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Ethics of Field Research: Do Journals Set the Standard?

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ABSTRACT: *To determine whether ethical issues concerned with field research are addressed in the peer-review process, instructions to authors and reviewers of 141 (mainly natural science) journals were examined to ascertain how often ethical issues were mentioned. Only one-third (n=41) of responding journals addressed ethical issues in their instructions to authors or reviewers. When ethical issues were considered, most of the journals limited their concerns to ethical issues associated with animal and general human experimentation. No journal mentioned ethical practices in working with indigenous peoples or on traditional lands. Only two journals addressed the ethics of research in sensitive areas in their instructions to authors, only one in its instructions to reviewers. We suggest that peer-reviewed journals respond to an emerging issue in ecological research by formally incorporating research ethics into their instructions to authors and reviewers. Furthermore, these instructions should address the ethical issues associated with field research and in working with indigenous peoples and on traditional lands.*

INTRODUCTION

Ecology entails experimental manipulation of organisms or their physical environment, active observation, and deliberate or inadvertent disturbance of organisms in nature.¹ Ecological research undertaken by field biologists has greatly increased our knowledge of the living world and our impact upon it. Most field studies require some degree of intervention by the researcher. Some scientists say in

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order to gain the knowledge needed to protect a species or its environment, some disturbance is often necessary. However, many conservationists disagree. Some of these activities, such as the collection and identification of specimens for laboratory examination or museum storage, raise important ethical questions for the researcher. Such considerations may include whether specimens should be collected and if so how many, and whether the collection of such specimens may affect the viability of the population being studied.

Most ecologists recognize that carefully designed manipulative field-based experiments are an essential tool in understanding ecological processes.² Often such experiments are the only way to test explanations or to distinguish between equally plausible alternative explanations. Large-scale field experiments are widely advocated by scientists as a means of directly comparing management options in multiple-use protected areas and helping to resolve basic uncertainties about the response of managed ecosystems to human disturbance.³

Field research activities, such as collecting and manipulative experimentation, are increasingly recognized as having ethical implications. The absence of clear and appropriate ethical standards for the conduct of scientific field research in ecological communities has become an issue of increasing concern for both scientists and the general public.^{1,4} Although field research often requires special licences and permits, particularly if it is conducted in protected areas, the emphasis of current policies and procedures is on minimizing harm to higher vertebrates. The broader issues regarding the impacts of field research on non-animal organisms, or on populations, communities or ecosystems are rarely addressed.¹

In contrast, human and animal experimentation is tightly regulated in many countries. Research institutions often are required by law to have human and animal ethics committees.⁵ Some research-granting agencies will not fund research without the required ethics clearances.^{6,7} Animal and human ethics committees have developed guidelines for scientists who have to make ethical judgements in the design and conduct of their research.⁸⁻¹³ Some scientific societies produce guidelines which address ethical issues associated with field research, but these guidelines typically emphasize higher vertebrates.^{14,15}

Scientists conducting research involving animal or human experimentation frequently have to address direct objections from the public.¹¹ In contrast, biologists manipulating most ecosystems have not, for the most part, had to address concerns or objections from the public directly.¹ However, various conservation organizations recently have begun to draw public attention to field-research practices by focusing on the organisation's concern for the preservation of high profile animals¹⁶ or ecosystems.⁴

Despite the growing literature on environmental ethics,^{2,17-20} research and environmental management agencies generally have not developed ethical policies and practices in relation to ecosystems and biodiversity.²¹ Thus, during a time when the conduct of research is under increasing public scrutiny, field scientists are largely left

on their own to determine whether the impacts of field research accords with accepted community standards. For example, in 1996, considerable controversy developed both in Australia and internationally about the acceptability of several manipulative experiments in the Great Barrier Reef region.^{3,4} One, currently ongoing, experiment involves the opening and closing of individual reefs to assess the impact of line fishing on reef fishes and other biota. This required temporary changes in the zoning status of protected reefs in the Great Barrier Reef Marine Park. Because such changes to reef zoning must be approved by the national parliament, the merits of the experiment were hotly debated before the necessary rezoning was finally approved. As a result of this debate and associated controversies, the Australian Science Technology and Engineering Council (ASTEC) established a working party, made up of biologists, environmental managers and conservationists, to develop national guidelines for research in protected and environmentally sensitive areas.²² This process included an Australian national conference to address the "Ethics of research and management practices in World Heritage and other environmentally sensitive areas".

