

US EPA ARCHIVE DOCUMENT



WHAT IS THE STATE OF GREAT LAKES AMPHIBIANS?

Currently, the loss and degradation of wetland habitats poses a major threat to Great Lakes amphibian populations.

The Issue

Amphibians living in Great Lakes wetlands generally remain in one area throughout their lifetime. They also have semi-permeable skin, meaning that substances are able to pass through their skin and into their bodies. Because of these features, amphibians are likely to be more sensitive to, and indicative of, local sources of wetland contamination and degradation than are most other animals.

The Indicator

There are numerous amphibian species in the Great Lakes region, and most of these species are associated with wetlands during part or all of their life cycle. Measures of abundance, distribution, and diversity of amphibians provide needed information about their population trends and can contribute to more effective, long-term conservation strategies. In addition to providing valuable assessments of the health of amphibian populations, this information also indirectly evaluates the condition of coastal wetland habitat.

The Assessment

Currently, the assessment for the state of amphibians in the Great Lakes basin is based on frogs and toads only. Since 1995, the Great Lakes Marsh Monitoring Program (MMP) volunteers have collected frog and toad data throughout the Great Lakes region. Frogs and toads surveyed by this program are typically dependent on marsh habitat for their spring and early summer mating rituals.

Thirteen frog and toad species were recorded between 1995 and 2002. Spring peeper was the most frequently detected species, and was commonly detected in full chorus when it was encountered. Green frog, grey treefrog, American toad, and

northern leopard frog were also commonly detected species. Bullfrog, chorus frog, and wood frog were detected less frequently and pickerel frog, Blanchard's cricket frog, Cope's grey treefrog, mink frog, and Fowler's toad were detected infrequently.

Trends in frog and toad occurrence were assessed for eight species that are commonly detected on MMP routes. Statistically significant declines in occurrence trends were detected for American toad, chorus frog, green frog, and northern leopard frog.



Northern leopard frog. Photo: Allen Chartier.

Current Actions

Data collected by the Marsh Monitoring Program will serve as baseline data with which to compare future survey results. Additional years of data will help to distinguish whether the patterns observed indicate long-term trends or simply natural variation in population size. Marsh Monitoring Program data are being evaluated to gain a better understanding of Great Lakes coastal wetlands conditions.

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Reporting will also be improved by the establishment of a network of survey routes that accurately represent the full spectrum of marsh habitat quality in the Great Lakes basin. Development of such a network is underway, along with the following actions: the development of an amphibian indicator as an index for evaluating coastal wetland condition; the establishment of precise geo-referenced locations for all MMP routes to enable future spatial analyses; and continued recruitment efforts and training for volunteer participants.

Actions Needed

Effective monitoring of Great Lakes amphibians will require the collection of many years of data, using a standardized protocol, over a large geographic expanse. Since amphibian populations naturally fluctuate over time, a five-year timeframe would likely allow for noteworthy changes in populations to be detected. Further work is also required to determine the relationship between calling codes used to record amphibian occurrence and count estimates.

Other impacts that are detrimental to amphibian and wetland health also need to be addressed, such as inputs of toxic chemicals, nutrients and sediments. More rigorous studies will relate trends in species occurrence or relative abundance to environmental factors.



American toad. Photo:
www.glf.cfs.nrcan.gc.ca/landscape/herp_e.html

To Learn More

For further information about amphibians in the Great Lakes, refer to the *State of the Great Lakes 2005* report which, along with other Great Lakes references, can be found at

www.epa.gov/glnpo/solec. For more information on the Great Lakes Marsh Monitoring Program, visit www.bsc-eoc.org/mmpmain.html.