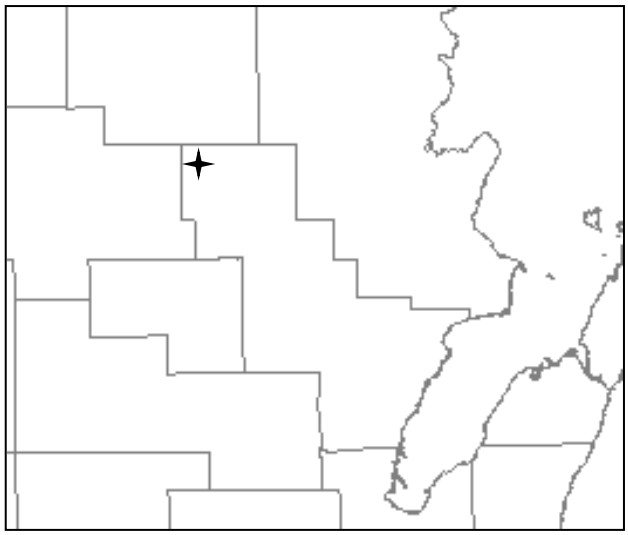
PICKEREL CHAIN (Pickerel Lake, Little Pickerel Lake, Smoke Lake)

Oconto County

2020 Fish Management Report

Christopher C. Long

Senior Fisheries Biologist



Wisconsin Department of Natural Resources
101 N. Ogden Rd.
Suite A
Peshtigo, Wisconsin 54157

2021

SUMMARY

Lake and location:

Pickerel Lake: 127 acres (176 acres – ROW), Oconto County; T33N, R15E, S11
Little Pickerel Lake: 24 acres, Oconto County: T33N, R15E, S11
Smoke Lake: 51 acres, Oconto County; T33N, R15E, S14

Physical / chemical attributes (Carson et al. 1977):

	Pickerel Lake (474900)	Little Pickerel Lake (475000)	Smoke Lake (427500)
Surface acres	127	24	51
Maximum depth (ft):	15	23	7
Shoreline length (mi)	1.8	0.9	1.2
Lake type	Drainage	Spring	Spring
Basic water chemistry	Hard water, slightly alkaline, clear water of high transparency	Hard water, slightly alkaline, clear water of moderate transparency	Hard water, slightly alkaline, brown water of moderate transparency
Littoral substrate	55% muck; 30% sand; 10% gravel/rubble	90% muck; 5% sand; 5% gravel/rubble	95% muck; 5% sand
Aquatic vegetation	Submergent - abundant	Floating and submergent - moderate	Floating and sumbergent - common

Purpose of survey:

Evaluate rehabilitation of the fishery post winterkill (2012-2013).

Surveys:

Survey Seq No	Survey Begin Date	Survey End Date	Primary Survey Purpose
515093846	24-Jun-20	24-Jun-20	FISHERIES ASSESSMENTS LAKES LATE SPRING BASS PAN
515093849	6-Jul-20	9-Jul-20	FISHERIES ASSESSMENTS LAKES SUMMER PANFISH

Fishery:

The Pickerel Chain of Lakes fishery is comprised of panfish species (bluegill, yellow perch, black crappie, pumpkinseed, and rock bass) and gamefish species (largemouth bass and northern pike). Other species present include bullheads (yellow and brown) and other non-game species.

