

Economics and Conservation in the Tropics: A Strategic Dialogue

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Valuing Nature

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A few months ago I was introduced to an academic from another field. Like many academics, we started talk about what we were working on. I mentioned I was working on a paper evaluating ecosystem services on a landscape and how the value of services change under alternative land use patterns. This person was intrigued and a bit skeptical. So, how do you that? You mean you can put a price tag on nature? Can you value other intangibles? Can you put a price tag on the value of this conversation? At this point, I began having some doubts about the value of this particular conversation, but pressed ahead and said that the point of the exercise was to help make better decisions about land use. Land use choices have a range of environmental and socio-economic consequences. Often decisions only take into account market values, such as when landowners choose land uses that maximize their monetary returns. I was interested in understanding the full set of values from land use decisions and evaluating which outcomes were more socially beneficial. I was not interested in coming up with values for the sake of putting a price tag on nature. What I and my colleagues were trying to do was to account for the values created by ecosystems and show how they are affected by alternative land use choices. We wanted to broaden the set of values beyond those currently measured by market prices and that show up on conventional economic balance sheets. The important values associated with the natural world should count as well. After this explanation, my conversation partner appeared more conciliatory (or perhaps just worn out) about the value of this research, even if it involved some amount of effort at “putting a price tag on nature.”

Over the past few years, I have been struck by how controversial attempts to value ecosystem services can be. “Putting a price tag on nature” strikes some people as wrong or misguided and others as a hopeless task that cannot possibly deliver accurate values. Doubts have been raised by people in conservation organizations, government agencies, private industry, and academia. Some of these doubts revolve around philosophical issues and some around practical issues. But, some of the debate over valuation, particularly arguments about whether to

* Stephen Polasky, Fesler Lampert Professor of Ecological/Environmental Economics, Department of Applied Economics, University of Minnesota, 337e Classroom Office Building, 1994 Buford Avenue, St Paul, MN, USA, 55108; (email) polasky@umn.edu; (tel) 612-625-9213.

monetize the value of ecosystem services, strikes me as being basically unproductive. I do not really care whether measures of ecosystem services are reported in biophysical terms or dollar values. What matters to me is whether these measures are useful and help inform decision making. Do better decisions result from evaluating the full set of consequences of alternative choices? The title of a National Research Council (NRC) report on valuing ecosystem services sums it up nicely: *Valuing Ecosystem Services: Toward Better Environmental Decision-Making*.

Before launching into a discussion of whether it is better to measure the value of nature in biophysical or monetary terms, I want to address a more basic philosophical question that logically precedes this discussion. Why should we even try to value nature? What is the value of valuation exercises? In fact, I think a lot of the debate about monetary approaches to the value of nature stems from a basic philosophical divide between looking at the utility of outcomes versus looking at rights/obligations/duties. For something that is a fundamental right, obligation, or duty, there really is no need to evaluate whether we are better off with or without it. There is no option but to provide a fundamental right. Some critics of valuing nature talk about the intrinsic value of nature—nature is valuable in and of itself regardless of whether it is appreciated or valued by humans. In talking about attempts to value biodiversity, David Ehrenfeld says:

“Value is an intrinsic part of diversity; it does not depend on the properties of the species in question, the uses to which particular species may or may not be put, or their alleged role in the balance of global ecosystems. For biological diversity, value is. Nothing more and nothing less. No cottage industry of expert evaluators is needed to assess this kind of value.”¹

If one views the world like Ehrenfeld, then we can just stop the whole valuation discussion right now. If conserving biodiversity, or nature more generally, is a moral duty or obligation—like not killing other people—then we must conserve and there is no need to worry about what value there is with or without conservation actions occurring. So, for example, under the Endangered Species Act of 1973, actions that cause jeopardy (section 7) to listed species are prohibited regardless of the other benefits of the action. This interpretation of the ESA was upheld by the Supreme Court in *TVA v. Hill* in 1978 in a case that pitted the snail darter against the Tellico Dam with the snail darter coming out the winner (temporarily).

¹ David Ehrenfeld, “Why Put a Value on Biodiversity?” in *Biodiversity*, ed. E.O. Wilson and F.N. Peter (Washington, DC: National Academy Press, 214).

