



Climate Change : Natural Disasters

A Critical Link: Biodiversity and Climate Change

A changing climate endangers whole ecosystems and entire species. Instead of preserving Earth's biodiversity, human actions are advancing its destruction. In so doing, we destroy one of our best defenses against the impacts of global warming.



A giant green turtle rests on a coral reef near Borneo. Coral reefs are sensitive to increasing water temperatures (Photo: Reuters)

According to the most recent UN assessment, 20-30 percent of the Earth's plant and animal species face extinction if global warming boosts average temperatures between 1.5 and 2.5 degrees Celsius. Most climate scientists think such warming is probable. We could lose countless species of plants, insects, and smaller animals, as well as some of our favorite mammals, including polar bears, whose habitats are literally melting away.

Due to the complexity of global climate and ecosystems, scientists are only beginning to learn about the impact of global warming on the world's biodiversity hotspots - rainforests, wetlands, and coral reefs. The World Wide Fund for Nature (WWF) says much of the Amazon rainforest and Australian Great Barrier Reef could be destroyed by unchecked global warming in the coming decades. Wetlands, coastal marshes, low-lying islands, mangroves, and coniferous forests are also sensitive to global warming.

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"The reality is that we are already seeing ripples of change, not just terrestrial, but also in the oceans, because of coral bleaching and ocean acidification," says Thomas E. Lovejoy, president of the Washington D.C.-based Heinz Center for Science, Economics, and the Environment. "These are just now coming to light because nobody was looking for them before."

The Millennium Ecosystem Assessment, a study by over a thousand international scientists released in 2005, found that climate change will

also effect basic environmental "services" provided by nature. Forests and marshes are vital for air purification, fresh water, and regulation of the climate. Coral reefs are important breeding grounds for fish. Once they are gone, quality of life declines.

Biodiversity as a bulwark

Biodiversity and various ecosystems act as a natural defenses against the impacts of climate change. Drought-resistant crops can reduce the likelihood of famines triggered by lack of rainfall. Mangroves like the Sunderbans between India and Bangladesh provide shelter against an increasing number of typhoons and floods. According to the UN Environment Programme, ecosystems with more biodiversity are simply more persistent, and more likely to adapt to climate change.

One of the quickest ways to destroy biodiversity is deforestation. Cutting down forests also accounts for about 20 percent of all man-made carbon dioxide emissions, so slowing down the rate of deforestation could help contain runaway climate change and preserve ecosystems vital to the earth's carbon cycle. Scientists have also found that once a forest has been cut down, precipitation decreases dramatically. Reforestation helps to stabilize the natural water cycle and subtract CO₂ from the atmosphere, but once a virgin forest is destroyed, it can never return to its original splendor.



Who's Next?

A Costa Rican blue jeans dart frog. Global warming is thought responsible for the disappearance of 17 amphibian species from Costa Rican jungles (Photo: Reuters)

Financial incentives could be an important tool to prevent the loss of forests in places like Brazil and Indonesia. Without subsidies, growing palm oil is more profitable for a local farmer than leaving the forest untouched. Once the soil is exhausted, he moves on to clear another patch of trees.

Avoided deforestation - money for nothing?

One solution is called avoided deforestation. Sean Southey, director of the UN's Equator Initiative, sees it as a good example of the interaction between climate change mitigation, biodiversity preservation, and poverty reduction. When local communities profit from sustainable practices, it makes economic sense for them to stop cutting down trees. International policies still largely ignore the connection between preserving biologically diverse forests and meeting climate objectives and the Millennium Development Goals.

"They're not letting people not cut down trees and get the benefit," says Southey of current international climate protection schemes. "So, you have cases of beautiful, largely untouched biodiversity being wiped out in Asia to grow new palm oil, which doesn't help meet any of the [Millennium Development] Goals." Southey is trying to promote a

change of perspective. Preserving rainforest is a valuable service. Farmers who participate should be rewarded.

Thomas Lovejoy agrees. "The way we are mismanaging the world's ecosystems, particularly the forests, is a significant contributor [to global warming]. So if we just stopped doing that, it would be an important part of the solution."

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