Diversity

How Conservation Scientists Can Help Develop Social Capital for Biodiversity

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Implementation of biodiversity conservation actions is driven by private contributions and political decisions (Orr 2003). Social scientists interested in conservation have long recognized the challenge of engaging people in conservation solutions (e.g., Freyfogle & Newton 2002; Peterson et al. 2005). Garnering resources, public and private, to set aside habitat for biodiversity requires maintaining and building social capital in an era when this has proven increasingly difficult to accomplish (Putnam 2000). In contrast, the role of the conservation biologist, generally speaking, is to provide the scientific support for conservation decision making, not to build social capital. Rosenzweig (2003), however, urges us to look for synergisms; to be creative in finding ways to meld conservation work with people's interests and day-to-day lives. There is a resurgent interest in conservation in and around urban areas. This provides a venue for biologists to conduct research relevant to decision making and builds social capital. Furthermore, conservation scientists should become more mindful of opportunities to work on these multiple goals of conservation that include building public support.

As conservation has matured successes abound: endangered species have been protected, reserves have been dedicated, critical ecosystems have been identified for protection. Yet, global biological diversity is still at great risk and is declining (Novacek 2000; Stein et al. 2000; Millennium Ecosystem Assessment 2005*b*). Relentless human population growth undoubtedly has much to do with this declining overall status of biodiversity, as pressure for human welfare intensifies pressure on biotic resources (Millennium Ecosystem Assessment 2005*a*). With human population expected to hit 9 billion during this century (United Nations 2000), threats to biodiversity will not be abated easily (Orr 2003). Effectively engaging people in the job of protecting biodiversity is a persistent challenge (e.g., Kempton et al. 1995; Freyfogle 2003).

Conserving biodiversity is a large and complex problem and resources are limited; thus conservation efforts have to be prioritized. Prioritizing one action inevitably entails foregoing other opportunities, which means conservation goals often mesh uncomfortably with one another (Callicott et al. 1999). Effective triage strategies require a clear focus and agreement on objectives. Over recent decades, as conservation has shifted its emphasis toward ecosystems, conservation biologists have been encouraged to think big in terms of reserves and targets (e.g., Pickett & Thompson 1978; Noss & Cooperrider 1994). Conservation biologists also need to think big, however, in terms of the numbers of concerned and mobilized constituents for conservation. A focus on developing conservation social capital—rallying the public around the need to take conservation of biodiversity seriously—may suggest a shift in conservation emphasis not entirely based on ecosystem targets and wildlands objectives.

If framing the biodiversity issue for society is a critical component for successful conservation, then conservation science should prioritize assessing the degree to which valued biodiversity can persist in human-dominated landscapes and the degree to which it contributes to collective conservation action by citizens. Indeed, urban conservation has become a core issue in conservation science (e.g., the 2004 SCB annual meeting was entitled "Conservation in an Urbanizing World"). Conservationists are beginning to engage local citizens in all levels of scientific inquiry and management. Social capital for biodiversity begins with embracing a personal responsibility for protecting the diversity of life on Earth. The task of personalizing nature for humanity is large, yet critical to long-term success.

Paper submitted July 1, 2005; revised manuscript accepted November 8, 2005.

Conservation Biology Volume 20, No. 5, 1550–1552

DOI: 10.1111/j.1523-1739.2006.00421.x

Although the task of personalizing nature in an urbanizing world seems daunting, there is much from which to gain encouragement. Rosenzweig (2003) presents several successful examples of personalizing nature that involve local efforts that make a difference to a component of nature persisting within human-dominated landscapes.

Conservation biologists can help engage society in conservation efforts by striving to achieve three goals: market biodiversity, adjusting the public's perception of biodiversity, and increasing public participation in biodiversity conservation. Each of these goals, to some extent, challenges the predominant paradigm of establishing core wildlands reserves for ecosystem level protection.

Strategic marketing of biodiversity is, and should be, uncomfortable for conservation biologists. Biologists do not generally market scientific information or even present information for public consumption.

People love elephants, pandas, and whales. Nevertheless, there may be a hidden cost to the marketing of flagship species. Conservation drives that feature pandas in the wild undoubtedly raise more money than ones focused on scraggly plants in urban environments. Nevertheless, exploiting empathy for endangered species in remote ecosystems does not engage people in the shared personal responsibility of how the communities in which we live contribute to biodiversity loss. An alternative approach is to market information on biotic resources to the people who have a direct impact on their continued existence. For example, a systematic program to engage public empathy for endangered species by posting adopt-a-species signs in support of stewardship, the way we currently post adopt-a-road signs, might foster strong collective action responses. I was recently in a restaurant that sported an endangered species theme for wall decoration. Not a single species depicted therein lived within 1000 miles of the restaurant, yet there was an occurrence of a federally listed endangered plant species within 5 miles. This was a missed opportunity.

