When Agendas Collide: Human Welfare and Biological Conservation

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Abstract: *Conservation should benefit ecosystems, nonhuman organisms, and current and future human beings. Nevertheless, tension among these goals engenders potential ethical conflicts: conservationists' true motivations may differ from the justifications they offer for their activities, and conservation projects have the potential to disempower and oppress people. We reviewed the promise and deficiencies of integrating social, economic, and biological concerns into conservation, focusing on research in ecosystem services and efforts in community-based conservation. Despite much progress, neither paradigm provides a silver bullet for conservation's most pressing problems, and both require additional thought and modification to become maximally effective. We conclude that the following strategies are needed to make conservation more effective in our human-dominated world. (1) Conservation research needs to integrate with social scholarship in a more sophisticated manner. (2) Conservation must be informed by a detailed understanding of the spatial, temporal, and social distributions of costs and benefits of conservation efforts. Strategies should reflect this understanding, particularly by equitably distributing conservation's costs. (3) We must better acknowledge the social concerns that accompany biodiversity conservation; accordingly, sometimes we must argue for conservation for biodiversity's sake, not for its direct human benefits.*

Keywords: community-based conservation, distribution of costs and benefits, ecosystem services, ethics, local communities, mediation, poverty, transdisciplinarity

Cuando las Agendas Chocan: Bienestar Humano y Conservación Biológica

Resumen: *La conservación debería beneficiar a los ecosistemas, a los organismos no humanos y a los seres humanos actuales y futuros. Sin embargo, las tensiones entre estas metas engendran potenciales conflictos éticos: las verdaderas motivaciones de los conservacionistas pueden diferir de las justificaciones que ofrecen por sus actividades, y los proyectos de conservación tienen el potencial de reducir facultades y oprimir a la gente. Revisamos la promisión y deficiencias de la integración de aspectos sociales, económicos y biológicos a la conservación, de la concentración de la investigación en los servicios ecosistémicos y los esfuerzos de la conservación basada en comunidades. A pesar de muchos progresos, ningún paradigma proporciona una solución directa a los problemas más apremiantes de la conservación, y ambos requieren de reflexiones y modificaciones adicionales para ser afectivos al máximo. Concluimos que se requieren las siguientes estrategias para que la conservación sea más efectiva en un mundo dominado por humanos. (1) La investigación en conservación necesita integrar aspectos sociales de manera más sofisticada. (2) La conservación debe ser*

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informada por el entendimiento detallado de la distribución espacial, temporal y social de los costos y beneficios de los esfuerzos de conservación. Las estrategias deben reflejar este entendimiento, particularmente mediante la distribución equitativa de los costos de conservación. (3) Debemos mejorar el reconocimiento de las preocupaciones sociales que acompañan a la conservación de la biodiversidad; consecuentemente, algunas veces debemos argumentar por la conservación en favor de la biodiversidad, no por sus beneficios directos para los humanos.

Palabras Clave: comunidades locales, conservación basada en comunidades, distribución de costos y beneficios, ética, mediación, pobreza, servicios ecosistémicos, transdiciplinariedad

Introduction

The crux of conservation is the relationship between people and the landscapes that house biodiversity, and the appropriate nature of that relationship has been debated at length within the conservation community (Karanth & Madhusudan 1997; Saberwal 1997; Redford & Sanderson 2000; Schwartzman et al. 2000). Recently, Chapin (2004) has questioned whether international conservation organizations are dealing ethically with local people and with their corporate donors, while *Nature* (Nature 2005) has editorialized that certain tropical conservation groups are becoming too cozy with despotic regimes. Perceived conflicts between conservation and human welfare have alienated potential allies by engendering the sentiment that conservationists are unconcerned with people's problems or are using people only to further other ends. Although it is possible to debate the depth and extent of these "conflicts," the mere perception of conflict—regardless of its origin—has crucial implications for the success of conservation and must be addressed.

