Nature: the many benefits of ecosystems services

SIR — In his Commentary "Selling out on nature" (*Nature* **443,** 27-28; 2006), Douglas J. McCauley dismisses the importance of ecosystem services as a tool in conservation and resource management. The author correctly notes that market-based approaches to conservation are no panacea, as has also been concluded by The Millennium Ecosystem Assessment (MEA) (*Ecosystems and Human Well-Being: Synthesis,* Island Press, Washington, DC, 2005). But he goes on to conclude that there is no value in factoring ecosystem services into decision-making, and that indeed they represent a harmful diversion from a more traditional focus on the intrinsic and aesthetic values of nature. We, the assessment panel of the Millennium Ecosystem Assessment, believe that these conclusions result from three errors in reasoning.

First, McCauley assumes that conservation arguments based on ecosystem services are cast only in economic terms. In practice, while it is possible to calculate the economic values of some ecosystem services, this can't be done for others, including many of the cultural services provided by ecosystems. Proponents of ecosystem services argue that it is folly to ignore real economic costs and benefits of decisions.

Second, McCauley assumes that conservation efforts based on ecosystem services rely only on market-based approaches and hence are always subject to the vagaries of the market. This is not the case. The useful roles played of a watershed in water purification, a woodland for recreation or a forest for carbon sequestration are just some of the many factors used to help convince a government of the merits of protecting certain areas from development. For example, although it would be possible to argue that the coastal wetlands of Louisiana should be protected for their intrinsic value, it is logical — and probably far more effective — to add the utilitarian argument that those wetlands also provide a valuable service in protecting coastal development from storms.

Finally, McCauley assumes that the growing interest in ecosystem services is relevant only to the goal of biodiversity conservation. In practice, scientists, managers and decision-makers are increasingly using the concept of ecosystem services because of its broad usefulness across a wide range of resource management issues, not just biodiversity protection.

For too long, scientists and managers have tended to view the world as either protected because of the intrinsic or aesthetic value of the area, or developed for its utilitarian benefits. The reality, of course, is that our planet is a mosaic of systems providing people with different bundles of ecosystem services and disservices. We cannot manage these systems effectively if we do not actively seek to measure the flows of these services, examine who is benefiting from them, and consider a range of policies, incentives, technologies and regulations that could encourage better management and sharing of the benefits.

Historically, conservation has largely relied on the considerations of intrinsic value that McCauley sees as the only solution. This has been manifestly insufficient as a response to the increasing threats to biodiversity, particularly in the world's poorest regions, where considerations of intrinsic and spiritual values are often trumped by the needs for survival or used to exclude significant segments of the population from the benefits from their ecosystem resources. It is time to add to the mix other approaches based on a fuller consideration of ecosystem services and options for distributing costs and benefits that may result.

Further information, and details of the signatories, are available at www.MAweb.org/en/about.people.panel.aspx.

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