

ECOLOGY

Global Survey Documents Puzzling Decline of Amphibians

Almost a third of the world's amphibians are threatened with extinction, according to the first global survey of the situation. And it's not clear what's killing many of them off. "It's very sobering," comments David Wake of the University of California, Berkeley, about the assessment, described in a paper published online by *Science* this week (www.sciencemag.org/cgi/content/abstract/1103538).

Scientists first noticed the perilous state of many amphibians in the late 1980s. Many common species were becoming hard to find, even in national parks and other protected areas. In addition to a loss of habitat, studies pointed to herbicides, stronger ultraviolet light, and a fungal disease called chytridiomycosis. There was also speculation about the role of climate change and invasive species. Despite an accumulating stack of evidence, there was no global picture of all 5743 known species.

The \$1.5 million Global Amphibian Assessment project, funded by several federal and nongovernmental donors, was launched in 2001 to provide that global picture. Simon Stuart of the International Union for Conservation of Nature and Natural Resources (IUCN) and colleagues at Conservation International and NatureServe, a biodiversity clearinghouse, began by dividing the world

into 34 regions. They assigned a herpetologist to assemble a species list for each region and seek out information such as trends in abundance, distribution, and threats. More than 500 herpetologists reviewed the data. "The effort is unprecedented," says Michael Lannoo of Ball State University in Muncie, Indiana.

The next step was to evaluate the chance that each species would go extinct, according to IUCN "Red List" criteria. Not only are a third threatened, they found, but 7.4% of all amphibians—427 species—qualify for the highest IUCN threat level, known as critically endangered. Moreover, both figures are certainly underestimates, Stuart says, because too little is known about 1294 rare species to gauge their status. Stuart is seeking funding that would allow his team to update the database frequently and review it completely every 3 years.

The survey attempted to chart trends in amphibian species as well. One approach was to ask the expert reviewers what was happening to populations. Some 43% of amphibian species are dwindling in numbers, they reported; 27% are stable, and fewer than 1% are increasing. The status of the rest is unknown.

Another method was to look at species for which data existed in 1980—when declines apparently began—and compare their Red List status, then and now. The situation has gotten worse over the past 2 decades for 435 species, the survey reveals. (Again, this is likely an underestimate, Stuart cautions, because the decline of many species could have gone undetected.) In North America and Europe, the reason is largely habitat loss, whereas in East Asia it is humans hunting for



Disappearing. Like many amphibians, the harlequin toad (*Atelopus varius*) is in serious decline for unknown reasons.

food. But there is no obvious cause for the declines in the Neotropics and Australia, which host the majority of rapidly declining species.

"The bottom line is that there's almost no evidence of recovery and no known techniques for saving mysteriously declining species in the wild," Stuart says. "It leaves conservation biologists in a quandary."

—ERIK STOKSTAD

NOBEL PEACE PRIZE

Kenya's Maathai Wins for Reforestation Work

Arrested, beaten, and jailed for her efforts, environmentalist and political activist Wangari Maathai of Kenya has won the 2004 Nobel Peace Prize.

Maathai, 64, is the first African woman to win the prize, announced last week, and the first to be honored for environmental work. The founder of the Green Belt Movement, which since 1976 has organized local groups to plant an estimated 30 million trees across eastern and southern Africa, Maathai was a longtime opponent of Kenya's former strongman Daniel arap



Seeds of change. Maathai's tree-planting program has attracted global attention.

Since 2002 she has served as deputy environment minister under President Mwai Kibaki and also holds a seat in Kenya's parliament.

In awarding the prize, the Norwegian Nobel committee said Maathai "combines science, social commitment, and active politics. More than simply protecting the existing environment, her strategy is to secure and strengthen the very basis for ecologically sustainable development."

Maathai's accomplishment also breaks new ground by recognizing environmental activism as worthy of a prize

normally awarded for peacemaking and human-rights advocacy. "Peace depends on our ability to secure our environment," said Ole Danbolt Mjoes, the Nobel Committee chair.

Maathai earned a Ph.D. from the University of Nairobi, one of the first women in the region to do so. She later chaired the school's department of veterinary anatomy, also a first for a woman. Maathai is "delightful, ebullient, and dynamic," as well as a keen thinker, says Chad Oliver of the Yale School of Forestry and Environmental Studies in New Haven, Connecticut, where Maathai was a visiting scholar in 2002. "She's able to look at a cloud of information and cut right through to the core."

Since winning the award, Maathai has provoked controversy by restating her belief that scientists may have created the HIV virus to harm Africans. Many prominent Africans have endorsed that fringe idea because the epidemic has hit the continent exceptionally hard, says Samuel Kalibala of the International AIDS Vaccine Initiative in Nairobi. But Maathai's remarks are unfortunate, he says: "We should not be diverted from fighting AIDS by trying to blame others."

—GRETCHEN VOGEL AND DAVID MALAKOFF