Many members of the public see environmentalists as misanthropes, pursuing largely biocentric ends (Shellenberger & Nordhaus 2004). Controversies such as the jobs-versus-owls showdown in the U.S. Pacific Northwest have left communities near areas of conservation concern resentful of environmentalists (Satterfield 2002). Likewise, there are both pro-growth conservatives (Beckerman 1995) and pro-welfare liberals (Rosenberg 2004) who see environmentalists as throwing up barriers to "progress" and livelihoods, respectively. What and where are the convergences between conservation and human well-being, and what and where are the divergences? How should conservationists respond to convergences and divergences, given that every conservation initiative will involve both?

We briefly review the ethics of conservation and then discuss the extent of convergence or conflict between the needs of people and of biodiversity. We focus primarily on the following question: How can researchers help practitioners conserve biodiversity in light of the tradeoffs between needs?

Justifying Conservation in a World of Human Needs

Some environmental ethicists have persuasively justified conservation based on concern for nonhuman organisms (e.g., Singer 1993; Rolston 1995; Varner 1998). However, many projects also promise economic dividends (Daily & Ellison 2002), and conservationists have increasingly made use of that promise in promoting their efforts. Research on the links between natural ecosystems and human welfare has demonstrated that many conservation projects will benefit humanity (Millennium Ecosystem Assessment 2005). Such win–win scenarios—in which conservation and economic growth are clearly coupled—have become the holy grail of conservation biology (Rosenzweig 2003). Nevertheless, these benefits are often difficult to identify, slow to materialize, diffuse, or discouraged by high transaction costs. Moreover, the benefits may accrue only to certain sectors of society, such as local political elites or geographically remote firms, while shutting out some local stakeholders whose actions may ultimately determine the fate of the landscape. Most importantly, it usually takes years for the long-term benefits of conservation to outweigh the short-term costs, whereas much shorter time horizons hold sway in economics, politics, and people's day-to-day decisions.

Thus, even the rosiest win–win conservation scenario will have detractors and opponents. The remaining question is not whether to pursue conservation—we must. Rather the question is how to achieve conservation given that economics is more likely than ecology to inform policy and that the same ethics that justify conservation also demand that we be mindful of poverty and associated human suffering (e.g., Singer 1993, 1999). There can be no universal prescription for how to make conservation work and no panacea for conflicts between conservation and human interests. Nevertheless, there can be a standard set of issues for conservationists to keep in mind.

We considered two areas of research and activity that have been approached enthusiastically in recent years and that illustrate the promise and deficiencies of explicitly integrating social, economic, and biological concerns in conservation planning.

Insight from Research on Ecosystem Services

Nature provides a set of benefits to human populations that have broadly been labeled ecosystem services (Daily 1997; Millennium Ecosystem Assessment 2003, 2005). Ecosystem services are supplied by natural and seminatural systems and fall into four categories: production of goods, provision of life-support processes (e.g., water purification, crop pollination), provision of life-fulfilling processes (e.g., aesthetic cultural, and scientific inspiration), and preservation of future options regarding presently unrecognized values (Daily et al. 2000).

Although a conservation paradigm rooted in the concept of ecosystem services appeals to many in both scientific and nonscientific communities (Economist 2005), some conservationists have expressed concern that a purely anthropocentric approach will be insufficient to protect biodiversity (e.g., Myers 1997; Redford & Sanjayan 2003). It is generally unclear which elements of biodiversity are critical for service provision—will an ecosystem-service-oriented approach value functionally redundant species only as insurance against risk to other species? The designation of biodiversity itself as providing life-fulfilling ecosystem services partly sidesteps this problem. If biodiversity can be valued inherently in this way, incorporating ecosystem services into conservation agendas becomes less a paradigm switch than a shift or expansion. The real test, however, of whether an ecosystem service will facilitate conservation is not whether academics can valuate it, but whether someone—or some organization—is able and willing to do what is necessary to secure it. Western conservationists are clearly more willing and able to pay for biodiversity conservation than, say, African peasants (who may be willing but unable; Pringle 2005) and multinational corporations (which may be able but unwilling; Revkin 2005).

