



Diversity

Overcoming Obstacles to Interdisciplinary Research

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Introduction

Mascia et al.'s (2003) call for increased interdisciplinary approaches to conservation and Thornhill's (2003) response detailing activities of the Society for Conservation Biology reflect an evolution in thinking about environmental problems. We have moved beyond Hilborn and Ludwig's (1993) call to consider the human context of such problems to addressing them in an interdisciplinary manner and training researchers to do this (Zarin et al. 2003).

I fully support efforts to make conservation research, work, and training more interdisciplinary. I believe interdisciplinary approaches are critical for successful conservation and find collaborations personally and professionally rewarding (Campbell 2003). Participants approaching an interdisciplinary collaboration for the first time, however, must recognize potential obstacles from the outset, not the least of which are "obstructive misconceptions or prejudices [that social and natural scientists have] about each other" (Redclift 1998:179). I have written about the challenges of doing social science research in the biologist-dominated field of sea turtle conservation (Campbell 2003). Here, I outline some practical and philosophical obstacles to interdisciplinary research in general, offer illustrative examples from my own experience, and make some suggestions for overcoming them. Many suggestions are directed at conservation biologists, because they are the primary audience for this journal, but are relevant for all participants in an interdisciplinary undertaking. Mascia et al. (2003) address professional societies, conservation organizations, and teaching in the academy. Here, I focus on interdisciplinary research and publishing.

Practical Obstacles: Interdisciplinary Research in the Academy

According to Daily and Ehrlich (1999) and Pickett et al. (1999), interdisciplinary environmental research is con-

strained by the newness of related journals and their inferior reputations compared with those of well-respected discipline-based journals that have been published longer. Researchers may avoid publishing in the newer journals or the resulting publications may be treated with suspicion. Daily and Ehrlich (1999) believe that this constraint is lessening with time, however, and as a tenure-track faculty member, I can only hope that they are correct. About half the articles I've published have been in environmental journals, and I've targeted these as a key publication outlet for three main reasons. First, I relied heavily on environmental journals as a graduate student. Because of this, they seemed a sensible place to publish my own work, and I did not question their respectability. Second, my research is relevant to biologists working with endangered species, and these biologists are more likely to read environmental journals than discipline-based geography journals. Third, part of my own research involves examining the way biologists conceive of and define conservation and development problems (Campbell 2000, 2002), and I believe I have an ethical obligation to publish research results where biologists are more likely to see them. Of the reprints I send out, I estimate that 90% are requested by biologists, and their interest reinforces my commitment to address this audience.

Although I have several motives for publishing in interdisciplinary journals, and for me these outweigh concerns about respectability, there remains a pressing concern about my publication strategy. In the tenure process, publications are key. Although biologists are reading my work (or at least asking for reprints), they are unlikely to cite me and might be deemed inappropriate members of a social scientist's tenure committee, a general problem for interdisciplinary researchers (Nyhus et al. 2002). I work in an interdisciplinary school of environment and believe that its senior administrators would support a sea turtle biologist as an appropriate tenure referee for me, although this might not be true for researchers in more traditional departments. I would expect a biologist to comment on the overall impact and relevance of my work for sea turtle conservation, rather than on theories or methods with which they may be unfamiliar. I have found, however, the review processes for such journals to be biased toward

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biologists, and reviewers are often interested in and familiar with the issues addressed but unfamiliar with the theory or methods used. This lack of familiarity does not stop them from suggesting related revisions, most of which are inappropriate for the type of data presented (Campbell 2003). This makes revision difficult and perhaps more time consuming.

To overcome biologically biased review processes, editors of interdisciplinary environmental journals should expand the list of social scientists on editorial boards and then use those social scientists more fully. They will be best positioned to identify appropriate reviewers, and this will help to increase the quality of contributions and reduce the authors' frustrations. Conservation biologists should continue to play a role in reviews because they are often familiar with the details of specific case studies. However, biologists should recognize their role in reviewing interdisciplinary work, for publications and for tenure files, and focus their assessments on the issues on which they are professionally most able to comment. Any academic should be able to comment on whether or not methods are adequately described, but not all can comment on the validity of specific data-gathering tools.

