

The Biodiversity Issue Takes to the Water

Many scientists are warning that if things continue as they are we may have extinguished more than one-third of the world's existing species by 2050, and perhaps even half of them by 2100. The last spasm of extinctions on this scale ended the Age of Reptiles 66 million years ago. It took more than 10 million years for evolution to replenish the biological diversity lost.

The most important cause of species extinction is the destruction of natural habitats, above all in the tropical forests which contain a majority of the world's life-forms. Chemical pollution, including acid rain and the excessive use of agricultural chemicals, is another factor. Climate change arising from global warming threatens to accelerate the destruction of species, as organisms lose the temperature and rainfall patterns in which they have evolved.

Underlying these factors is the accelerating increase in human population and consumption. An estimated 40% of the annual biological product of the planet is now appropriated for human use, and the proportion is growing every year — leaving less and less space for wild species. Underlying the growth in

When a single species is destroyed forever, it rarely makes news. But the fact that we are destroying a significant part of the wealth of species on our planet, and that most governments are doing very little about it, is one of the major issues of our time. Here we look at some general and aquatic biodiversity problems and at possible solutions.

population is the failure of the world community to provide basic health care, education and family planning to hundreds of millions of its citizens.

Why does species extinction matter to humanity?

- **Because the human species is part of the web of life on Earth, and no one can predict the consequences of destroying so much of that web.** Says distinguished Harvard University biologist Edward O. Wilson: "We have only a poor grasp of the ecosystem services by which other organisms cleanse the water, turn soil into a fertile living cover and manufacture the very air we breathe."
- **Because we are depriving ourselves and our children of countless new medicines and products.** "It is hard even to imagine what other species have to offer in the way of new pharmaceuticals, crops, fibres, petroleum substitutes and other products," says Wilson. More than a quarter of all prescriptions in modern Western medicine contain active ingredients extracted from plants.
- **Because food security depends on genetic diversity.** Monocultures are vulnerable to pests and climatic changes. In the 1846 Irish potato famine, in the damage to the Soviet wheat crop in 1972, and in the 1991 outbreak of citrus canker among Brazil's orange trees, the genetic uniformity of the crops allowed pests to sweep across the country, causing severe damage.
- **Because wild species generate direct economic revenue.** Nature tourism generates as much as \$12 billion a year worldwide. Forests provide an income to many of their inhabitants, who harvest nuts, fruits, rubber and many other forest products. In the United States alone, the destruction of estuarine ecosystems between 1954 and 1978 cost over \$200 million in revenues lost from commercial and sport fisheries.
- **Because the planet's genetic wealth, the result of billions of years of evolution, is the most important inheritance which can be passed on to future generations - far more important to their well-being than financial or industrial capital. If we destroy it now, we rob our children.**

What can be done

A key event was the meeting of the Intergovernmental Committee (IGC) for the Convention on Biological Diversity in Geneva in October 1993. Convened by the UN Environment Programme (UNEP), the IGC brought together all the governments involved in the Convention. The October meeting provided a good indication of how far governments are prepared to follow words with action.

The main purpose of the meeting was to work on outstanding issues that are key to the success of the Convention. However, governments are still quarrelling on many of these issues, such as the transfer of funding and biotechnology expertise to the South, safety measures for the production of biotechnology products, and access to the South's genetic resources.

One sure test of political will is whether governments—especially those of the wealthy Northern nations—are prepared to spend real money to protect biodiversity in the South. Many of the nations richest in biodiversity are facing staggering problems of debt, hunger and poverty, and have few resources to spare for conservation of species. If Northern governments are serious about the goals

of the Convention, they must provide substantially increased funding both for conservation in the South and to ensure that the South reaps more benefit from its genetic resources.

This meeting in Geneva was an important opportunity for government representatives to state their positions on the Convention and for exchanges with UN bodies (FAO, UNEP, UNDP) and other interested parties such as IUCN and a wide variety of NGOs. The meeting discussed funding mechanisms and a host of topics, including biosafety. With so much to debate, the meeting failed to accomplish its full agenda. There will have to be another meeting of the IGC before the first Conference of the Parties—a meeting of all nations which have ratified the Convention—expected to take place in late 1994. The Conference of the Parties is the governing body responsible for the review and implementation of the Convention.