Furthermore, biodiversity protection per se is subject to compromise in managing the whole portfolio of services because it is impossible to maximize imperfectly correlated goals simultaneously. And the life-fulfilling benefits arising from biodiversity are imperfectly correlated with other ecosystem services: although some minimum level of biodiversity is required for ecosystem function, the relationship is variable and context dependent (Kremen 2005; Srivastava & Vellend 2005). Some lines of evidence suggest a plateau of certain ecosystem functions and services at intermediate levels of biodiversity (Loreau et al. 2001; Bell et al. 2005), whereas other evidence suggests that species losses may considerably impair the provision of services (Ostfeld & LoGiudice 2003; Sekercioglu et al. 2004; Zavaleta & Hulvey 2004; Larsen et al. 2005; Lyons et al. 2005). This imperfect relationship is exacerbated because non-native species often perform certain services better than native species. For example, fast-growing non-native eucalypts may be ideal for forestry or carbon sequestration but minimally useful in biodiversity protection (Myers 1984).

In other cases the relationship between biodiversity and ecosystem services will pit the interests of current and future people against one another. For example, current North American farming practices assume that European honeybees (*Apis mellifera*) are more economical crop pollinators than a suite of indigenous insects (Kremen et al. 2002). But preferential use of *A. mellifera* as a lone pollinator today may jeopardize future crop pollination because of susceptibility to disease and invasive species (USDA-NASS 2000). In the mid- or long-term, conservation of the native bee community might best assure the continuity of the pollination service (Kremen et al. 2002).

To understand the practical significance of incongruence between the interests of contemporary human beings, future generations, and nonhuman organisms, we must understand how conservation projects are likely to pay off in terms of human welfare. Two problems confound the evaluation of social impacts of conservation projects, however. First, the costs and benefits of conservation are not evenly spread over all peoples, places, and times. The "winners" might be distant in space and time from the "losers," necessitating analyses at multiple scales. For example, the benefits of conserving a Madagascar forest were estimated to accrue at both global and local scales, but with a significant opportunity cost of foregone logging concessions for the national government (Kremen et al. 2000). More generally, Balmford and Whitten (2003) argue that future generations and the global community typically benefit most from tropical conservation, whereas local communities and nations bear the costs. Conservation efforts intended to dissipate development or resource extraction pressures necessarily entail costs to those local people who rely on such activities (Gadgil & Guha 1993; Salafsky et al. 2001).

Second, it is likely that impacts that are damped locally will simply shift to another location. Mayer et al. (2005) allege that forest protection in China and Finland has shifted logging pressure to Russia. Unfortunately, the areas least able to institute successful conservation programs are often the most susceptible to degradation resulting from successful conservation actions elsewhere (Gadgil & Guha 1993).

The knowledge that will allow resolution of these dilemmas has been slow in building. Research on the benefits of conservation has generally been conducted separately from research on the negative impacts, and each strand suffers from biases and limitations. Nearly a quarter century of work has explored the implications of the harvest of nontimber forest products (NTFPs) for forest conservation, but recent reviews highlight the many uncertainties that impede effective management and policy development. It is difficult to determine sustainable harvest

levels and manage extraction even of well-known products such as the Brazil nut (*Bertholletia excelsa* Humb. & Bonpl.) (Boot & Gullison 1995). The long-term impacts of NTFP harvest on ecosystem-level processes are also poorly understood (Ticktin 2004). Moreover, the economic potential of NTFPs is highly context dependent (Arnold & Ruíz-Pérez 2001; Belcher et al. 2005). Divergent outcomes—both ecological and economic—stem from complex interactions among the development of markets for NTFPs, the method and level of extraction, and the household economic strategies of harvesters (Crook & Clapp 1998; Arnold & Ruíz-Pérez 2001; Belcher et al. 2005).

