WHAT IS THE STATE OF GREAT LAKES BIRDS?

Although Great Lakes bird populations appear to be recovering from the effects of contaminants such as DDT, they are still impacted by habitat loss and degradation.

The Issues

- Wetland loss, water level stabilization, non-native species introductions, sedimentation, and contaminant and nutrient inputs have contributed to the loss and degradation of important breeding habitats for wetland-dependent birds in the Great Lakes region.

- Colonial waterbirds from the Great Lakes are in poorer health than those from clean sites in the Maritime provinces, as observed by monitoring populations of several waterbird species and by tracking contaminants present in the eggs of herring gulls.

- Bald eagle populations depend on large areas of habitat for breeding and hunting. Continued development along the shorelines of the Great Lakes will cause further loss and degradation of important bald eagle habitat. Persistent contaminants are also a concern for this species because bald eagles are relatively rare, so high levels of contaminants in individuals affect the health of whole populations.

Caspian tern with two nestlings.
Photo Credit: U.S. Environmental Protection Agency, Great Lakes National Program Office.

The Indicators

Wetland-dependent Bird Diversity and Abundance

Because many species of birds live and breed on Great Lakes wetlands, the diversity and abundance of these birds can indicate the health of coastal and inland wetlands. By monitoring these characteristics of wetland-dependent birds, trends in bird populations and the ability of the Great Lakes wetlands to support these populations can be determined. This information can be used to develop more effective, long-term conservation strategies.

Contaminants in Colonial Nesting Waterbirds

Another indicator of bird population health is trends in contaminant concentrations in Great Lakes colonial waterbirds (waterbirds such as gulls, terns, cormorants and herons that nest in colonies). As colonial waterbirds are among the top aquatic food web predators in the Great Lakes ecosystem, they accumulate contaminants to a greater degree than other organisms that are lower on the food chain. Trends in contaminants can be compared, as well as ecological and physiological trends for colonial waterbirds across the Great Lakes, because they breed on all of the Great Lakes.

Productivity of Bald Eagles

As the top avian predators in the nearshore and tributary areas of the Great Lakes, bald eagle populations are responsive to contaminant stresses, food availability and the availability of prime habitat over most portions of the Great Lakes shoreline. Bald eagle populations serve as an indicator for both habitat quantity and quality.

The Assessment

Many of the declining bird species across the Great Lakes use wetland habitats almost exclusively for breeding and foraging. This reduction suggests that their decline may be linked to wetland habitat conditions.

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The population trends of some bird species appear to coincide with fluctuations in Great Lakes water levels. Bald eagle populations have increased dramatically since their decline caused by dichlorodiphenyltrichloroethane (DDT). The percentage of nests producing one or more healthy fledglings and the number of young produced per territory has risen, which indicates that the current bald eagle population is healthy and capable of increasing.

The ecological effects of contaminants on bird populations include eggshell thinning, failed reproductive success and population declines. Although colonial waterbirds appear to have recovered from these effects, physiological abnormalities are still present in Great Lakes herring gulls. Since the monitoring of herring gull eggs began in 1974, most contaminants in gull eggs have decreased by at least 50 percent, with some contaminants decreasing by more than 90 percent.

Polybrominated diphenyl ethers (PBDEs), used as fire retardants in plastics and common household items, have increased dramatically in gull eggs in the last 20 years. In bald eagles, concentrations of the primary organochlorine contaminants such as dichlorodiphenyldichloroethane (DDE) and polychlorinated biphenyls (PCBs) are decreasing or are stable, but they are still above levels that can cause adverse effects.

Current Actions

Health of bald eagle populations continues to be assessed by the number of territorial pairs, success rate of nesting attempts, number of fledged young per territorial pair and developmental deformities in the young. In addition, concentrations of persistent organic pollutants and selected heavy metals are measured in unhatched eggs, nestling blood and feathers.

The Great Lakes Herring Gull Egg Monitoring Program is the world's longest-running annual monitoring program for contaminants in wildlife. The longevity of the egg database makes it possible to examine changes in contaminant concentrations in wildlife over time.

Programs to restore many degraded wetland areas have been initiated through efforts of local citizens, organizations and government agencies.

Volunteers across the Great Lakes region are using standardized monitoring protocols to help gather wetland-dependent bird data.

Actions Needed

High quality wetland habitats and adjacent upland areas must be maintained to support populations of Great Lakes birds. Factors that impact wetland health such as water level stabilization, non-native species invasions and inputs of contaminants, nutrients and sediments should be addressed.

Monitoring programs must be continued and maintained through continual volunteer recruitment efforts and training activities.

Reproductive rate data for the shoreline populations of Great Lakes bald eagles imply that widespread effects of persistent organic pollutants have decreased. There are still gaps in the pattern of reproductive recovery, however, that must be explored. In addition, information on genetic structure of these shoreline populations is needed.

Although the effects of persistent organic pollutants on bird populations appear to have decreased, investigations of the sources and impacts of chemicals of emerging concern, such as PBDEs, are needed.

To Learn More

For further information related to Great Lakes bird populations, please refer to the ***State of the Great Lakes 2005*** report and other Great Lakes references which can be found at www.binational.net.

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