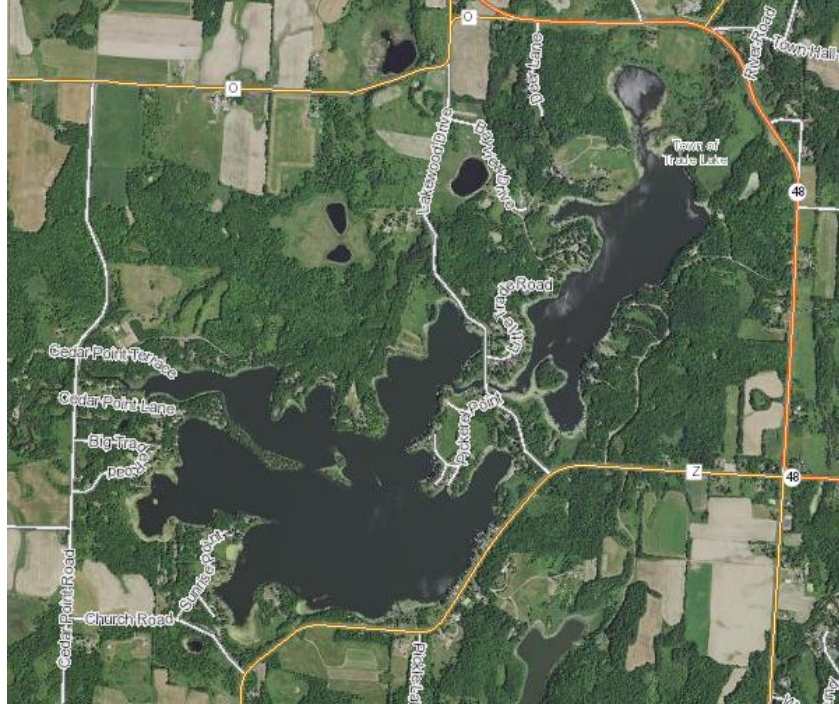


WISCONSIN DEPARTMENT OF NATURAL RESOURCES
Fishery Survey Report for Trade Lake
Burnett County, Wisconsin 2021

WATERBODY IDENTIFICATION CODE: 2638700 and 2639300



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Introduction

Trade Lake was surveyed in 2021 to assess the status of the fishery. For the purposes of this report, Big Trade Lake (WBIC 2638700) and Little Trade Lake (WBIC 2639300) are going to be considered Trade Lake. We indexed the catch rates of northern pike, muskellunge, largemouth bass, walleye and panfish species. We assessed general population characteristics, size structure and growth of all species. Recent management activities have focused on stocking, public outreach and education.

LAKE CHARACTERISTICS

Big Trade Lake is a fertile and deep lake, while Little Trade Lake is fertile and shallow (Tables 1 & 2). More information on water quality and invasive species can be found at the Wisconsin Department of Natural Resources (DNR) Lake Page for [Big Trade Lake](#) and [Little Trade Lake](#). Both lakes are classified as Complex Warm-Dark lakes in Wisconsin.

Table 1. Lake and watershed characteristics for Big and Little Trade lakes, Burnett County, WI.

	Big Trade Lake	Little Trade Lake
Size (ac)	434	126
Max depth (ft)	39	19
Mean depth (ft)	15	-
Watershed Area (ac)	124,754	124,754
Lake class	Complex Warm-Dark	Complex Warm-Dark
Trophic Status	Eutrophic	Eutrophic

Table 2. June – August (2000-2022) mean Trophic State Index (TSI) values for Big and Little Trade lakes, Burnett County, WI.

Trophic State Index	Big Trade Lake	Little Trade
Secchi Disk Visibility	55	59
Total Phosphorus	56	61
Chlorophyll A	56	62

There are two public boat landings on Big Trade Lake. These landings are located at the end of Pickerel Point Rd and adjacent to Cedar Point Ln. Trade Lake is a popular multispecies fishery in Burnett County.