Aside from the special case of NTFPs, quantitative analysis of conservation benefits has typically been the arena of ecosystem-services research, which is in its infancy despite a dramatic recent expansion. Most studies focus on a single service (Turner et al. 2003) and suffer from the linked problems of inappropriate methods and inadequate context-specific data, which limits relevance to public policy (1998. Special section: forum on valuation of ecosystem services. *Ecological Economics* 25:1–136; Ludwig 2000; Xue & Tisdell 2001; Balmford et al. 2002).

A cynical interpretation of the ecosystem-service literature (McCauley 2006) would be a scramble to illustrate instances of mutual gain for people and biodiversity. True, most valuation studies in the ecological literature have emphasized considerable overlap between nature conservation and the supply of services (Kremen et al. 2000, 2004; Xue & Tisdell 2001; Mols & Visser 2002; Knowler et al. 2003; Ricketts 2004; Ricketts et al. 2004), but this reflects the need for proofs-of-concept before ivory-tower ideas can take root on the ground. That said, the degree of overlap depends on the scale of biodiversity protection. In many of the above analyses, there are scales of and approaches to land management that would benefit biodiversity but may not be justified by service values alone (see also Xu et al. 2003; Hietala-Koivu et al. 2004).

Conversely, studies documenting the social costs of conservation suffer from their own biases and limitations. Such research (particularly in the developing world) has traditionally been the province of anthropologists, historians, and geographers and has tended to overemphasize socioeconomic injustices associated with conservation projects (e.g., Leach & Mearns 1996; Neumann 1998; Sundberg 1998; Brockington 2002) with minimal consideration of potential or realized mutual benefits. This perspective is understandable: these scholars are filling a niche left vacant by conservationists who have typically ignored the unpleasant aspects of nature protection. We need a better, integrated accounting of the benefits and costs of nature conservation, which will probably only occur when teams of natural and social scientists work together.

Finally, three key market failures continue to prevent Adam Smith's invisible hand from favoring an efficient allocation of resources to conservation initiatives (Balmford et al. 2002). As a result conservation efforts that really are win–win (in the aggregate) may nevertheless be popularly perceived as beneficial only for biodiversity. First, decision makers have imperfect information regarding ecosystem services and their value. The disaster-mitigation service of coastal mangroves was revealed widely only after the crushing tsunami of 26 December 2004 (Danielsen et al. 2005). Second, there are often considerable positive externalities of conservation (impacts that have no market value), whereas landscape conversion—with its negative externalities—often yields immediate, tangible economic rewards (Balmford et al. 2002). The disaster-mitigation service of mangroves has no economic market, whereas the conversion of such mangroves to shrimp lagoons yields substantial private benefits. Third, there are many intervention failures (e.g., "perverse" subsidies, especially in agriculture, fisheries, and forestry; Myers & Kent 2001) that artificially enhance the private benefits of conversion.

Thus, a fuller characterization of ecosystem services might provide incentive for individuals, businesses, and governments to internalize long-term and diffuse benefits and to foster nature conservation as part of a diverse portfolio of strategies. But a detailed understanding of the benefits of conservation will only guide policy in conjunction with an equally detailed understanding of the costs, and it is likely that even a comprehensive assessment of conservation's positive externalities will not ensure the preservation of biological diversity to the extent that most conservationists desire.

Insight from Community-Based Conservation Efforts

Another focus of conservation activity at the interface of nature and society has been in community-based conservation. Such projects attempt to win support for conservation from local people by ceding management authority, ownership, or economic benefits of those resources to those people (Western & Wright 1994). Early enthusiasm for community-based conservation has declined in the face of mixed results (Berkes 2004), with critiques emanating from both social and biological perspectives. Community-based conservation projects have occasionally failed socially because local people bore an inordinate share of the costs associated with conservation of a resource and received an inadequate share of the authority and benefits (Songorwa et al. 2000; Salafsky et al. 2001). In other cases the model has not provided adequate protection to the resources themselves (Barrett & Arcese 1995). Barrett et al. (2001) suggest that community-based conservation is most effective when resource access is restricted by strong local systems. This is undoubtedly true

from the perspective of nature, if not necessarily that of people, and there are successes on record (Dinerstein et al. 1999).

