

Biological and Ecological Science for

Wisconsin

“A Great Lakes & Rivers State”

Wisconsin and natural resources go hand-in-hand. Tourism, which generates \$19 billion annually and sustains about 200,000 jobs, depends on an abundance of lakes, rivers, shorelines, and woodlands for fishing, hunting, boating, and other outdoor recreation. Rivers and floodplains in the Upper Mississippi Basin, including the Mississippi River, are part of a five-State corridor that generates more than \$300 billion annually and sustains millions of manufacturing, tourism, transportation, and agricultural jobs. Wisconsin also is a Great Lakes State with more than 800 miles of shoreline, and the fisheries of lakes Superior and Michigan deliver \$185 million annually and provide thousands of jobs.

The USGS Ecosystems Mission Area

The U.S. Geological Survey (USGS) Ecosystems Mission Area, the biological research arm of the Department of the Interior, provides science to help Wisconsin achieve sustainable management and conservation of its biological resources and the ecosystems that sustain these resources. This work is done within the broader mission of the USGS—to serve the Nation with science that advances understanding of our natural resources, informs land and water stewardship, and helps safeguard communities from natural and environmental hazards.



The common loon is an icon of the Wisconsin Northwoods. USGS works with Wisconsin biologists to understand chronic mercury exposure and loon health, movement patterns of loons, and risks from exposure to avian botulism in the Great Lakes.

What's Up with Walleye?

The abundance of walleye, the most popular sport fish in Wisconsin, has declined in some Wisconsin lakes. To investigate why, USGS scientists worked with Wisconsin scientists to develop methods for monitoring young walleye and detected issues with survival early in life, well before fish reach the end of their first summer. The USGS and Wisconsin biologists are now researching what limits walleye survival, including the potential role of predatory fish.

Sustaining the Wisconsin Great Lakes Fishery

Commercial and recreational sport fishing in lakes Superior and Michigan provide an economic driver and a way of life for coastal communities and metropolitan areas of Wisconsin. For decades, the USGS has assessed deep-water prey fish on both lakes using oceanographic-sized research vessels, one of them stationed in Ashland, Wisconsin. These assessments provide information for inter-jurisdictional State, Tribal, and Canadian Provincial decisions that focus on ensuring sustainable fisheries.

Research using the 107-foot USGS vessel stationed in Ashland, Wisconsin, provides annual estimates of prey fish populations to support fisheries management.





WHISPers, one of the largest wildlife disease databases in the United States, helps managers track the spread of white-nose syndrome, a disease that has devastated populations of insect-eating bats.

Sharing Information about Wildlife Diseases

The USGS manages an internet-based tool, WHISPers, that provides managers with current information about wildlife diseases such as white-nose syndrome and chronic wasting disease. Wisconsin wildlife managers can use WHISPers to monitor the health of wildlife and develop strategies for responding to disease events. This tool is part of USGS efforts to safeguard wildlife and ecosystem health through partnerships and advanced science tools.



The USGS studies chronic wasting disease, and is helping the State of Wisconsin develop tools for early detection, diagnosis, surveillance, and control.

Causes and Consequences of Chronic Wasting Disease

Almost 700,000 hunters in Wisconsin enjoy deer hunting, which generates more than \$1 billion annually for the State. A disease of the nervous system in deer, chronic wasting disease (CWD) is increasing in occurrence, and unchecked, could greatly curtail deer hunting and associated economic support that comes to local communities. The USGS supports Wisconsin's efforts to manage CWD with science focused on describing the effects, understanding modes of transmission, and developing projections of the spread of the disease.



The Upper Mississippi River Restoration Program's long-term resource monitoring element, with the USGS as science lead, supports decision makers with information and understanding needed to maintain a viable, multiple-use riverine ecosystem.

Upper Mississippi River Science and Restoration

In 1986, Congress recognized the 250 miles of Mississippi River along the Wisconsin border as a nationally significant ecosystem and commercial navigation system. USGS science expertise contributes to the U.S. Army Corps of Engineers Upper Mississippi River Restoration Program where the USGS and five states, including Wisconsin, implement long-term resource monitoring to better understand and manage the river. Datasets and tools produced over a period of 30 years have helped managers improve fish and wildlife habitat on over 30,000 acres in Wisconsin.

Surveillance and Control Techniques for Unwelcome Mollusks



Invasive zebra mussels are now part of many Wisconsin lakes and rivers. Wisconsin uses USGS science and technical assistance to control and prevent further spread of these and other damaging mollusks.

Quagga mussels, zebra mussels, and the New Zealand mud snail have invaded some lakes and rivers in Wisconsin, requiring major economic costs for surveillance, education, prevention, and management. These invaders can have negative repercussions for agriculture, drinking-water supplies, recreation, and native species and their habitats. The USGS supports State managers as they work to prevent spread of these invaders with scientific detection and monitoring tools and by developing control measures.

The USGS has been working with the U.S. Fish and Wildlife Service and Canada for decades to continue to suppress the devastating economic and ecological effects of invasive sea lamprey in the Great Lakes. The USGS maintains the United States and Canadian registrations of two pesticides used to manage sea lamprey. USGS research is also used for early detection of other invasive fish in Wisconsin waters, such as Asian carp and round goby.



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For more information: Ecosystems Mission Area
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