Interdisciplinary research can be hindered by differing expectations about publishing within a research team. Norms for publications in the natural and social sciences are not the same. For example, a cast-of-thousands author list is common in some natural sciences, but less so in the social sciences, and the order of authors varies between the sciences as well. Although these issues seem small, I'm part of a research team that spent some time clarifying a publication protocol once it became obvious that one was needed. This reactive process took time and broke the flow of ongoing work. Publishing protocols should be established at the beginning of collaborations, and team members should approach this exercise with an open mind.

Although interdisciplinary research has been constrained by the lack of financial incentives for its pursuit (Daily & Erlich 1999; Pickett et al. 1999), there are signs of progress on this front. At least in principle, many funding agencies—including traditional agencies such as the National Science Foundation in the United States and the Natural Sciences and Engineering Research Council in Canada—now promote interdisciplinary research. This emphasis has made interdisciplinary research more attractive to researchers. Although the availability of money may be less of a constraint to interdisciplinary research, the motives for undertaking collaborations and how these affect on the overall product, can be constraining.

In my first 5 years as a professional academic, I was asked to participate in at least six interdisciplinary research projects. In all cases, however, I was invited after the initial planning stages. In four of the six, I was the only social scientist involved, and there were at least two (and sometimes many more) natural scientists. In four of the

six, the perceptions of what I would do on the projects were initially vague and wide ranging, with few clear links to my past work. I said no to one of the projects, was written into two of them with no consultation, and had some input into three of them. In two cases, I suspected that a social scientist was being tacked on to meet funding requirements and that if the projects were funded, I would have little or no involvement. In the others, an interdisciplinary team may have been perceived as a requirement, but the natural scientists involved were eager to try it. The irony is that few of the proposals were successful, and in at least one case where I had no role in grant writing, the reviewers cited the inadequate integration of the social science component as the key reason it was not funded.

To overcome these barriers, biologists initiating interdisciplinary collaborations should ensure that the interdisciplinary component is pursued from the outset. Social scientists from appropriate disciplines and in appropriate numbers should play a key role in project conceptualization and grant writing. Likewise, researchers being asked to join a project should ensure that there is adequate opportunity for their input. These steps will help to avoid the impression that a particular component is being tacked on. This in turn will improve collegiality and, more importantly, research proposals. If collaboration begins late, original research partners may have preformed ideas about what they want, and there will be less room to explore the full range of possibilities. With the interdisciplinary team in place from the beginning, overcoming some of the philosophical obstacles identified below will also be easier.

Philosophical Obstacles: Understanding the "Other"

Social and natural scientists often approach conservation from different perspectives, both in terms of defining the problem and determining the appropriate approach to understanding it. If left unaddressed, such differences can hinder interdisciplinary research. Social and natural scientists may have fundamentally different views on some of the most common conservation narratives. Positions on key issues may be so fundamental to one's beliefs that they go unacknowledged until conflicts arise. These differences do not have to be debilitating. On the contrary, challenges to deeply held, sometimes unquestioned beliefs can be opportunities for growth. This can be one of the most rewarding aspects of interdisciplinary research, but if ideological differences arise unexpectedly and at an inopportune moment (e.g., when trying to finalize project outputs) the chance that challenges will be embraced as "opportunities" is reduced.

These fundamental beliefs may be linked to conservation objectives associated with particular research

projects. Natural scientists working with a charismatic species are more often than not conservationists. In extreme cases, scientists cross the line between science and advocacy to the detriment of their science (Mrosovsky 1997, 2000a, 2000b; Bowen & Karl 1999). More often, it may be that research has explicit conservation applications or that scientists undertake advocacy efforts in addition to their research. At many of the Costa Rican sea turtle nesting beaches where I work, natural scientists are members of and are supported by nongovernmental organizations that also advocate sea turtle conservation. Although they should be aware of the potential for their advocacy activities to influence how their research is perceived, it is possible for these scientists to perform an advocacy function without affecting their study group.

