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The Values of Ecologists

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ABSTRACT

The popular stereotype of ecologists appears somewhat at odds with the ideal of the objective, detached, morally disinterested researcher. Ecologists tend to subscribe to this ideal, as do most natural scientists. This puts the stereotype into question. To what extent and in what respects can ecologists be regarded as motivated by environmentalist values? What other values might contribute to their motivations? The answers to those questions have bearing on how policy makers perceive the input they receive from ecologists and it has long-term implications for the funding of ecological research. To obtain some answers I analysed over fifty randomly selected publications of ecologists for explicit and implicit value statements. The analysis revealed an abundance of value statements. However, no bias was evident towards a conservationist or ecocentric environmental ethic such as suggested by the stereotype. I will suggest some explanations and ramifications of these results that take into account the ecologist's professional situation.

KEYWORDS

Ecology, values, science, discourse, ecocentrism.

INTRODUCTION

Ecological science, conservation, and the environmentalist ethics of conservation are frequently being confused in the media. Why is a person subscribing to an ecocentric ethic referred to as a 'deep ecologist'? One likely reason for this confusion lies in the fact that the natural environment doubles as an object of scientific study for ecologists and as an object of moral concern for environmentalists. Moreover, a considerable area of overlap is evident as many people would feel affiliated to both groups. One result of this confusion has been that

ecologists tend to be regarded by their scientist colleagues as 'green' scientists, regardless of their individual political or moral dispositions. But how true is the assumption that an interest in the workings of the environment necessarily correlates with a moral concern for it? And if it is true, is this concern fundamentally different from the way all scientists care about their work? Do ecologists by virtue of their objects of study really differ from all other scientists in their attitudes, values and political opinions? These questions have bearing on the conceptual position that the discipline of ecology takes among the sciences. If it indeed rests on unique moral assumptions or gives rise to unique moral convictions, then the moral standing of the discipline and the moral authority of its practitioners justifiably differ from the rest of the scientific community.¹ It could be lower or higher, depending on the environmental ethics of the valuer. Ultimately the moral standing of an area of scientific inquiry determines to a crucial degree how seriously its findings and predictions are taken by policy makers and the extent to which it is publicly funded.

In this paper I will address those questions by analysing how ecologists write about their work. Contrary to popular belief, scientific writing as well as scientific practice is by no means free of values. If it were so they would be pointless exercises. I will begin with a conceptual analysis of what the moral convictions of ecologists could be. I will then present an analysis of the value content of research reports from three major international periodicals in ecology. Values were classified into distinctly environmentalist values and two other categories. To my knowledge this is the first analysis of this kind, at least within the area of biology.

What values can an ecologist be expected to espouse? At the practical level, successful scientists in general tend to hold a set of values that collectively define what constitutes 'good' science. This includes ideals of approved professional practice, such as truth, simplicity, objectivity and explanatory power (Longino, 1990). These practical values define appropriate means rather than ends. With respect to ends we can distinguish between three overall value orientations.

Firstly, any person who devotes a considerable portion of his or her working life to investigating the interactions among populations, communities and *abiotica* is likely to do so out of the conviction that the ends of such a pursuit have significant value. Part of this value manifests itself in love for science. Without a love for science the person would likely have long ago turned to a more lucrative profession. Another part of this value is likely to pertain more specifically to ecology. This could consist merely of the kind of curious interest commonly referred to as 'academic' but it is important to realise that even this focused kind of curiosity represents an affective preference and can therefore not be considered 'objective'. I will include this kind of mildly emotive disposition into the category of 'professional fascination or curiosity'. Also included in this category, although quite distinct from mere professional curiosity, is the

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kind of pseudo-religious awe of nature that draws many students of science towards the profession.

In many ecologists that I have met, however, their academic affiliation is grounded in a much more intense, if not passionate, devotion to their work. If those examples are anything to go by, then it could be surmised that most ecologists not only love ecology but that they harbour a moral concern for the objects of their work, which would make them environmentalists subscribing to a more or less ecocentric ethic. These are the deep green values that the above-mentioned stereotype postulates in ecologists. They would set ecologists apart from other scientists who may feel equally passionate about their work and the objects of their studies but whose professional interest is not ecological.

