Merritt Reservoir

2024 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 an 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.

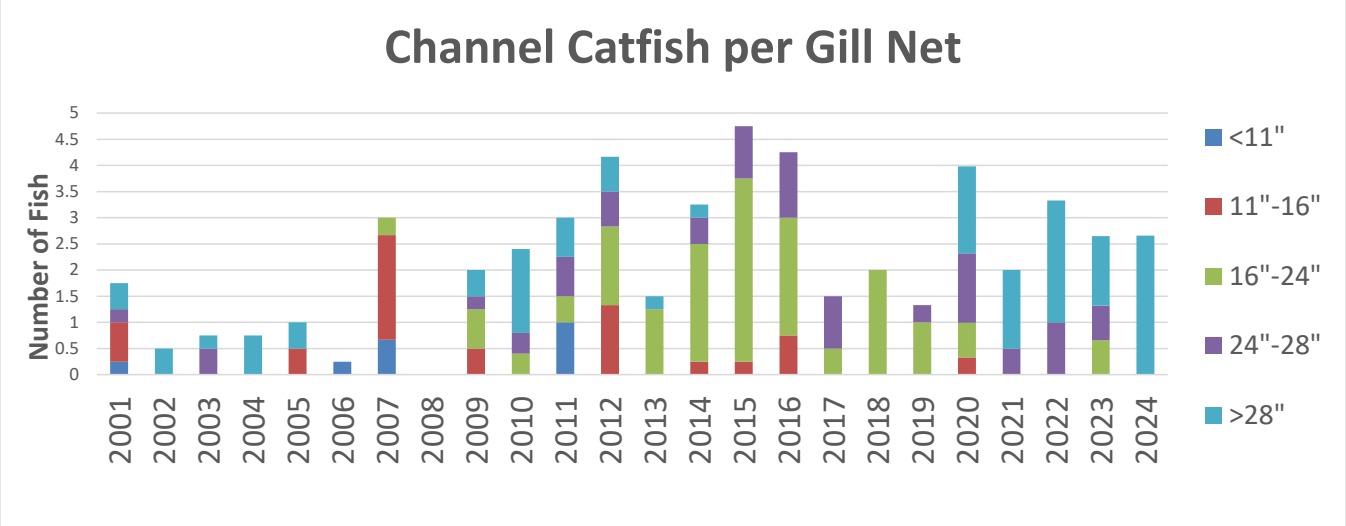
The following text and graphs are the results of netting surveys completed at Merritt Reservoir in 2024 as well as historical data. Biologists use gill nets to sample species that are primarily found in open water such as Walleye, White Bass, and Channel Catfish and trap nets to sample shore oriented species such as Bluegill, Black Crappie, Yellow Perch and Northern Pike. Electrofishing surveys are used to sample Largemouth and Smallmouth Bass at Merritt Reservoir. Trap net and electrofishing stations are sampled each year or on a 2-3 year rotational basis at approximately the same locations and dates as previous years to allow for trend comparisons. Gill nets for open water species are sampled annually.

Channel Catfish

Merritt Reservoir Channel Catfish abundance has remained low and 2024 was no exception. Surveys completed in the fall sampled 2.66 Channel Catfish per net. When compared to the average since 2001 of 2.2 per net it is slightly higher but not significant. Angler reports each year indicate a good catfish population with quality to trophy size catfish. These larger fish draw anglers to Merritt each year in search of trophy catfish and especially tournament anglers. Channel Catfish sampled in 2024 indicated all fish over 28 inches which should provide some quality fishing in 2025. Smaller fish are also present in Merritt but just missed during the standardized surveys. These sampling methods are not effectively targeting these fish which tend to be in deeper habitats when surveys are completed.

Anglers who target catfish usually do good drifting cut bait and dough balls working the edges of drop offs throughout the reservoir in the fall. Catfish can also be targeted through the ice as those fish tend to form large schools during the ice season.

Stocking requests were for 10,000 fish on alternate years (odd numbered years). This request was cut to 8,000 on alternate years due to angler requests to create a smaller trophy caliber catfish population in Merritt Reservoir.