EXECUTIVE SUMMARY

- The Pickerel Chain of Lakes (PCL) is in northern Oconto County near the Town of Townsend. Pickerel Lake, Little Pickerel Lake and Smoke Lake combined total 202 acres.
- The PCL has a prolonged history of "winterkill". Well documented winterkill events occurred in 1985, 1995, 2007, and again in 2012.
- Aeration systems (diffused air and aspirating) were installed on Pickerel Lake in 2014, Little Pickerel Lake in 2017 and Smoke Lake in 2018. These systems are designed to create and maintain open water during the winter to hopefully prevent fish kills.
- Fish stocking began in 2013 with black crappie, bluegill, largemouth bass and northern pike.
- The goal of the 2020 fisheries survey was to assess the recovery of the fishery.
- Six standard fyke nets (3-foot hoop, $^{3}/_{4}$-bar, 1.5-inch stretch) were set from July 7 through July 9, 2020. Night electrofishing was completed on June 23 and 24, 2020.
- Overall, 2,127 fish representing 11 species were collected during the 2020 sampling season. The five most abundant species collected by number were brown bullhead (40%), bluegill (33%), pumpkinseed (13%), yellow bullhead (6%), and black crappie (3%).
- **Brown and yellow bullheads** accounted for 46% of the total catch and yielded a fyke netting CPUE of 35.6 and 6.3/NN, respectively. Since bullheads are tolerant of low oxygen conditions, their abundance is not surprising considering the history of winterkill on the PCL.
- A total of 695 **bluegill** was collected which accounted for 33% of the fish collected. Bluegill ranged in length from 2.5 to 7.9 inches and averaged 5.0 inches across both samples. Bluegill were reaching preferred size (6 inches) between 4 and 5 years old.
- A total of 65 **black crappie** was collected which accounted for 3% of all fish collected. Black crappie ranged in length from 3.5 to 10.6 inches and averaged 6.3 inches. A subsample of 61 crappie was aged from 1 to 6 years old. Crappie were last stocked in the PCL in 2016 therefore the large age-2 and age-3 year classes are the result of natural reproduction.
- During the 2020 survey, 34 y**ellow perch** were collected which was only 2% of the total catch. Perch ranged in length from 3.0 to 7.6 inches and averaged 4.7 inches. A subsample of 27 yellow perch was aged from 2 to 4 years old.
- A total of 44 **largemouth bass** was collected, ranged in length from 3.0 to 16.9 inches and averaged 10.8 inches. The low CPUE can be attributed to the fact the population is still recovering from the 2012 winterkill. A subsample of 44 largemouth bass was aged from 1 to 5 years old. The oldest bass was 5 years old; evidence that the population is still in recovery.
- **Northern pike** accounted for 1% of the fish collected in 2020. A total of 26 pike was collected and ranged in length from 14.3 to 29.9 inches. The average length of northern pike was 19.8 inches. Year classes from age 2 through age 9 were represented. Pike less than 4 years old are the result of natural reproduction.
- Bullhead abundance should be reduced through manual removal using fyke nets as soon as possible (preferably 2021).
- The next fisheries survey of the PCL is tentatively scheduled for 2025 and will consist of spring/summer fyke netting and gamefish/panfish electrofishing. The survey and will focus on the age, growth, abundance, and recruitment of largemouth bass and panfish species (bluegill, black crappie, and yellow perch). We will also be able to evaluate bullhead abundance and determine the impact of the 2021 planned removal effort. Bullheads collected during the 2025 survey will also be removed.

INTRODUCTION

The Pickerel Chain of Lakes (PCL) is in northern Oconto County near the Town of Townsend. Pickerel Lake, Little Pickerel Lake and Smoke Lake combined total 202 acres. Little Pickerel Lake and Smoke Lake are spring lakes that drain to Pickerel Lake. The outlet of Pickerel Lake flows to the North Branch Oconto River. Anglers and boaters may access the PCL at the boat landing on Pickerel Lake Rd.

The PCL has a prolonged history of winterkill. Winterkill, or the loss of fish populations, occurs as the result of low dissolved oxygen (DO). During winter as aquatic vegetation decomposes under the ice, oxygen is depleted to a level whereby fish cannot survive. Well documented winterkill events on the PCL occurred in 1985, 1995, 2007, and again in 2012.

In 2014, the Pickerel Chain Lake Association (PCLA) installed a diffused air aeration system on Pickerel Lake. Diffused air and aspirating aeration systems were installed on Little Pickerel Lake in 2017 and Smoke Lake in 2018 respectively. These systems are designed to create and maintain open water during the winter to prevent fish from dying. This technology allows for the atmospheric exchange of oxygen and should prevent fish kills and allow fish populations to recover.

Year	Species	Number Stocked	Average Length	Source
2013	BLACK CRAPPIE	900	3.0	PRIVATE
2014	BLACK CRAPPIE	20800	1.5	FEDERAL
2016	BLACK CRAPPIE	31871	2.0	FEDERAL
2013	BLUEGILL	899	3.0	PRIVATE
2014	BLUEGILL	12319	1.0	FEDERAL
2016	BLUEGILL	1000	5.0	PRIVATE
2017	BLUEGILL	1220	5.0	PRIVATE
2014	LARGEMOUTH BASS	4325	3.2	WDNR
2015	LARGEMOUTH BASS	8734	1.9	WDNR
2016	LARGEMOUTH BASS	4990	2.2	WDNR
2020	LARGEMOUTH BASS	5383	2.8	WDNR
2020	LARGEMOUTH BASS	253	9.0	PRIVATE
2020	LARGEMOUTH BASS	400	3.0	PRIVATE
2013	NORTHERN PIKE	998	4.8	WDNR
2014	NORTHERN PIKE	8740	2.5	WDNR
2015	NORTHERN PIKE	8781	3.0	WDNR
2016	NORTHERN PIKE	8910	4.1	WDNR
2020	YELLOW PERCH	1000	4.0	PRIVATE

The commitment and support of the PCLA to mitigate low oxygen levels justified stocking fish in order to reestablish the fishery. Restocking began in 2013. Bluegill, crappie, yellow perch, northern pike and largemouth bass of various sizes have been planted over the last 7 years.

The goal of the 2020 fisheries survey was to assess the recovery of the fishery by characterizing gamefish and panfish size structure, abundance (CPUE) and mean length at capture (age).

METHODS

Data collection:

Six standard fyke nets (3-foot hoop, $^{3}/_{4}$-bar, 1.5-inch stretch) were set for 3 consecutive nights from July 7 through July 9, 2020. A standard WDNR electrofishing (EF) boat was used to collect fish on June 23 and 24, 2020. Work restrictions related to the COVID-19 pandemic altered the timing of our sampling in 2020 (surveys were conducted after gamefish and panfish had spawned).

