Review: The State of the Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States

By the H. John Heinz III Center for Science, Economics, and the Environment

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In modern Western culture, ecosystem awareness has evolved from a somew obscure scientific concept a few decades ago, to its current state in the verna a large proportion of the population. Today it is increasingly hard to find some who does not have an idea of what an ecosystem is, however fragmentary or inaccurate the understanding may be. Yet even with increased awareness it is impossible to state with any certainty and credibility the current overall status most critical ecosystems.

Some of the reason for this can be attributed to the origins of ecology in the reductionist sciences. Ecosystem status indicators are integrative measures. T of looking at data seems unnatural or even erroneous to many investigators. National Academy of Sciences and others asserted the need for indicators at v scales several years ago. Federal agencies, especially the Environmental Prote Agency, have been actively funding work to develop ecosystem indicators tha useful for policy development. The federal agencies encourage use of existing but also facilitate collecting new data as needed to develop indicators that wo otherwise unavailable.

In 1995 the Heinz Center began an alternative approach. They organized a la group of people with expertise in particular ecosystems, developed a list of in for each ecosystem, then assembled available data to quantify the indicators. result is *The State of the Nation's Ecosystems: Measuring the Lands, Waters, Living Resources of the United States*.

This volume is clear in its stated purpose and never strays. The report aspires to be "an authoritative, comprehensive, and succinct overview" of the natural economy of the United States. It was prepared as a multi-year collaboration among dozens of experts in various fields, who were organized into broad-scale ecosystem work groups. In the composition of the group membership and the methodologies used for data collection and analysis, the organizers sought credibility and objectivity in the final report. This

report is expected to be the first in a continuing series, with a repeating interval of approximately five years. Thus a process is now in place to provide regular and credible reports to decision makers and the public at large.

The overall objective was to use existing data to develop a set of indicators of ecosystem state. Indicators were developed at the national level, then for ecc grouped as coasts and oceans, farmlands, forests, fresh waters, grasslands ar shrublands, and urban and suburban lands. Within each broad category are ir for system dimensions, chemical and physical conditions, biological componer human uses. The number of individual indicators varies from one broad ecosy grouping to another. There are one hundred three total indicators.

The report is in three parts. Part one introduces the rationale for the work, de the study design, and provides a summary of the results. Part two is the core report, going through each broad category in detail. Each ecosystem groupinc introduced and described in its own chapter. Within the grouping each indicat described, the data are presented, and the results are interpreted. An extensi collection of technical notes is provided in part three.

The developers of this report conceived a set of indicators to provide a cohere of critical components of the ecosystems of the United States. In many cases not possible to actually produce and interpret the indicator. Reasons include c unavailability and that the indicator needs more conceptual development. In t respect the report is as much a blueprint for further work as it is a description current status.

For those who work with ecosystem state on a daily basis it is easy to underst enormity of the task undertaken by the Heinz Center. It is also easy to puzzle some of their decisions. The biggest one for me is their handling of nutrients i aquatic systems. Both nitrogen and phosphorus are treated inconsistently, so possible to get a holistic picture over all systems. Given the importance of nut export to the significantly deteriorated state of many coastal areas, this seem missed opportunity to invoke the integrative and scale-dependent nature of ecosystems in a way that is both useful and instructive for the target audienc

I believe that weaknesses such as this do not undermine the base value of thi There could easily be hundreds or even thousands of indicators, not just 103, magnitude of the ongoing reporting could well be prohibitive. A balance betwe overall tractability and value at the policy and scientific levels was struck, and result is truly impressive.

The real value of this effort will manifest itself if the envisioned regular update place. One reads the report with a sense that a previously unreported, critical

dimension of the economy of the country is being revealed. Like most econom indicator reports, it will be trends over time that carry the most meaning.

If this work does continue, no doubt there will be refinements to deal with wic perceived shortcomings and new scientific understanding. The data shortcomi noted in the report will hopefully generate needed monitoring and reporting. A extension of this work would be to integrate it with traditional economic repor The integration would bring this valuable work into its fullest and broadest application.

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