

Summary

Monitoring and Assessment

Nemadji River Watershed



Why is it important?

The Nemadji River watershed covers 473 square miles in northeastern Minnesota and northwestern Wisconsin and is located within the Lake Superior basin.

The Minnesota portion represents 276 square miles; this area includes 35 lakes and 258 stream segments.

Today, more than 80 percent of the Nemadji watershed consists of forest and wetlands that support timber production, hunting, fishing, hiking and other recreational opportunities. Large tracts of public land exist within this watershed, including county land, state forests, wildlife management areas and other public lands. Local citizens and resource managers are engaged in projects to improve and protect its waters.

Key issues

Overall, the water quality of rivers, streams, and lakes in the Nemadji River watershed are in fair to good condition. Problem areas do occur and persist but they are typically limited to lower reaches of the watershed where stressors may accumulate. The stream channels in the lower reaches of the Nemadji River and its contributing waters are deeply incised forming steep stream banks with exposed clay soils. This exposed clay soil is susceptible to slumping and accelerated erosion which contributes sediment to portions of the watershed and Lake Superior. This watershed also includes a number of streams of exceptionally high quality that are worthy of additional protection. Many natural coldwater streams within the watershed support brook, brown, and/or rainbow trout populations.

Major impairments in this watershed include:

- turbidity;
- dissolved oxygen;
- *E. coli* bacteria; and,
- Fish collected in 2011 from the Nemadji River and Nemadji Creek tested above the state standard for mercury in fish tissue.

Twelve stream segments did not support aquatic life and two did not support aquatic recreation.

The MPCA and several partners identified the stressors in the watershed following an intensive water monitoring and assessment effort, which is part of the state's watershed approach to restoring and protecting Minnesota waters.

Highlights of report

- Most stream segments supported a healthy stream community.
- Turbidity/Total Suspended Solids is the main stressor for aquatic life.
- Though most habitat is fair to good, culverts, dams, and other hydrological modifications impact stream flows and habitat .
- Two lakes exceed expected nutrient levels (Lac La Belle and Net Lake).

Highlights continued

- Protecting and enhancing natural vegetative shoreline buffers is critical to minimizing erosion and sedimentation.
- Fish collected during this sampling process were riverine and coldwater species commonly-found in these conditions; this is likely due to the water temperatures, habitat and overall channel structure.
- Tributaries with relatively high turbidity levels could explain the limited number of sensitive species found and fish collected.
- Habitat, water chemistry, and flow may all play a role in the diversity of the species found and the relative abundance of sensitive aquatic life.
- Problem areas do occur and persist throughout the watershed and may reflect natural and man-made stressors. Current and historic land-use practices have likely contributed to the biological condition of streams. Sediment movement and placement are likely limiting biological life.
- Areas of exceptional water quality do exist and are typically limited to tributaries with minimal disturbance. Streams with exceptional biological, chemical and physical indicators are worthy of additional protections in order to preserve these valuable aquatic resources.

About this study

In 2011, the Minnesota Pollution Control Agency began an intensive watershed monitoring effort of this watershed's surface waterbodies. Twenty stream stations were sampled for biology at the outlets of variable sized subwatersheds. These locations included mouth of the the Nemadji River and the South Fork Nemadji River, as well as the upstream outlets of major tributaries. As part of this effort, MPCA staff joined with the Carlton County Soil and Water Conservation District to conduct stream water chemistry sampling at the outlets of two rivers.

In 2013, a holistic approach was taken to assess all surface waterbodies within this watershed for the support of aquatic life, recreation and consumption (where sufficient data was available). Additional data from other agencies, groups, and/or individuals were used in the assessment of designated beneficial uses. Twenty-two stream segments and eight lakes were assessed in this effort.



Full report

To view the full report, go to <http://www.pca.state.mn.us/lupgdf1> or search for "Nemadji River watershed" on the MPCA web site.

Contact person

Nathan Mielke
Minnesota Pollution Control Agency
nathan.mielke@state.mn.us
218-316-3916