Implementation at national level

In signing the Convention on biological Diversity (see Box 1) the governments have undertaken a number of commitments at the national level. These include creating inventories of biological

Box 1

Convention on Biological Diversity

Signed at the Earth Summit in Rio de Janeiro by 157 countries, the Convention came into force in December 1993. Protocols to the Convention containing further concrete commitments may be added later.

The Convention:

- recognizes that biological diversity (known as "biodiversity") is essential to our planetary life-support systems.
- commits countries to a series of national-level obligations, including making inventories of biological resources, developing national conservation strategies and integrating conservation in development planning.
- requires developed countries to assist developing countries in carrying out their conservation programs.
- recognizes the role of indigenous and local communities in protecting biodiversity.
- promotes the fair and equitable sharing of the benefits arising from the use of genetic resources by way of:
 - appropriate access to genetic resources;
 - appropriate transfer of relevant technologies to developing countries;
 - appropriate funding.

The Convention complements other international conservation agreements, including the Ramsar Convention on Wetlands and the Convention on International Trade in Endangered Species (CITES), addressing issues of equity which weren't covered in earlier agreements.

diversity, and launching policies, program and strategies to preserve that diversity.

Access to genetic resources and traditional knowledge. Until now, Northern pharmaceutical and biotech companies have had free access to the genetic resources of the South, and to the traditional knowledge of indigenous peoples (which has been important for many pharmaceutical discoveries). Southern countries argue that they should receive a share of the profits from the use of genetic resources within their territories. Likewise, indigenous communities believe that they should share in the benefits arising from the use of their traditional knowledge. Some

Northern countries argue that companies must earn maximum returns on their investments if they are to continue to develop products the world needs.

Funding. Not only will the level of funding for conservation in the South be a critical test of political will in the North, but the way the funding will be channelled is also under discussion. The principal funding mechanism is likely to be the Global Environmental Facility (GEF), which is closely associated with the World Bank, though its implementing agencies include UNEP and the UN Development Programme. Many NGOs have been sharply critical of the GEF and the Bank for failing to consult

adequately with local communities where projects are carried out, and failing to disclose full information about projects. The NGOs argue that for conservation projects to work they must have the full support and involvement of local and indigenous communities. **6**

This material is based on an EarthAction Media Alert. EarthAction Network consists of more than 750 citizen groups in 101 countries. EarthAction focuses on one critical peace, environment or development issue each month and produces an Action Alert for distribution to individual activists. ICLARM is a member of EarthAction.

Ecosystem Function and Biodiversity on Coral Reefs

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Of the species known to science, it has been estimated that about 20% are marine. However, almost all of the phyla occur in the sea. Coral reefs are acknowledged to be one of the most diverse shallow marine ecosystems, but understanding of their biodiversity is in its infancy as sampling difficulties have defeated any attempts to inventory even a significant fraction of the taxa.

During the first week in November 1993, a group of 35 international scientists attended a workshop in Key West, Florida, to discuss the topic of ecosystem function and biodiversity on coral reefs. Specific questions which were addressed at the workshop include: Do losses of biodiversity compromise the capacity of coral reefs to maintain their functional and structural integrity? What are the implications of biodiversity for the sustainable use of reef resources, both for reef-based recrea-



tion, eco-tourism and other commercial activity, and for subsistence farming and harvesting (particularly in poor and developing countries)? Over what spatial and temporal scales are alterations in biodiversity on coral reefs manifest as alterations in biogeochemical processes, and do they contribute significantly to changes in ocean-atmosphere fluxes?

This workshop is one of a series which ICSU (International Council of Scientific Unions)/SCOPE (Scientific Committee on Problems of the Environment) is sponsoring within 12 biotic regions: tundra, boreal forest, temperate forests, Mediterranean, savanna, tropical forests, freshwater systems, arid zones, islands, ocean upwelling systems, estuaries, and coral

reefs. Taken together the SCOPE workshops will synthesize our knowledge of the functional role of biodiversity and provide the background for an

experimental program within the International Geosphere Biosphere Program (IGBP). The SCOPE program is part of DIVERSITAS, a program jointly administered by the International Union of Biological Sciences (IUBS) and the UNESCO/MAB (Man in the Biosphere) program. The former effort is directed at the origin and maintenance of biodiversity and the latter at inventory and monitoring. There will be an overall syn-

thesis meeting in Asilomar, California, in February 1994, leading to the publication of the Global Biodiversity Assessment of which coral reefs will be a chapter. This will be unprecedented knowledge base in support of future strategies for research and conservation of biodiversity.

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