

# Summary

## Stressor Identification

### Redeye River Watershed



#### Why is it important?

The Redeye River watershed covers nearly 900 square miles in the northern part of the Upper Mississippi River Basin in central Minnesota. The watershed includes all or parts of Becker, Otter Tail, Todd, and Wadena counties. The Redeye River begins at Wolf Lake and joins the Leaf River, before draining into the Crow Wing River near Staples.

The Redeye River provides drinking water for households and industries, habitat for aquatic life, riparian corridors for wildlife, and recreation opportunities like fishing, swimming, and canoeing. Nearly half the watershed's land use is agricultural, 30% is forested, 15% is wetlands, and about 4% is developed communities and industries.

#### Key issues

Based on intensive watershed monitoring, which began in 2011, results indicate that a handful of streams do not meet water quality standards for beneficial uses such as:

- Aquatic life
- Drinking water
- Fish consumption

The main concerns are low dissolved oxygen levels, excess sediment, increased drainage and flow alterations, and high bacteria levels.

#### Highlights of report

- The report summarizes the key causes, or “stressors”, contributing to impaired fish and aquatic macroinvertebrate communities in this watershed. A comprehensive review of existing biological, chemical, and physical data was performed to create a broad list of candidate causes for impairments. Water bodies with identified impairments include South Bluff Creek, Wing River, Union Creek, a tributary to East Leaf Lake, and a tributary to the Leaf River.
- Low dissolved oxygen is a stressor identified in all the impaired waters listed in the bullet above. This decreases the variety of fish and invertebrate species that can live in these conditions.
- Flow alteration is a stressor in South Bluff Creek and the Wing River. Alterations can include channelization, drain tiling, land cover alteration, and impoundments.
- Increased sediment and bedded sediment are stressors in South Bluff Creek and the tributary to the Leaf River. This includes suspended solids and sediment within the water and sediment settling and altering stream beds. Both have impacts on aquatic life.
- Elevated nutrients are a stressor for the Wing River and the tributary to the Leaf River. Excess nutrients, like nitrogen and phosphorus, promote excessive plant and algae growth. Sources include urban stormwater and agricultural runoff, animal waste management, and fertilizer management.

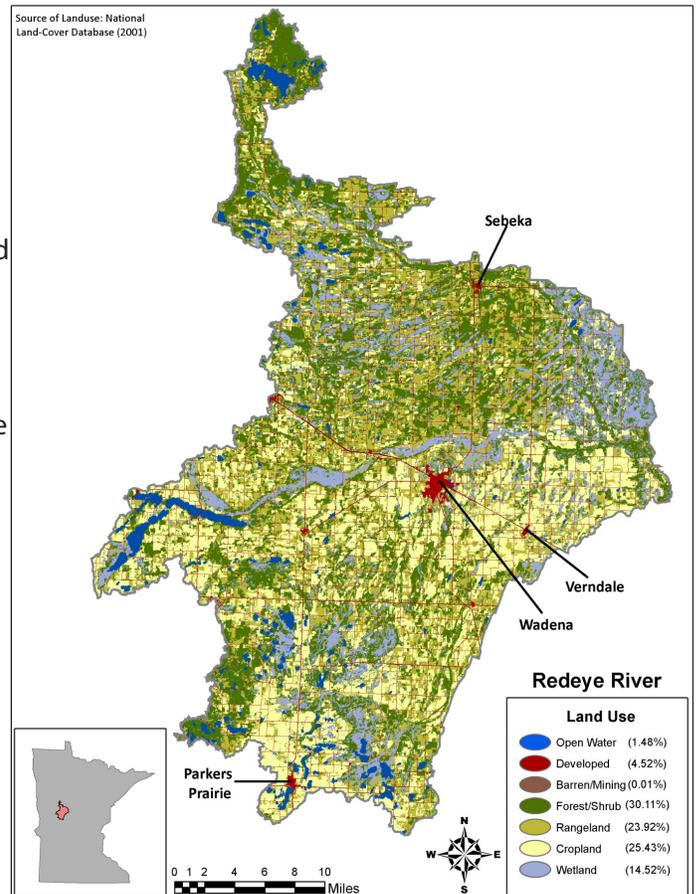
## Highlights continued

- Lack of physical habitat, or natural stream bed structures and vegetation, is a stressor in South Bluff Creek, and the tributaries to East Leaf Lake and the Leaf River. This can be caused by human activity and land use changes.
- Physical connectivity is a stressor in the Wing River and the tributary to East Leaf Lake. A noted example is the low head dam in the Wing River, near the Highway 210 bridge, which results in little to no fish passage between water bodies during the year.

## About this study

Monitoring of many of the lakes and streams began in 2011, as part of the MPCA's intensive watershed monitoring effort. Those results can be found in the Redeye River Watershed Monitoring and Assessment report, which is the first step of the watershed restoration and protection strategy (WRAPS) process, and is available on the MPCA website.

This report, the second WRAPS step, or stressor identification, is to find and evaluate factors, natural and human, which are likely responsible for the impaired condition of the fish and macroinvertebrate communities. An important part of stressor identification is to understand the natural features and processes occurring in the watershed, and gaining understanding of the extent of various human activity throughout the watershed that may have potential to degrade streams, rivers, and lakes.



## Full report

To view the full report, go to <http://www.pca.state.mn.us/index.php/water/water-types-and-programs/watersheds/redeye-river.html#overview>

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