Nevertheless, the same institutions that provide the necessary "strong local control" of threatened resources are also vulnerable to corruption and exploitation, as when local elites monopolize the flow of benefits into the community (Homer-Dixon 1999). Zimbabwe's CAMPFIRE program, cited by some as an example of successful community-based conservation (Getz et al. 1999), has been roundly criticized by some social scientists noting widespread local disenchantment with both the program and the local officials administering it (Alexander & McGregor 2003).

In many of these cases history has obstructed community-based conservation projects. For example, Good Neighborliness programs sponsored by the Tanzania National Parks have failed because of distrust and miscommunication, fueled by collective memories of colonial abuses, between local Maasai and conservation groups (Igoe 2003). The portrayal of conservation as cultural imperialism, although rebutted by Terborgh and van Schaik (2002) on ethical grounds, nonetheless remains a practical problem in areas where the coercive hand of the state has blurred the line between colonial and postcolonial regimes. Many protected areas in former colonies were gazetted by Europeans and essentially for Europeans (Anderson & Grove 1987), whereas others were established in the aftermath of independence with the explicit aim of enticing wealthy international tourists. Community-based projects aim to counter these exclusionary models and emphasize the local benefits of conservation (Salafsky & Wollenberg 2000). But rural inhabitants may nevertheless perceive these processes as parallel—a coercive partitioning of space that privileges the interests of foreign elites—despite whatever benefits they might derive from that partitioning (Neumann 2001). Terborgh and van Schaik's (2002) contention that "just compensation, transparency, and public accountability" will prevent the repetition of past injustices is probably correct, but only if these principles are brought out of abstraction and applied as an integral part of every new conservation plan.

Community-based conservation research offers insights into promotion of conservation from the bottom up (Jones & Murphree 2004). But we can only expect such projects to yield sustainable gains for biodiversity if the gains for people are linked and are themselves sustainable (Salafsky et al. 2001).

Dealing with Conflict

Merely recognizing that biological conservation and human welfare are both ethical imperatives and that they are (imperfectly) interlinked will not solve any problems. Efforts to design globally applicable strategies, when a patchwork of locally and regionally tailored approaches is required, also will fall short. Nevertheless, we suggest some ways in which conservation researchers can help guide effective conservation policy.

Broad Engagement with Social Issues and Social Scholarship

When conservation biologists presume to prescribe or demand policies based only on biological considerations, it suggests indifference to human concerns. Although biological concerns ought sometimes to overrule social concerns in matters of public policy, they should do so only if the respective impacts have been considered carefully.

Earnest efforts to understand the concerns of people and institutions relevant to areas of conservation significance will require earnest efforts to work with social scientists in addition to local communities. Calls for transdisciplinary work in conservation (e.g., Daily & Ehrlich 1999; Mascia et al. 2003; Max-Neef 2005) have been in fashion for some time, and they have yielded some important advances, particularly when the collaborations have been between ecologists and economists. In particular, integrated ecological-economic models have produced new insights into the relationship between ecological function and economic benefit (Guo et al. 2000; Costanza et al. 2002; Nalle et al. 2004; Polasky et al. 2005). Conservation biologists have collaborated much more rarely with cultural anthropologists, human geographers, or social historians. This is a shame because these are the scholars who can best inform conservationists about the social and cultural implications of conservation work. They also can provide clarity about the sometimes-controversial methods (such as consensus building and argument-based models) used to manage the conflict often associated with conservation efforts (Peterson et al. 2005, 2006; Leach 2006). We suspect that the divergent philosophies and research styles of these disciplines have obstructed collaboration: for example, the epistemological challenges to objectivity commonly raised in the social science literature alarm many natural scientists (Guyer & Richards 1996).