STOCKING HISTORY

Muskellunge have been the only species stocked into Trade Lake since 1992 (Appendix Table 1). Prior to 1992, walleye, muskellunge largemouth bass and northern pike had been periodically stocked. Muskellunge are currently stocked at a rate of 0.5 fish/acre.

FISHING REGULATIONS

All species either follow the statewide, regional or county fishing regulations.

Methods

Trade Lake was sampled during 2021, following the DNR's assessment protocol ([Cichosz 2021](#)) to sample muskellunge. Muskellunge were indexed in Trade Lake using fyke nets from April 15 to April 25. Data were also collected on any northern pike collected during this timeframe.

A late spring electrofishing survey (SE2) was done on May 26 to assess largemouth bass and panfish populations. This survey consisted of 0.5-mile index stations where all gamefish and panfish were captured and 1.5-mile stations where only gamefish were collected. There were two index stations and two gamefish stations completed on Trade Lake. Description of standard DNR survey type, gear used and target water temperatures are listed in Appendix Table 2.

Lake Class Standards catch per unit effort (CPUE) and average length were calculated by comparing Trade Lake's CPUE of each species to CPUEs of the other lakes listed as Complex Warm-Dark lakes in Wisconsin. When possible, CPUE was also compared to past surveys for Trade Lake.

Walleye, largemouth bass and bluegill were aged with scales and dorsal spines. Muskellunge were aged with anal fin rays. Spines and fin rays were cross-sectioned and aged under a microscope. Mean length at age was compared to other Complex Warm-Dark Wisconsin lakes. Size structure was assessed using the proportional size distribution (PSD) indices (Neumann et al. 2013). The PSD value of a species is the number of fish of a specified length and longer divided by the number of fish of stock length or longer, the result multiplied by 100 (Appendix Table 3).

Results and Discussion

MUSKELLUNGE

Twelve muskellunge were collected in spring fyke nets for a catch rate of 0.3 fish/net night. The catch rate is higher than in 2008 (0.1 fish/net night) and lower than in 2001 (0.4 fish/net night) and 2002 (0.9 fish/net night). This rate is the same as the 50th percentile (0.3 fish/net night) for Complex Warm-Dark muskellunge lakes in Wisconsin. When compared to other Class B muskellunge waters, Trade Lake is the same as the median (0.3 fish/net night). Muskellunge collected ranged in length from 30.5 to 45.3 inches (Figure 1). The average length was 39.7 inches and above the 95th percentile (31.3 inches) for Complex Warm-Dark muskellunge lakes. Based on aging, all but one fish was from DNR stocking. The most common year classes were 2004, 2012 and 2019.

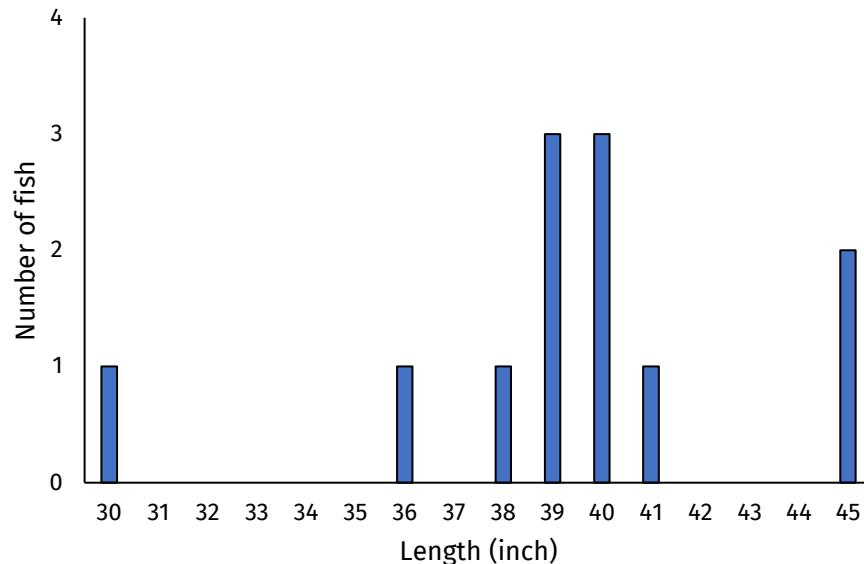


Figure 1. Length frequency of muskellunge captured in Big Trade and Little Trade lakes during spring 2021 (n=12).

