

Merritt Reservoir

2022 Fall Survey Summary

Zac Brashears Fisheries Biologist



Merritt Reservoir is located in the Nebraska sandhills approximately 26 miles southwest of Valentine, NE. The area is comprised of 2,905 acres of water with 6,000 acres of land adjacent to the reservoir. The reservoir was built in 1964 by the Bureau of Reclamation for irrigation purposes. When built, the Snake River was dammed near its confluence with Boardman Creek, flooding both valleys along with the Powder Horn arm of the reservoir. Flows from both the Boardman Creek and Snake River contribute to filling the reservoir to full pool each year. The water and land adjacent to the reservoir is managed by the Nebraska Game and Parks Commission for fishing, hunting, and recreational activities. Fishing is available year round and several different fish species are present in Merritt Reservoir which include: alewife, walleye, white bass, muskellunge, northern pike, yellow perch, bluegill, pumpkinseed, black crappie, largemouth bass, smallmouth bass, freshwater drum, black bullhead, white sucker, and common carp.

Facilities at Merritt Reservoir include nine campgrounds (four with electrical hookups and one with ADA accessible shower), one dump station, vault toilets, picnic shelters, two fish cleaning stations, five boat ramps with lighted parking lots, and an area concessionaire which provides permits, groceries, fee camping with RV hookups, boat rentals, fuel, cabins and guide services.



The following texts and graphs are the results of netting surveys completed at Merritt Reservoir in 2022 as well as historical data. Biologists use gill nets to sample species that are primarily found in open water such as walleye, white bass, and channel catfish and trap nets to sample shore oriented species such as bluegill, black crappie, yellow perch and northern pike. Electrofishing surveys are used to sample largemouth and smallmouth bass at Merritt Reservoir. The nets and electrofishing stations are sampled each year or on a 3 year rotational basis at approximately the same locations and dates as previous years to allow for trend comparisons.

