

Macroinvertebrate Monitoring Summary Report 2021-2023

Introduction

In 2021, the Lake Ripley Management District received a Surface Water grant from the Wisconsin Department of Natural Resources for “Expanding the Scope of Lake Ripley Watershed Monitoring”. One of the goals listed within the grant was to conduct biological monitoring surveys within our streams and wetlands. This activity included monitoring macroinvertebrates in the inlet stream at two different locations to assess stream health.

Macroinvertebrate samples were collected at three locations in the Lake Ripley watershed from the small tributary locally known as the inlet creek. The County Road A (CR A) site is the most upstream and is located just west of the Lake Ripley Management District (LRMD) Preserve parking lot. The Ripley Road site is located at the intersection of Ripley Road and the inlet creek near the lake’s inlet. The Park Road site is located at the intersection of Park Road and the creek formed by the lake outlet.

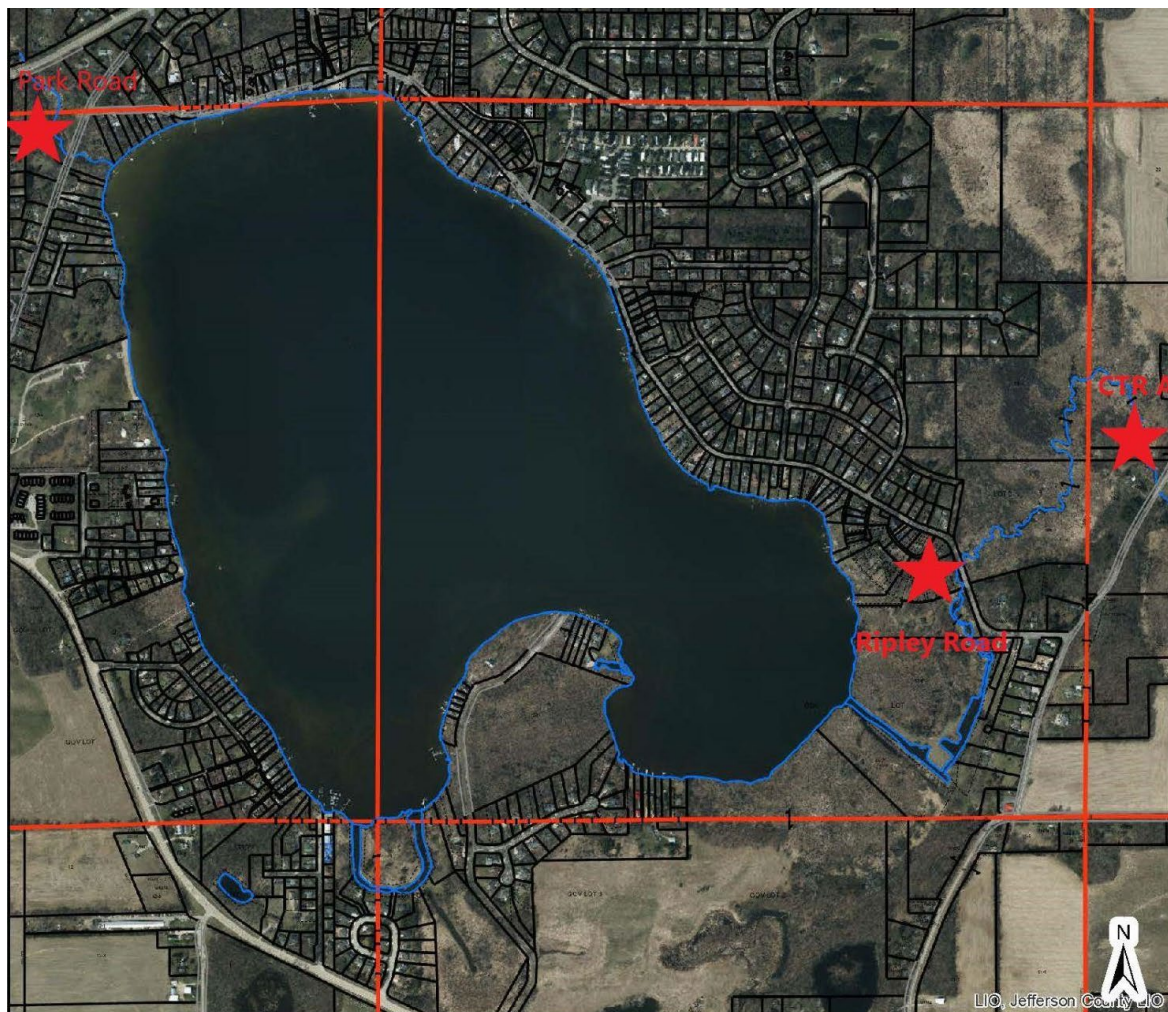


Figure 1: Map of the three inlet stream sampling sites where macroinvertebrates are sampled.



Picture 1: County Road A sampling site.



Picture 2: Ripley Road sampling site.



Picture 3: Park Road sampling site.

Methods

Macroinvertebrates were collected in the spring and fall according to methods outlined in the Water Action Volunteers (WAV) Biotic Index (BI) Factsheet¹ using a 500um mesh, D-frame kicknet. The specimens collected were identified to the taxonomic level of effort required to classify organisms according to the WAV BI field data sheet.

Each site was provided a BI score rating based on the organisms collected and identified (Table 1).

Biotic Index Score Interpretation	
Rating	Score

¹ Biotic Index - Volunteer Monitoring Factsheet (2015) University of Wisconsin. DNR PUB WT-755. "Water Action Volunteers -Volunteer Stream Monitoring Factsheet Series"

Good	2.6-3.5
Fair	2.1-2.5
Poor	1.0-2.0

Table 1: Biotic Index Score Interpretation

Results and Discussion

During 2021-2023, we sampled macroinvertebrates six different times.

