Ecosystem Services and Conservation

The Nature Conservancy
Protecting nature. Preserving life.

Ecosystem Services in a Nutshell

Ecosystem services refer to the many ways in which ecosystems support and fulfill peoples' lives. They include production of goods (food, timber), life-support processes (maintaining soil fertility, purifying water, mitigating flood, stabilizing climate), and life-fulfilling conditions (providing aesthetic beauty and cultural stimulation). Unfortunately, nature's ability to deliver ecosystem services is under siege because of habitat degradation, land conversion and pollution. While engineering innovations can replace nature's contributions in some instances, they cannot substitute for ecosystem services everywhere, or completely. Moreover, the world's poorest people and countries cannot afford these technological fixes, and are tragically vulnerable, whether on the Louisiana coast or in Sri Lanka. This means that the loss of ecosystem services is not just a conservation or environmental issue – it is a human problem and an issue of equity, political stability and the well-being of people.

The loss of ecosystem services is spurring a growing interest in innovative, practical, politically feasible, and ultimately effective approaches to conservation more than the protection of biodiversity for its own sake ever has. This is feasible because ***protecting biodiversity often also protects and maintains ecosystem services.*** If the conservation movement were more effective at getting full credit for the protection of ecosystem services that accompanies biodiversity protection, we could greatly magnify support for conservation. Realizing this vision, however, will require overcoming the many barriers to incorporating ecosystem services into key policy, funding and market decisions.

Global Trends Elevate the Attention Given to Ecosystem Services

Population growth, higher incomes, growing consumption and diminishing resources are placing a premium on nature as a provider of ecosystem services. In some cases, such as the provision of food through fisheries, the nexus of ecosystem services and growing human needs is obvious. In other cases, the connections are more nuanced. For example, most human population growth is centered along coastlines, which are vulnerable to flooding and storms. The severity and impact of these extreme weather events are exacerbated by the loss of coastal mangrove forests or marshes, which would normally provide natural flood and storm surge protection.

As people begin to appreciate the economic value of services that are normally provided by nature free of cost, we can dream of a world in which payments for ecosystem services become a routine business, just as we pay our monthly electric bills to maintain reliable electricity supplies. The challenge of realizing this vision of routinely accounting for nature's services, however, is that ecosystem services generally create benefits for many diffuse parties who are unable to come together to maintain those benefits in the absence of some government intervention. There are a few principle ways in which this "market failure" can be addressed:

1. Governments recognize the value and fund conservation of ecosystems through general revenue sources or dedicated taxes and fees (e.g., creation of protected areas).
2. There is a specific externality that accrues to identifiable parties and government creates a mechanism whereby the beneficiaries of the services are charged fees to fund the ecosystem conservation from which they benefit (e.g., water user fee model in Ecuador and Brazil).
3. Government establishes a cap on emissions (e.g., carbon, nitrogen) – this creates a demand and hence a market for the associated "credits."
4. All or a sufficient amount of the ecosystem benefits are realized by one or a few private parties, and they invest in ecosystem conservation with no need for government intervention (e.g., Perrier protecting watersheds in France that supply their bottling plants).

While examples exist in each of these categories, none of these activities occurs at a meaningful global scale – to achieve this will require fundamental changes in behavior of government institutions and the complex development of new markets for these services.

Ecosystem services are also important as a framework for the development of green business and green technology. This is because there is always the risk that a technology designed to be "green" along one dimension (e.g., reduced energy consumption) may have unintended consequences for other ecosystem services. For example, hydropower operations that provide clean energy may reduce flows needed for downstream biodiversity and for the replenishment of sediments in coastal marshes. Or reforestation projects that are designed to sequester carbon and mitigate global warming can lead to increased evaporation and a diminished supply of water. When technologies or actions are promoted as "good for the environment," one needs a framework that allows us to synthesize all of the positives and negatives of those actions and technologies. The valuation of ecosystem services is exactly such a framework.

Making Ecosystem Services Work for Conservation

Ecosystem service approaches are being asked to deliver three things to conservation:

1. A clear connection between conservation action and benefits to people
2. New and bigger sources of funding for conservation
3. A framework for the many tough decisions we must make about our future.

