

Management Options

The Boardman River watershed is unique because of the diverse aquatic habitat and species it supports. It also contains the largest metropolitan area (Traverse City) in the northern Lower Peninsula of Michigan. Therefore, it is subject to increasing developmental pressure which could adversely affect aquatic habitat and species.

The management options follow the recommendations of Dewberry (1992), who outlined measures needed to protect and preserve the health of a river ecosystem. Stressed are the protection and restoration of headwater streams, riparian corridors, and floodplains. We must view the river system as a whole, for many important elements are driven by whole-system processes.

The following options are consistent with the mission statement of the MDNR, Fisheries Division. This mission is to protect and enhance public trust in populations and habitat of fishes and other forms of aquatic life, and promote optimum use of these resources for the benefit of the people of Michigan. In particular, Fisheries Division seeks to: protect and maintain healthy aquatic environments and fish communities and rehabilitate those degraded; provide diverse angling opportunities and maximize the values of these fisheries; and to foster and contribute to public and scientific understandings of fish, fishing, and fishery management.

Within each of the broader categories listed below, we convey four option types for correcting problems in the watershed. First, we present options to protect and preserve existing resources, second are options requiring additional surveys, and third are opportunities for rehabilitation of degraded resources. Opportunities to improve an area or its resources, given its present status, are listed last. These options are not intended for MDNR, Fisheries Division action only, but should also be initiated by citizen groups and other agencies.

Geology and Hydrology

The Boardman River has very stable flows. However, increasing urban development within the watershed has the potential to increase the flashiness of the river, specifically since the lower watershed contains the largest metropolitan area in the northern Lower Peninsula.

- Option: Protect natural hydrologic regimes of streams by protecting existing wetlands, flood plains, and upland areas that provide recharge to the water table.
- Option: Protect the natural seasonal flow patterns of the river by incorporating best management practices and requiring that no additional runoff enter the river from land development.
- Option: Protect and restore groundwater recharge by requiring that all development-related runoff be captured by infiltration basins.
- Option: Protect existing hydrologic conditions of lakes and remaining natural lake outlets by prohibiting construction of new lake-level control structures.
- Option: Restore the natural hydrologic regime of the main stem Boardman River by removing, Boardman and Sabin dams.
- Option: Restore the natural hydrologic regime of tributaries to the Boardman River by removing or modifying dams that negatively affect aquatic and semi-aquatic populations and habitat.

- Option: Restore the connectivity of sub-watersheds by removing barriers among inland lakes, ponds, and tributaries.
- Option: Restore the natural hydrologic regime of lakes and lake outlets by removing lake-level control structures where appropriate.

Channel Morphology

Adequate data on the channel morphology of the Boardman River is lacking. However, the limited data that does exist indicates relatively high gradient, especially in the lower reaches (Beitner Road downstream to Boardman Lake). The gradient in this section is likely higher than in any other large river in the Lower Peninsula, which explains why there were historically three hydroelectric dams in this reach. The main stem of the Boardman River generally lacks adequate aquatic habitat in the form of woody debris and pools. This may be a result of historic peaking operations of the dams which would homogenize channel morphology.

- Option: Protect natural, unimpeded flow regimes in smaller tributaries by managing riparian areas in a way that preserves natural flow regimes.
- Option: Protect diverse stream channel habitat by limiting removal of woody debris currently in the river.
- Option: Restore extremely rare high-gradient habitat and rehabilitate inundated stream reaches on the Boardman River by removing Boardman, and Sabin dams.
- Option: Restore sinuosity and channel diversity in stream reaches that were historically channelized.
- Option: Improve habitat for coldwater fishes on the main stem of the Boardman River by narrowing and deepening the stream channel in appropriate areas and by adding woody instream overhead cover.
- Option: Collect channel morphology and physical habitat data for the Boardman River in representative locations to develop a baseline dataset.

Dams and Barriers

The Boardman River watershed contains four major and numerous minor dams. The dams and barriers in the watershed disrupt the natural flow regime of lakes and rivers and degrade aquatic habitat and species.

- Option: Protect biological communities of the river by providing select upstream and downstream fish passage at all dams to mitigate for habitat fragmentation.
- Option: Protect the public trust by requiring dam owners to make appropriate financial provisions for future dam removal or perpetual maintenance.
- Option: Remove Boardman and Sabin Dams to restore the natural flow regime of the Boardman River.

