



Cost-Effective Conservation:

A Review of What Works to Preserve Biodiversity

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The need to preserve biodiversity is urgent, but the financial stakes are high and the debate is heated. There has never been a greater need for both a clear understanding of the principles involved and a careful investigation of the facts.

Humanity has never had a greater impact on the world's land use than we do at the present. As a result, some natural scientists predict that a third or more of the species on earth could become extinct in this century. Such losses are encountered in the geological record only at times of astronomical cataclysm. Half of all terrestrial species can be found in the 6% of the world's land area covered by tropical forests, and these species face the gravest risk. In developing tropical countries, the social agenda is dominated by the pressing needs of poor and growing populations.

Despite the difficulties inherent in influencing behavior in other countries, international efforts to preserve biodiversity have been under way for many years. Aggregate statistics are difficult to come by, but some numbers are indicative of the commitment. The World Bank has dedicated well over a billion dollars toward biodiversity conservation. A number of donors have allocated the same amount toward retiring developing country debt under debt-for-nature swaps. A recent study of conservation spending in Latin America reported approximately \$3.3 billion in expenditures. Private foundations have contributed more than \$10 million per year to conservation in developing countries.

Over the past two decades, conservation funding has shifted away from the "parks and fences" approach toward one attempting to integrate conservation and development projects. This new approach has been harshly criticized. "Integrated conservation and development projects," as they are called, have been labeled as little more than wishful, and generally ineffectual, thinking in works such as John Terborgh's *Requiem for Nature* (Island Press, 1999). Calls to return to a parks and fences approach have sparked another backlash from critics who regard it as little better than stealing indigenous peoples' land at gunpoint. While these debates are raging, other groups are cataloguing, extolling, or sometimes lambasting a variety of innovative approaches to conservation finance.

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Direct vs. Indirect Approaches

Biodiversity conservation is largely a matter of preserving the habitats sheltering imperiled species. Effective conservation requires that people who would destroy

Box 1. A Taxonomy of Habitat Conservation Policy Options

Direct approaches pay for land to be protected. Examples include:

- Purchase or lease—Land is acquired for parks or reserves.
- Easement—Owners agree to restrict land use in exchange for a payment.
- Concessions—Conservation organizations bid against timber companies or developers for the right to use government-owned land.

Indirect approaches support economic activities that yield habitat protection as a by-product. Examples include:

- Payments to encourage land use activities that protect habitat and supply biodiversity as joint products. These payments can take several forms:
 - Subsidies to ecofriendly commercial ventures: Subsidies assist ecotourism, bioprospecting, and nontimber forest product entrepreneurs with facility construction, staff training, or marketing and distribution.
 - Payments for other ecosystem services: Payments for carbon sequestration, flood and erosion protection, or water purification provide incentives to maintain the habitats that both provide these services and shelter biodiversity.
- Payments to encourage economic activities that direct human resources away from activities that degrade habitats. This "conservation by distraction" approach provides assistance for activities such as intensive agriculture or off-farm employment. These activities may not be eco-friendly, but their expansion can reduce local incentives to exploit native ecosystems.

such habitats be provided with incentives to preserve them. Equitable conservation requires that we identify the people who have a rightful claim to such habitats and compensate them. People who do *not* have rightful claims must be prevented from destroying imperiled habitats.

People will generally do what is in their own interest. If they can receive more benefits from protecting an area of habitat than they could from clearing it for other uses, they will preserve it.

Box 1 identifies a number of conservation policy options. We've grouped them into *direct* and *indirect* approaches. Direct approaches are straightforward. The conservation organization pays for conservation. Payments may be in the form of outright purchases or purchases of "partial interests" such as easements or concessions, but the basic idea is to pay for actual conservation.