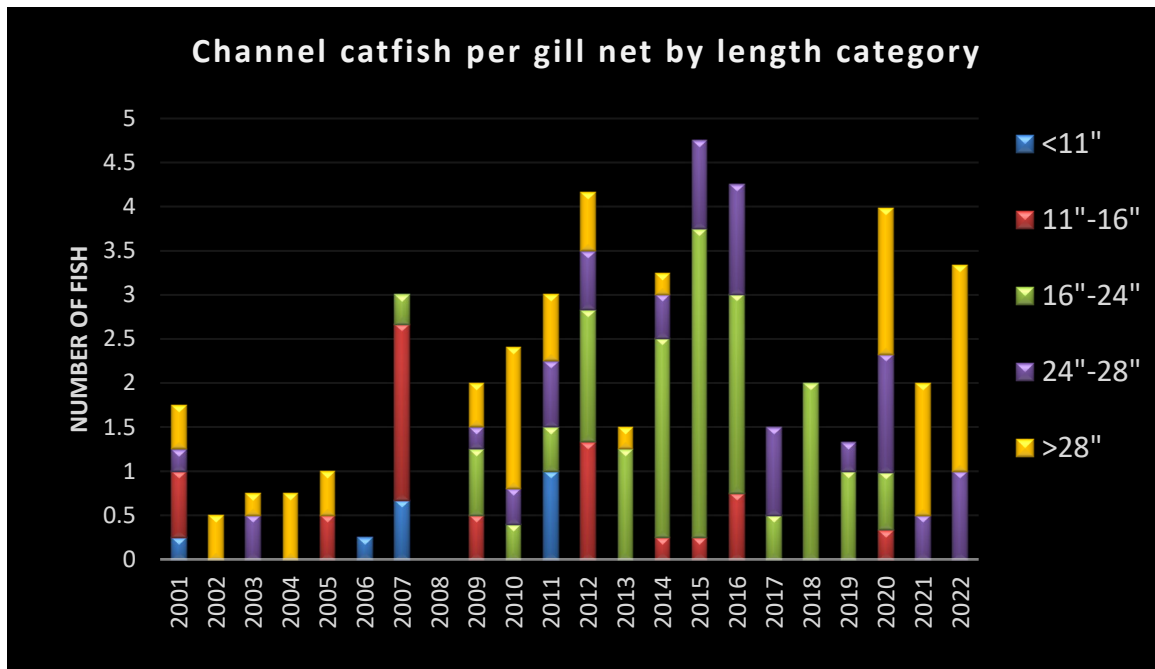
Channel Catfish

Channel Catfish populations at Merritt have typically been low but with memorable to trophy potential. In 2022 surveys captured 3.33 catfish per net which was up from the 2021 survey. Approximately 69 percent of these fish sampled were greater than 28 inches in length. The largest catfish sampled at Merritt measured 31.1 inches and weighed approximately 12.8 pounds.

Reports of excellent catches of catfish are reported each year indicating the fish are there and possibilities of trophy fish exist with fish over the 30 inch mark. Gill nets used to sample these fish may not be effectively targeting these fish which tend to be in deeper water during these surveys at Merritt. The state record was caught at Merritt in 1986 and weighed 41.5 pounds.

Anglers usually target these fish in early spring as they venture into shallower areas of vegetation and submerged timber to spawn or in the late summer and early fall months along deep water drop offs and holes throughout the lake. As of the last few ice fishing seasons it has been becoming more popular to target schools of catfish through the ice using live imaging.

Stocking requests are for 10,000 ten-inch catfish to be stocked on alternate years at Merritt (odd numbered years). Efforts will continue to be made to provide trophy channel catfish opportunities at Merritt Reservoir.



Regulation:

Daily bag limit of 5 fish with a possession limit of 20 fish. The channel catfish daily bag limit at Merritt Reservoir shall include no more than one fish 30 inches or longer. This change is expected to protect larger fish at Merritt which have experienced a reduction in overall size of catfish.

