

Researchers reported that overall numbers of amphibians dropped 15 percent a year from 1960 to 1966, and continued to decline about 2 percent a year through 1997.

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Scientists have yet to zero in the causes but suspect a combination of factors: loss of wetlands to development; use of fertilizers and pesticides; increased ultraviolet light from an ozone layer thinned by industrial pollutants; and the introduction of exotic predators.

"It's just society doing its thing," said Michael Lannoo, a professor of anatomy at the Indiana University School of Medicine. The study was initiated by Jeff Houlahan, a Ph.D candidate in biology.

"By and large the evidence has been anecdotal. No one had ever quantitatively tried to say is there truly a global decline," Houlahan said. "I thought the best way to do that was simply to pile the data up as high as you can get it and see what it tells you." Houlahan gleaned studies from obscure scientific journals and combed university Web sites for the names of scientists studying amphibians, then e-mailed them to ask if they had data to share. He contacted more scientists through Froglog, the Internet newsletter of the Declining Amphibian Population Taskforce of the World Conservation Union's Species Survival Commission.

Data on 936 populations of amphibians and 157 species came in from 37 countries and eight regions of the world.

"We could not have done this without the Internet," Houlahan said. Trends varied by time and place. In Western Europe, a sharp decline in the early 1960s leveled off later. In North America, the decline was slower, but steady. There was not enough data to fully analyze trends in South America, Africa and Australia.

Houlahan acknowledged that amphibians traditionally have gone through periodic booms to overcome regular population declines. But he said the analyses found overall that the booms are not overcoming the declines.

For more information go to: Froglog

http://www2.open.ac.uk/biology/froglog/froglog.html

The North American Amphibian Monitoring Program

## http://www.im.nbs.gov/amphibs.html

eologic oddities—geysers, hot springs, and mud pots—that prompted Congress in 1872 to protect Yellowstone as a public "pleasuring ground," off limits to grazing, mining, logging, and other exploitation.

Luckily, America soon realized that Yellowstone was also a remarkable storehouse of wildlife. Writing in Forest and Stream in 1882, George Bird Grinnell described the rapid transformation of the West, and noted, "There is one spot left, a single rock about which the tide will break, and past which it will sweep, leaving it undefiled by the unsightly traces of civilization. Here in this Yellowstone Park the large game of the West may be preserved from extermination..."

Today, the Greater Yellowstone Coalition works to ensure a healthy future for

wildlife. And we need your help—to secure habitat and funding, to educate decision-makers about the value and needs of wildlife, and to keep the ball rolling on behalf of future generations.

In recent years, with tremendous help from GYC's members, and working closely with other conservation organizations, we've made great forward strides. We helped build widespread support for returning wolves to the Ecosystem, stopped a risky mine that might have poisoned Yellowstone, and forged land exchanges which brought tens of thousands of acres into public ownership—the most in Greater Yellowstone since the expansion of Grand Teton National Park in 1950.

There is much more to be done for Greater Yellowstone's wildlife. Will you help us? Please contact GYC's Tim Stevens for more information about our current efforts and how you can help. Email Tim at **tstevens@greateryellowstone.org** or call him, toll free, at 1-800-775-1834

In Greater Yellowstone's natural tapestry, wildlife is a spectacular element, attracting worldwide interest and awe. The Ecosystem is home to the largest herds of elk in North America, and is one of the few remaining areas in the lower 48 states where the magnificent grizzly bear still roams in significant numbers. Greater Yellowstone serves as wintering ground for the rare trumpeter swan, and is home to the largest free-ranging herd of bison in the lower 48 states. Greater Yellowstone's relatively intact natural landscape appears to retain its full complement of vertebrate wildlife, excepting the gray wolf and the black-footed ferret. Cougar and wolverine still roam its mountains, bighorn sheep scramble among its cliffs, moose browse its willows, and eagles grace the open sky.

No less vital to the character and health of Greater Yellowstone are its many other species: more than 300 birds, 94 mammals, two dozen reptiles and amphibians, and vast numbers of invertebrates, including 128 species of butterflies, live and move through this remarkable place.

Impressive as that tally may be, to count the number of species is only one way of grasping the Ecosystem's web of life. Imagine Greater Yellowstone as a huge tapestry, each animal worked into its design: a bull elk in tawny thread, a grizzly in walnut and silver, cutthroat trout in colors that give back the light. Move closer: each figure is woven of many threads, and each thread has a slightly different hue. Closer: each thread is twisted of many distinct strands, like the genetic strains which form a lineage.

Greater Yellowstone's tapestry is beautiful because it is diverse, woven of uncountable, individual strands. If a weaver is limited to only a few colors, the figures will be crude, mere outlines, cartoons. If the thread is weak or poorly spun, it may not withstand the years. If the fabric is worn, strained, abraded, the

thinnest strands break first. Then the thicker ones part, then the warp and weft disintegrate as the tapestry unravels, until the design is gone. This is a metaphor for life, yet biologists now speak, urgently, of the diversity of life in all of its forms. Richness and variation, it turns out, are not just the surface colors, but the very fiber of Greater Yellowstone's tapestry of life.

Some wildlife species, such as the elk, are keystone species. They play an indispensable role in basic, natural processes, and their elimination from the Ecosystem would trigger a major change in many other species. Other species discussed in this chapter, such as the marten, great gray owl and goshawk, represent ecological indicator species, which are closely associated with a particular habitat type that is uncommon and in need of protection. Some species, such as the grizzly bear, bald eagle and ferret, were selected because they are considered rare, sensitive, threatened or endangered. Special protection is required for these species and their habitats to prevent their complete loss from the Ecosystem, and in some cases, the planet.

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