Indirect approaches are more complicated. Subsidies are provided to activities that are felt to be conducive to conservation. A conservation organization might, for example, assist a local entrepreneur in constructing a hotel for ecotourists, or training people to evaluate native organisms for their pharmaceutical potential. Indirect approaches raise two questions:

- If the activities local people undertake are profitable, why is assistance from conservation organizations necessary?
- If the activities are not profitable, might direct approaches be more effective in motivating conservation?

Ecofriendly enterprises have proved profitable in many parts of the world (see Box 2), so subsidies are not always required. Many millions, if not billions, of dollars have been devoted to assisting ecofriendly enterprises, however. The wisdom of these subsidies is suspect for a number of reasons.

First, such subsidies are generally an inefficient way of accomplishing a *conservation* objective. Consider two options facing an organization that wishes to preserve a certain area of land. First, it could pay for land conservation. If an ecofriendly enterprise can profitably be operated on the land, the conservation organization could sell a concession to operate the enterprise. The *net* cost of conservation under this option would be the cost of buying the land less the income received from the concession.

Under the second option, the conservation donor would subsidize the ecoentrepreneur by, for example, investing in hotel facilities to be used by tourists. The ecoentrepreneur would then acquire land for the ecotourism facility. The conservation donor may be able to motivate the protection of more land by providing a higher subsidy. The conservation organization's net cost of conservation under this option would be the value of the subsidy it offers.

The second approach is more expensive. The basic principle at work is that "you get what you pay for," and the cheapest way to get something you want is to pay for *it*, rather than things indirectly related to it. While it is extremely difficult to estimate reliably the earnings of ecofriendly projects, we have been able to construct a number of examples that demonstrate dramatic differences in costs under the alternative approaches. The cost

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of the direct approach can be no greater than the forgone earnings that would have arisen from land conversion. If any earnings can be generated from ecofriendly activities, they can be subtracted from the cost of protection in computing the net cost of conservation. The cost of the indirect approach can, on the other hand, be several times higher than the cost of outright purchase or lease.

A number of other considerations also weigh against indirect approaches:

- There is no guarantee that subsidizing ecofriendly activities will motivate more conservation. Organizations offering such subsidies often assume that their effects will be positive, but if, for example, nicer hotel facilities induce would-be ecotourists to spend more time in their rooms than outdoors, the investments would prove counterproductive.
- Activities intended to be ecofriendly can have unintended consequences. Careless tourists may damage the sites they visit. Projects to commercialize local collection of forest products may induce overharvesting, or encourage local people to cultivate particular plants at the expense of their region's broader biodiversity.
- Integrated conservation and development projects may fail to achieve development objectives. Many developing nations would be better served by broader investments. Spending on public health or primary education is likely to pay greater dividends than training specialists in taxonomy or hotel management.

What Works in Practice?

Theory and practice can, of course, be very different things. It's one thing to advise conservation organizations to pay to preserve imperiled habitats, but it can be quite another thing for them to implement such a policy. One of the problems often observed in implementing conservation policy in developing countries is that the legal institutions for establishing and defending property rights are absent. Nevertheless, there is evidence that direct approaches are working at least as well as the alternatives:

- A recent paper in the respected journal *Science* by a group of researchers from Conservation International and the University of British Columbia demonstrates that many areas derided as "paper parks" are, in fact, effective in protecting imperiled habitat.
- Organizations in several tropical countries have initiated

Box 2. Profitable Ecofriendly Enterprises

Landowners in many parts of the world are "doing well by doing good."

- Some ranchers in Zimbabwe and other African nations earn more money managing native species than they would from cattle.
- Scores of landowners in Costa Rica choose to maintain their land as private nature reserves.
- Earth Sanctuaries Limited, a private firm operating game reserves in Australia, became the first conservation-related enterprise to be publicly traded when it was listed on the Australian Stock Exchange.

These developments are to be applauded. The question remains, though, "What should we do when local landowners do not perceive biodiversity conservation to be in their own interest?"

apparently successful programs to provide direct payments for habitat protection.