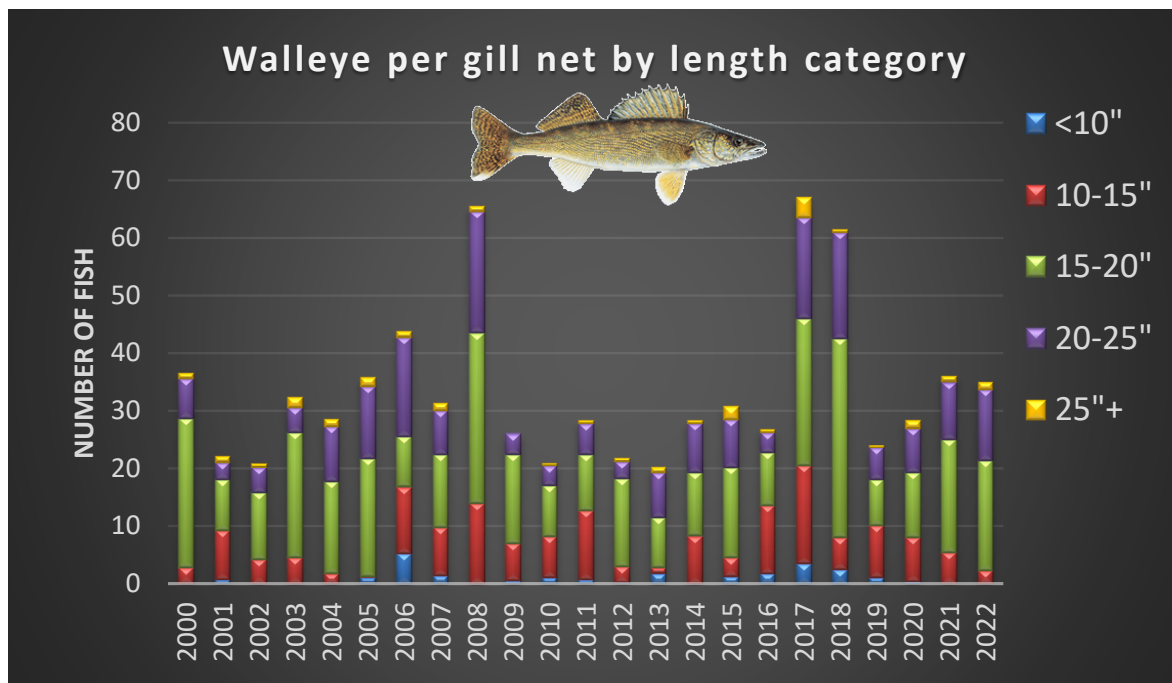


Walleye

Walleye abundance has remained similar over the last couple years and has exceeded management goals of 30 walleye per net. Historic catches in 2017 and 2018 indicated a high abundance of walleye and surveys over the past several years suggest the population building once again. In 2022 surveys collected 35 walleye per net which is right on the average since 2000. Approximately 93% were over the statewide minimum of 15 Walleye averaged 17.8 inches in length and net catches of fish greater than 25 inches indicated a good population of larger sized fish. The largest walleye sampled during the survey period measured 25.7 inches and weighed 7.6 pounds although larger fish are present in the reservoir indicated by spring brood stock collection efforts.

Anglers should see similar catch rates in 2022 as in 2021 with fair to good year classes of 15-20 and 20-25 inch fish. Opportunities will exist for larger fish over 25 inches as well. Anglers should still find success in spring or early summer targeting fish along drop offs and weed lines. Common fishing techniques include slip bobbers along weed lines, running shallow death rigs along flats and drop offs, and pulling crankbaits in late summer months and into fall.

Walleye stockings at Merritt Reservoir occur during June with approximately 214,875 fingerling (2 inches) stocked to maintain the population. This stocking rate began in 2014 and is an increased stocking rate from 50 fish per acre to 75 fish per acre.



Regulation:

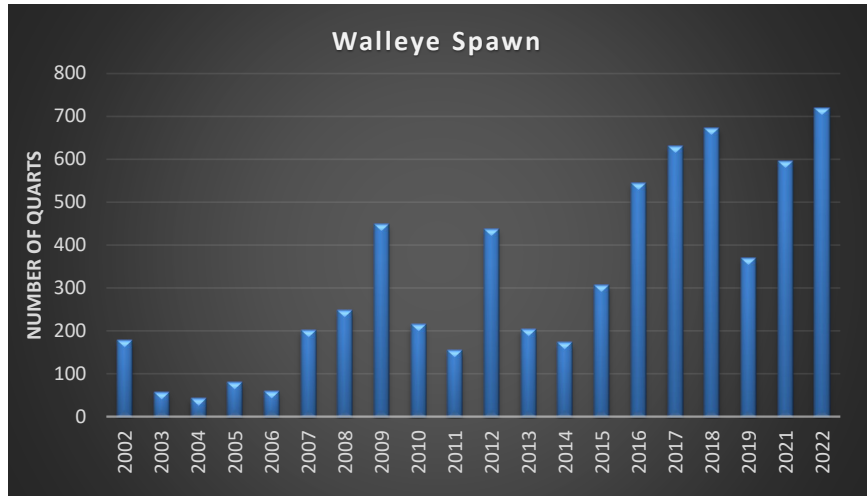
Anglers at Merritt are allowed a daily bag limit of four walleye which may include one from 15 to 18 inches (it is allowable to have all fish over 18 inches) but only one fish over 22 inches is allowed in the daily bag. Possession limit of 8 fish.



Walleye Spawn

Fisheries Division will conduct walleye spawn operations at Merritt reservoirs in 2023. These operations usually occur during the first part of April and last until hatchery production needs are met for statewide requests. Nets are set parallel to the dam or shoreline in order to collect females as they venture into spawn. The net mesh is usually big enough that male walleye pass back and forth through the net. These nets are marked with a buoy on each end and anglers are reminded not to cast between the buoys or lures will be lost.