As a social scientist working on sea turtle conservation, my research involves measuring the social, political, cultural, and economic context of human interactions with sea turtles and assessing the impacts of conservation programs. My data source is most often the people living with sea turtles and, as a result, I cannot be a direct advocate for sea turtles, because such a stance would influence the way my research subjects—people—interact with me.

Advocacy, whether expressed through explicit activities or through implicit beliefs that underline research objectives, is more problematic in interdisciplinary research than in traditional research. First, as I have mentioned, the advocacy positions of social and natural scientists may be fundamentally different and can cause conflict. Second, human research subjects will be influenced by their perceptions of the overall research team and project and not just by the social scientists with whom they interact. Thus, advocacy is an issue that a research team must address explicitly, and conservation biologists working in an interdisciplinary context may have to suspend their own advocacy activities for the sake of broader project goals.

Although most biologists would defend the objectivity of their own research, they may have unconscious or assumed expectations about what results of socioeconomic research will show, and such expectations pose a barrier to interdisciplinary research. In some cases, such expectations are transparent. I was once asked to conduct research that would “show” that tourism was more valuable than an extractive-use project. Biologists may see results that do not support a desired conservation outcome as a betrayal, both professionally and personally. For example, at a recent sea turtle symposium, many field-based biologists spoke of the need to work with local communities and to engage social scientists to assist with this. Many, however, gave the impression that they believed interdisciplinary collaborations were necessary because social scientists were better positioned to educate local people about the value of sea turtles or that they could fix socioeconomic problems. Both tasks are beyond my normal remit as a researcher, and undertaking collaboration with such expectations in place would undoubtedly lead

to disappointment and frustration. Thus, researchers entering into collaborations should discuss and clarify their assumptions about conservation problems and investigate any unstated or assumed objectives of the overall research project. This exercise needs to be approached with an open mind and without defensiveness.

Interdisciplinary research is a group activity and as such is underlain by power. There are bound to be power differentials between members of a group. Individuals in a research team are unlikely to be at exactly the same stage of their careers, and someone is usually identified as a project leader. But power differentials need to be acknowledged, minimized, and managed or they can undermine interdisciplinary collaborations.

One factor affecting power balances is the number of social and natural science researchers on a research team. I am in the minority among academics interested in sea turtle conservation, among faculty in a multidisciplinary school of environment, and among collaborators. It is sometimes exhausting to be the one person speaking a different language or trying to represent a broad suite of social science concerns. Expanding the number of social scientists involved in collaborations can mitigate power imbalances and allow various disciplines to be involved. Perhaps ironically, incorporating more social science disciplines is likely to increase the time required to find common meaning. Just as bridges are needed between natural science disciplines, social scientists come from a variety of theoretical and methodological backgrounds and may also need to find common ground among themselves (Pickett et al. 1999).

Taking Time in Interdisciplinary Research

Many of my recommendations for interdisciplinary research teams—developing publishing protocols, clarifying problem definition, integrating assumed objectives, and considering power relations—take time. This time needs to be budgeted throughout the research cycle, but particularly near the beginning. Time is needed to wrestle with unfamiliar literature (an academic exercise) and to develop the friendship and collegiality that Daily and Erlich (1999) cite as critical to interdisciplinary success.

I do not mean to dissuade researchers from undertaking interdisciplinary collaborations. Rather, I encourage would-be interdisciplinarians to anticipate and prepare for some of the potential challenges in advance and to have reasonable expectations. Some actions I recommend may facilitate this process. Furthermore, if researchers share their experiences with interdisciplinary research in practice, there will be a wider body of knowledge for potential interdisciplinary researchers to draw on. An emerging backlash against integrating human need into biodiversity conservation (detailed and critiqued by Wilshusen

et al. [2002]) serves as a warning and suggests that the danger is real. We have not turned to interdisciplinary research on a whim, but rather because there are compelling arguments in its favor.

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