The muskellunge population appears low but stable. There has been a decrease in relative abundance since the population estimate in 2001-2002. However, this population is currently meeting expectations for a Class B muskellunge waterbody in Wisconsin. DNR stocking accounted for all but one muskellunge observed, which helps confirm that there is not a significant level of natural reproduction occurring in Trade Lake. Currently, the muskellunge population provides another sportfish to pursue in a fishery with low-density pike and walleye populations.

NORTHERN PIKE

Six northern pike were collected in spring fyke nets for a catch rate of 0.2 fish/net night. This rate is lower than in 2001 (1.4 fish/net night). This rate is also below the

25th percentile (0.6 fish/net night) for Complex Warm-Dark northern pike lakes in Wisconsin. Northern pike collected ranged in length from 19.9 to 32.9 inches. The average length was 24.6 inches. PSD was not calculated for this species due to the low sample size.

Northern pike densities appear to have decreased since 2001. This decrease may be related to overharvest, poor habitat or lack of suitable prey. The discrepancy may also be tied to sampling at slightly warmer water temperatures than in 2001. However, northern pike should still be vulnerable to our sampling at this time. A more restrictive regulation should be used to try and rehabilitate this population and promote another gamefish in Trade Lake.

LARGEMOUTH BASS

There were 121 largemouth bass collected electrofishing for a catch rate of 30.5 fish/mile. This catch rate is lower than in 2008 (40.5 fish/mile). This catch rate is above the 50th percentile for Complex Warm-Dark lakes in Wisconsin. Largemouth bass averaged 11.6 inches, similar to 2008 (11.7 inches), and ranged from 4.0 to 18.5 inches (Figure 2). This average was above the 90th percentile for Complex Warm-Dark lakes in Wisconsin. PSD and PSD-14 were 52 and 25, respectively, and were similar to 2008 (PSD=50; PSD-14=28). Largemouth bass had slow growth and were below lake class average for most ages; however, the growth was similar to 2008 (Figure 3).

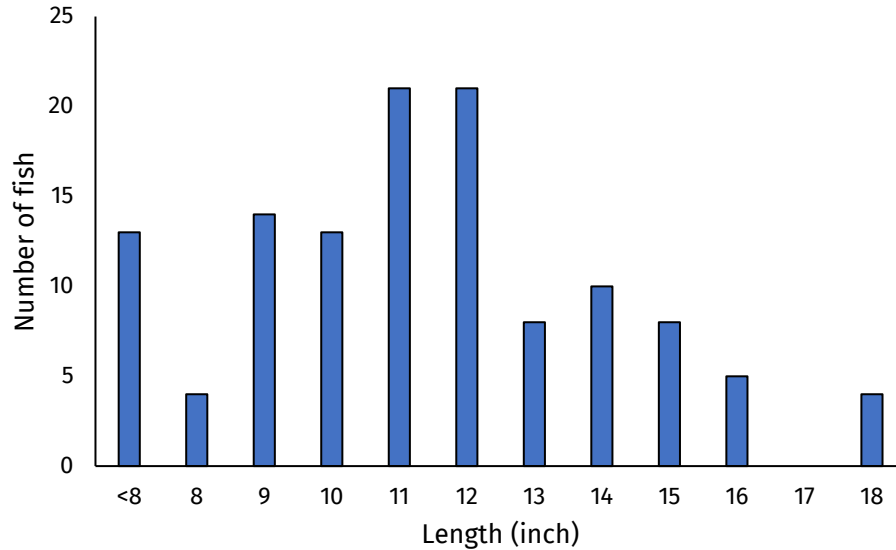


Figure 2. Length frequency of largemouth bass captured in Big Trade Lake during spring 2021 (n=121).

