial policy towards integrative papers through information on their websites. Moreover, almost all of the editors contacted in our survey said that they accept integrative papers provided they fall within the subject scope of the journal; but some editors claim that few integrative papers are submitted.

We conclude that all landscape journals from our sample that regularly publish landscape research papers welcome integrative papers and many journal editors consider knowledge of integrative research processes when they select reviewers for an integrative paper. We discussed several reasons why researchers may perceive it to be more difficult to publish from integrative landscape research. It would be helpful for editors, reviewers and authors to define clear criteria for what is a good integrative study, since tools are available for measuring the output of integrative research. Also future investigations would be helpful that compare the structures of integrative manuscripts and disciplinary-oriented papers. Equally, an analysis of reviewer and editorial

decisions of accepted and rejected manuscript might reveal further information on publication patterns of integrative landscape studies.

In our study, we found no evidence to support the statement that the editorial policies of peer-reviewed journals are biased against integrative landscape research papers. We encourage authors to submit their results from integrative landscape research to peer-reviewed journals. This will improve the publication performance in integrative landscape research and will help justifying the investments made in this field.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.envsci.2006.03.004](https://doi.org/10.1016/j.envsci.2006.03.004).

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