All fish collected were measured to the nearest 0.1-inch total length (TL). A sub-sample of scales, dorsal spines, or anal fin rays was collected for age and growth analysis (5 fish per half inch group). Ages were assigned to each fish using standard WDNR procedures. Age data was calculated for each species on all 3 lakes but since these lakes are connected and managed as a single fishery, mean length at age was averaged to obtain a mean length at age for each species.

Data analysis:

Catch per unit effort (CPUE) was calculated as catch by gear divided by sampling effort for each species collected. Length frequency distributions were tabulated from fish measured during the electrofishing and fyke net samples; not all panfish were measured. Mean length at capture data was calculated for dominant gamefish and compared to the average of mean length at age for northern Wisconsin.

RESULTS & DISCUSSION

Overall, 2,127 fish representing 11 species were collected during the 2020 sampling season. The five most abundant species collected by number were brown bullhead (40%), bluegill (33%), pumpkinseed (13%), yellow bullhead (6%), and black crappie (3%).

SPECIES COMPOSITION OF FISHES COLLECTED

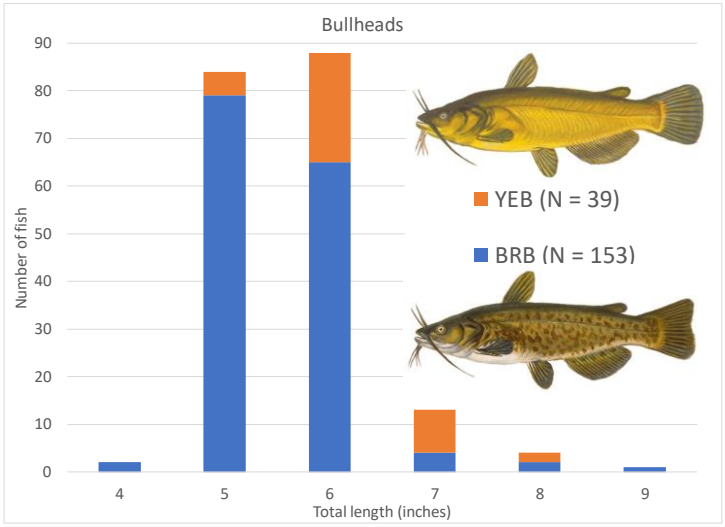
*COMMON NAME	TOTAL NUMBER COLLECTED	PERCENT (TOTAL)	NUMBER COLLECTED (FN)	PERCENT (FN)	NUMBER COLLECTED (EF)	PERCENT (EF)	AVERAGE LENGTH (inches)	LENGTH RANGE (inches)
Brown bullhead	**844**	40%	**641**	42%	**203**	34%	5.8	4.5-9.5
Bluegill	**695**	33%	**517**	34%	**178**	30%	5.0	2.5-7.9
Pumpkinseed	**269**	13%	**187**	12%	**82**	14%	5.0	2.5-7.8
Yellow bullhead	**134**	6%	**113**	7%	**21**	4%	6.6	4.0-8.9
Black crappie	**65**	3%	**44**	3%	**21**	4%	6.3	3.5-10.6
Largemouth bass	**44**	2%	**8**	1%	**36**	6%	10.8	3.0-16.9
Yellow perch	**34**	2%	**8**	1%	**26**	4%	4.7	3.0-7.6
Northern pike	**26**	1%	**12**	1%	**14**	2%	19.8	14.3-29.9
Rock bass	**9**	< 1%	**1**	0%	**8**	1%	6.1	4.0-9.8
Golden shiner	**6**	< 1%			**6**	1%		
White sucker	**1**	< 1%			**1**	< 1%	8.0	8.0
TOTALS	**2,127**		**1,531**		**596**			

* Common names of fishes recognized by the American Fisheries Society.

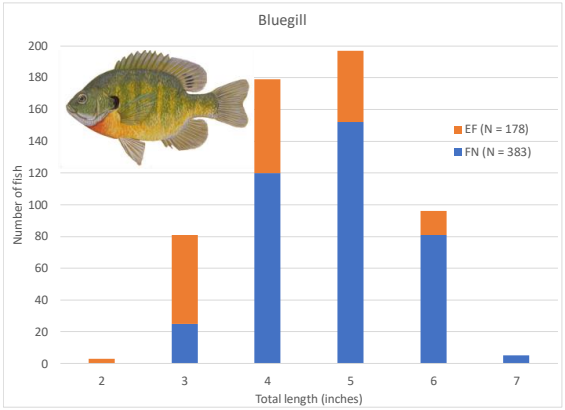
Electrofishing CPUE (total catch / miles)				
	Pickerel (2.2)	Smoke (1.2)	Little Pickerel (1.0)	Average (4.4)
Black crappie	7.4	0.9	4.0	**4.9**
Bluegill	56.5	20.9	33.0	**41.5**
Brown bullhead	54.5	40.0	35.0	**46.1**
Largemouth bass	6.5	7.0	14.0	**8.4**
Northern pike	3.7	0.9	6.0	**3.5**
Pumpkinseed	19.9	23.5	12.0	**19.0**
Rock bass	3.2	0	0.9	**2.4**
Yellow bullhead	7.3	0	5.0	**4.8**
Yellow perch	6.5	4.4	7.0	**6.0**