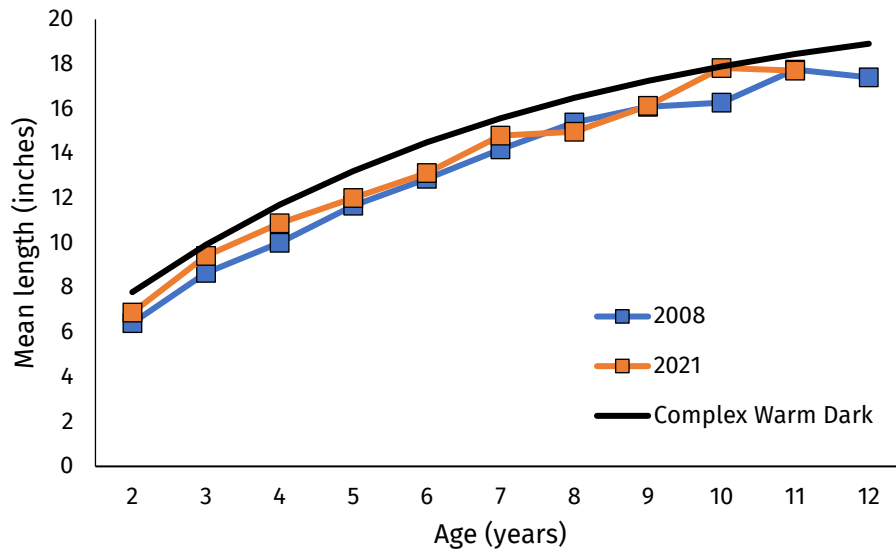


Figure 3. Mean length-at-age of largemouth bass captured in Big Trade Lake during spring 2021.

The largemouth bass population has remained consistent since 2008, with little change in growth or average size. The no minimum length limit and five fish daily bag limit haven't resulted in greater numbers of large bass since 2012. There have been small increases in growth and decreases in relative abundance since 2008, which may be attributed to the no minimum length limit regulation. Further harvest is needed on small bass to help increase the size structure of bass.

WALLEYE

There were ten walleyes collected electrofishing for a catch rate of 2.5 fish/mile. This catch rate is higher than in 2008 (0.3 fish/mile). Walleyes averaged 16 inches. Growth and PSD were not calculated due to the low sample size. Also, nine of the ten walleyes sampled were age-3. Juvenile walleyes were observed but not captured during night electrofishing.

There is a remnant walleye population present in Big Trade Lake. These walleyes are not from stocking but likely from natural reproduction in the Trade River. Walleyes have historically been rare in the system based on data from the 1990s (Damman 1997). For this reason, walleye are not being considered for any new management activities.

PANFISH

There were 247 bluegills collected electrofishing with a catch rate of 61.8 fish/mile. This catch rate is lower than in 2008 (72.7 fish/mile). This catch rate was below the median (117 fish/mile) for Complex Warm-Dark lakes in Wisconsin. Bluegills ranged in length from 2.7 to 8.1 inches (Figure 4). Bluegills averaged 6.0 inches, a decrease from 2008 (6.6 inches). This average is above the 90th percentile (4.0 inches) for Complex Warm-Dark lakes in Wisconsin. Bluegills grew near average for most ages for Complex

Warm-Dark lakes in Wisconsin (Figure 5). PSD was 54 and lower than in 2008 (77). Other panfish collected included black crappies, pumpkinseeds and hybrid sunfish. These species were collected in low numbers and, therefore, were not analyzed in this report.