Regulation:

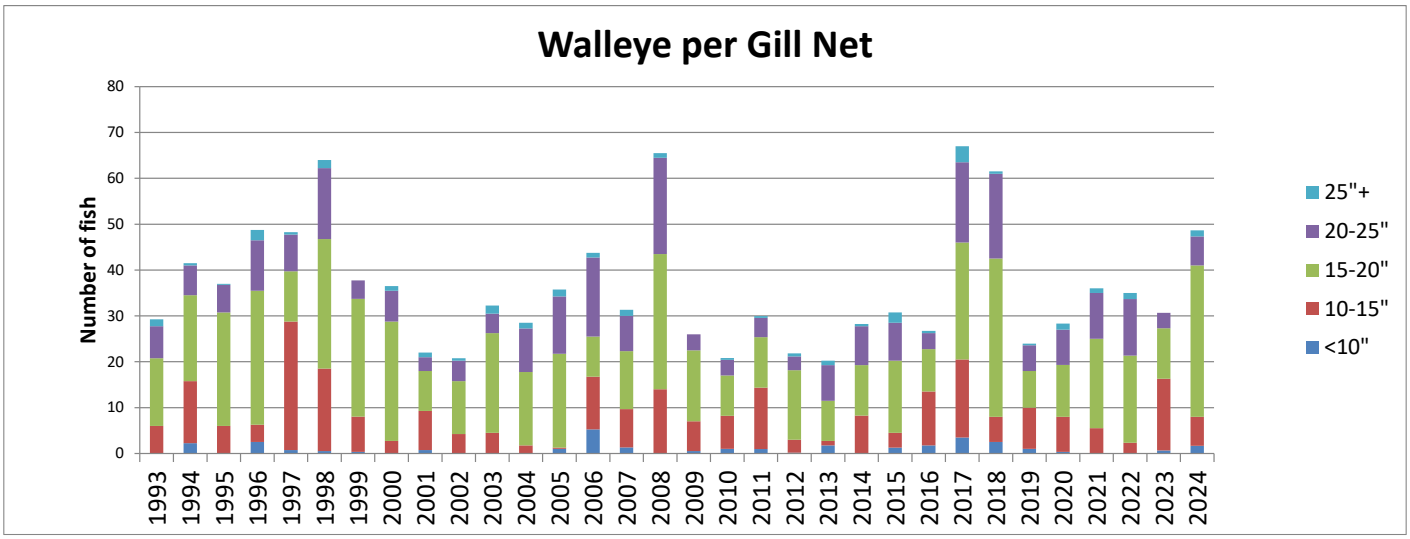
Daily bag limit of 5 fish with a possession limit of 20 fish. The Channel Catfish daily bag limit statewide shall include no more than one fish 30 inches or longer. This change is expected to protect larger fish which we are observing in our surveys.

Walleye

Walleye fishing has been important to Merritt anglers for a long time. Historical creel data indicated approximately 80 percent of the anglers come to Merritt to target walleye. Merritt has consistently been ranked in the top 5 Walleye fisheries in Nebraska for abundance and size structure and had the second highest gill net catch in Nebraska in 2025. A complete list of survey results can be found at https://outdoornebraska.gov/wp-content/uploads/2024/12/2025-Fishing-Forecast-for-web.pdf.

Fall surveys of Walleye in 2024 increased from 30.6 Walleye per net in 2023 to 48.66 Walleye per net in 2024. The average net catch for Walleye since 1991 is 35.4 fish per net. The catch in 2025 showed an excellent size structure with 83% of the population over the statewide minimum of 15 inches and 15% over 20 inches. Young of the year Walleye (<8 inches) are usually not big enough to recruit to our standardized gill net however fall electrofishing surveys indicated a potentially strong year-class with a catch rate of 256 walleye per hour.

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. Efforts are ongoing to determine if smaller fingerlings stocked in early June or larger fingerling stocked in later June are contributing more to the overall fishery at Merritt. Early results have indicated the smaller fingerlings stocked earlier are resulting in better recruitment probably due to available prey species at the time frame.