Fyke netting CPUE (total catch / net nights)				
	Pickerel (9)	Smoke (6)	Little Pickerel (3)	Average (18)
Black crappie	1.9	4.7	0.3	**2.6**
Bluegill	38.3	28.5	2.7	**29.1**
Brown bullhead	44.8	33.8	11.7	**35.6**
Largemouth bass	0	1.3	0	**0.4**
Northern pike	0.8	0.5	0.7	**0.7**
Pumpkinseed	12.1	13.2	2.3	**10.8**
Rock bass	0.4	0.3	0	**0.3**
Yellow bullhead	8.8	3.8	4.0	**6.3**
Yellow perch	0	0.2	0	**0.1**

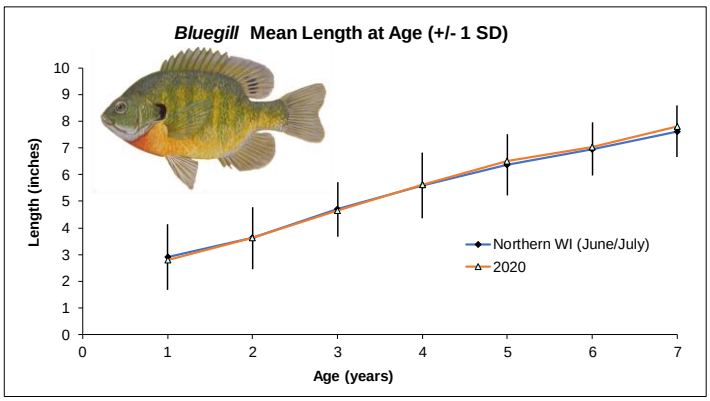
Combined, **brown and yellow bullheads** dominated the catch during both electrofishing and fyke net samples. Together they accounted for 46% of the total catch. Brown bullhead averaged 5.8 inches and had a fyke netting CPUE of 35.6/net night (NN) and electrofishing (EF) CPUE was 46.1/mile. Yellow bullhead averaged 6.6 inches but CPUE's were much lower. Not all bullheads were measured during the survey. Since bullheads are tolerant of low oxygen conditions, their high abundance is not surprising considering the history of winterkill on the PCL.



A total of 695 **bluegill** was collected which accounted for 33% of the fish collected. This total includes bluegill collected during the electrofishing and fyke netting surveys. Bluegill ranged in length from 2.5 to 7.9 inches and averaged 5.0 inches across both samples. Fyke netting CPUE was 29.1 bluegill/NN and electrofishing (EF) CPUE was 41.5 bluegill/mile.



A subsample of 135 bluegill was aged from 1 to 7 years old. Bluegill were reaching preferred size (6 inches) between 4 and 5 years old. Compared to the average length at age for northern Wisconsin, bluegill growth was average at all ages.

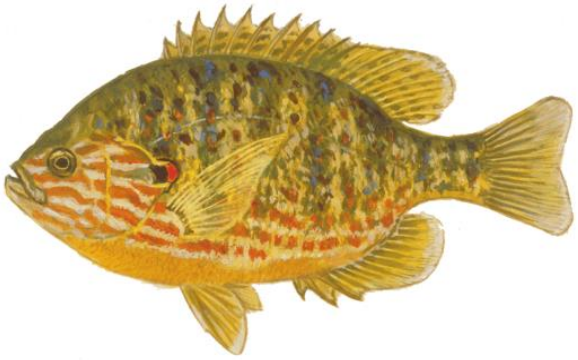


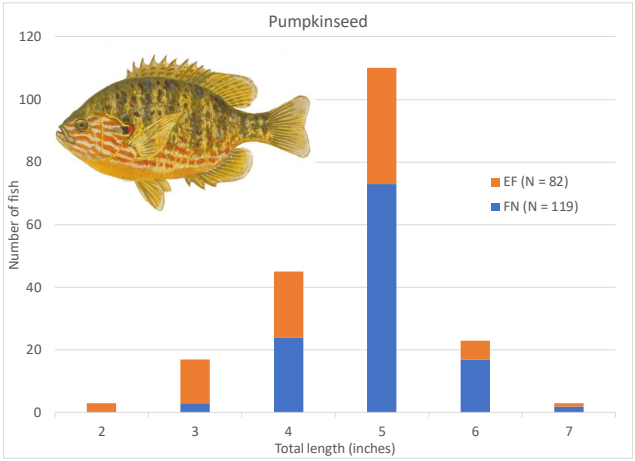
Age	Number aged	Average length	Min	Max
1	1	**2.8**	2.8	2.8
2	45	**3.6**	2.7	4.2
3	29	**4.7**	4.2	5.2
4	39	**5.6**	4.9	6.7
5	16	**6.5**	5.9	7.1
6	3	**7.0**	6.6	7.4
7	2	**7.8**	7.7	7.9

Bluegill were last stocked in the PCL in 2017. Due to the severity of the 2012 winterkill, its likely stocking contributed to bluegill abundance based on our length frequency and age data. Bluegill less than 3 years of age are the result of natural reproduction. Since bluegill sexually mature at younger ages, future stockings are not necessary.

