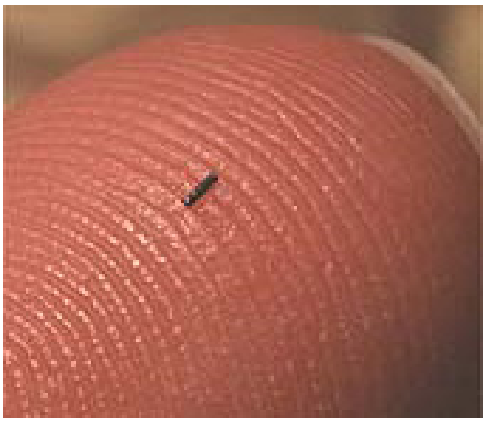
U.S. Fish & Wildlife Service

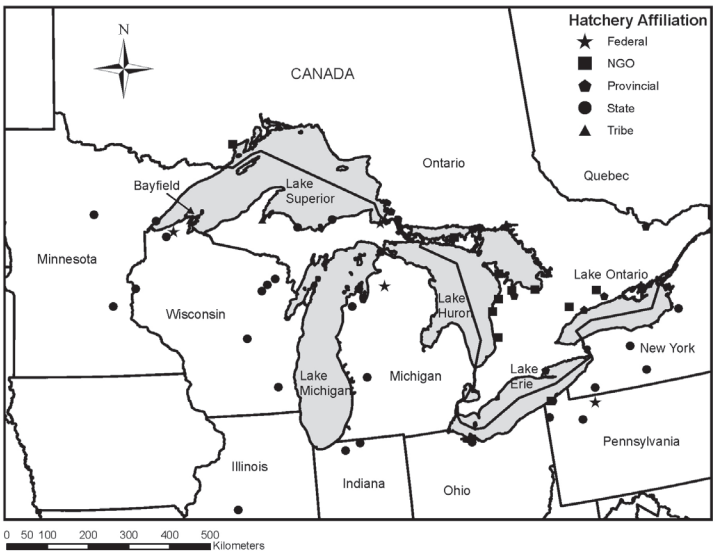
Great Lakes
Mass Marking Program

Great Lake states and tribes, along with the Fish and Wildlife Service, annually stock millions of salmon and trout to restore native fish populations, diversify sport fisheries, and control invasive forage fishes. However, little is known about how well these fish survive, contribute to the fisheries, and reproduce in the wild. To meet this information need, the Fish and Wildlife Service coordinates with state, tribal, and federal hatcheries to insert a coded-wire tag (CWT) and clip the adipose fin for all salmon and trout stocked in the Great Lakes. This "mass marking" of all fish stocked is the only technique that allows managers to learn the effectiveness of their stocking efforts, determine how many wild fish contribute to the fish community and fisheries, and balance the predator abundance to the prey fish available.

The picture above shows a coded-wire tag that has been inserted into the snout of a young salmon prior to stocking. Below - The relative size of a coded-wire tag is apparent in this image of a singe tag displayed on a finger tip.



-Northwest Marine Technology photos



Location of state, federal, tribal, and provincial hatcheries potentially involved in mass marking of salmon and trout stocked into the Great Lakes

After considering many tags and marking options, a CWT combined with an adipose fin clip (an external mark) was the most attractive method to meet the objectives of the Great Lakes marking program. A CWT is a 1.1 mm long stainless steel wire marked with serial numbers denoting a specific group of fish. The tag is injected into the nasal cartilage of a fish prior to stocking, and is extracted at recapture and viewed under a microscope to determine the code. As tagged fish are recovered over time, this information can inform biologists of key population characteristics such as survival, movement, contribution to fisheries, growth, and levels of natural reproduction. This tagging and marking method has proven reliable and feasible, and has been used extensively for decades in the Pacific Northwest of America for salmon and steelhead management.