Thirdly, an ecologist's possible motivation might be based on a more materialistic desire to generate commercial income for themselves, or for their employer or funding agency. Such material gain may come in the form of elevated productivity in agriculture, fisheries or a related area, and it may be valued on the basis of the amount of human welfare it is perceived to procure. This kind of value orientation would be geared towards optimising practices for resource management. Its anthropocentric focus distinguishes it from the ecocentric position described above. However, it does not necessarily imply self-serving motives; it frequently takes the form of an altruistic humanitarian value orientation. In fact I would suggest that purely self-serving motives such as personal fame or monetary gain are of minor importance in this conceptual analysis of possible values for ecologists because ecology, like many other academic fields, holds little statistical promise of such success measures. People who are driven primarily by a yearning for fame and fortune do not tend to become scientists.

Finding out which of the above value orientations predominate in motivating ecologists in their work is important for at least two reasons. As I suggested at the outset, the moral standing that an academic profession enjoys within wider society is affected by the values that its practitioners are perceived to hold. This moral standing, in combination with instrumental considerations of what 'benefits to society' ecologists can contribute, influences the amount of political weight attributed to ecologists' professional opinions and the amount of public funding they receive. For ecologists themselves, then, it would be of interest to know what values predominate in their profession.

The second, more significant reason pertains to wider society. The challenges attendant to the global environmental crisis will require decisive action from humanity. Two groups of people seem particularly qualified to initiate such action, those with sufficient environmental knowledge and those who espouse strong environmental values. Of special instrumental importance will be those who combine both qualifications. Ecologists tend to automatically qualify in the first category, but do they also excel in terms of value orientation towards the environment as the public stereotype would have it? If environmentalism

is indeed the most science-driven of all modern social mass movements (Pope, 1993) ecologists would be in a prime position to spearhead it. This study represents an empirical test of this hypothesis. Its main objective was to discern to what extent ecologists are motivated by a moral concern for the environment, judged by the moral considerations evident in their professional discourse.

METHOD

Three issues of major ecological research journals (*Ecology*, *Ecology Letters*, *Journal of Applied Ecology*) were randomly selected and all the research papers in them were analysed for explicit and implicit statements of value. Book reviews were exempted. A value statement was considered implicit if a goal was stated as self-evident. For example, the statement that a research project had the advantage of 'reducing the amount of error in population management decisions' was taken to imply that the management of populations was a morally commendable exploit.

The value content was classified according to its context into the three categories identified in my conceptual overview: professional fascination and curiosity, resource management, and conservation. Only the last is considered to be potentially ecocentric in its value base. The decision between the latter two categories was made depending on the context. As the summary in Table 1 shows, some statements can be indicative of either an orientation towards resource management or towards conservation. For this analysis the decisive indicator was taken to be the species, population or ecosystem studied. If it was of obvious and direct commercial importance (such as certain types of forest), or if commercial benefits were alluded to, then the underlying value was considered to be the exploitation of resources. If the object of study was not of obvious commercial importance (such as a population of seals) and commercial benefits were not mentioned, an underlying value of conservation was surmised. Personal knowledge about any of the authors was not taken into account, nor were their sources of funding.

RESULTS

An overview of the values that were found is shown in Table 1. The first category of professional fascination or curiosity is the most abstract as it is virtually universal among scientists of all fields. It is equivalent to pursuing science 'for its own sake'. The second and third categories rely on ulterior motives which can be summarised as benefits to humans and to non-humans, respectively. Distinguishing between those two categories without ambiguity was possible because statements about commercial benefits tended to be clearly identifiable as such.

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TABLE 1. Summary of Value Statements as Identified in this Analysis

Fascination/ Curiosity	Ecosystem Management (ANTHROPOCENTRIC)	Conservation/Crisis (POSSIBLY ECOCENTRIC)
Attempting to confirm or refute a hypothesis or model Documenting ecologists' ignorance on a specific mechanism or situation	Positioning one's findings with respect to one or more of the following (after Dayton, 2003): <ul style="list-style-type: none"> • Limits and thresholds for vulnerability of species/ ecosystems • Stability and recoverability of ecosystems/habitat • Trend analysis (climate change, pollution, other anthropogenic effects) • Goals and means for ecosystem restoration • Animal welfare 	
Referring to a specific mechanism or situation as 'fascinating', 'intriguing', or similar attribute.	Expressing changes in biomass or in species diversity in terms of dollars The ecosystem/population/species in question is regarded as a resource. The aim is to maximise production. Restricting one's conclusions to a specific system of production.	Regarding biodiversity or the survival of an endangered species as a good in itself. The ecosystem/population/species in question is considered as valuable in itself. The aim is to protect it from anthropogenic harm without considerations of commercial productivity. Extrapolating one's conclusions to larger regional levels or to generalise across ecosystems/biomes (Loreau et al, 2001).