Year	Species 	Number Stocked	Average Length	Source
2013	BLUEGILL	899	3.0	PRIVATE
2014	BLUEGILL	12319	1.0	FEDERAL
2016	BLUEGILL	1000	5.0	PRIVATE
2017	BLUEGILL	1220	5.0	PRIVATE

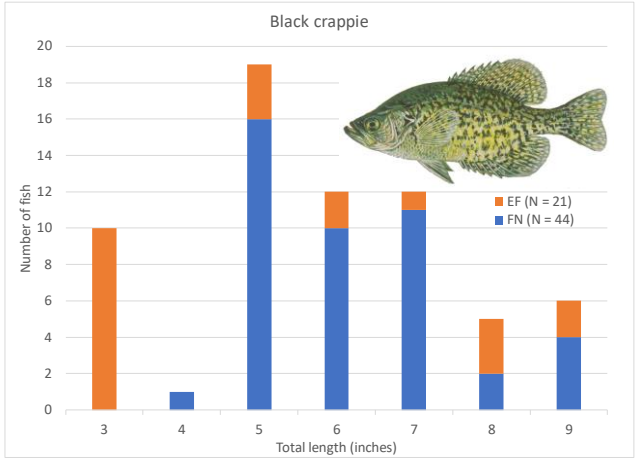
Pumpkinseed sunfish (below left), not to be confused with bluegill (below right), contribute significantly to the panfish fishery. Overall, pumpkinseed accounted for 13% of fish collected.





In 2020, 269 pumpkinseed were collected which ranged in length from 2.5 to 7.8 inches and averaged 5.0 inches. Fyke netting CPUE was 10.8/NN and EF CPUE was 19.0/mile. Pumpkinseed are recovering even though none were not stocked after the 2012 winterkill. Pumpkinseed are a little more tolerant of low dissolved oxygen than other panfish species and should continue to provide a consistent fishing opportunity in the PCL.

A total of 65 **black crappie** was collected which accounted for 3% of all fish collected. This total includes crappie collected during fyke netting and electrofishing. Black crappie ranged in length from 3.5 to 10.6 inches and averaged 6.3 inches. Fyke netting CPUE was 2.6/NN and EF CPUE was 4.9/mile.

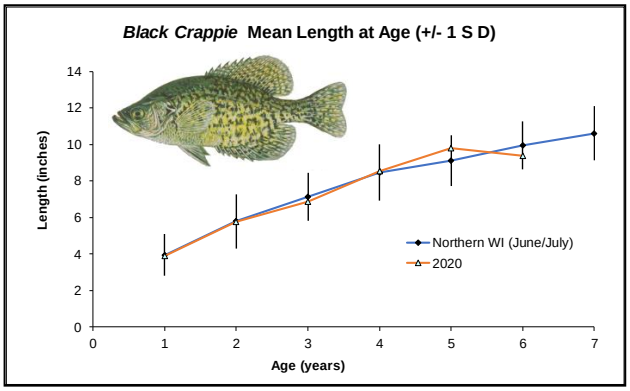


A subsample of 61 crappie was aged from 1 to 6 years old. Crappie were reaching preferred size (10 inches) by age 5. Compared to the average length at age for northern Wisconsin, crappie growth was average at most ages.

Age	Number aged	Average length	Min	Max
1	7	**3.9**	3.5	4.1
2	26	**5.8**	5.2	6.9
3	13	**6.9**	6.0	7.9
4	8	**8.5**	7.5	9.1
5	6	**9.8**	8.5	10.6
6	1	**9.4**	9.4	9.4

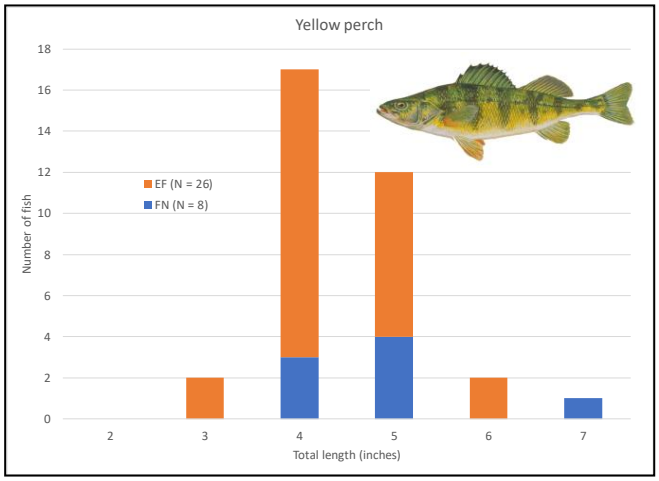
Crappie were last stocked in the PCL in 2016. Stocking contributed to crappie abundance based on our length frequency and age data. However, the large age-2 and age-3 year classes are the result of natural reproduction.