Perhaps contrary to common sentiment among natural scientists, so-called relativist scholarship may offer unexpected and useful insights (Ludwig 2001). Social scientists have repeatedly pointed out that a particular set of "facts" may be socially constructed and interpreted in innumerable ways, a lesson that has implications for how researchers relate to people. Because academic science cannot lay sole claim to truth, researchers should demonstrate humility and respect and cultivate an attitude of mutual learning. Western tropical conservation biologists in particular would do well to recognize the plurality of knowledge systems across cultures (Robertson & Hull

2001; Pedynowski 2003) and that their relative wealth and education often creates a power imbalance between them and the people they work among (Foucault 1980; Song & M'Gonigle 2001).

Obviously, many tropical conservation biologists have arrived at organic and highly functional understandings of the social and political contexts in which they work. Others apparently have not (Chapin 2004). In any case efforts to break down disciplinary boundaries (Ludwig et al. 2001) will achieve important advances in communication, both within academic culture and across global cultures.

Spatial, Temporal, and Social Distributions of Costs and Benefits

Conservation biologists are aware of the importance of determining the biological benefits of a prospective conservation effort. Hence we have seen biodiversity inventories (Kremen et al. 1994), biodiversity hotspots (Myers et al. 2000) and coldspots (Kareiva & Marvier 2003), priority ecoregions (Olson et al. 2001), and optimal reserve design (Meir et al. 2004), among other approaches. Whereas most conservation biologists now appreciate the need to work with society, methods for characterizing human costs and benefits are considerably more primitive (National Research Council 2005). This problem requires investments in effort and technology similar in scope to those that have been applied to the biological facets of conservation planning, with a focus on the distributional complexities.

The long-term prospects of conservation efforts are likely to be determined not just by the aggregate costs and benefits, but also by their distribution across time and space (e.g., Kremen et al. 2000; Balmford et al. 2002; Hanley et al. 2003). Economic analyses frequently assume distributional issues will be corrected after efficiency has been maximized (Sen 1999), but we suggest otherwise. When attempting to establish a conservation or restoration project in an impoverished place, we need a detailed understanding of the distribution of impacts to ensure effectiveness, equity, and sustainability (Costanza & Folke 1997). For example, which individual(s) will receive the lion's share of revenue from the proposed project, and which other individuals should we therefore strive to see employed in some conservation-related capacity? Precisely where is conflict over restricted access to fuelwood likely to arise? Exactly how much time will it take before watershed benefits from forest restoration begin to make themselves felt? Better questions will enable better solutions. If village X will suffer most from restricted access to fuelwood, a development organization should be engaged to help ensure an adequate supply of power there. If it will take 5 years for a watershed restoration project to provide positive benefits, community Y should be provided with 5 years of compensatory alternatives.

Conservation biologists should consider how the private costs stemming from conservation initiatives vary with socioeconomic stratum and adjust their proposals accordingly. Balmford et al. (2002) note that the result of landscape conversion is often "short-term private gain," but it is also true that there are many people eking out an existence by means of such gains. The humanitarian implications of conservation projects that obstruct these private gains are presumably different if the bearer is a subsistence farmer as opposed to an executive in a large corporation (and failure to recognize this difference is already causing consternation among antipoverty advocates: GRAIN 2005; Lovera 2005). A fuller accounting of the distribution of costs and benefits will reveal when and where solutions for societal gain would incur devastating private losses, and thus when, where, and how policy reform for global gain should be accompanied by compensation of private loss.

Project Justification

The recognition that conservation is proceeding too slowly and that people are loss-averse (Arrow 1965; Tversky & Kahneman 1986) has led many to reframe conservation. We hear less about undoing human damage to nature and more about salvaging nature for economic reasons (Balmford et al. 2002). This is an appropriate tactic in many situations—particularly where relative wealth and stability allow people to pay and to plan for distant time horizons—and will do much to foster new conservation partnerships in coming years. Wherever clearcut win–win scenarios can be identified, they should obviously be pursued doggedly and the results publicized. Such happy coincidences will do much to extinguish the notion that there cannot be environmental stewardship alongside economic growth and welfare.