On March 31, 2021, we sampled Ripley Road and County Road A. At the Ripley Road site, we found damselfly larva, caddisfly larva, orb snails, amphipods/scuds, pouch snails, and isopods/aquatic sowbugs. We found one invasive species at this site, the Asian clam. This site scored 2.00, for a 'poor' rating. At the County Road A site, we found caddisfly larva, orb snails, amphipods/scuds, pouch snails, and isopods/aquatic sowbugs. This site scored a 1.8, for a 'poor' rating.

During the morning of June 16, 2021, we sampled Park Road, Ripley Road, and County Road A. It was a clear, windy day with an air temperature of 73°F. Winds were gusting at 10-20 mph. At the County Road A site, we found caddisfly larva, dragonfly larva, mayfly larva, fingernail clams, black fly larva, gilled snails, amphipods/scuds, pouch snails and leeches. This site scored a 2.3, for a 'fair' rating. The stream condition was dry at this site. At the Ripley Road site, we found mayfly larva, crawfish, fingernail clams, riffle beetle (adult), amphipods/scuds, gilled snails, pouch snails and bloodworm midge larva. This site scored a 2.25, for a 'fair' rating. The stream condition was dry at this site. At the Park Road site, we found caddisfly larva, mayfly larva, damselfly larva, orb snails, gilled snails, amphipods/scuds, pouch snails, bloodworm midge larva, and leeches. This site scored a 2.0, for a 'poor' rating.

During the morning of June 15, 2022, we sampled Park Road, Ripley Road, and County Road A. It was a sunny, dry day with an air temperature of 74°F. At the County Road A site, we found fingernail clams, mayfly larva, black fly larva, orb snails, gilled snails, amphipods/scuds, pouch snails, and bloodworm midge larva. This site scored a 2.22, for a 'fair' rating. The stream condition was dry at this site. At the Ripley Road site, we found mayfly larva, damselfly larva, black fly larva, non-red midge larva, amphipods/scuds, pouch snails, bloodworm midge larva, and tubifex worms. This site scored a 1.89, for a 'poor' rating. The stream condition was dry at this site. At the Park Road site, we found stonefly larva, caddisfly larva, dragonfly larva, mayfly larva, damselfly larva, black fly larva, non-red midge larva, gilled snails, amphipods/scuds, isopods/aquatic sowbugs, and bloodworm midge larva. This site scored a 2.25, for a 'fair' rating. The stream condition was normal.