In the absence of such a statement, as in cases where maximising or protecting biodiversity was invoked as an aim in itself, a conservationist orientation was inferred. It would be more difficult to estimate the degree of ecocentric motivation within that third category. We can only regard those value orientations as 'possibly ecocentric'.

In accordance with the value-laden nature of science, not a single publication was found to be devoid of value statements. As evident from the numerical distribution in Table 2, most of the articles invoked only a single value orientation. As could be expected, most of the articles in the sample contain at least one statement expressing the authors' professional fascination or curiosity. Those

TABLE 2. Distribution of Values Found

Periodical	Attitudes or values			Total no. of value statements
	Fascination / Curiosity	Ecosystem Management (anthropo-centric)	Conservation/ Crisis (poss. eco-centric)	
<i>Ecology</i> 79(8) (Dec.1998) [34 papers]	31	0	4	35 (~ 1 per paper)
<i>Ecology Letters</i> 6(10) (Oct.2003) [11 papers]	7	11	6	24 (>2 per paper)
<i>J. of Applied Ecology</i> 36(4) (Aug.1999) [13 papers]	1	12	3	16 (>1 per paper)
TOTALS	39	23	13	75

statements were employed by the authors to justify their choice of topic. The more theoretical articles in *Ecology* and *Ecology Letters* invariably invoked curiosity, a wish to understand, or to test a particular model. The more applied articles in the *Journal of Applied Ecology* tended to emphasise values concerning ecosystem management.

Table 2 also shows that environmentalist values are clearly in the minority. Many of the more 'academically' motivated authors seemed reluctant to mention implications concerning conservation or detrimental human behaviour even in cases where such implications seemed glaringly obvious from their findings. An environmentalist orientation would have induced the author to discuss the relevance of their results with respect to the global environmental crisis, aspects of human ecology, or to the health of ecosystems in general.

DISCUSSION

The finding that all the research publications in the sample contained at least one value statement is not unexpected as all scientific publications are expected to include some justification why the work was undertaken. It is the nature of the justification that reveals the underlying values of the authors. The finding represents yet more evidence for the claims, still not universally accepted, that

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scientific discourse and practice are value-laden and that they cannot be otherwise. In part the disagreement on the value content of science seems to derive from disagreements over what constitutes a value. Thus, the counterclaim that (good?) science is at least value-neutral is based on the supposition that its traditional norms of 'universalism, communality, organised scepticism and disinterestedness' (Merton, 1967) are not values themselves but instead render science objective and value-free (Healy, 1995; Webster, 1991). I intend to leave that dispute aside by adhering to Najder's (1975) definition of a value as the 'strongest or ultimate motivational factor in a person's intentional behaviour'.

The low incidence of conservationist values seems to invalidate the stereotype mentioned at the onset, even though its numerical value was probably affected by my choice of periodicals. This finding offers little encouragement with respect to the concern about how much ecologists can contribute towards mitigating the global environmental crisis. The crisis was first described by researchers in earth sciences and life sciences. As the biosphere continues to lose in species diversity, scientific efforts to describe, analyse and especially to counteract that loss are becoming more and more important (Caughley, 1994). It has been claimed (Knapp et al, 2002; Healy, 1995) that despite their eminent professional competence, the academic community appears ill-equipped to rise to that challenge for lack of moral motivation. My results bear out this shortfall among the ecologists in this sample as the vast majority of publications indicate only motivations of the fascination/curiosity type. The number of such statements probably under-represents the popularity of this value orientation, as presumably every researcher is interested in their topic even if they do not explain their interest or elaborate on it.

As far as the more applied publications were concerned, a similarly striking bias is apparent in favour of an instrumental ethic of resource management with commercial aims. This reflects the modernist trend away from regarding science as an end in itself towards viewing it as a means, through technology, of controlling natural systems (Healy, 1995: 617). Whether this trend manifests itself in an increase over the years in this kind of value statements, as has been suggested by some of my colleagues, will be subject of a separate study.

These results suggest that ecologists by and large do not differ significantly from other scientists in their values. This would agree with what scientist-philosophers such as Michael Polanyi and Thomas Kuhn proposed decades ago about the ontogeny of scientists' values – namely that it is the scientists' basic training that instils in them notions of what counts as an important question, and the reasons why. All scientists, ecologists and others alike are thus primed by the same educational experience in their primary, secondary and early tertiary schooling and become influenced by its value messages. Whatever motivations attract students to the field of ecology at a later stage, they are not likely to include ecocentric values – otherwise they would have been detected in this study.