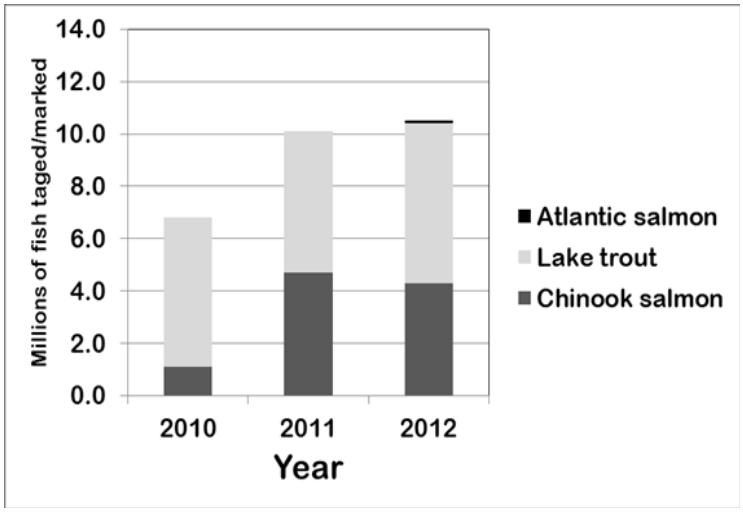
-Northwest Marine Technology

The centerpiece of the Great Lakes marking program is the automated tagging and marking trailers known as the "AutoFish" system, a computer operated automated system that counts, sorts by size and rapidly fin clips and tags fish at a rate of over 7,000 fish per hour. The fish are never out of water and never anesthetized. The Fish and Wildlife Service owns four automated trailers that are moved among hatcheries in the Great Lakes region (see map) to tag fish for lakes Superior, Michigan, and Huron. The New York Department of Environmental Conservation also owns one automated trailer and is used to mark fish for lakes Erie and Ontario.

-GreatLakesMass-MarkingTeam

An AutoFish fish marking/tagging trailer is set up at Illinois Department of Natural Resource's Jake Wolf Memorial Fish Hatchery.

Numbers of fish tagged and clipped by the Service by year and species



For more information please contact:
Charles Bronte
U. S. Fish & Wildlife Service
Green Bay Fish and Wildlife Conservation Office
2661 Scott Tower Drive
New Franken, WI 54229
920/866-1761
Charles_Bronte@fws.gov

-USFWS/Jim Webster

Mass marking biologists Kevin Pankow (left background) and Elliot Hoffman (right foreground) operate the AutoFish™ Trailer.

The Great Lakes Fish Tag and Recovery Laboratory, located at the Green Bay Fish and Wildlife Conservation Office, provides coded-wire tagging, tag recovery, and science support services to state and tribal agencies that stock trout and salmon into the Great Lakes, as well as for the Fish and Wildlife Service's Midwest and Northeast Regions' lake trout restoration programs. The lab was established in 2010 at the request of the Council of Lake Committees, Great Lakes Fishery Commission to develop a basin-wide program to tag or mark (fin clip) all (18-23 million) trout and salmon stocked into the Great Lakes. This coordinated effort among all management agencies will provide greater insight into the levels of natural reproduction of both native and non-native fish, the relative survival and contributions of stocked fish, the ability to manage harvest away from wild fish, and evaluation of hatchery operations.

When fully funded, the Great Lakes Fish Tag and Recovery Laboratory will provide:

- **Program coordination between the U.S. and Canada**
- **All marking services to all U.S. fish hatcheries**
- **Tag extraction and reading services**
- **Database management and programming services**
- **Tag recovery efforts in cooperation with states and tribes**
- **Experimental design and analytical services**
- **Ownership and maintenance of all equipment in the U.S.**
- **Possible contractual arrangement with the Ontario Ministry of Natural Resources to tag Canadian fish with all technical services (database, head shop, statistician) available to the Canadian program**

The Great Lakes Mass Marking Program is currently funded by the Great Lakes Restoration Initiative and represents a high level of science coordination among agencies and broad spatial scales of the Great Lakes basin.