

DEBUNKING MYTHS ABOUT ECOSYSTEM SERVICES

by Ken Bagstad, PhD student
Gund Institute for Ecological Economics, University of Vermont
Contact information: kbagstad@uvm.edu

March 2007

1. It is impossible to value ecosystem services.

FACT: Ecosystems and the services they provide to humanity are not traded on traditional markets, making it hard to estimate their value. Advances in economic methods over the last several decades, however, have made it easier to obtain increasingly accurate estimates of economic value provided by ecosystems. Today there are a variety of methods available to estimate the value of different ecosystem services by looking at their value to individuals, groups, and society overall. While it is difficult if not impossible to estimate the full economic value of nature, today's estimates are more accurate and scientifically acceptable than ever.

2. It is unethical to value ecosystem services.

FACT: Some argue that ecosystem services are “priceless” and that applying economic arguments takes away from moral or ethical reasons to conserve nature, or that ecosystem service valuation fails to account for non-human values and needs. We find similar arguments – that are justifiably emotionally charged - in the debate over the economic value of a human life. Yet society makes tradeoffs about human life constantly, in developing “acceptable” safety standards for food, medicines, transportation, and workplace safety. We also make tradeoffs about nature, almost always giving nature a value of zero when deciding to pave over wetlands, clear-cut forests, release pollution into air and water, or strip mine a landscape. Valuing nature at zero continues to tilt the scales in favor of extractive resource use over conservation.

3. Ecosystem services are not important to quality of life.

FACT: Some economists feel that only labor and capital (productive machinery, buildings, and infrastructure) are needed to run a modern economy. Yet without raw natural resources, energy, and places to safely dispose of and detoxify our wastes, the human economy would quickly grind to a halt (to say nothing of the obvious recreational and quality of life benefits provided by ecosystems). Ecosystem services are required complements to labor and capital in economic production, and in generating human well-being. In developing countries, ecosystems directly provide food, fuel, and material goods outside traditional markets. Ecosystems also provide critical benefits to quality of life for all humanity. In wealthier segments of society people nearly always choose to preserve natural open space as one of the key components of “the good life”.

4. Putting economic values on ecosystems will lead to their being privatized.

FACT: By their very nature, it is difficult or impossible to extract private profit from ecosystem services. The few exceptions include harvesting timber, fish, or other food – “stocks” of ecosystem goods that can be harvested and sold on the market. For the vast majority of ecosystem services, it is impossible to exclude others from enjoying the benefits of ecosystem services or to consume them so others cannot (in economic terms most ecosystem services are “non-excludible” and/or “non-rival”). Estimating the economic value of nature will not suddenly allow corporations or large landholders to buy ecosystem services and prevent the rest of humanity from receiving their benefits. Better than the impossible task of *privatizing* ecosystem services would be the legal process of *propertizing* these services – assigning legal rights and standing that recognizes their public benefit and the responsibility of landowners and managers to maintain the flow of services, or compensate the public when services are lost.

5. Markets can be developed for all ecosystem services.

FACT: Because most ecosystem services are “non-excludible” and “non-rival”, it is difficult to create markets for ecosystem services, and if not carefully designed, markets can be economically inefficient or lead to perverse outcomes. Markets *have* been developed in air pollution and greenhouse gas credit trading, and there is great interest in creating markets for a variety of other services, including biodiversity, water quality, and water supply. But creation of a market alone does not guarantee sustainable use of a resource. Markets that fail to respect both environmental thresholds and basic human needs will not help solve any environmental problems. As such, these emerging markets should be carefully designed using sound economic and ecological principles, so that they provide positive incentives for conservation and an efficient marketplace. And for some services, it will be extremely difficult to identify beneficiaries and collect appropriate payments, making it extremely difficult to develop markets.

6. Landowners must be compensated for the full value of ecosystem services on their land.

FACT: Paying landowners for the ecosystem services their land provides (“payments for ecosystem services”, or PES) is another tool that is gaining popularity. Generally, landowners will freely choose to preserve land if they are paid just over the amount they would gain by extractive use of their land to preserve ecosystem services (the economic concept of “opportunity cost”). Unfortunately, opportunity costs for landowners in the suburban fringe of most American cities is high, as great profit can be made from development. Municipal governments, however, face a less attractive opportunity cost for development – the fiscal cost of new development often exceeds new tax revenues, making conservation a good move for city governments. In places where opportunity costs are high, it may make sense to superimpose a greater local payment on top of a baseline national or state payment program.