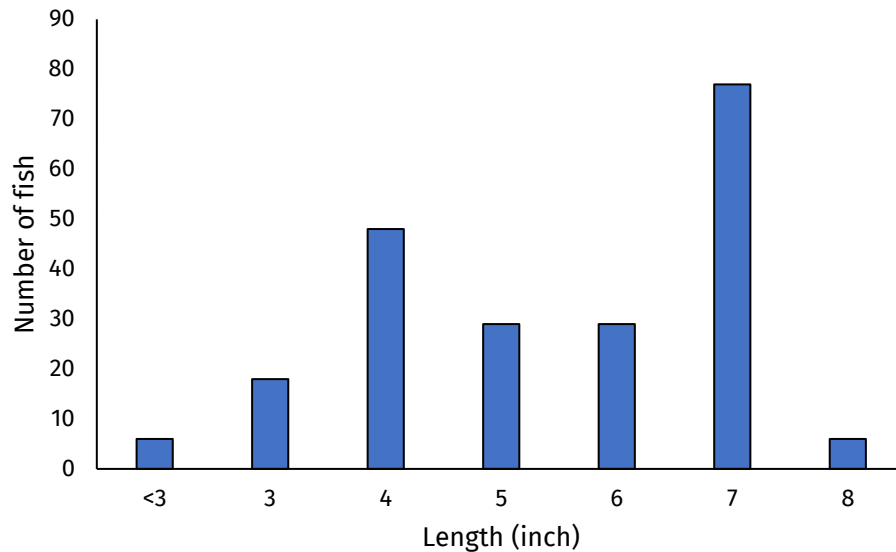


Figure 4. Length frequency of bluegill captured in Big Trade Lake during spring 2021 (n=247).

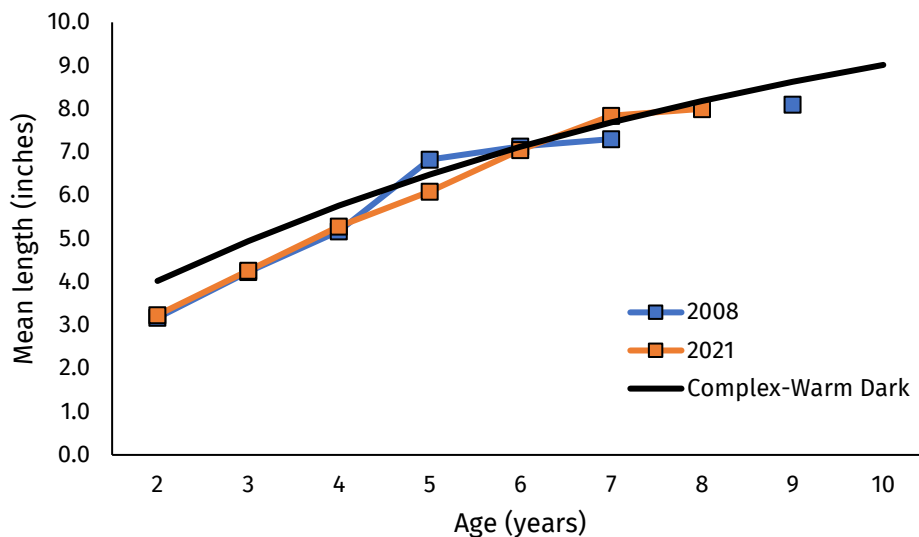


Figure 3. Mean length-at-age of bluegill captured in Big Trade Lake during spring 2021.

Bluegill size structure has declined despite good average growth in 2008 and 2021. PSD has also declined from 2008 to 2021. However, the percentage of bluegill over 7 inches has remained similar to 2008. Despite the decreases, the overall average size and PSD of bluegill remain fairly healthy for the system. A more restrictive regulation should be considered if stakeholders are interested in trying to bolster panfish

numbers and size. Black crappies are also popular with anglers and more abundant in Trade Lake but were not well represented in our sampling.