The present study arose as a result of the senior author's involvement in the development of the ASTEC guidelines,^{4,22} and her resultant concern about whether ethical issues are addressed in the peer-review process. We examined the instructions to authors and reviewers in a range of professional journals (mainly natural science) and concluded that the leadership role taken by journals in addressing human and animal ethics was not paralleled by journals concerned with field research. Many of the journals we contacted requested feedback on our findings and this paper aims to provide that feedback to a wide audience interested in environmental ethics. This study further aims to draw attention to a growing concern regarding ethical practices by scientists conducting field research in sensitive ecosystems.

METHODS

We requested 185 professional journals to supply copies of their instructions to authors and reviewers as a contribution to a comparative study. Most journals (n=149) were from fields related to nature conservation, field biology (including palaeontology), natural resource management, and bio-prospecting. To provide comparisons, we also sought parallel information from chemistry, physiology and anthropology journals (n=36). Responding journals were categorized according to their thematic focus as follows: anthropology, aquatic science, botany, chemistry, ecology/conservation, fisheries, palaeontology, physiology, polar science (Arctic and Antarctic), wildlife, and zoology/entomology. Each set of instructions was reviewed to determine whether ethical issues associated with the following topics were addressed: research involving animals, field research in environmentally sensitive areas, and research involving humans (including specific mention of indigenous peoples).

RESULTS AND DISCUSSION

One hundred and forty-one journals responded to our request for copies of their instructions to authors and reviewers. Seventy-three journals included their instructions to authors only, and did not state whether they had a set of guidelines for reviewers (Table 1, p. 382).

One-third of responding journals (n=41) mentioned ethical issues relating to animals, humans or sensitive areas in their instructions to authors or reviewers. Five journals (3.5%) addressed issues of animal ethics, such as ethical concerns regarding studies involving animal experimentation and handling, in their instructions to authors but not in their instructions to reviewers. Five journals (3.5%) took the reverse approach, addressing animal and human ethical issues in their instructions to reviewers only. These inconsistencies do not accord with a fair peer-review process. It is important for authors and reviewers to have access to a consistent set of evaluation criteria.

References to ethical issues were found in journals from the categories of physiology, zoology/entomology, ecology/conservation and aquatic science. When ethical issues were addressed, most of the journals we polled limited their concerns to the ethics of animal and human experimentation (Table 1). For example, the instructions supplied by ecology/conservation journals such as *Environmental Research* and the *Journal of Ecology* asked authors to justify using animals for particular research projects and to provide formal assurance that any studies involving humans or experimental animals were conducted in accordance with national and institutional guidelines. Within the human ethical guidelines, no journal mentioned ethical practices in working with indigenous peoples or on traditional lands in their instructions to authors or reviewers. We found this disappointing, given the increasing international recognition of the rights of indigenous peoples by researchers,²³ and the guidelines for ethical research practice being developed for researchers working on indigenous lands and with indigenous people.^{e.g.}²⁴