In 2022, 828 females were captured in gill nets. Out of these fish 436 were "ripe" or had eggs flowing and hatchery personnel were able to collect 665 quarts of walleye eggs for statewide production needs.

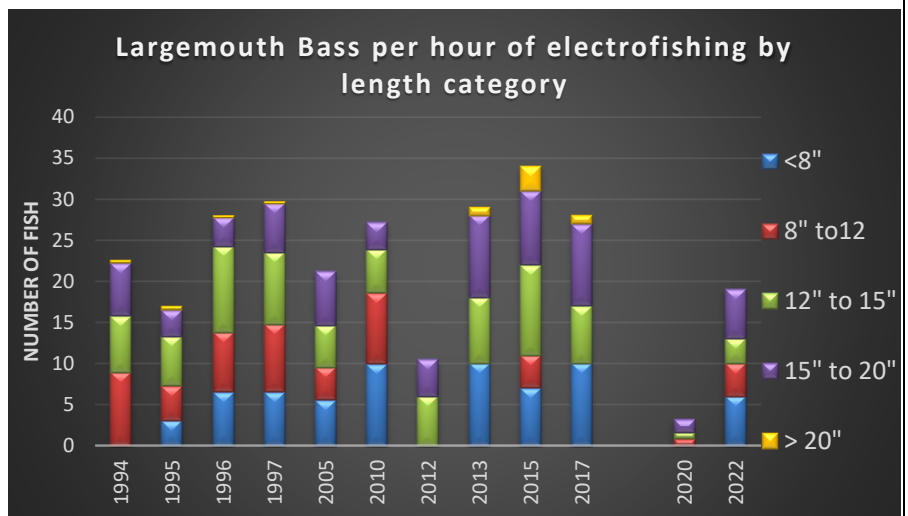


Largemouth Bass

Largemouth bass numbers were up somewhat in 2022 indicating bass were missed during the 2020 survey. However a catch rate of 19 bass per hour is still lower than historical catches have indicated. Even though numbers were lower the population showed an excellent size structure with similar catch rates of all size categories except fish over 20 inches. Out of the largemouth sampled 31% of these fish were greater than the statewide minimum of 15 inches. The largest bass sampled measured 19.6 inches and weighed 5.8 pounds.

Smallmouth bass also exist in Merritt at low abundance which makes sampling of these fish difficult. In 2022, five smallmouth all less than 8 inches were caught indicating some natural recruitment of this population is occurring.

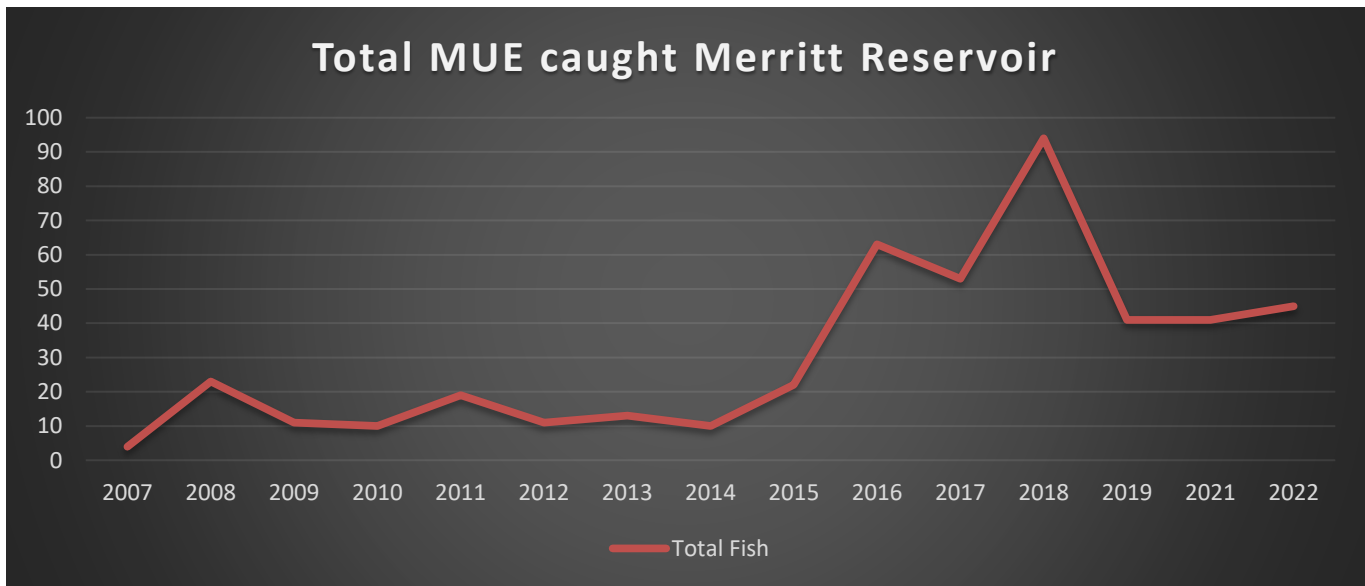
Black Bass Regulations: Minimum length limit of 15 inches with only one fish longer than 21 inches in the daily bag. Daily bag limit of 5 fish with a possession limit of 10 fish.