- Option: Remove non-functioning or obsolete dams on tributaries in the watershed to restore natural flow regimes.
- Option: Retrofit Union Street Dam to allow passage of select species, while preventing the migration of sea lamprey.
- Option: Discourage the construction of any new dams or lake-level control structures in the watershed that will negatively affect aquatic species or habitat.
- Option: Survey and document all the dams and barriers within the watershed to identify areas where environmental damage and the need for mitigation are the greatest.

Soils and Land Use Patterns

Soils in the Boardman River watershed are generally coarse-textured, providing high infiltration and groundwater recharge, but are also susceptible to significant erosion. In addition, the loss of wetlands within the watershed compounds the susceptibility and negative effects of erosion and sedimentation.

- Option: Protect undeveloped private riparian lands by bringing lands under public ownership or through economic incentives such as tax credits, deed restrictions, conservation easements, or other means.
- Option: Protect lands through land-use planning and zoning guidelines that emphasize protection of critical areas and discourage alteration of natural drainage patterns. Support development of zoning standards for townships presently not zoned.
- Option: Protect the river from excessive sedimentation by reducing the density of oil and gas well pads, and restore obsolete pads.
- Option: Protect and maintain forested buffers along lakeshores and river corridors to retain critical habitats and to allow for natural wood deposition.
- Option: Protect river channels from excessive sedimentation by applying BMPs at all road-stream crossings.
- Option: Restore or enhance instream culverts or road crossings that are under-sized, perched, misaligned, or placed incorrectly.
- Option: Encourage the construction of bridges at road-stream crossings.
- Option: Assess the effectiveness of sand traps and erosion/sedimentation control methods by conducting a watershed-based evaluation of natural versus anthropogenic (human-caused) sediment sources and transport.

Special Jurisdictions

The wildlife and fisheries resources within the Boardman River watershed are managed by the Department of Natural Resources and the Department of Environmental Quality. In addition, there are a variety of township, city, and county governmental entities that have authority over developmental practices that can affect aquatic natural resources.

- Option: Protect the natural character and function of the Boardman River watershed by extending the Natural Rivers jurisdiction to include headwater areas of the North and South Branches of the Boardman River upstream of US 131.
- Option: Protect coldwater tributaries by designating appropriate reaches as Designated Trout Streams to ensure proper management and environmental protection.
- Option: Protect and restore the watershed by supporting collaborative planning and decision-making. Develop a Geographic Information System that could be used to facilitate these processes.
- Option: Protect natural form and function of wetlands, streams, and lakes through rigorous enforcement of Public Act 451, parts 301 and 303.
- Option: Rehabilitate lake-outlet streams by encouraging run-of-river management at lake-level control structures.
- Option: Collaborate with local units of government, non-profit groups, State, and Federal natural resources agencies, and Tribal agencies (in accordance with appropriate Decrees, ordinances, and laws) to protect, enhance, and restore aquatic resources.

Water Quality

Water Quality is generally good throughout the entire watershed with the exception of identified NPDES sites specifically on Boardman Lake, and non-point pollution sites such as poorly designed road-stream crossings. In addition, the water quality of the Boardman River is degraded downstream of dams due to increased water temperatures and decreased transportation of organic material.

- Option: Promote public stewardship of the watershed and support educational programs teaching best management practices that prevent further degradation of aquatic resources.
- Option: Protect water quality by protecting existing wetlands, rehabilitating historic wetlands, and maximizing the use of wetlands and floodplains as natural filters.
- Option: Protect aquatic resources by implementing best management practices for storm water and non-point source pollution.
- Option: Protect major aquifers in the watershed by promoting hydrogeologic studies to characterize groundwater and programs to protect groundwater from contamination.
- Option: Survey the effects of nonpoint source pollutants on water quality characteristics.
- Option: Survey loading of nutrients and sediment to the river and develop strategies to reduce identified problems.
- Option: Restore natural coldwater temperatures below dams by removing or physically modifying dams to reduce their thermal effects on downstream reaches.
- Option: Rehabilitate water quality by encouraging communities to implement street cleaning practices that reduce contributions of refuse, sediment, and pollutants to the river.

Biological Communities

The Boardman River watershed supports a diverse biological community. This community has been historically degraded through inappropriate developmental practices such as extreme logging and the creation of unnatural structures such as dams. The present biological community is currently protected from large-scale degradation by a variety of local, state, and federal ordinances and oversight. However, the biological community is in danger of incremental, cumulative degradation that is less obvious than the effects of large-scale degradation.