Year	Species 	Number Stocked	Average Length	Source
2013	BLACK CRAPPIE	900	3.0	PRIVATE
2014	BLACK CRAPPIE	20800	1.5	FEDERAL
2016	BLACK CRAPPIE	31871	2.0	FEDERAL

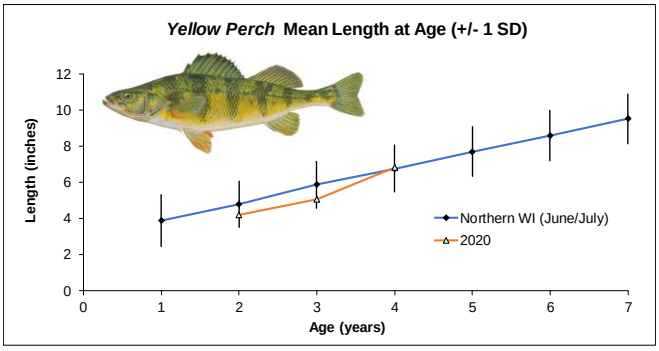


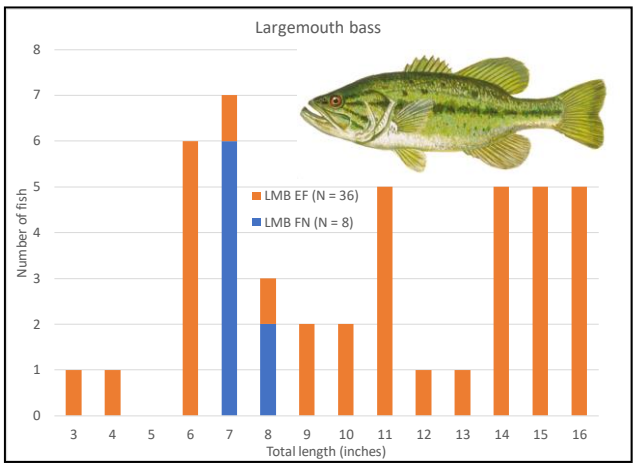
During the 2020 survey, 34 y**ellow perch** were collected which was only 2% of the total catch. Perch ranged in length from 3.0 to 7.6 inches and averaged 4.7 inches. Fyke netting CPUE was 0.1 perch/NN and EF CPUE was 6.0/mile. Perch abundance is likely greater that what was observed. Yellow perch spawn much earlier in the spring and were less vulnerable to capture during our summer survey.

A subsample of 27 yellow perch was aged from 2 to 4 years old. Growth was average at all ages compared to the mean length at age for yellow perch in northern Wisconsin. Perch are reproducing and recruiting to the fishery judging from the length frequency and mean length at age. A total of 1,000 perch were stocked in 2020 after the survey was complete.



Age	Number aged	Average length	Min	Max
2	12	**4.2**	3.4	5.0
3	10	**5.1**	4.5	5.6
4	5	**6.8**	5.7	7.6

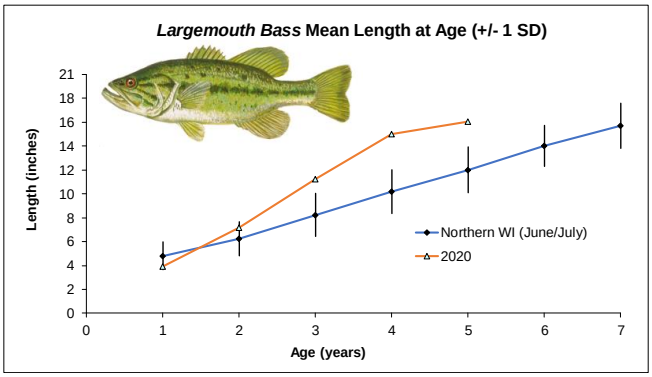




Largemouth bass are the dominant gamefish species in the PCL. A total of 44 bass was collected (8 fyke netting and 26 electrofishing). Bass ranged in length from 3.0 to 16.9 inches and averaged 10.8 inches. Electrofishing CPUE was only 8.4/mile. The low CPUE can be attributed to the fact the population is still recovering from the 2012 winterkill.

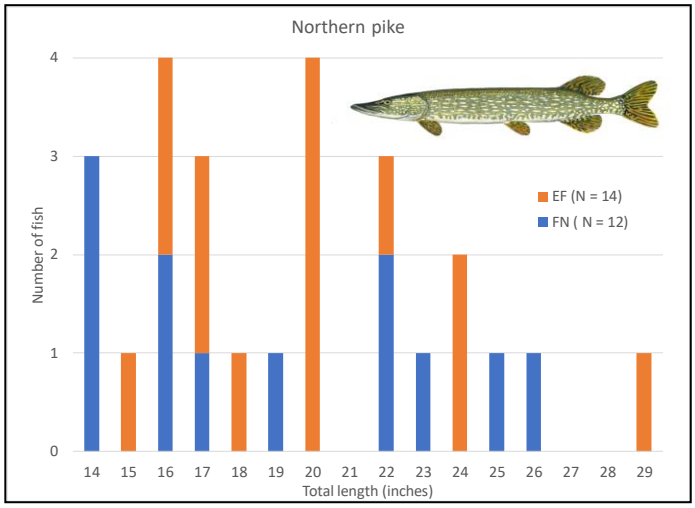
A subsample of 44 largemouth bass was aged from 1 to 5 years old. Bass are reaching legal size (14 in) between age 3 and 4. The oldest largemouth bass aged was 5 years old; more evidence that the population is still in recovery. Even though the PCL is heavily vegetated and there is a lot of bass habitat/cover, growth was well above average at these ages compared to the mean length at age for bass in northern Wisconsin. The exceptional growth of largemouth bass is not surprising since there is limited competition from other predators and an abundance of prey since the 2012 winterkill.