Creating a biodiversity ethic requires changing the perception of distant biodiversity loss into one in which we all share personal responsibility, locally and globally. For example, a broad-based effort to engage the people of the San Francisco Bay Area in the conservation of the more than 200 threatened plant taxa within the region would provide a large group of people with a conservation objective that they could actually do something about.

Biodiversity conservation suffers from the perception people have that personal actions do not cause biodiversity problems, so there is a need to adjust the public's perception of biodiversity. All too often the message portrayed by zoos, museums, environmental education centers, and nature programming is that valuable biodiversity (most often large vertebrates) is concentrated in remote areas. This is neither the right message for personalizing nature (Thompson 2004) nor biologically accurate. Biodiversity is more appropriately characterized as being distributed disproportionately in regions of high human density (Moore et al. 2002; Schwartz et al. 2002; Seabloom et al. 2002).

The spatial coincidence of people and biotic diversity poses a problem for conservation biologists, but also provides an opportunity. Targeting large, remote, and defensible reserves is, of course, often cost-effective because it minimizes social conflict and focuses on regions with lower land costs (e.g., Ando et al. 1998). If, however, conservation scientists were to appropriately address irreplaceable components of nature that share living space with people, one might may be able to answer three important questions: Are these resources conservable? Does providing opportunities for public action result in increased ecological connectedness of our communities? Can urban reserves provide a net benefit to conservation by driving increased gifting to broader conservation issues? The question should arise as to whether this social capital is worth the added expense of conserving systems with the high real estate value of urban settings. Fortunately, however, rare plants associated with urban environments are often already in the public domain; they simply lack monitoring and management (Schwartz et al. 2002). Given the lack of monitoring, there is a genuine need for public participation in collecting meaningful data that can answer important questions regarding the persistence of isolated populations of endangered taxa.

Biotic resources in urbanized settings may be valuable, irreplaceable, and defensible (Schwartz 1999). In recent years a focus on understanding what kinds of species persist within urban ecosystems has begun (e.g., Blair 1999). The public can help. There is generally more experienced and qualified help available than can be accommodated, if the job has a meaningful outcome.

There is no greater way to get people to internalize a biodiversity ethic than to have them participate in ecological stewardship. Although urban areas have nature centers and schools with environmental education programs that contribute to a conservation ethic (but see Thompson 2004; Struhsaker et al. 2005), these projects have not adequately increased the political value of biodiversity. Conservation biologists can help increase public participation by building opportunities for participatory, cooperative science and stewardship. Within the United States, for example, nearly 22% of county-level occurrences of federally listed endangered plants are found in the 12% of counties where half of all Americans reside (Schwartz et al. 2002). This urban-associated biodiversity presents an opportunity for people to get involved. Volunteer stewardship programs are an important way to engage the public, yet relatively few organized efforts exist.

Conservation biologists need to increase their participation in programs such as the Chicago Wilderness, the Breeding Bird Survey, and coastal cleanup programs.

These are social programs that motivate large numbers of people. There are questions of conservation management concern that can be asked and answered within the context of these public events. Furthermore, we need to create more opportunities with which to engage the public in conservation science. Citizen scientists have been effectively used in the developing world to build scientific databases. These citizen scientists can help collect valuable data on ecological systems, and they cultivate an ethic of conservation stewardship. Some regions (e.g., Great Britain) have a strong tradition of trained amateur naturalists. Many of the best studies of phenological and distribution shifts associated with global warming have emerged from Europe precisely because they have skilled amateurs collecting valuable biodiversity data. Conservation science in the United States, by contrast, has been reluctant to embrace the value of citizen scientists. We should engage citizen scientists in conservation science purely because it engages citizens.

Conservation biologists can help build a robust biodiversity ethic by supporting science that better integrates the public into the process of understanding human impacts on biodiversity. Conservation projects should protect large, defensible reserves that capture as much diversity and ecological processes as possible. These projects capture much about diversity that we value that cannot be accomplished in any other way. It is also important, however, to focus research efforts that engage people in the stewardship of diversity. This could entail striving to develop a better understanding of what components of biodiversity persist in human-dominated landscapes by helping the people who live with that biodiversity participate in its conservation. As with remote wilderness, the concentration of biodiversity in human-dominated landscapes suggests that there is much about these habitats that cannot be conserved in any other way than through reserves within the fragmented landscape. Focusing on conservation projects that engage the urban populace and support the goal of developing a biodiversity ethic must become more of a priority of more conservation biologists.

Acknowledgments

I thank T. Banda, E. Bella, M. Borgerhoff-Mulder, T. Caro, D. Lawson, G. Meffe, T. Mwampamba, J. O'Brien, S. Strauss, and J. Williams, along with J. B. Callicott, for thoughtful discussion and comments on earlier drafts.

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