- Option: Protect instream gravel habitat from sedimentation due to land development by enforcing local soil and sedimentation codes. Implement nonpoint source best management practices at all construction sites within the watershed.
- Option: Protect unique biological habitat such as wetlands by discouraging development within these areas.
- Option: Protect and rehabilitate upland habitats for native plant and wildlife diversity.
- Option: Protect native mussels by removing dams so less lentic habitat is available for zebra mussels.
- Option: Protect native and naturalized aquatic species from predation, competition, and habitat destruction from invasive species, by suppressing the spread and population expansion of invasives.
- Option: Protect resident, naturally-reproducing fish populations by screening all private and public fish stockings to ensure they are free of diseases and undesirable species.
- Option: Restore the potential for fishes to migrate through the watershed by removing dams whenever feasible.
- Option: Survey and map biological community distributions in the watershed using advanced technology, including global positioning and geographic information systems.
- Option: Survey and accumulate all data concerning the present distribution and status of fishes, aquatic invertebrates, mussels, amphibians, reptiles, aquatic plants, and pest species throughout the watershed.

Fisheries Management

The stable, groundwater-dominated flows of the Boardman River are a key factor in sustaining high-quality fisheries. Fishing is good throughout the watershed, but could be enhanced by removing obsolete dams, introducing woody debris, and restoring natural riparian corridors.

- Option: Protect fish communities in Grand Traverse Bay and Lake Michigan from sea lamprey by perpetual maintenance of a lamprey barrier on the Boardman River.
- Option: Protect fish communities by working with the general public to discourage the construction of additional dams.

- Option: Initiate ecosystem-level monitoring of physical and biological characteristics of the main stem and tributaries throughout the watershed.
- Option: Protect existing wetlands that provide spawning and rearing habitat.
- Option: Restore aquatic connectivity of the Boardman River by removing Boardman and Sabin dams.
- Option: Continue to operate and maintain the Boardman Weir between mid-September and mid-October, as appropriate.
- Option: Enhance the fishery of the Boardman River by developing and operating a selective species passage barrier prior to the removal of Sabin and Boardman Dams.
- Option: Assess the ten-inch minimum size limit on largemouth and smallmouth bass in Arbutus and Spider lakes
- Option: Improve habitat for coldwater fishes on the main stem of the Boardman River by supporting projects that encourage the narrowing and deepening of the stream channel, and by adding woody instream cover.
- Option: Continue to enhance the Boardman River, Grand Traverse Bays, and Lake MI fisheries by assessing and determining appropriate stocking initiatives.
- Option: Enhance the fishery of the lower Boardman River, Boardman Lake, and Lake Michigan by allowing coolwater fish to access Boardman Lake such as walleye, smallmouth bass, Great Lakes muskellunge, northern pike, or yellow perch.
- Option: Explore the potential for reintroducing lake sturgeon into the Boardman River when the major dams are removed.

Recreational Use

Recreational use in the watershed is substantial, primarily due to the abundance of public access and public land within Grand Traverse and Kalkaska Counties. The recreational use of resources in the watershed should be managed to assure an appropriate balance between use and abuse.

- Option: Protect, encourage, and support existing parks, and promote responsible management for riparian areas in public ownership.
- Option: Protect recreational use of small tributaries by supporting establishment of a “recreational” definition of legal navigability as opposed to the “commercial” definition.
- Option: Improve public access opportunity (where lacking) through MDNR, county, township, city, and other municipal recreation departments.
- Option: Survey and quantify recreational user groups within the watershed, and identify programs to enhance compatible use of resources.

Citizen Involvement

The perpetual sustainability of wildlife and fisheries resources within the Boardman River watershed is reliant upon general public involvement in the protection, enhancement, and restoration of natural resources. Public involvement should occur from the very beginning of every environmental initiative. The ultimate goal of any environmental initiative is to create and perpetuate environmental stewardship. Environmental stewardship can only be accomplished by educating and empowering the general public to be actively engaged in environmental issues.

- Option: Protect and expand Fisheries Division partnerships with diverse watershed stakeholders by initiating collaborative relationships and continuing to participating in watershed-based initiatives.
- Option: Protect and rehabilitate the watershed by supporting efforts of interest groups seeking funding to protect, enhance, or restore wildlife and fisheries integrity.
- Option: Protect and preserve the natural integrity of the watershed by actively participating on the Boardman Prosperity and Implementation Teams.
- Option: Rehabilitate aquatic habitat by encouraging and supporting collaborative habitat improvement projects within the watershed.