Beaver and Trout Management in Wisconsin

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Summary of beaver threat to wild trout management in Wisconsin

Degradation of trout habitat by beaver is considered a severe threat to wild trout fisheries in Wisconsin.

Small or low gradient trout streams can be easily dammed, causing changes in water temperature, habitat, and access to spawning areas.

Beaver dams isolate spawning areas by blocking upstream migration of trout, particularly larger females.

Beaver ponds change the habitat upstream by killing trees, warming the water in summer and cooling it in winter, and creating a shallow dishpan shape with no undercut banks.

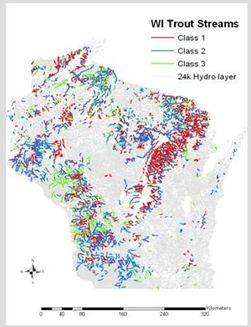
Decreased water velocities and the sloughing of inundated stream banks within impounded stream segments result in the siltation of former gravel riffles.

When beaver leave and a dam is breached allowing the impoundment to drain, a wide, shallow channel flowing through dead timber remains.

Stream velocities are not sufficient to cut through silt deposits and re-establish pool-riffle complexes vital to trout productivity.

Managing beaver damage to coldwater fisheries: Our current approach

We currently manage beaver interactions with coldwater streams by utilizing stream-specific removal of beaver dams AND beaver.



We focus beaver and beaver dam removal efforts on Wisconsin's classified trout streams.

We have classified over 10,000 miles of streams (out of 54,000 stream miles in Wisconsin) as trout streams.

At present beaver control efforts are focused on less than 2,000 miles of trout streams of the 10,000 mile total.

No removal occurs on non-target streams.

Our main tool for beaver control is contract removal by USDA APHIS Wildlife Services, as well as WDNR fisheries staff and partners.

Funding is primarily provided by WDNR trout stamp funds, U.S. Forest Service, and Federal Directive (APHIS).

Additional support comes from tribes, counties, towns, and Trout Unlimited.

Fish community and habitat responses in a northern Wisconsin brook trout stream 18 years after beaver dam removal

Beaver control efforts to support trout fisheries are supported by DNR fisheries research, such as DNR fisheries scientist Ed Avery's 18-year study on the removal of beaver dams and maintenance of free-flowing conditions on the Pemonee River system.

Beginning in 1982, 200 beaver dams were removed from 10 miles of the Pemonee River and 22 miles of its tributaries. An additional 546 dams were removed by 1986 and free-flowing conditions were maintained through 2000.

Significant improvements were found in water temperatures and brook trout populations by 1986.

By 2000, further improvements in water temperature were seen throughout the system, as well as improvements in brook trout numbers and size, and angler effort and harvest.

Adapting to climate change in Wisconsin: Implications for trout and beaver management

Core issue: Beaver and trout cannot coexist on coldwater streams in Wisconsin.

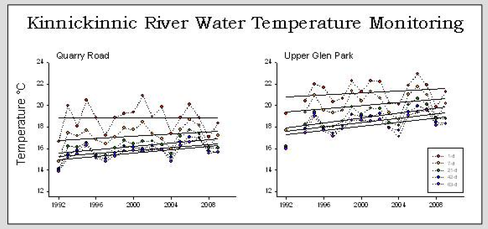
How many streams and in what locations will we choose to remove beaver?

Understanding climate change impacts on our coldwater streams may help guide trout management and beaver removal efforts.

Evidence of warming stream temperatures

Summer maximum water temperature is a key factor in determining the distribution of trout in Wisconsin streams.

Long-term (decadal or greater) stream temperature data sets for Wisconsin are rare, but those that are available suggest a warming trend in stream temperatures.

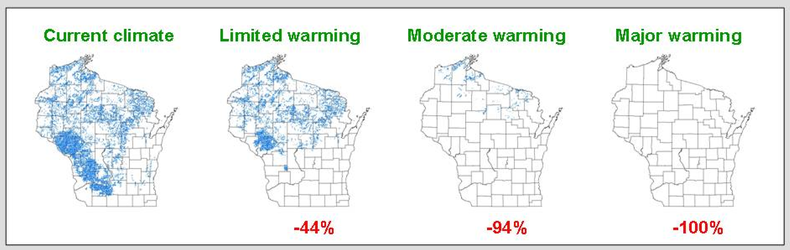


We observed increasing trends in stream temperature from 1992 to 2009 at multiple sites in the Kinnickinnic River watershed (2 shown here), particularly as the duration maximum mean water temperature was measured increased from 1 day to 63 day periods.

These observed changes in stream temperature are consistent with UW Climate Research Center predictions for summer nighttime temperatures becoming warmer.

Beaver activity on coldwater streams may exacerbate climate change impacts on stream temperatures.

Predicting climate impacts on brook trout distribution



Our first-generation models predict significant long-term losses of brook trout waters under different future climates (50 years from now).

We can use these models to help focus efforts to manage trout streams in which the benefits of beaver removal will continue to be realized as our climate changes.