An important question about this kind of text analysis regards its reliability. What guarantees do we have that the authors largely wrote how they felt? In the light of my findings, the question addresses possible motives for authors to either hide their ecocentrist motivations or to misrepresent them. Such motives are undoubtedly relevant in cases where an environmentalist wishes to be published in a 'mainstream' journal (Pope, 1993) with a rigorous editing policy that might disallow even a well-justified value statement. On the other hand, some publications obviously succeed without such subterfuge, which argues against a hard rule against conservationist values. Also, any bias of this kind would mean that the values found are really the values of the editors and reviewers, rather than the authors'. As those people are presumably also ecologists this consideration does not affect the basic question after the values of ecologists. Furthermore, the most obvious value statement made by the authors, namely the choice of topic and its justification, is not so easily disguised. Most writers seem likely to give in to the temptation to emphasise the relevance of one's findings across all their applications and ramifications rather than to deliberately hold back when their work bears relevance for conservationist agenda.

There is, of course, a still widespread tradition in scientific writing to avoid explicit value statements of certain kinds. This includes statements, for example, that could be interpreted as prejudicial judgments or personal taste. While this tradition is unlikely to have influenced the findings reported here, it is relevant to the wider issue of the role that values play in science. If, as I have argued, values are ubiquitous and unavoidable in science, then the aims of science would be well served by explicating those values. Parascandola (2003) argued that the habit of relegating values to the realm of the implicit is ultimately counterproductive. Students and practitioners are more likely to improve in their practice if they pay more attention to their own motives and those of others (Zurer, 1993). Critics argued that this shortcoming of the scientific method derives from a fundamental lack of reflexivity (Webster, 1991; Harding, 1991: 161–3). Calls to 'keep politics and religion out of the laboratory' (Koertge, 2000: S53) are futile and counterproductive because ethics cannot and should not be kept out, and those two areas to a great extent affect our ethics. Moreover, they cannot be reconciled with the ideals of 'explanatory science with social responsibility' and 'emancipatory science with empirical adequacy' (ibid). Specifically in ecology this counterproductive effect may have dire consequences with regard to the crisis (Wynne, 1993; Wynne and Mayer, 1993). Based on this consequentialist view, ecologists can be seen to have a moral duty to explicate their values in their writing and teaching (Hart, 2002), as far as the important stages of hypothesising and interpreting are concerned (Medawar, 1963). This duty is based on the amount of power they wield as experts at a time of critical uncertainty, if only with respect to conflict mediation (Cullen, 1998).

Biocentrism was evident in only two publications in the form of references to animal welfare as an object for concern. This is not unexpected for an academic

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discipline that concerns itself with populations and ecosystems more than with individual organisms. However, the case of biocentrism presents an interesting parallel to this study. Life scientists that are concerned with the study of single organisms, entire or in parts, often spend a great deal of their time observing living beings such as laboratory animals, as do farmers, operators of pet shops and many other professionals. Yet they are often, and sometimes rightly, accused by animal welfare organisations as lacking in biocentric ethics. Somehow one's professional attention to a living entity does not seem to increase the likelihood that one develops a moral concern for it. Whether this proposition is true for those professions remains the subject for a future study, but the present study certainly supports it as far as ecologists are concerned.

NOTES

An abbreviated version of this paper was presented at the Annual Conference of the New Zealand Ecological Society, 16–20 November 2003, University of Auckland.

¹ This claim rests on two observations. Firstly, policy makers and – to some extent – granting agencies impart different degrees of moral priority to different areas of scientific research as a matter of course, as seen in a comparison of, for example, parasitology and cardiology. Those differences, manifested in funding priorities, result from the different values that are attached to the information the research can provide, including possible commercial spin-offs. Secondly, this differential moral standing is to some degree transferred onto areas of knowledge and onto the practitioners themselves. Thus, a cardiologist is widely perceived as 'more valuable to society' as a parasitologist, even though nothing is known about their individual qualities as human beings and citizens. Ecologists, presumably, are located somewhere in midfield along this value continuum. However, if it could be shown that most ecologists, by virtue of association with their science, harbour a special moral concern for the environment then we have an additional reason to train more of them and to fund their work, besides what support might seem warranted by the value of the information their research can provide. In sponsoring ecological science society would have a means not only of producing experts but of *producing experts who care*.

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