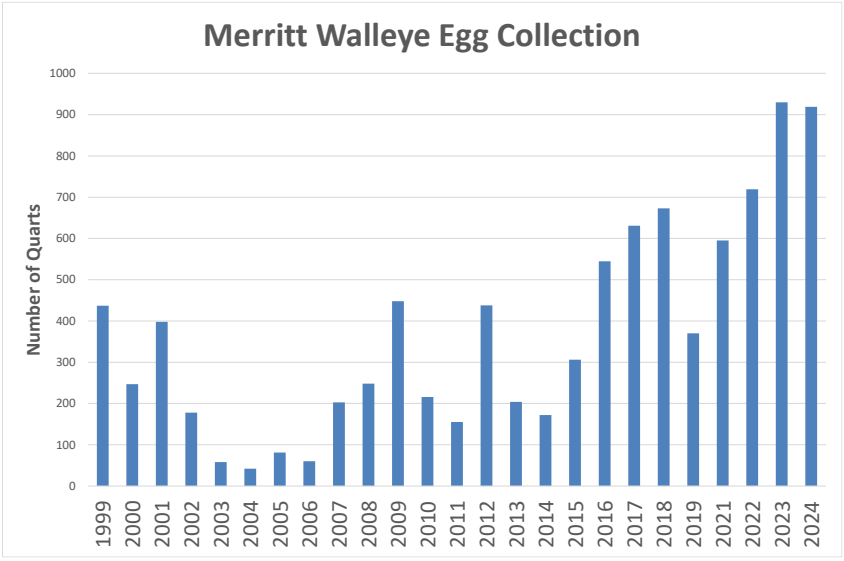
Regulation:

The walleye size limit at Merritt Reservoir shall include: One from 15 to 18 inches and three longer tan 18 inches or four longer than 18 inches. No more than one 22 inches or longer in the daily bag limit of 4 fish.

Walleye Spawn

Fisheries Division will conduct Walleye spawn operations at Sherman and Merritt reservoirs again in 2025. These operations usually occur during the first part of April and last until hatchery production needs are met for statewide requests. Gill nets are set parallel to the dam or shoreline in order to collect females as they venture into spawn. These nets are set short term and ran every 1-2 hours. The mesh nets target female Walleye and are usually big enough that male Walleye pass back and forth through the net avoiding capture. 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.

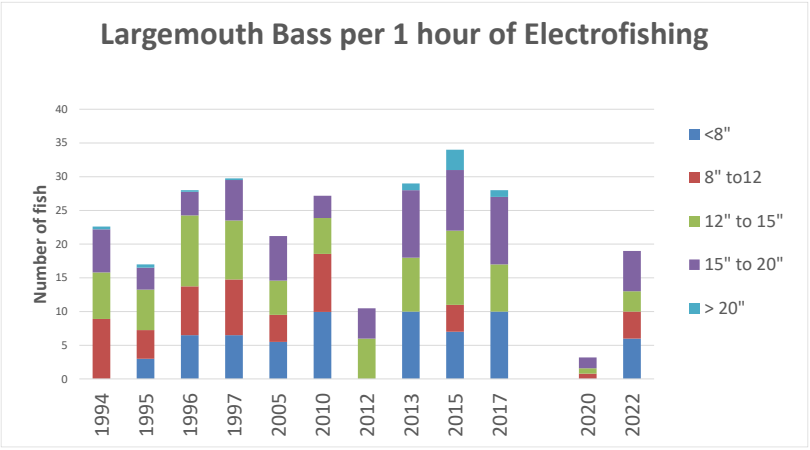
Crews were able to collect 1,308 females of which 595 were spawned to collect 919 quarts of eggs in 2024.



Largemouth Bass and Smallmouth Bass

Largemouth Bass were not surveyed at Merritt in 2024 due to time constraints and still assessing winterkill conditions on other lakes across the district. Surveys for Largemouth Bass and Smallmouth Bass populations at Merritt will be conducted in 2025.

