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## Biodiversity Is Our Life

2010 IS THE INTERNATIONAL YEAR OF BIODIVERSITY, IN RECOGNITION OF LIFE ON EARTH. EIGHT years ago, more than 190 countries agreed, through the United Nations Convention on Biological Diversity, to reduce biodiversity loss by 2010. This October, the Convention will meet in Nagoya, Japan, to evaluate progress and agree on new biodiversity targets for the world. Shortly before that, the UN General Assembly will address the biodiversity crisis for the first time.

It is clear from many indices of biodiversity that the world has failed to meet the 2010 target. For example, in its Red List of Threatened Species, the International Union for Conservation of Nature documents the extinction risk of 47,677 species: 17,291 are threatened, including 12% of birds, 21% of mammals, 30% of amphibians, 27% of reef-building corals, and 35% of conifers and cycads. Tracking extinction risk over time through this index reveals even worse news, with dramatic declines in many groups, notably amphibians and corals. The Living Planet Index reveals that populations of wild species have declined by 30% since 1970; mangrove forests have lost a fifth of their area since 1980, and 29% of seagrass beds are gone.

This biodiversity loss has grim consequences for humanity. According to *The Economics of Ecosystems and Biodiversity* study in 2009, half the welfare of the world's 1.1 billion poorest people flows directly from nature, through benefits including wild harvest, crop pollination, disaster mitigation, clean water provision, and maintenance of traditional cultures. The study estimates the total global annual economic cost of biodiversity loss, where it can be measured, to be between 1.35 and 3.1 trillion U.S. dollars. In addition, destruction of tropical forests (shrinking by 6 million hectares each year) is responsible for nearly a fifth of greenhouse gas emissions, driving climate change. Biodiversity loss deprives our descendants of currently unknown but potentially vast benefits. And in the sense that it cuts off humanity from the wonders of nature, the loss ultimately makes us less human.

However, rays of hope pierce this gloom. Conservation has centuries-old roots, and it works. The recent toll of bird extinctions would have been 25% greater in the absence of conservation action.\* Protected areas are expanding worldwide, and they can prevent or reverse natural habitat destruction. The world's zoos, aquaria, botanic gardens, and gene banks provide insurance for species and genetic diversity.

The key challenge in Nagoya will be to establish a new plan for scaling up and mainstreaming these successes. The plan must have a long-term vision, aimed at 2050, to maintain and restore biodiversity. It must also establish an immediate mission and time frame: to stop biodiversity loss by 2020. To achieve this goal in 10 years, necessary actions will need to be in place by 2015, providing timely synergy with the United Nations Millennium Development Goals. These actions should be explicit, defining the ultimate drivers of biodiversity losses, the proximate threats, the benefits that conservation provides, and the scientific, political, economic, and social response mechanisms necessary to deliver this conservation.

To help drive this mission, a strengthened global science-policy interface is needed, such as the proposed Intergovernmental Platform on Biodiversity and Ecosystem Services. And new biodiversity targets will require new financial support, especially for developing countries. Innovative funding mechanisms for ecosystem services—such as climate change mitigation through forest conservation [known as Reducing Emissions from Deforestation and Forest Degradation (REDD)]—offer enormous new opportunities. But much more is needed. For example, each of the 30 member countries of the Organization for Economic Cooperation and Development should contribute 0.2% of its gross domestic product for biodiversity conservation in developing countries, in addition to its 0.5% commitment for development assistance. Such funding could be freed up through the removal of misappropriated economic and environmental subsidies, and would yield several hundred billion dollars annually. Only through such explicit financial commitment can we ensure that biodiversity will survive, for the benefit of all people, and for nature itself. —Julia Marton-Lefèvre

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\*A. S. L. Rodrigues, *Science* 313, 1051 (2006).