Age	Number aged	Average length	Min	Max
1	2	**4.1**	3.2	4.9
2	15	**7.3**	6	8.6
3	13	**11.6**	9.3	14.1
4	10	**15.4**	14.3	16.1
5	4	**16.5**	16.2	16.9



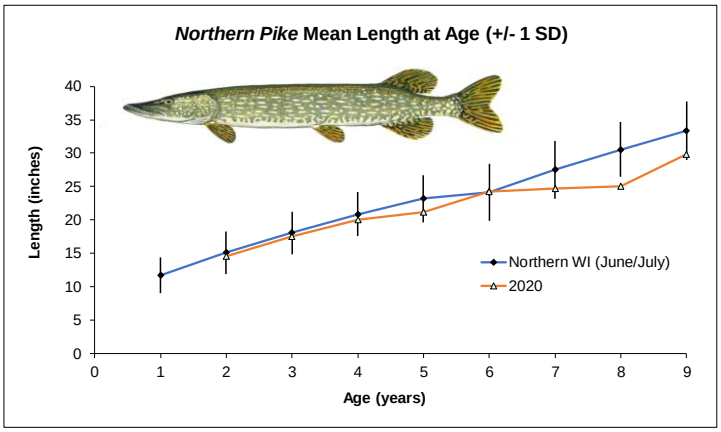
Year	Species	Number Stocked	Average Length	Source
2014	LARGEMOUTH BASS	4325	3.2	WDNR
2015	LARGEMOUTH BASS	8734	1.9	WDNR
2016	LARGEMOUTH BASS	4990	2.2	WDNR
2020	LARGEMOUTH BASS	5383	2.8	WDNR
2020	LARGEMOUTH BASS	253	9.0	PRIVATE
2020	LARGEMOUTH BASS	400	3.0	PRIVATE

Bass were stocked for 3 consecutive years following the 2012 winterkill. All largemouth less than 4 years old are the result of natural reproduction. In 2020, largemouth bass were stocked after the survey was complete.



Northern pike accounted for 1% of the fish collected in 2020. A total of 26 pike was collected (12 fyke netting & 14 electrofishing) and ranged in length from 14.3 to 29.9 inches. The average length of northern pike was 19.8 inches. Pike EF CPUE was 3.5/mile and fyke netting CPUE was 0.7/NN.

All northern pike were aged in 2020 using anal fin rays. Year classes from age 2 through age 9 were represented. Pike were reaching 24.0 inches by age 5. Even though our sample size at older ages was small, growth was average until age 6 and slightly below average at older ages compared to other lakes in northern Wisconsin.



Age	Number aged	Average length	Min	Max
2	6	**14.5**	11.9	16.5
3	5	**17.5**	16.1	20.7
4	5	**20.0**	18	23.4
5	6	**21.1**	20.1	26.1
6	1	**24.2**	24.2	24.2
7	1	**24.7**	24.7	24.7
8	1	**25.0**	25.0	25.0
9	1	**29.8**	29.8	29.8

Year	Species	Number Stocked	Average Length	Source
2013	NORTHERN PIKE	998	4.8	WDNR
2014	NORTHERN PIKE	8740	2.5	WDNR
2015	NORTHERN PIKE	8781	3.0	WDNR
2016	NORTHERN PIKE	8910	4.1	WDNR

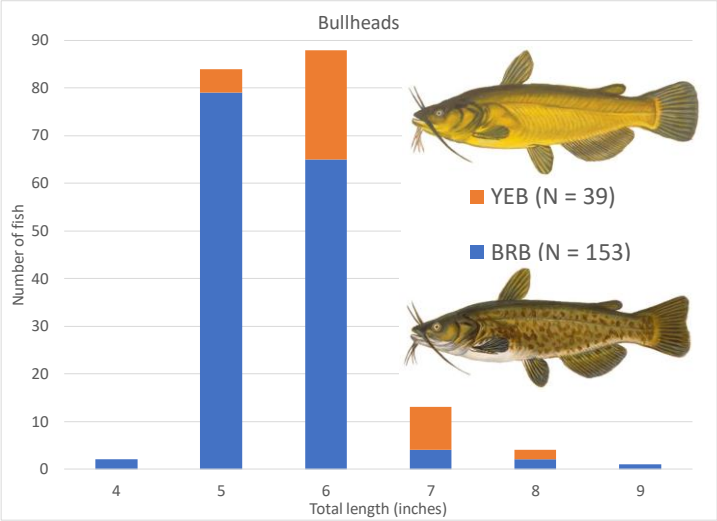
Northern pike were stocked for 4 consecutive years following the 2012 winterkill. Pike less than 4 years old are the result of natural reproduction and as a result, future stocking of pike is not recommended. The PCL has an abundance of shallow, heavily vegetated habitat that is ideal for northern pike. Pike abundance and size structure should continue to improve over the next several years. Like perch, northern pike are likely more abundant that observed since the 2020 survey did not occur during the spring when pike are spawning and more vulnerable to our sampling gear.