Muskellunge and Northern Pike

Muskellunge are becoming more popular each year with anglers coming to Merritt. The state record came from Merritt in 1992 and weighed 41.5 pounds. Reports of fish close to this in length have come in over the past several years. These fish are relatively difficult to sample with standard gears in the spring and fall but are often collected during the walleye spawn operations. Muskellunge are typically spawning during a similar time period to maybe a little later depending on weather conditions. In 2020 a special research project was started at Merritt and Cottonwood Steverson lakes. This research project is to determine how old muskellunge can get, how long they can grow, and whether they can reproduce in these environments.

As can be seen from the graph, musky populations really increased in 2015-2018. This can be attributed to a large year class of 28-34 inch fish. Since 2019 the muskellunge catch has remained similar catching about 40 fish per year. The largest muskellunge sampled in 2022 was a 48.5 inch fish that weighed 32 pounds. Northern pike are also present in Merritt adding additional fishing opportunities especially during the spring months and ice fishing season. Angler reports of fish over 40 inches have been received over the last several years.



Regulation:

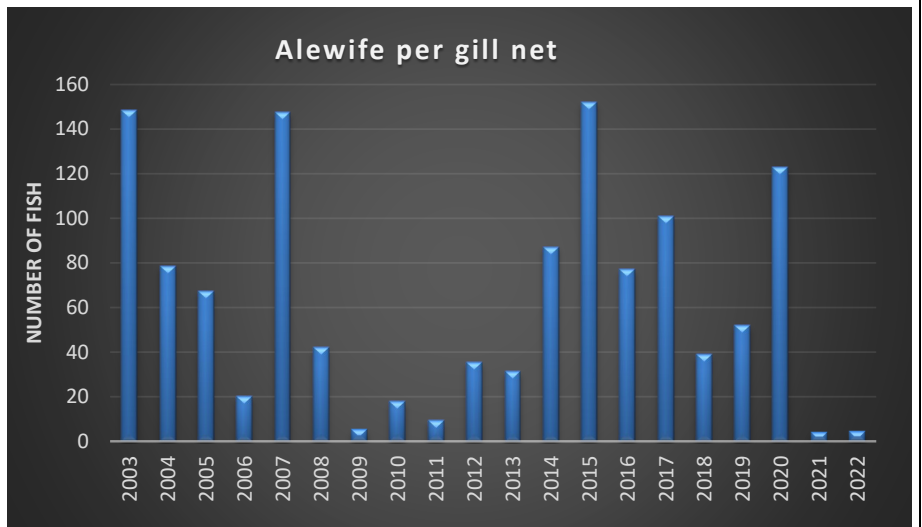
There is a 50-inch minimum length limit for muskellunge and tiger muskellunge at Merritt Reservoir. This change is expected to protect large muskies and establish a destination location and trophy fishery at Merritt. Bag limit of 1 fish with a possession limit of 2 fish.

