



The yearlong celebration of science continues...

Biodiversity and Conservation: The YoS2009 September Theme



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➤ What is Biodiversity and Why Is It Important?

Biodiversity is the variability of all living organisms -- including animal and plant species -- of the genes of all these organisms, and of the terrestrial, aquatic, and marine ecosystems of which they are a part.

Biodiversity makes up the structure of the ecosystems and habitats that support essential living resources, including wildlife, fisheries, and forests. It helps provide for basic human needs such as food, shelter, and medicine. It composes ecosystems that maintain oxygen in the air, enrich the soil, purify the water, protect against flood and storm damage, and regulate climate. Biodiversity also has recreational, cultural, spiritual, and aesthetic value.

Society's growing consumption of resources and increasing populations have led to a rapid loss of biodiversity, eroding the capacity of earth's natural systems to provide essential goods and services on which human communities depend. Human activities have raised the rate of extinction to 1,000 times its usual rate. If this continues, Earth will experience the sixth great wave of extinctions in billions of years of history. Already, an estimated two of every three bird species are in decline worldwide, one in every eight plant species is endangered or threatened, and one-quarter of mammals, one-quarter of amphibians, and one-fifth of reptiles are endangered or vulnerable.

Also in crisis are forests and fisheries. The World Resources Institute estimates that only one-fifth of the Earth's original forest-cover survives un-fragmented, yet deforestation continues, with 180 million hectares in developing countries deforested between 1980 and 1995. Forests are home to 50-90% of terrestrial species, provide ecosystem services such as carbon storage and flood prevention, and are critical resources for diverse societies and millions of indigenous people. Overfishing, destructive fishing techniques, and other human activities have also severely jeopardized the health of many of the world's fish stocks along with associated marine species and ecosystems.

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➤ Celebrating Biodiversity

When Ed Wilson was asked by Montana Senator Max Baucus why he should tell his voters to save the spotted owl, Wilson replied, "Tell them, senator, about the rosy periwinkle, a small plant discovered in Madagascar that provided successful treatment for Hodgkin's disease and acute lymphomatic leukemia. Tell them about the obscure Norwegian fungus that yielded cyclosporine, an immunosuppressant now used every day in organ transplants. And ask them how many species of fungi exist in the old stand forests of the Pacific Northwest that we haven't even classified yet, much less learned the benefits of."

In his book, The Diversity of Life, renowned biologist Ed Wilson implores us to "cherish each species in turn as a world unto itself, worthy of lifetimes of study."

-- Text courtesy of Bradley Balukjian, UC Berkeley, Science@Cal.

For resources on biodiversity and conservation, go to:
www.yearofscience2009.org/themes_biodiversity_conservation/celebrate/

Despite our shrinking world, biodiversity remains a frontier of new discovery. Of a possible 5-30 million species on the planet, only 1.8 are named and described. Who knows what medical cures and new technologies exist in the remaining millions?

Medical advances, though, are just one reason to conserve and study biodiversity. From bacteria to elephants to humans, all biodiversity is interconnected in a complex yet fragile network of relationships. The tiniest perturbation to this network can cause its wholesale collapse. Also, there's dollars and cents to consider. Forty percent of the global economy is based on biological products and processes. Think about the food you eat; the paper you write on; and the herbal shampoo you use. Think, even more simply, of the very air that you breathe, which is recycled and emitted by trees that absorb the carbon dioxide that you exhale. Our ability to persist and function as a society is entirely dependent on biodiversity, which is why we must be responsible and informed citizens of our environment.

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