

The Sum Is Greater than the Parts

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The practice of conservation and the designation of protected areas are clearly in the best interest of humankind and are embraced by a large fraction of the world's peoples and governments. The goals of conservation, however, and thus the targets and priorities of conservation, are not so easy to agree upon. A recent essay by Brooks et al. (2004) would have us believe that protecting the longest possible list of species is the obvious overarching goal of conservation and that species data are therefore the key to conservation planning. Although we agree that protecting biodiversity is important, we do not agree that long lists of species represent the trump card in conservation priority setting and planning.

Each unique species has value in itself, but the value of assemblages of species in ecosystems should also be considered when making conservation decisions. Recognizing this, the parties to the Convention on Biological Diversity defined biodiversity loss as "the long-term... reduction in components of biodiversity and their potential to provide goods and services" (UNEP 2004). This attention to goods and services is not accidental—it reflects a realization that unless conservation explicitly makes human welfare a significant priority, biodiversity protection will merely represent the vision of a privileged few.

Too much attention to species-rich areas will cause us to neglect habitats that confer great services yet harbor few species (Kareiva & Marvier 2003). For example, although salt marshes have relatively low biodiversity, they are among the richest ecosystems when measured by the services they provide such as sinks for pollution, protection against floods, and nurseries for commercially important fish (Costanza et al. 1997). Moreover, there are countries that are species poor, but still offer valuable ecosystem services. For example, Canada ranks in the bottom 5% of nations for endemic plant species per unit area ($n = 131$; WRI 2001), but in the top 25% for the value of its ecosystem services per unit area ($n = 236$; Sutton & Costanza 2002). Thus, a major advantage of conservation goals that are based on habitats is that every place on the

planet remains a candidate for conservation protection. This is not the case when one focuses too much on the length of species lists.

The future of biodiversity and indeed of our planet depends on a massive renaissance of natural history. But naming all of the world's species or even mapping the distribution of all species will not get us very far. Projects such as the "All Species Initiative" (www.all-species.org), which aim to name all the species on the planet, are visionary and compelling but are also scientifically misguided and naïve. It is estimated that it will cost \$5 billion to discover and name all of the species on Earth (McCarthy 2002). But exactly what will this accomplish? We are certainly suffering from a shortage of taxonomists, and we agree that public funding is needed to bolster this starving profession. But support for systematics is a long way from claiming that naming all the world's species or drawing up detailed lists of species by region will help us to improve the environmental health of our world. What we really need is an infusion of ecological science and an understanding of how species contribute to processes such as nutrient cycling or fisheries production or resilience. By analogy, would you rather have a mechanic who can fix your car or one who can list and name all of its parts? It is far more important to understand the ecological role of species than to list them and assign each a name.

It is time for conservationists to stop measuring success only by the tally of how many species we have collected in our protected areas. A major value of conservation is in protecting the lands and waters that deliver essential services to humans—services that are provided by the biodiversity living in those habitats. Decisions about what and where to protect must consider whether or not each type of habitat is adequately represented in our network of reserves.

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Paper submitted July 15, 2004; revised manuscript accepted August 24, 2004.

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