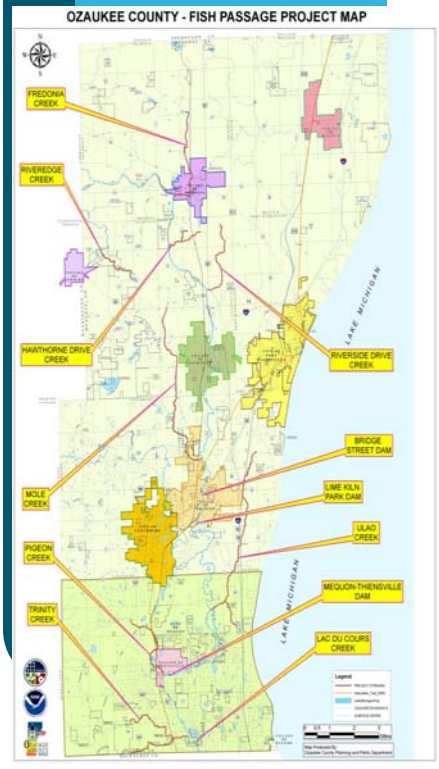
Milwaukee River Watershed: Fish Passage Program

Summer 2010

Partner Municipalities:

- Ozaukee County
- City of Mequon
- Village of Grafton
- Village of Thiensville
- Town of Cedarburg
- Town of Grafton
- Town of Saukville
- Village of Fredonia
- Town of Fredonia

Project Map of Ozaukee County



Background

Fish and other aquatic organisms need a variety of habitats to complete their life cycles. These species move throughout streams and watershed to find suitable conditions to spawn, feed, develop, or survive winter.

Unfortunately, barriers such as dams, some culverts, and debris jams can prevent animals from accessing critical habitats. Recent natural resources management trends support removing artificial barriers to create streams that are passable for fish and other animals. This strategy revitalizes fisheries and directly improves recreational opportunities. It also tends to be less expensive and more productive than creating artificial habitat.

During 2005-2007, Ozaukee County completed an inventory of fish barriers in select Milwaukee River Watershed tributaries, documenting over 150 impediments on 11 streams.

On June 9, 2009, the County was awarded a $4.7 Million Grant from the National Atmospheric and Oceanic Administration (NOAA) as part of the American Reinvestment and Recovery Act (ARRA) to remove documented barriers on the Milwaukee River and 9 tributaries.

Ozaukee County was one of 50 in the nation, one of three in the Great Lakes Basin and the only one in Wisconsin to receive ARRA funding through NOAA. This program has received national and international interest from a variety of fisheries and natural resource experts.

Habitat Fragmentation and Barrier Types

Making the Most of What We Have

Approximately 50% of Wisconsin's wetlands have been lost. Artificial aquatic habitat is expensive to create and is often inferior to quality natural habitat. Many pockets of quality natural aquatic habitat remain in Ozaukee County along the Milwaukee River and tributary streams, but are ecologically isolated.

Several critical habitat types are found in the Milwaukee River watershed including: lush riparian vegetation, as well as reaches of exposed bedrock and gravel/cobble channel are present. Each habitat is significant to different fish and aquatic organisms. Riparian vegetation provides cover, food and spawning grounds for certain species, such as

Fish are unable to swim through culverts that are too long or perched above the water, like this one on Hawthorne Drive Creek.

A before and after view of a debris jam on Mole Creek.

northern pike. Undercut banks beneath vegetation provide shelter fish. Exposed fractured bedrock is associated with higher stream velocities, perfect spawning habitat for Lake Sturgeon. Gravel and cobble habitat found in shallow riffles provides spawning habitat for many native species.

Barrier Types

A barrier prevents migration of aquatic organisms. They do not affect all organisms equally, and may not necessarily be effective throughout the year.

Impediments directly resulting from human activities include: dams, improperly designed/ installed culverts, excessive water velocities and insufficient refuge in "improved" stream reaches, pervious fill deposits, artificially lined channels, and channel-constricting bridge abutments.

Impediments indirectly resulting from human actions include: intensified sediment accretion and debris accumulation, entrenchment resulting from channelization and development, channel dispersion related to dense invasive vegetation, and compromised hydrology.

