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The Environmentalist's Paradox

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Organisms from Molecules to the Environment
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The Environmentalist's Paradox

Average human well-being is improving globally, despite resource depletion and degradation of ecosystems. Why?

So ask Ciara Raudsepp-Hearne and her coauthors in their article "Untangling the Environmentalist's Paradox," which begins on p. 576. Studies including the influential Millennium Ecosystem Assessment have concluded that the capacity of ecosystems to produce many ecosystem services is now low. Depletion of ecosystem services is expected to mean fewer benefits to humans, thus decreasing human well-being. Yet the composite Human Development Index, a widely used metric that incorporates measures of literacy, life expectancy, and income, has improved markedly since the mid-1970s in both rich and poor nations. The index correlates strongly with other measures of prosperousness. Some measures of personal security buck the upward trend, but the overall improvement in well-being cannot, it seems, be denied. Does this paradox mean that concern about ecosystem services is overblown?

Raudsepp-Hearne and her coauthors first examine the notion that the traditional measures of well-being are flawed—that average well-being is in fact declining despite the numbers suggesting otherwise. But they reject that idea.

They then examine three other ideas, derived from different academic traditions, that might reconcile improving human well-being with decreasing ecosystem services. The selection, as Raudsepp-Hearne and her coauthors acknowledge, does not exhaust the possibilities, but it encompasses some plausible ones. One idea is that food production (which has increased) is more important for human well-being than are other ecosystem services, another is that technology and innovation have decoupled human well-being from ecosystem degradation, and the third is that there is a time lag after ecosystem service degradation before human well-being is affected. The interested reader should consult the article to learn how the authors judge these hypotheses: All find some support, though with important qualifications.

The authors' conclusions are limited by the geographically aggregated nature of their data, and *BioScience* will publish commentary on aspects of their analysis in a future issue. Yet the article clearly strengthens the case for research that integrates human well-being, agriculture, technology, and time lags affecting ecosystem services. Raudsepp-Hearne and her colleagues urge more attention to how ecosystem services affect multiple aspects of well-being, ecosystem service synergies and trade-offs, technology for enhancing ecosystem services, and better forecasting of the provision of and demand for ecosystem services.

The recent oil calamity in the Gulf of Mexico, the biological impacts of which will take years to fully manifest and will persist for decades, should be reminder enough that although technology can insulate us from degrading ecosystem services locally, it often does so by creating problems elsewhere. As the human population grows, fewer places remain where the impacts can be absorbed without adversely affecting somebody. Aggregate global human well-being is, apparently, growing—though it is obviously declining in some places. Extending and defending the gains, particularly as the quest for energy becomes more intense, will require policymakers to understand the complicated relationship between ecosystem services and the humans who use them.

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