During the afternoon of October 28, 2022, we sampled Park Road, Ripley Road, and County Road A. It was a sunny, clear day with an air temperature of 45°F. At the County Road A site, we found dobsonfly larva and amphipods/scuds. This site scored a 3.0, for a 'good' rating. At the Ripley Road site, we found caddisfly larva, fingernail clams, gilled snails, amphipods/scuds, and pouch snails. This site scored a 2.2,

for a 'fair' rating. At the Park Road site, we found damselfly larva, gilled snails, amphipods/scuds, and leeches. This site scored a 2.0, for a 'poor' rating.

On May 19, 2023, we sampled Park Road, Ripley Road, and County Road A. It was a clear day, with an air temperature of 62°F. At the County Road A site, we found caddisfly larva, fingernail clams, orb snails, amphipods/scuds, and pouch snails. This site scored a 2.2, for a 'fair' rating. At the Ripley Road site, we found caddisfly larva, mayfly larva, damselfly larva, amphipods/scuds, and pouch snails. This site scored a 2.4, for a 'fair' rating. At the Park Road site, we found caddisfly larva, fingernail clams, non-red midge larva, orb snails, gilled snails, amphipods/scuds, and leeches. This site scored a 2.5, for a 'fair' rating.

During the afternoon of October 8, 2023, we sampled Park Road, Ripley Road, and County Road A. It was overcast, with slight winds, and an air temperature of 50°F. At the County Road A site, we found fingernail clams, orb snails, gilled snails, and amphipods/scuds. This site scored a 1.75, for a 'poor' rating.

The stream condition was dry, with the creek bed exposed. At the Ripley Road site, we found damselfly larva and amphipods/scuds. This site scored a 1.0, for a 'poor' rating. The stream condition was dry. At the Park Road site, we found caddisfly larva, damselfly larva, orb snails, gilled snails, amphipods/scuds, and leeches. This site scored a 2.2, for a 'fair' rating. The stream condition was normal.

Table 2 summarizes the Biotic Index Scores on Ripley Creek from 2021 through the end of 2023. The BI Scores varied from "poor" to "good" with the majority of the samples in the "fair" category.

Observations at CR A and Ripley Creek show evidence of excess sediments present on the stream bed which provide poor habitat for aquatic macroinvertebrates. Stream flow also increases rapidly during storm events which can dislodge aquatic macroinvertebrates and wash them downstream. Water quality is also an issue during storm events as suspended sediments reach high levels that can be damaging to aquatic life in general².

Reducing the flashy nature of the stream, moderating flow events and reducing suspended solids would be beneficial to the aquatic macroinvertebrate community by increasing the amount of available instream habitat over time as existing sediments move downstream.

Date	Site	Biotic Index (BI) Score	BI Score Interpretation
3/31/2021	CR A	1.8	Poor
3/31/2021	Ripley Road	2.0	Poor
3/31/2021	Park Road	-	-
6/16/2021	CR A	2.3	Fair

² Please see the data included in the Lake Ripley Watershed Monitoring and Modeling Report.

6/16/2021	Ripley Road	2.25	Fair
6/16/2021	Park Road	2	Poor
6/15/2022	CR A	2.1	Fair
6/15/2022	Ripley Road	1.8	Poor
6/15/2022	Park Road	2.3	Fair
10/28/2022	CR A	3.0	Good
10/28/2022	Ripley Road	2.2	Poor
10/28/2022	Park Road	2.0	Poor
5/19/2023	CR A	2.2	Fair
5/19/2023	Ripley Road	2.4	Fair
5/19/2023	Park Road	2.1	Fair
10/08/2023	CR A	1.75	Poor
10/08/2023	Ripley Road	1	Poor
10/08/2023	Park Road	2.2	Fair

Table 2: Biotic Index Scores for Ripley Creek

Future recommendations are to continue annual monitoring of the aquatic macroinvertebrate community in the spring and fall and to conduct annual WAV habitat assessments to track aquatic habitat quality.



Picture 4: Native crayfish; sampled on 6-16-2021.



Picture 5: Dragonfly larva; sampled on 6-16-2021.



Picture 6: Native crayfish; sampled on 6-16-2021.



Picture 7: Caddisfly larva; sampled on 6-16-2021.