Naturally occurring barriers include: some debris jams and sediment accretions, some high-gradient reaches, ephemeral and losing streams, natural channel dispersion in wetlands. The Program is removing approximately 135 barriers on the main stem Milwaukee River and 9 project streams in Ozaukee County.

Native Fish Performance

Our native fish are large and deep bodied. They are good for rapidly swimming short distance, or "bursts" for less than 15 seconds and for "sustained" movements against current velocities at less than 2 ft/s. However, they are poor for prolonged swimming and jumping. Most road crossing culverts are designed to efficiently pass water at greater than 2 ft/s, and many are also perched. Northern Pike are poor sustained swimmers and jumpers, therefore have been chosen as the target species.

Barrier Removal

Dams

"Fish ladders" or "fishways" are being designed for the Thiensville-Mequon and Bridge St. Dams, utilizing historical features such as abandoned mill raceways. These fishways circumvent the dam and incorporate a series of weirs, pools, and riffles to allow fish resting time to pass the elevation change around the dam. They will also include measures to address aquatic invasive species should they appear in the watershed. The Lime Kiln Dam is scheduled to be removed in October 2010.

Culverts

Forty five improperly placed culverts are being redesigned to incorporate natural substrates, adequate water depths, and velocities suitable for fish passage. Designs include bottomless, arched culverts, or buried box culverts and sometimes incorporate grade controls. These are being constructed by the Ozaukee County Highway Department.

Other Barriers

The Milwaukee Community Service Corps (MCSC) is a job skills training program for at-risk inner-city youth. 84 barriers including log

jams and pervious fill were set to be removed this year by the MCSC and volunteers using hand labor and small equipment. As of mid-summer 50% of these barriers have been removed, confirming that we are on-schedule with removal work.

Outcomes

The removal of approximately 130 passage barriers for fish and aquatic life on 9 tributaries and the Milwaukee River main stem will:

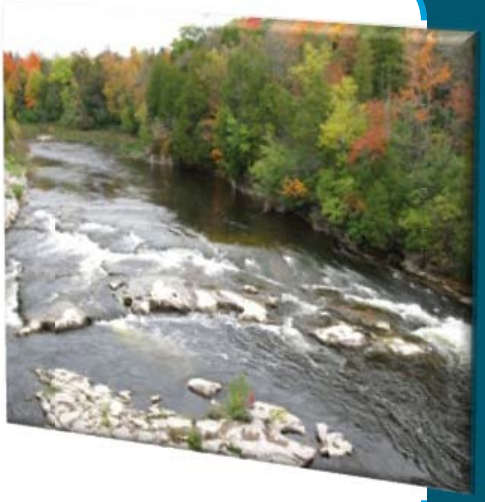
- Reconnect 158 miles of streams
- Link to over 119,000 acres of habitat, including 14,000 acres of wetlands
- Improve natural resources and recreational opportunities
- Increase migratory fish populations
- Benefit endangered species & species of concern
- Compliment sturgeon rearing/stocking & walleye restoration efforts
- Raise awareness and a sense of stewardship

"We are fortunate to have pockets of superb aquatic habitat throughout Wisconsin. Unfortunately, many have been biologically isolated from their watersheds. They act like fences, preventing animals from migrating to survive. Reconnecting natural, high-quality habitat is the best — and oftentimes least expensive — method for improving aquatic habitat in many watersheds."

— Dale Buser, Hydrologist, Bonestroo / Northern Enviromental

Making Connections

The Fish Passage Program reconnects high quality habitat in tributaries to Lake Michigan, the Milwaukee Estuary, and lower reaches of the Milwaukee River main stem. It also forges new connections between Ozaukee, Milwaukee, and other counties, municipalities, businesses, schools, non-governmental organizations (NGO's), citizens and landowners, volunteers, and State and Federal agencies. New connections forge ideas and opportunities. Public partnerships with a variety of national experts on fish passage and these collaborations will be reflected in innovative designs. Engaged citizens and partners have volunteered countless hours thus far, and will be crucial to the long term aspects of the program.



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Visit our website for updates and Information:
http://www.co.ozaukee.wi.us/PlanningParks/PlanningParks_Fish_Passage.htm

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