This ruling in *TVA v. Hill*, and the political fallout that it caused, led Congress to amend the Endangered Species Act. Congress added an exemption that allowed a way to override the strict prohibitions against jeopardy through the formation of the Endangered Species Committee or “God Squad,” which could authorize such exemptions if it was deemed in the national interest to do so. In other words, it turns out that increasing the risks of extinction are okay under the right circumstances, just as killing others is okay under the right circumstances (wars, self-defense, capital punishment, etc.).

I think there are two difficulties in making the conservation of nature a strictly moral issue. First, casting something as a moral issue causes political stalemate when there is no widespread agreement about the morals involved. The abortion debate comes to mind as an example. With endangered species protection, there are bitter disputes between the rights of private property owners and the rights of the continued existence of endangered species. Protecting ecosystem processes, functions, or states is likely to garner even less unanimity on moral views than protecting species from extinction. Second, conservation is often a matter of degree rather than a bright line that should not be crossed. If clearing land to make way for housing or agriculture reduces habitat for a species, it is likely to make that species more vulnerable to extinction. Perhaps such action increases the risk of extinction over a 100-year time horizon from 0.0001 to 0.0002; or perhaps large scale loss of habitat will increase extinction risks from 0.1 to 0.2—at what point does loss of habitat become a moral issue?

If instead of a world of duties, obligations, and moral absolutes, we are in the messy world of tradeoffs and utility, then the question of how to evaluate alternatives becomes important. This is where the question of indicators, biophysical measures of ecosystem services or dollar measures of ecosystem services, comes to the fore. I would argue that tradeoffs and utility, not moral absolutes, are the things that drive most of the decisions affecting conservation currently. I am hard pressed to see this changing anytime soon especially since much of the decline in biodiversity and ecosystem services is caused by actions aimed at meeting human needs. In poor countries in particular, it is difficult to claim that protecting biodiversity is a moral issue, while protecting the livelihood and welfare of the rural poor is not.

Without moral absolutes to guide us, the choice of which alternative is “best,” I think, is judged by which alternative generates the highest value, i.e., highest welfare or utility, for society. There is an extremely important set of issues related to distribution (who benefits and how much) as well as aggregation of the welfare of individuals in society to social welfare. Doing justice to these issues would take too long and take me too far away from my intended

topic. So I will take it as given that the goal of valuation exercises is to judge which alternatives generate greater social welfare.

With social welfare as the goal, an evaluation based on ecosystem services is preferable to one based on ecosystem indicators. A number of efforts have been undertaken to come up with sets of ecosystem indicators. In a sense, ecosystem services are one set of ecosystem indicators, where these indicators are directly tied to values (welfare) and so are directly relevant to the goal of maximizing social welfare. When ecosystem indicators are distinct from ecosystem services, and so not tied to values, why should we care about the indicator? What does it indicate? Ecosystem services tie together how ecosystems function and what they provide with an assessment of how this affects human welfare. Therefore, it seems to me that ecosystem services are a much better approach than developing sets of ecosystem indicators with no clear relationship to values.

Within the ecosystem services approach, we still have the question of how best to measure services: biophysical measures or dollar value measures? On this question, I do not have a clear answer, only a pragmatic one. The goal is to make choices that maximize social welfare. If measuring the value of ecosystem services in dollars is a more effective way to communicate with landowners, private industry, and government officials to improve their decision-making, then let us measure values in dollar terms. If not, let us measure ecosystem services in biophysical terms. My view is that the decision on how to report results of the analysis should be based on effectiveness. Making better decisions requires an effective means of communicating the environmental and social consequences of alternative choices.

The advantage of measurement of services in monetary terms is that all values are reported in a common metric. Doing so facilitates comparison across alternatives. It also forces careful thought about why ecosystem services are of value.

Getting estimates of some values in monetary terms is relatively easy. For example, a study by Taylor Ricketts et al. (2004) reported the value of increased coffee yield and quality due to close proximity to patches of native forest that increased visits from native pollinators. The hard part of this study was getting estimates of the increased yield and quality of coffee. It was then easy to use market prices for coffee of various grades to report the increase in value. It was far more effective to report the increase in value from pollinators in money terms as one number rather than reporting the change in yields of various grades of coffee (the latter report would probably induce drowsiness rather than be a stimulant).