The proportion of journals (Table 1) addressing ethical issues was highest in physiology. Seventeen of the 20 physiology journals that responded (85%), addressed both animal and human ethical issues in their instructions to authors. Instructions to reviewers were provided by two physiology journals; both addressed animal and human ethical issues. Reference to animal ethics was made in 10 (35%) of the instructions to authors of the 29 zoology/entomology journals reviewed in this study, while human and sensitive area ethics appeared in only one. In the instructions to reviewers of these journals (n=10), animal ethics was mentioned in three (30%), while human and sensitive areas ethics were mentioned in one (10%). Of the 26 ecology/conservation journals that provided us with their instructions to authors, reference to animal ethics was found in five (19%), while ethical issues associated with humans and sensitive areas were mentioned in only one (3.8%). In these journals' instructions to reviewers (n=15), one reference (6.7%) to animal ethics was made while no mention

of the ethics of human experimentation or of conducting research in sensitive areas was found. Aquatic science journals addressed ethical issues similarly in their instructions to authors and reviewers, i.e., three journals (12%) dealt with ethical issues that arise in the studies of animals in their instructions to authors, while two (13%) of these journals included this topic in their guidelines to reviewers. One journal addressed the topic of ethical issues in research involving humans in both its instructions to authors (4%) and its guidelines to reviewers (6%). No journal in the categories of anthropology, botany, chemistry, fisheries, palaeontology, polar science (Arctic and Antarctic), or wildlife mentioned ethical issues in their instructions to authors (Table 1). One wildlife and two botany journals made reference to the ethical conduct of research on animals and humans in their instructions to reviewers but not in their instructions to authors.

Very few journals addressed the ethical issues specifically associated with field research. Only the *Journal of Applied Ecology* and *Journal of Zoology* addressed the issue of ethics of research in environmentally sensitive areas. The journal *Forest Science* provides a descriptive code of ethics for research in sensitive areas on their World Wide Web page. However, no mention of ethical issues was found in their instructions to authors or reviewers. The failure of journals dedicated to science in polar regions to address ethical issues was particularly surprising, given the attention to such issues by authorities that manage research in the Arctic and Antarctic.^{25,26}

CONCLUSIONS

Because judgements about the quality and merit of research are determined mostly by scientific peer review, we believe that ethical issues should be addressed at all stages in the peer-review and publication process. We appreciate that the discussion of ethical standards takes place to some degree, in other fora. For example, some scientific societies may publish ethical guidelines in their newsletters or their equivalents, or on the World Wide Web (e.g., in the *Bulletin of the Ecotopical Society of America*). However, this is much less transparent than publishing ethical guidelines directly in the journals' instruction to authors and guidelines to reviewers. Currently, evaluation of the ethical suitability of a field-research project generally relies on the judgment of the scientist or the research permit granting agency. This study indicates that most journals fail to provide clearly defined and publicly available ethical guidelines, or instructions to authors to provide evidence of adherence to a set of such guidelines. A more consistent approach to research ethics would assist scientists in conducting research that accords with accepted community standards. For example, the "National Guidelines for Research in Protected and Ecologically Sensitive Areas" developed by the Australian Science, Engineering and Technology Council²² provide comprehensive guidance on the issues involved.

Most researchers studying protected and environmentally sensitive areas recognise their obligations to conduct research using best practice procedures in accordance with

community values, including consultation with indigenous peoples. However, to date, both the researchers and the managers who process research permit applications have operated in the absence of agreed upon guidelines. This has limited the capacity of researchers and managers to respond constructively to public criticism.²² The development of a consistent approach to research ethics for field biologists will assist in addressing community conservation concerns, while helping scientists to design research projects which adhere to community and general environmental standards. We believe that journals concerned with field research should address ethical issues in their instructions to authors and reviewers. In doing so, we suggest that these journals not limit their guidelines to the ethical issues of animal and human experimentation, but also address the ethical issues associated with field research in ecologically sensitive areas and on the traditional lands of indigenous peoples. While we have restricted ourselves to the evaluation of a limited number of ethical issues relating to field research, other topics may also need to be addressed such as allocation of credit, responsibilities of authors, mentorship and dealing with conflicts of interest. Nevertheless, a useful approach might be for societies to develop these guidelines during workshops at their annual meetings, and to use these guidelines as a focus for discussion in professional journals, at society meetings and for educating the journals' membership with regard to the accepted standards of the scientific community.

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