- There is no reason to suppose that indirect approaches will be any more effective than direct ones when property rights cannot be enforced. Whether it is an ecoentrepreneur or a park ranger, *someone* needs to guard against incursion.
- Payments for habitat conservation can create incentives for institutional change. When local people stand to gain from instituting clear property rights, they are likely to respond by doing so.

Conservation Finance

Just as there are a number of approaches to spending money for conservation, there are also a number of ways to raise money to spend. It is important to think clearly about each. While innovative approaches are to be applauded, one must also maintain realistic expectations because "if it sounds too good to be true, it probably is." A number of options have been suggested (see Box 3). Some financing approaches that have received considerable recent attention may be no more effective than existing options, or could even perpetuate inefficiencies.

- A debt-for-nature swap may be no more effective than simply allocating money for conservation directly. Exactly the same outcome would be achieved if the conservation organ-

Box 3. Financial Instruments for Habitat Conservation

Financial Instruments may be used to fund either direct or indirect approaches. Examples include:

- Debt-for-nature swaps—A conservation organization purchases and retires the loan of an indebted nation in exchange for the country's promise to conserve more biodiversity.
- Environmental funds—Public or private investors provide debt or equity financing for conservation projects.
- Securitization—Debt or equity issued to support conservation-related activities is bought and sold in organized financial markets.

ization paid the indebted government to preserve habitat. The government could then, if it chose, use the money to retire its debt.

- Ecofriendly enterprises might “securitize” their financial obligations by combining them in negotiable stocks or bonds. In order to do so, they must meet the standards of the organized financial exchanges on which they hope to list them.
- A number of investment companies already offer their clients socially responsible options. When conservation donors subsidize funds for eco-friendly investment, it raises the questions regarding the efficacy of indirect approaches that we addressed above.

Risky Bargains

Conservation donors are intrigued by programs that would afford them leverage: small investments with big payoffs. There is, however, an irreducible cost of conservation. If people are to preserve the habitats under their control, they must receive benefits as least as large as they would have from converting them to other uses. Some conservation donors find these costs daunting, although we have found that they are often surprisingly affordable.

The costs of conservation would only be lower if local people misunderstand the benefits conservation would afford them or cannot organize to realize them. These possibilities hold out a glimmer of hope to those who would achieve conservation on

the cheap. There might be “demonstration effects.” For example, one landowner might devote holdings to tourism rather than farming after observing that another has done so successfully. Or there might be “spillovers,” if, for example, one landowner's property is a more attractive tourist destination if a neighbor chooses to keep his or her land in its natural state as well.

Is wagering the success of conservation policy on demonstration effects and spillovers wise? Perhaps it is, if one truly believes that only a spectacular reduction in conservation costs will suffice to assure the meaningful preservation of biodiversity. If one is not quite so pessimistic, though, three considerations argue against seeking such risky bargains.

- The simplest explanation of a phenomenon is not always right, but it should be the first considered. The simplest explanation for why local peoples do not maintain biodiversity is that they find destructive options are more attractive.
- The track record is not good. A number of programs have failed to achieve exactly these demonstration and spillover effects.
- Conservation is often not as expensive as it seems. Over vast areas of the developing world, people can be dissuaded from converting natural habitats for a pittance.

The world's biodiversity is at risk and we ignore this fact at our own peril. Desperate times may, however, call for *thoughtful* measures. Different strategies may work in different circumstances, and there are exceptions to every rule. Mounting evidence suggests, however, that direct conservation measures are generally most effective.

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Suggested Readings

- Paul J. Ferraro, Global Habitat Protection: Limitations Of Development Interventions And A Role For Conservation Performance Payments. *Conservation Biology* (August, 2001). In Press.
- Paul J. Ferraro and R. David Simpson, "The Cost-Effectiveness of Conservation Payments," RFF Discussion Paper 00-31, which can be found on the RFF website, at www.rff.org/disc_papers/PDF_files/0031.pdf