

Scientists Predict Widespread Extinction by Global Warming

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By JAMES GORMAN

An international group of 19 scientists, analyzing research around the globe, has concluded that a warming climate will rival habitat destruction in prompting widespread extinctions in this century.

By 2050, the scientists say, if current warming trends continue, 15 to 37 percent of the 1,103 species they studied will be doomed.

They did not extend their prediction to all species worldwide, but they said that the sample was large enough to show that climate change could be disastrous. In addition to current efforts to create parks and reserves, they added, efforts to decrease global warming will be necessary to reduce rates of extinction.

The analysis is built on layers of computer models of climate change and other models of the ways species become extinct, each having varying degrees of uncertainty. Consequently, the authors say, the numbers cannot be taken as precise. They are described in the paper as a "first pass" at quantifying the extinction threat posed by a global warming trend.

"There's a huge amount of uncertainty," said the primary author of the paper, Dr. Chris D. Thomas, a professor of conservation biology at the University of Leeds in England.

Dr. Daniel B. Botkin, professor emeritus at the University of California at Santa Barbara, an ecologist who has done extensive research on climate change, said the paper was "a valiant effort" to address the effect of warming trends on living things, an area of research he said had been slighted in favor of creating climate models. And he acknowledged that the authors themselves presented their numbers as a beginning and a spur to further research.

He said, however, that the analysis was based on "a lot of steady state assumptions that lead it to the most pessimistic forecast," including the notion that things will stay as they are in terms of the ways animals migrate and respond to temperature change.

Scientists have been predicting drastic extinctions for years, largely because humans are steadily taking land that other creatures live on and turning it to their own purposes.

By different estimates species are now becoming extinct at rates 100 to 1,000 times as great as would be expected without human interference or a catastrophic event.

The analysis, published Wednesday in the journal *Nature*, raises the status of global warming from that of

contributor to habitat loss to full-fledged force for extinction.

Dr. Thomas said that despite the significant uncertainties, the researchers assessed the raw data on species numbers, current habitats and past extinctions from as many angles as possible. They included species in different terrestrial environments around the world - in Central America, South America, Australia and Africa.

They used predictions of increased temperature ranging from mild to extreme and applied three different methods for predicting extinction, all based on the relationship of species disappearance to loss of livable habitat. They also considered two different possibilities for gauging how well the different species would be able to disperse as temperatures at home became uncomfortable.

Although the results vary widely, Dr. Thomas said, even the most conservative estimates show that global warming, which he and most other scientists attribute to emissions of carbon dioxide and other greenhouse gases in the burning of fossil fuels, presents a "very serious risk to huge numbers of species and at least ranks alongside habitat destruction" as a threat.

The paper does not predict that all the extinctions will occur by 2050, but that by that time these species will have reached the point of no return.

<http://www.nytimes.com/2004/01/08/science/08CLIM.html?ex=1074599681&ei=1&en=dc86a28d393231f1>

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