CONCLUSIONS & RECOMMENDATIONS

The PCL fishery is recovering however, it's difficult to forecast the full potential of the fishery. Prior fisheries sampling has only been conducted to confirm the severity of previous winterkill events. As a result, there is limited abundance or growth data from previous surveys available for comparison. Additionally, the timing of our 2020 survey was later than desired due to pandemic work restrictions. Typically, gamefish electrofishing and panfish fyke netting are completed in late May or early June, during peak spawning activity for bass and panfish. In 2020, panfish fyke netting and electrofishing took place well after spawning for all species was finished which is outside the standard timing for the bass/panfish survey protocol. These factors could

have affected our catch rates. Therefore, these results need to be interpreted carefully however, the data collected still provided information regarding stocking success and future management needs before the next evaluation/survey.

Stocking has helped reestablish both gamefish and panfish populations. Reproduction and recruitment of all species was observed. Predator species, namely large fingerling bass, should be stocked in future years. There is ample habitat to support a quality bass fishery. Additionally, largemouth bass will provide the predation necessary to promote quality-sized panfish and reduce bullhead abundance.



The bullhead population in the PCL likely expanded after the 2012 winterkill. The 2020 length frequency suggests (6.2-inch average) most bullheads could be young fish (none were aged) or they are stunted. If these are young fish, perhaps bullheads were also impacted by the winterkill. With no competition or predation from other gamefish and panfish after the winterkill, bullheads have become the most abundant species in the PCL. Bullheads could be stunted because of limited food resources after the 2012 winterkill; especially if their diet consisted of fish. The elevated bullhead abundance may be a result of the lack of predators (bass and pike) since they can survive during winterkill events. Unfortunately, we do not have bullhead population data on the PCL from past years to verify if the population has changed.

Removal of "detrimental fish" is sometimes used to enhance or recover recreational fishing opportunities. Numerous studies have shown favorable results to gamefish and panfish populations after detrimental fish are removed (i.e. gizzard shad, common carp, and bullheads). Bullheads destroy aquatic vegetation by stirring up the bottom in their search for food, thus eliminating protective cover for bass and bluegill (WDNR, 2008). Bullheads have also been known to feed on the spawn of various sportfish species. With their high reproductive rate, bullheads can quickly overpopulate small lakes, choking out other fish and stunting themselves in the process. Bullhead removals may have resulted in positive changes to the fish community in Patten Lake, Florence County Wisconsin (Sikora, *in press*). In this study, bluegill CPUE declined however, black crappie and yellow perch CPUE increased dramatically several years after bullheads were removed (Sikora, *in press*). Therefore, we recommend reducing bullhead abundance through manual removal using fyke nets as soon as possible (preferably 2021).

The goal is not to eradicate bullheads from the PCL but rather greatly reduce their abundance to allow gamefish and panfish populations ample time to recover. Reducing bullhead abundance will minimize competition for food and space with more desirable species. Once gamefish and panfish populations are reestablished, these desirable species will fill the "void" left by removing bullheads and potentially prevent bullheads from becoming over abundant in the future.

The current fishing regulations are adequate to allow the fishery to recover while providing fishing opportunities for a variety of species and no changes are recommended. The next fisheries survey of the PCL is tentatively scheduled for 2025 and will consist of spring/summer fyke netting

and gamefish/panfish electrofishing. The survey and will focus on the age, growth, abundance, and recruitment of largemouth bass and panfish species (bluegill, black crappie, and yellow perch). We will also be able to evaluate bullhead abundance and determine the impact of the 2021 removal effort. Bullheads collected during the 2025 survey will also be removed.

There is one boat landing located on Pickerel Lake Rd. Access to the PCL is adequate for boaters but there are minimal shore fishing opportunities. Shore anglers can fish at the park where the boat landing is located. Boaters are reminded to remove all vegetation from their boat and trailer before leaving to limit the spread of this and other invasive species. Lake maps of Pickerel Lake, Little Pickerel Lake and Smoke Lake can be found at the following internet address;

Pickerel Lake: https://dnr.wi.gov/lakes/maps/DNR/0474900a.pdf
Little Pickerel Lake: https://dnr.wi.gov/lakes/maps/DNR/0475000a.pdf
Smoke Lake: https://dnr.wi.gov/lakes/maps/DNR/0427500a.pdf

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Fisheries technicians Ronnie Lee Rhode and Cory Wienandt completed the sampling (fyke netting and electrofishing), aged fish, and entered the data for this survey.

LITERATURE CITED

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