



Land Economics

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The Value of Biodiversity: Markets, Society, and Ecosystems

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John M. Gowdy

ABSTRACT. *The value of biodiversity is discussed at different levels including market value, non-market values to humans, and the value of biodiversity to ecosystems. The main conclusion is that, although market exchange values of environmental services may be used to justify biodiversity protection measures, it must be stressed that exchange value constitutes a small portion of total biodiversity value. The total value of existing biodiversity is largely unknown but indications are that it is essential to human existence. The various levels of biodiversity value point to the need for a hierarchical and pluralistic methodology to determine appropriate policies for its preservation. (JEL Q21)*

I. INTRODUCTION

Among ecologists, there is a general consensus that biodiversity¹ is of critical importance to the health of ecosystems and even for the long-term survival of the human species. There is also a consensus that biodiversity is being lost at a rate which is a cause for concern.² Economists, on the other hand, generally view biodiversity as just another good which is to be placed in the basket of market choices just as any other. The discussion of the specifics of biodiver-

plex multicelled life on earth. If the paleontologists and biologists who study the phenomenon of mass extinction are correct, the current human-induced mass extinction may be of the same order of magnitude as the five other major extinction episodes which destroyed between 20 and 96 percent of existing species on the planet (Ehrlich and Ehrlich 1992; Ward 1994; Wilson 1992). We are living in a truly remarkable period in Earth's 4½-billion-year history. The valuation decisions our species has made in the recent past and will make during the next few decades will determine the fate of life on Earth for the next tens of millions of years. It is critical to clarify the language and concepts we use to estimate the value of biodiversity, and thus policies leading to its destruction or preservation.

The importance attached to the issue of biodiversity preservation necessarily involves ethical judgments about duty to future generations and responsibility toward the nonhuman natural world. Although individuals hold a variety of conflicting beliefs about human responsibility to the natural world, this does not mean that policy choices

sity policy has been unsatisfactory partly because of the different meanings of the word "value" used by economists and ecologists. Many ecologists fail to understand the logic of market allocation and why biological resources are used in seemingly irrational ways. Many economists fail to appreciate the narrowness of the concept of economic value as indicated by relative prices determined by market exchange. Following Anderson (1966) and Brown (1984), the discussion below considers economic measures of value to be species of the genus *assigned value* which belongs to the family *value*.

Many biologists and paleontologists believe that we are at a critical point in the history of the human species, and perhaps even in the 600-million-year history of com-

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¹The term biodiversity encompasses all of the species that currently exist on Earth, the variations that exist within each species, and all of the interactions that exist among all of these organisms and their biotic and abiotic environments as well as the integrity of these interactions.

²In one of the most thorough surveys to date, Pimm et al. (1995) estimate that current extinction rates are 100 to 1,000 times higher than their pre-human levels. This rate is expected to increase tenfold in the next century. Economist Julian Simon's (in Meyer and Simon 1994) claim that there has been no increase in extinction rates is "not scientifically credible" (Pimm et al. 1995, 348).

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