

ECONOMICS AND ECOLOGY

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Economics and ecology are often presented as opposing disciplines. Both fields have strengths and weaknesses. A new transdisciplinary field, ecological economics, attempts to bring together the strengths of both disciplines with a vision for a sustainable future. In this paper, we focus on one particular concept championed by ecological economists, natural capital.

Economics and ecology often receive two different responses from natural resources professionals. Economics, which deals with the allocation of scarce human-made and natural resources, is viewed unfavorably by many who are concerned about effects of society on the environment and natural resources. Ecology, which deals with nature's allocation of scarce resources, is more often viewed in a favorable light. Economics is burdened, in particular, by a misperception that it is synonymous with finance. That is, financial decisions (i.e., profit, the "bottom line", etc.) are confused with the much broader equity and efficiency concerns that provide the theoretical underpinning for economics. For many years, resource economists have addressed natural resource and environmental issues in theory and in practice. The most recent offshoot of these earlier efforts is the newly evolving field of ecological economics (Prugh 1995).

According to Costanza et al. (1997), ecological economics is a transdisciplinary field that focuses on the three linked goals of sustainability, fairness in distribution, and efficiency in allocation. As a result, ecological economists have more interest in a vision of the future, methods for analyzing problems in new ways, and institutions and instruments that are needed to implement this vision. The vision includes recognition that: (1) our planet is essentially a closed system in which our societies are subsystems; (2) a sustainable future exists for all species that is constrained by the global ecosystem; (3) we should be cautious and humble, given the many uncertainties that exist; and (4) our policies must become more proactive, with clearer thought about the interrelationships of the earth's subsystems. Costanza and Daly (1987) noted that neither economists nor ecologists were adequately addressing this vision, and that a new, integrated approach, ecological economics, was required.

The vision is ambitious, and several aspects (e.g., interspecies distribution of wealth and intergenerational equity) may be very difficult to achieve. Nonetheless,

we can move forward in other cases. Specifically, a more formal recognition of the role of natural capital and its relationship to sustainability is needed (Prugh 1995). In the case of boreal forests, the stocks and flows of forest resources can be assessed to determine prospects for sustainability. This can be and is being accomplished through the emergence of natural resource accounting. To provide an understanding of how natural resource accounting may be applied to boreal forests, we first review the origin and purpose of natural resource accounting. Then we summarize several cases in which natural resource accounting has been applied and describe the United Nation's Satellite System for Integrated Environmental and Economic Accounting (SEEA). Finally, we present an example of stocks and flows from Michigan's (United States) boreal forest resources. Natural resource accounting work from Canada, Finland, Norway, and other countries with boreal forests should be examined to provide more insights regarding forest conditions; the major missing data for a circumpolar assessment may be from Russia.