Nevertheless, we must guard against the assumption that economics can single-handedly rescue conservation. To assume this would be to believe (in the face of contrary evidence) that market forces would always favor conservation. Alternatively, we must satisfy ourselves that biodiversity that cannot survive in the marketplace is not worth conserving. Goods, services, and their providers get bought and sold. They also get discontinued, become obsolete, compete with one another, and go bankrupt (Janzen 2001). Markets and technology are unpredictable, and they are therefore fickle friends for conservation, which typically seeks to provide biodiversity protection in perpetuity. If we argue, or even imply, that native bees are important *because* they provide pollination services to coffee farmers, what do we say about bees that become obsolete when coffee prices bottom out and coffee farmers become pineapple farmers? What is our plan for

conserving water sheds after technology delivers competitively superior filtration and purification? Internalizing externalities and harnessing market forces may buy biodiversity some time, but we should not expect this alone to deliver protection in perpetuity.

If a conservation project seems essential for biodiversity, how then should conservation biologists build support for it? The first task is to assess whether the economic or public-health payoffs are likely to be high and sustainable. If they are, then that unit of conservation can be marketed as a number of things—as a venture in capitalism, as a civic or government responsibility, or as a humanitarian necessity—and the appropriate partners solicited (private landowners, local people or their governments, and international aid or development organizations, respectively). If they are not, then it is unwise to promise or even imply the possibility of economic returns. There have been cases in the developing world in which conservation programs offered returns that did not materialize (at least on locally relevant timelines), resulting in disillusionment and a popular backlash against nature (e.g., Alexander & McGregor 2003). Without the promise of economic returns, we then have conservation for biodiversity's sake, funded by conservation-minded philanthropists and enforced by laws (as far as ethical and practicable). In these cases by all means invite people in; encourage domestic ecotourism and "bioliteracy" to nurture biophilic impulses and a sense of pride in the landscape (Wilson 1984; Janzen 2001); and facilitate local livelihoods by employing local people (e.g., Sheil & Lawrence 2004). But do not expect or wait for people who are not first and foremost conservationists to make the initial capital investment in conservation.

Conclusions

In the discussion about conservation practice, the category "people" has little meaning and must be disaggregated. Failure to do so renders debate about the relationship between conservation and human concerns sterile at best. We cannot argue issues such as "people versus parks" (Schwartzman et al. 2000) without asking, Which people? What parks? This point may at first seem obvious. But if it is, one would never know it from browsing the conservation biology literature, where the terms *indigenous peoples*, *landowners*, and *the public* are regularly encountered, monolithic, and without context.

The challenges we pose to conservation biologists (and practitioners) are as follows. Obviously, there is a need to analyze and explain biodiversity and to ask how the characterization and internalization of ecosystem services can generate revenue for conservation. For these efforts to result in widespread and lasting conservation, however, investigators must answer this question with some nuance and with reference to time, space, and socioeconomic conditions. Every project with winners might have losers. Can those losers be identified and their responses anticipated? Can that conflict be preemptively defused? Can conflict and harmony be mapped, as can slope and vegetation, as data layers in geographical information systems, to design better mitigation strategies?

Conservation biologists must also become more adept at bridging disciplinary divides and consulting the social science literature for insights about how to design culturally, politically, and socioeconomically appropriate conservation plans. When possible we should solicit—and heed—the advice not only of economists and legal scholars, but also of psychologists, ethicists, anthropologists, and geographers. We must embrace unrealized allies in the business and development communities by developing nontechnical planning tools that can be used by nonconservation partners to integrate conservation priorities into their projects. The added time and complexity of integrating these other perspectives introduces an undeniable trade-off such that integration might appear to be a luxury we cannot afford. It takes time and effort to do things right.

Single mindedness was an asset in building global awareness of the biodiversity crisis. But a solution to the crisis requires a fusion of biological and social considerations, with sophistication and depth of thinking that give substance to today's "conservation and people" slogans and marketing phrases.

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