WISCONSIN DEPARTMENT OF NATURAL RESOURCES

2023 Pelican River Survey Report
Pelican River Watershed, Oneida County
Waterbody Code 1567800

Introduction And Objectives

The Wisconsin Department of Natural Resources (DNR) assessed the fish community in the Pelican River during the summer of 2023. The Pelican River is 28.63 miles long cool-warm water river apart of the Pelican River Watershed within Oneida County. A floating mini boom shocker was used to collect all species within two separate one-mile transects within the Pelican River. The objectives of the survey were to assess the overall health of the fishery, quantify the smallmouth bass fishery and collect fish samples from creel sized fish for contaminant sample testing.

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Watershed/Region Information
Second Order Miles: 3.6
Third Order Miles: 3.4
Fourth Order Miles: 9.1
Fifth Order Miles: 12.5
Notable Public Accesses:
Pelican Rapids Boat Landing


Photo credit: Wisconsin DNR


Photo credit: Wisconsin DNR

Figure 1. Launching and sampling with the floating barge in the Pelican River

SURVEY INFORMATION

Stream Name	Site Location	Survey Date	Station Length (ft)	Water Temperature (°F)	Target Species	Gear	Dippers	IBI
Pelican River—Berquis	45.59673, – 89.2948	8/29/2023	5280	77.0	All	Floating mini boom	1	70
Pelican River—Rhinelander	45.62297, – 89.3903	8/29/2023	5280	71.6	All	Floating mini boom	1	50

Survey Method

- All reaches were sampled according to DNR wadeable/nonwadelable streams monitoring protocols.
- All gamefish are counted and measured.
- All other species are counted and weighed to calculate an Index of Biotic Integrity (IBI) score.
- Metrics used to describe fish populations include average length, catch per unit effort (CPUE), biomass per unit effort (BPUE), index of biotic integrity (IBI) and length frequency distribution.

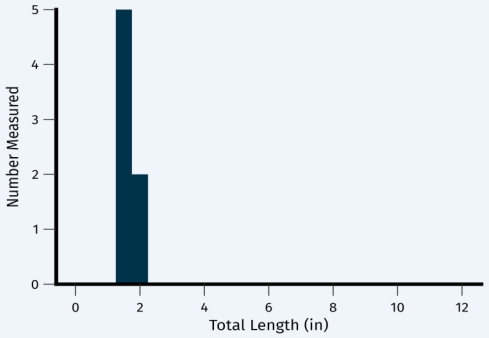
Metric Descriptions

- **Catch per unit effort (CPUE)** is a method of quantifying fish population relative abundance. For all smallmouth surveys, we typically quantify CPUE as the number of a given size class of bass captured per mile of stream.
- **Biomass per unit effort (BPUE)** is a method of quantifying fish biomass excluding tolerant species.
- **Index of Biotic Integrity (IBI)** is a rating of environmental quality based on the fish assemblage. Scores of 90 - 100 indicate excellent stream quality, while scores less than 30 indicate poor stream quality. Our analysis utilizes the IBI for Wisconsin large river.
- **Length frequency distribution** is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals.

CATCH METRICS					
Species	Total Catch	Length Range (in)	Average Length (in)	CPUE (#/mi)	BPUE (lbs/mi)
black crappie	1	6.9 - 6.9	6.9	0.5	0.09
common shiner	1			0.5	0.01
golden redhorse	3			1.5	3.3
golden shiner	6			3.0	0.06
largemouth bass	1	2.8 - 2.8	2.8	0.5	0.01
logperch	3			1.5	0.03
northern hogsucker	2			1.0	0.02
northern pike	2	14.9 - 16.5	15.7	1.0	0.2
pumpkinseed	2	1.5 - 4.6	3.1	1.0	0.7
rock bass	3	1.5 - 4.6	3.0	1.0	0.04
shorthead redhorse	19			6.5	2.3
slenderhead darter	1			0.5	0.01
spotfin shiner	2			1.0	0.02
walleye	2	4.3 - 11.8	8.1	1.0	0.2
white sucker	12			6.0	4.3
yellow perch	2	2.8 - 3.0	2.9	1.0	0.01

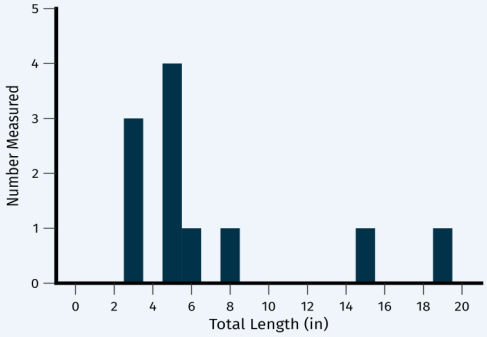
Species Summary

- Seven bluegill were captured. Lengths of bluegill varied between 1.4 to 1.8 inches with a mean length was of 1.7 inches. Catch rate was 2.5 bluegills per mile and biomass was 1.0 pound per mile.



Length frequency of bluegills captured in Pelican River, Oneida County, WI during the 2023 survey. Lengths bin are every 0.5 inches.

- Eleven smallmouth bass were captured. Lengths of smallmouth bass varied between 2.5 inches to 18.9 inches. Catch rate was 5.5 smallmouth bass per mile and biomass was 3.1 pounds per mile.



Length frequency of smallmouth bass captured in Pelican River, Oneida County, WI during the 2023 survey. Length bins are every 1 inch.

Summary

- The geomorphology of the Pelican River creates challenges for effective sampling of the fishery. The system starts as a second order stream with narrow (<30 ft) and deep (>6 ft) sections. As tributaries flow into the system, the river grows into a fifth order stream that is nonwadable with wide and deep sections (>100 ft) and shallow sections (<5 ft) with rocky rapids. This creates navigation issues for boom shockers and wading by personal during sample collection.
- The Pelican River was found in good (70) to fair (50) overall health from the IBI. The 2023 rating remained similar to the score found during the 2018 survey of 60.
- Thirteen additional species were detected in 2023 compared to 2018. Nine of those additional species were sampled at the Rhinelander site which was sampled in 2018. The increase in species may not merely because of the addition of a second transect in 2023.
- Shorthead redhorse and white sucker dominated the fishery in number and weight during the 2023 Pelican River survey. Catch rate of these two species remained similar between 2023 and 2018 surveys. Golden redhorse catch rate increased between survey years.
- Smallmouth bass were the most abundant predator species in number and weight during the 2023 Pelican River survey. Smallmouth bass catch rate of 5.5 per mile in 2023 was higher than the 1.0 per mile observed in 2018. Smallmouth bass catch rate in the Pelican River during the 2023 survey was slightly higher than the median value (4.79 per mile) for Riverine systems throughout the state.
- Young of year walleye, largemouth bass, and smallmouth bass were suspected to have been captured based off their total lengths indicating reproduction within the Pelican River area.
- Seven individual fish from 6 different species were collected for contaminant sampling. Samples were given to the toxicology department for additional processing.
- Several mussel beds were observed within the sampling reaches of the Pelican River. Six different native species were found when investigating one bed.