Northern Pike have a daily bag limit of 3 fish with a possession limit of 10. Only 1 fish greater than 34 inches in the daily bag.



Alewife

Alewife are the dominant prey species in Merritt for walleye, northern pike, muskellunge, largemouth bass, and channel catfish. Catch rates decreased drastically in 2021 and 2022 to 4 fish per net although with communication from anglers and personal observations it seems as though the alewife population is still high at Merritt and the survey just missed these fish.



Fishing can sometimes be tough at Merritt and this usually falls in line with a high alewife prey base. Predators are very opportunistic and if something presents itself like big prey numbers they are going to take advantage of that making angling more difficult. Alewife do grow and maintain great walleye populations but alewife can be hard on eggs and or fry of all species which can lead to issues of recruitment making stocking of some species necessary.

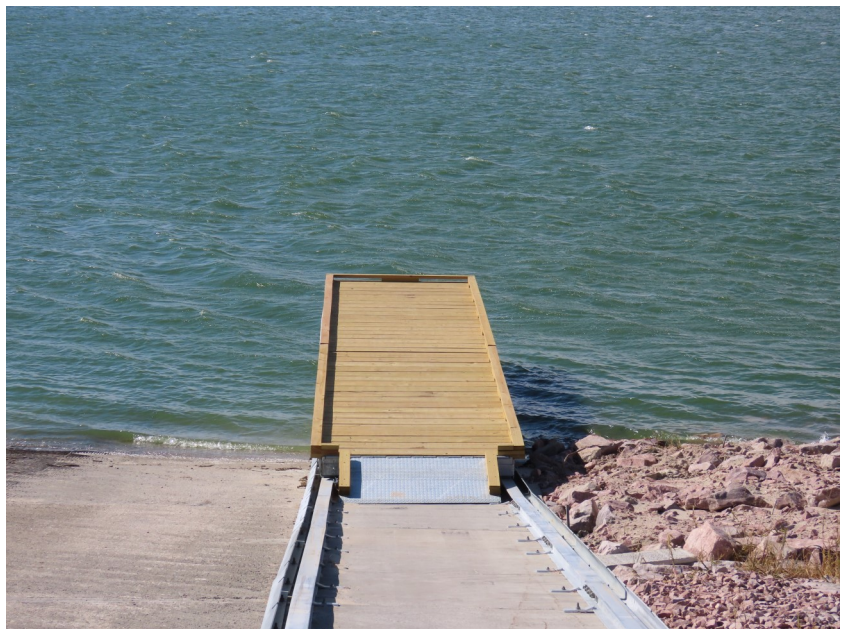
Other Species

Many other species exist in Merritt Reservoir and some of these species are not surveyed each year such as bluegill, crappie, yellow perch, rock bass, and pumpkinseed. White bass populations are not abundant at Merritt Reservoir but opportunities do exist for large white bass such as this 16 inch fish pictured right.



Angler Access Project-Merritt Reservoir

A boat ramp and breakwater was initially started during the fall of 2017. Due to the higher water levels that year the ramp and breakwater were constructed to what contractors could accomplish. In 2022, Merritt levels receded 16 feet allowing more work to be accomplished. The breakwater was extended approximately 50 feet and the boat ramp was extended down to meet the waters edge. A new wood dock on a rail system was also installed to make it easier for anchoring and moving with fluctuating water levels. The breakwater was constructed with a flat top that has been filled with smaller rock to create more bank angling opportunities and access to deeper water.



Invasive Species

Over the past several years invasive species have become a rising concern in Nebraska. In 2015, a regulation was established to help prevent the spread of invasive species via boats and trailers. The new regulation states: It is illegal to either arrive or leave any water body in Nebraska with water other than from a domestic source (water supply system, well or bottled) except for firefighting purposes.