COMMON CARP

Four common carp were observed netting and electrofishing. Common carp are not at nuisance levels, but continued monitoring will be important with this species in Trade Lake.

Local Biologist Recommendations

1. The muskellunge population is low-density but provides another angling opportunity for this fishery. No management changes are recommended.
2. Northern pike are not abundant. The 26-inch minimum length limit and two bag limit should be considered for northern pike in this lake. This new regulation should be assessed during the next survey.
3. Largemouth bass populations are stable, and the no minimum length limit hasn't resulted in dramatic changes. Harvest of bass should continue to promote better bass growth and size structure in Trade Lake.
4. Walleyes are present as a remnant population in Trade Lake. Limited natural reproduction is keeping them present, but the overall habitat in the lake is not ideal for walleye. No management changes are recommended.
5. Bluegill size structure is still at a good level but lower than in 2008. Black crappies are also popular with anglers in Trade Lake but were not well represented in our sampling. A more restrictive regulation could be considered if stakeholders are interested.
6. Efforts to increase habitat complexity in Trade Lake should continue where applicable. Inputs of coarse woody habitat, protection/promotion of aquatic vegetation and maintenance/restoration of vegetative buffers are important. This website www.healthylakeswi.com is a great resource to learn more.
7. Invasive species monitoring and control programs should continue. Efforts to keep aquatic invasive species out of a waterbody are much more effective than controlling invasive species once they are established. Common carp should be monitored by DNR during fishery surveys.

Acknowledgements

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Appendix Table 1. Fish stocking records for Trade Lake, Burnett County, WI. 1992 – 2020.

Year	Species	Age Class	Number Stocked	Avg. Length (in)	Source
1992	Muskellunge	Large Fingerling	432	10.0	DNR
1995	Muskellunge	Large Fingerling	432	11.3	DNR
1998	Muskellunge	Large Fingerling	450	11.7	DNR
2002	Muskellunge	Large Fingerling	217	10.7	DNR
2004	Muskellunge	Large Fingerling	217	10.7	DNR
2006	Muskellunge	Large Fingerling	125	11.6	DNR
2008	Muskellunge	Large Fingerling	217	10.6	DNR
2010	Muskellunge	Large Fingerling	95	12.3	DNR
2012	Muskellunge	Large Fingerling	217	13.3	DNR
2014	Muskellunge	Large Fingerling	130	11.4	DNR
2016	Muskellunge	Large Fingerling	85	12.0	DNR
2018	Muskellunge	Large Fingerling	143	12.1	DNR

Appendix Table 2. Survey types, gear used, target water temperature and target species.

Survey Type	Gear Used	Target Water Temperature (°F)	Target Species
Spring Netting 1 (SN1)	Fyke Net	~45	Walleye, northern pike
Spring Electrofishing 1 (SE1)	Boat Electrofishing	45-50	Walleye
Spring Netting 2 (SN2)	Fyke Net	50-55	Muskellunge, black crappie, yellow perch
Spring Electrofishing 2 (SE2)	Boat Electrofishing	55-70	Largemouth bass, smallmouth bass, bluegill and other panfish, non-game species
Spring Netting 3 (SN3)	Fyke Net	65-80	Bluegill, black crappie
Fall Electrofishing (FE)	Boat Electrofishing	50-60	Juvenile walleye and muskellunge



A DNR Technician lifting a fyke net



A DNR electrofishing boat

Appendix Table 3. Proportional and relative stock density values.

Species	Stock Size (inch)	Quality Size (inch)	Preferred Size (inch)
Black crappie	5	8	10
Bluegill	3	6	8
Largemouth bass	8	12	15
Northern pike	14	21	28
Pumpkinseed	3	6	8
Rock bass	4	7	9
Smallmouth bass	7	11	14
Walleye	10	15	20
Yellow perch	5	8	10