Natural-disaster policies need shaking up


U.S. Geological Survey

The 1993 Midwest floods ruined 50,000 homes.

Twentieth-century technology has lofted people into space and conquered smallpox, but it has not made them any less susceptible to floods, hurricanes, earthquakes, and other ravages of nature, according to a comprehensive 5-year study released last week.

In fact, U.S. citizens are growing ever more vulnerable to natural disasters, says Dennis S. Mileti, a sociologist at the University of Colorado at Boulder, who led the study team of 132 academics and officials. "The U.S. has been—and still is—creating increased catastrophic disasters in its future. It's time for a paradigmatic shift in our nation's approach," says Mileti.

The federally funded report estimates that 24,000 people died in natural disasters between 1975 and 1994, and four times that number sustained injuries. These events caused damage amounting to $500 billion, not counting indirect costs such as lost business and employment, environmental harm, and emotional tolls on victims.

Severe storms caused more than 80 percent of these losses, while earthquakes and volcanoes together accounted for just 10 percent. Seven of the 10 most expensive disasters, adjusted for inflation, have happened since 1989, indicating that the cost of catastrophes is growing.

The report blames people for the increasing damage. "There is a fundamental flaw in the way our nation and culture try to solve the problems of disaster. Many of the accepted methods of coping with disaster are based on the fantasy that people can use technology to control nature and make themselves totally safe," says Mileti.

For instance, hurricane forecasting in the past several decades has improved to the point that meteorologists can now provide many hours of warning before a storm makes landfall, perhaps fostering a false sense of security. Compounding that influence was a lull, from 1965 to 1989, in large storms that hit the U.S. coastline. "By providing advance warnings of severe storms, this country may well have encouraged more people to build in fragile coastal areas," says the report.

Indeed, between 1950 and 1991, the population of South Florida swelled from 3 million to over 13 million, with 80 percent of that expansion along the coast.

Instead of trusting in technology to eliminate disasters, Mileti and his colleagues propose that people take responsibility for reducing their risk of harm. Local communities and state and federal officials must consider the threat of natural disasters while making long-term development plans. Insurance companies can provide incentives for people to take steps mitigating future losses.

The Federal Emergency Management Agency (FEMA) has already begun to adopt some of these principles, says Jane Bullock, the agency's chief of staff. In 1997, FEMA started a program called Project Impact, designed to help communities increase their resistance to disasters. In flood-prone Darlington, Wis., for example, residents moved 15 vulnerable buildings and prevented new development near a river.

The program started out working with 7 localities and has since expanded to more than 118. The new report will help spread Project Impact to other regions, says Bullock. "It will give the program an impetus in different communities that may have been somewhat reluctant to come to the table." —*R. Monastersky*

When elephants can't take it anymore


Cynthia Moss/African Wildlife Foundation

African elephant calves and their families share a landscape with people until human settlements reach a certain density.

African elephants in savannas don't slowly fade away. When the human population grows to a certain threshold, elephants disappear rapidly, according to a new analysis.

Such declines are "more precipitous and less reversible" than those predicted by previous, linear-decline models, say Richard E. Hoare of the University of Zimbabwe in Harare and Johan T. Du Toit of the University of Pretoria in South Africa. In the June CONSERVATION BIOLOGY, they describe population studies in northwestern Zimbabwe and urge research to determine threshold levels for other ecosystems.

Finding these thresholds should help wildlife managers "distinguish areas where elephants can be conserved from those where they cannot," Hoare says.

Previous analyses looked at elephant-human relations on the sweeping scale of national or subcontinental trends, the researchers say. In this view, elephant density declines linearly as the human population rises.

Hoare and Du Toit focused on a smaller scale. Within the Sebungwe region of semiarid, shrubby savanna, they examined 25 census units, varying from 150 to 700 square kilometers. Each unit contains both wild areas and human settlements. People have been flocking to the region since the tsetse fly was wiped out in the mid-1980s, but poaching is not widespread.

After reviewing population counts of humans and elephants covering a 3-year period, Hoare and Du Toit say, "The results did not fit the linear model."

Elephant density showed no consistent relationship with the growing number of settlers until the human density reached about 16 people/km^2, the researchers report. By then, people had tamed 40 to 50 percent of the land in the unit.

As the human population continued to grow, elephant numbers dropped sharply. Hoare speculates that the elephants did not suddenly die from disease or a massacre but fled to less disturbed areas.

Conservation biologist Keith Lindsay of the Environment and Development Group in Oxford, England, welcomed the threshold idea when Hoare first presented it at a 1998 meeting of IUCN's African Elephant Specialist Group. "It gives you a more realistic picture of what the prospects are," he says.

He regards the new paper as "a strong note of caution" to analysts using a correlation derived from a large-scale study to attack local problems.

The elephants' threshold of tolerance for people does not surprise Steve Osofsky, who directs elephant conservation for the World Wildlife Fund in Washington, D.C. "Elephants are large creatures with large needs," he points out, and the main threats to their survival are land-use clashes with people.

Westerners can romanticize the majestic creatures from a safe distance, but people who live around wild elephants have their own thresholds. "If all the elephants are doing is eating, in one night, the crops it took you a year to grow, you're not going to want elephants," he says. Osofsky says he hopes conservationists can find ways for people and elephants to share the land. —*S. Milius*