Most ecosystem services are not traded in markets and have no readily available market price. Only a small subset of ecosystem services (some provisioning services) is closely tied to production of market commodities. Measurement of monetary value for most ecosystem services requires application of non-market valuation. Economists have developed a large body of literature on non-market evaluation over the past three decades. In some cases, application of non-market methods can be easily explained to non-specialists and the values from such studies are viewed as highly credible. An example of this are studies showing the increase in property values from proximity to open space, lakes, or other environmental amenities, using the hedonic property price approach. The value of recreational activities is similarly well-developed and (relatively) easy to explain. When such methods are available, it makes sense to use them. Even these studies, however, require a number of modeling decisions (implicit value judgments) that can have important effects on results: how the statistical equation is specified, what variables are included, what is the choice set or market extent. I am not that concerned with application of these methods as long as assumptions are clear and analysis is transparent.

Application of non-market techniques is more problematic for cultural and spiritual services and for values where there is no direct behavioral trail on which to base estimates of value. What is the continued existence of a species worth? What about the sense of place? In my view, these are very important sources of value, but I do not have much confidence that non-market valuation methods can be applied to generate results that all observers would view as credible.

One alternative is to leave some measurements of the value of nature in biophysical terms. In the Natural Capital Project (a partnership of The Nature Conservancy, World Wildlife Fund, and Stanford University), we have made a conscious decision to report the value of species conservation in terms of species, not dollars. Within The Nature Conservancy and World Wildlife Fund, the meaning of species conservation is clear—much clearer and far less controversial than an attempted conversion to dollars. Ecosystem service studies that report results in terms of multiple currencies can still present decision makers with information about tradeoffs between these currencies, for example, tradeoffs between services reported in dollar terms and species conservation. Making a choice about what tradeoffs are acceptable provides an implicit statement of value of species conservation in dollar terms. But in my experience, for species conservation and for most cultural or spiritual values, it is preferable for the analyst to lay out the tradeoffs in a clear fashion and let decision makers make the value judgments, rather than having implicit value judgments made as part of the non-market valuation study.

One danger of using monetary estimates for some values and non-monetary estimates for other values is that the non-monetary values may be systematically overlooked (undervalued). When results are reported in the news media or digested in bullet form for busy executives, it is easy to report the bottom line in dollar terms because everything is neatly summarized in one number. Measures in other terms can easily get lost. Having biophysical measures that are clear and clearly important, e.g., the number of human lives saved or the number of species conserved, can help to overcome this problem to some extent.

A related issue is that effective communication requires that there not be too many categories of results. I have recently been working on life-cycle analyses of alternative methods of energy production. One method of doing life-cycle analysis is to report all of the inputs and outputs from the analysis and leave it at that. For energy production from biomass, this would include net carbon emissions and net emissions of other greenhouse gases, emissions of nutrient and pesticide runoff in ground and surface water, emissions of various types of criteria air pollutants, in addition to the resources used to produce the biofuel and the energy content of the biofuel. How should we judge whether biofuel production method A is better than B, if A ranks higher than B in terms of net greenhouse gas emissions and some criteria air pollution emissions, but lower in terms of production cost and nutrient and pesticide emissions? At the end of this process, there are too many dimensions of value that make comparison across alternatives too difficult without further work by the analysts to boil this down.

My choice about whether to monetize values of nature or not comes down to pragmatic considerations. Where one can get a monetary value in a clear manner that can be easily explained and will be viewed as credible, I would recommend doing so. Where these conditions are violated, a judgment call is needed about whether it is best to report in multiple dimensions, given that some dimensions may be overlooked, or report in a single money dimension, given that some observers will be skeptical of the results.

To use terms from the philosophical debate that I talked about earlier in this essay, the process of valuing ecosystem services has instrumental, not intrinsic, value. In my view, valuation of nature should be done to inform choices and improve decision making. Therefore, we should be pragmatic and do what is most effective at communicating the full set of values of nature to those who make decisions that affect nature.

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