Zebra mussels (pictured right) were first documented in Nebraska in 2006 at Offutt Airforce Base Lake and have since been discovered at Zorinsky Lake in 2010 (mussels eliminated via a winter drawdown that successfully froze them out), Lewis and Clark Lake (2015), Lake Yankton (2017), Glen Cunningham Lake (2018), and below Gavins Point Dam in the Missouri River. Zebra mussels and quagga mussels are small fingernail-sized mussels and adults are usually $\frac{1}{4}$ to $\frac{1}{2}$ inches long with alternating yellow and brownish colored stripes on their shell. These mussels can spread in their immature form known as veligers by being transported in bilge, ballast, or live-well water or as adults attached to boat hulls, engines, aquatic vegetation, or other surfaces. Sampling for these veligers occurs statewide from May through September. No evidence of these mussels has been discovered in any other lakes sampled.

Aquatic vegetation such as curly-leaf pondweed and Eurasian water milfoil are also invasive species present in Nebraska. **Curly leaf pondweed is present in Merritt Reservoir.** Both of these plants form dense mats of vegetation near the water's surface which make recreational fishing, boating, and swimming difficult. Spread of these plants can happen through stem fragmentation where a single segment of plant material can be transferred to another water body and form a new colony. Both or one of these species have been documented throughout NW Nebraska at Merritt, Box Butte, Walgren Lake, Smith Lake WMA, Cottonwood SRA and on Fort Robinson. Therefore, removing any visible plant material from boats and trailers is a must and remember to **CLEAN, DRAIN, and DRY!**

CLEAN- Remove plants, animals, and mud by thoroughly washing equipment that came into contact with the water.

DRAIN- Drain all water before leaving, including wells, bilge, ballast, and any parts or equipment that can hold water.

DRY- Allow all equipment to dry completely before launching into another body of water.

For more information on invasive species in Nebraska visit neinvasives.com.



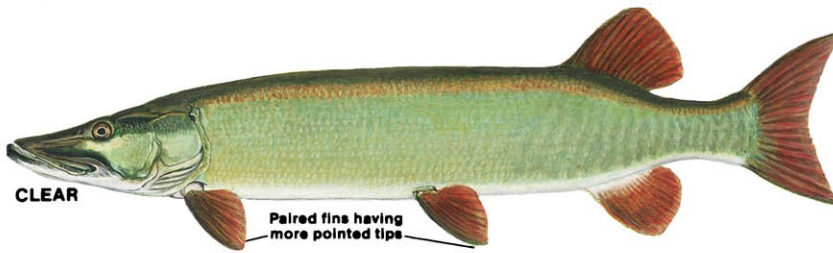
For more information on fisheries management or activities on the Valentine National Wildlife Refuge contact:

Zac Brashears NGPC Biologist, (402) 376-8080 zac.brashears@nebraska.gov

Al Hanson (NGPC Manager) or Joe Rydell NGPC Biologist, (308) 763-2940 al.hanson@nebraska.gov, joe.rydell@nebraska.gov

MUSKELLUNGE - NORTHERN PIKE

Know How To Tell The Difference!



CLEAR

Paired fins having more pointed tips

NOTE: Faint indication of marking pattern is sometimes present on posterior 1/3 of body in "clear" variation of muskellunge.