All of these deliverables are within reach, but none have been taken to scale. The valuation of ecosystem services should be routine everywhere. At the same time, any expansion of ecosystems services as a global conservation focus needs to attend to some important inherent risks. When the public is told that nature protection is going to benefit them (as opposed to simply protect biodiversity or some iconic species), they will notice whether, in fact, they benefit. Credibility is essential. Second, payments, profits and costs are likely to all be part of a future in which valuation of ecosystems services is routine. Care needs to be taken so that the resulting burden (costs) and benefits (profits) are distributed with fairness and social equity as objectives. Conservation cannot afford to advance policies or incentives that end up as being anti-poor. Thus, there are two pillars to making ecosystem service approaches work for conservation: (1) credible science; and (2) crafting the right policy and financial instruments to use in particular situations. We believe there are five key actions required to realize the opportunity of ecosystem services:

1. "Getting it right." Identify and create examples that demonstrate the value of ecosystem services.
2. Create tools to apply ecosystem services evaluation to other situations.
3. Engage public policy and funding institutions to integrate ecosystem services values into their decision making.
4. Develop markets and financial mechanisms for regulatory compliance regimes and user fee schemes.
5. Engage corporations to assist them in properly taking into account ecosystem services in their decision making and investment decisions.

Every NGO is Doing Something with Ecosystem Services

Sparked by the Millennium Ecosystem Assessment report, every international environmental NGO now mentions ecosystem services prominently on their websites. This even applies to organizations such as Birdlife International and Flora and Fauna International, which are focused on species. A survey of WWF and the Conservancy taken in 2007 revealed 340 on-the-ground conservation projects with explicit goals aimed at protecting ecosystem services. Analyses of these projects revealed that they were in fact generating more funding and different sources of funding (more from corporate) in comparison to other types of conservation projects. Government agencies, businesses, regional governments and nations are clamoring for tools that will help them incorporate ecosystem services into their planning. In some countries such as China, it is impossible to do conservation without paying attention to ecosystem services.

The other big conservation NGOs (CI and WWF) have developed strength in the policy dimension of ecosystem services, with staff specialized in national government-level incentives or policies that are favorable to ecosystem services. The Conservancy is building strength in the scientific aspect of ecosystem services (modeling, mapping, planning) and has scores of on-the-ground field projects that use ecosystem service approaches to advance conservation. Almost no one talks about conservation anymore without some mention of human well-being.

Last, as a result of the Millennium Ecosystem Assessment, academic centers around the world have built groups that are developing tools for valuing ecosystem services, or for examining alternative scenarios of ecosystem services into the future. In the NGO world, academic world, and government agency world, the topic of "ecosystem services" dominates the conservation agenda.

In spite of the growing interest among NGOs and academics, however, ecosystem services have not become a mainstream component of decision making among the institutions that drive global resource use – governments, corporations and markets. A possible exception is carbon emissions, although carbon regulation and markets are still nascent and have had only marginal impact on emissions and the forest sector to date.

Tapping TNC's Strength for a Global Strategy

The Conservancy has three key strengths, which with adequate investment, could potentially make it a world leader in ecosystem services:

1. Superb planning and mapping expertise;
2. Numerous on-the-ground projects that target ecosystem services
3. A culture and expertise at negotiating compromises and dealing with tradeoffs among competing land uses.

Thus, it was not surprising that the Packard Foundation invited the Conservancy to seek funding for ecosystem services because they knew the Conservancy had such strong mapping and planning expertise. The Conservancy is initiating an analysis of its hundreds of on-the-ground ecosystem service projects with the idea of using them in an experimental way. No other NGO could do this. A major aspect of ecosystem service projects is working landscapes—ecosystem service projects done by the Conservancy are 50 percent more likely to include working landscapes than more traditional biodiversity projects. In general, the Conservancy has greater experience doing conservation in conjunction with working landscapes than any other international NGO. Last, as mentioned above, the major risk to ecosystem services is over-promising and under-delivering. The Conservancy's commitment to measures makes it the only conservation NGO with a strong enough measures program to systematically evaluate ecosystem services as a conservation strategy.

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