Landowners will also preserve land if they are taxed for socially detrimental activities. Taxes and subsidies can work together with sensible and sustainable

environmental policy. A good example of this is the mix of incentives given by the USDA to farmers to preserve wetlands, stream buffers, and erodible soils. For payments for ecosystem services plans to work, those who benefit from the services must be identified, politically acceptable payment plans must be developed, and benefits must go to landowners and local groups dependent on the land. Finally, just like market systems, the very nature of some ecosystem services will make it more difficult to enact payments for ecosystem services plans. The choice to provide incentives through a market versus government-administered tax or subsidy plans should be made only after carefully considering the economic characteristics of the ecosystem service itself.

7. Landowners/managers should maximize a particular ecosystem service to maximize profit from land.

FACT: “Carbon credits” are one of the newest trends in ecosystem service payments, and compensate a landowner for the carbon their forest or grassland takes up to keep from contributing to global climate change. To maximize carbon uptake (and economic value), one might propose growing a dense, single-species stand of trees or fertilizing trees to get them to grow faster. Yet by maximizing a single service, like carbon sequestration, we often sacrifice other services, like biodiversity, nutrient cycling, disturbance prevention, etc. Rather than maximize a single service, maximizing the value of the full portfolio of ecosystem services is a more sustainable approach to long-term ecological sustainability and human well-being. Many ecologists would advocate protecting biodiversity as the “ultimate” ecosystem service, since ecosystems with low biodiversity are often expected to contribute less value to human well-being (although the link between biodiversity and ecosystem services is still not fully understood).

8. All services can be valued in dollars, and these are the only worthwhile units in which to measure ecosystem services.

FACT: Dollars (or other currency) are *not* the only way to value ecosystem services. Measuring ecosystem services just by people’s willingness (and ability) to pay puts less value on ecosystem services critical to lives of the poor, especially in developing nations. Ecosystem service value can also be estimated in ecological terms (species diversity, productivity, resilience following disturbance) or non-monetary terms (cultural or spiritual value). Placing dollar values on ecosystem goods and services should not be the sole goal of valuation. Instead, valuation should seek to better understand the trade-offs in conservation, restoration, and development decisions, ideally allowing for wiser long-term choices that improve sustainable human well-being. Dollar values provide a common currency to compare to other economic costs and benefits, but exist alongside ethical, moral, and spiritual arguments for protecting ecosystems.

9. We should wait until we know the accurate value of all ecosystem services before making conservation, restoration, or development decisions.

FACT: We rarely if ever can know the complete and accurate value of all ecosystem services for a region of interest. Ideally we would act with full, scientifically-

accurate knowledge before coming to a decision. Yet conservation, restoration, and development decisions will not wait for the years and expense of intensive studies needed to fully analyze each situation. Some scientists call this “post-normal science” – cases where both uncertainty and decision stakes are both high. With the unknown risks, thresholds, and potential irreversibility of broad-scale environmental change, ecosystem service research can and must sometimes take place without full information, forcing both scientists and stakeholders to make important decisions in the absence of complete knowledge and certainty.

TO LEARN MORE:

- Article about ecosystem services in Chicago: Bagstad, K.J. 2006. Valuing ecosystem services in the Chicago region. *Chicago Wilderness Journal* 4 (2): 18-26. <http://www.chicagowilderness.org/pubprod> (back issues of CW Journal)
- Ecosystem services valuation, Gund Institute for Ecological Economics, University of Vermont <http://www.uvm.edu/giee/?Page=research/ecosystems/index.html>
- Payments for ecosystem services, Gund Institute for Ecological Economics, University of Vermont <http://www.uvm.edu/giee/pes/en/>
- Report from the National Academy of Science on ecosystem services <http://www.nap.edu/catalog/11139.html#orgs>
- Nature valuation network <http://topshare.wur.nl/naturevaluation>
- The U.N. Millennium Ecosystem Assessment, which explores the links between ecosystem services and human well-being globally <http://www.maweb.org/en/Synthesis.aspx>
- Environmental valuation and cost-benefit news <http://www.envirovaluation.org/>
- A great introductory website about ecosystem service valuation <http://www.ecosystemvaluation.org/>
- Ecosystem services write-up by WorldChanging <http://www.worldchanging.com/archives/006048.html>
- A local green infrastructure valuation project by the Center for Neighborhood Technology <http://greenvalues.cnt.org/>
- Environmental Defense’s Center for Conservation Initiatives <http://environmentaldefense.org/page.cfm?tagid=126&campaign=cci>
- Conservation Finance Guide <http://guide.conservationfinance.org/>
- U.S. Forest Service Conservation <http://www.fs.fed.us/ecosystemservices/>