MUSKELLUNGE
(*Esox masquinongy*)

3 COMMON PATTERN VARIATIONS

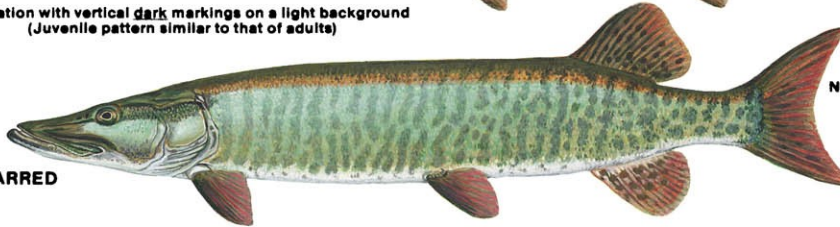
SPOTTED



Caudal fin with pointed tips

Coloration with vertical dark markings on a light background (Juvenile pattern similar to that of adults)

BARRED

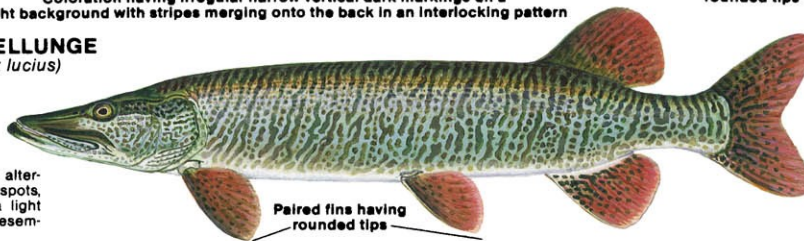


NOTE: Background colors of fish can vary slightly depending on environmental characteristics of the water body and its geographic location. One marking pattern may dominate in an area, but all 3 can be present.

Coloration having irregular narrow vertical dark markings on a light background with stripes merging onto the back in an interlocking pattern

Caudal fin with rounded tips

HYBRID "TIGER" MUSKELLUNGE
(*Esox masquinongy* X *Esox lucius*)



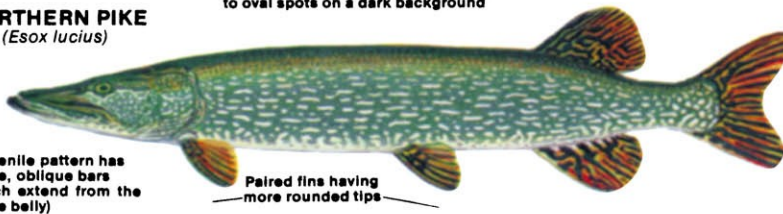
Paired fins having rounded tips

NOTE: Sides sometimes exhibit an alternating pattern of stripes and spots, or narrow paired-bars on a light background. Pattern never resembles that of northern pike.

Coloration with pattern of horizontal rows of light round to oval spots on a dark background

Caudal fin with more rounded tips

NORTHERN PIKE
(*Esox lucius*)



Paired fins having more rounded tips

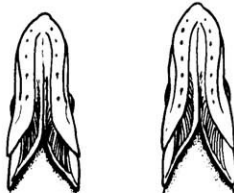
(Juvenile pattern has white, oblique bars which extend from the white belly)

NOTE: Some areas may contain "Silver Pike" which is a mutant color variation of northern pike that lack the characteristic spots and have dark to light greyish/blue sides. Fin coloration normal for northern pike is exhibited in the "silver" variety.

Color illustrations by:
MRS BECK ©86

IN MOST AREAS THESE FISH HAVE MINIMUM SIZE RESTRICTIONS, MAXIMUM POSSESSION LIMITS, AND SPECIAL OPEN SEASONS... CONSULT LOCAL FISHING REGULATIONS FOR SPECIFIC DETAILS.

Location of submandibular pores on under side of lower jaw...



NORTHERN PIKE
5 or fewer pores

MUSKELLUNGE
6 to 9 pores

NOTE: Hybrids have 5 to 8 pores on each side of lower jaw. ©

For further information please contact the Nebraska Game and Parks Commission or...

Muskies Inc.
www.muskiesinc.org



Line diagrams courtesy of Dr. James C. Underhill, University of Minnesota



NEBRASKA GAME AND PARKS COMMISSION



MUSKELLUNGE

Upper half of cheek and operculum with scales



NORTHERN PIKE

Entire cheek and upper half of operculum with scales

NOTE: Hybrids have 1/2 or more of cheek and upper half of operculum with scales.