Largemouth Bass populations have always ranged from 20-35 bass per hour which is a low density population. However, Merritt has always had a great size structure of Largemouth Bass. Sampling in 2022 had similar catch rates of all size categories except fish over 20 inches but angler reports and tournament anglers said otherwise. During the surveys in 2022 approximately 31% of these fish were greater than 15 inches. The biggest Largemouth Bass sampled was 19.6 inches and weighed 5.8 pounds.



Electrofishing surveys for young of the year walleye observed good numbers of Smallmouth Bass along rock shorelines and hard sand flats. These fish will be surveyed in 2025 to determine the overall abundance.

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.

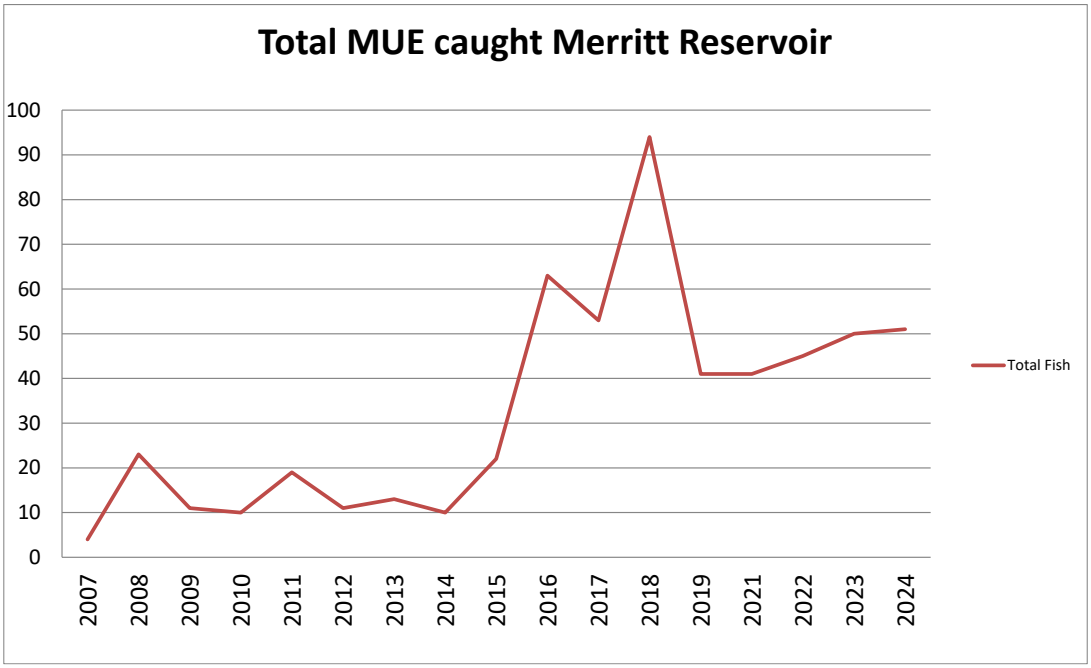
Muskellunge and Northern Pike

Muskellunge fishing at Merritt is growing in popularity over the past 10 years. The state record came out of Merritt in 1992 and weighed 41.5 pounds. Muskellunge are very difficult to sample during our standardized spring and fall surveys but often captured during spring walleye spawn operations at Merritt. In 2020 a research project was started at Merritt and Cottonwood Steverson Lakes, to determine how old Muskellunge can get, how fast they can grow, what lengths they can attain, and whether they can reproduce in these environments.

Fisheries crews have still not sampled a muskellunge over 50 inches but angler reports received each year document a few fish over that 50 inch mark. What biologists have been finding is similar to other species that females will attain larger sizes than males. The biggest female collected during the project so far was 48.7 inches and the male right around 40 inches. In 2024, 51 Muskellunge were collected at Merritt. The largest fish sampled in 2024 was a 47.6 inch female.

Muskellunge stockings in 2022 (1009 fish) and 2024 (563 fish) have all been pit tagged to determine how fast these fish are growing. These fish have not recruited to our sampling gear yet but should be showing in our surveys over the next couple years.

Northern pike are also available at Merritt Reservoir.



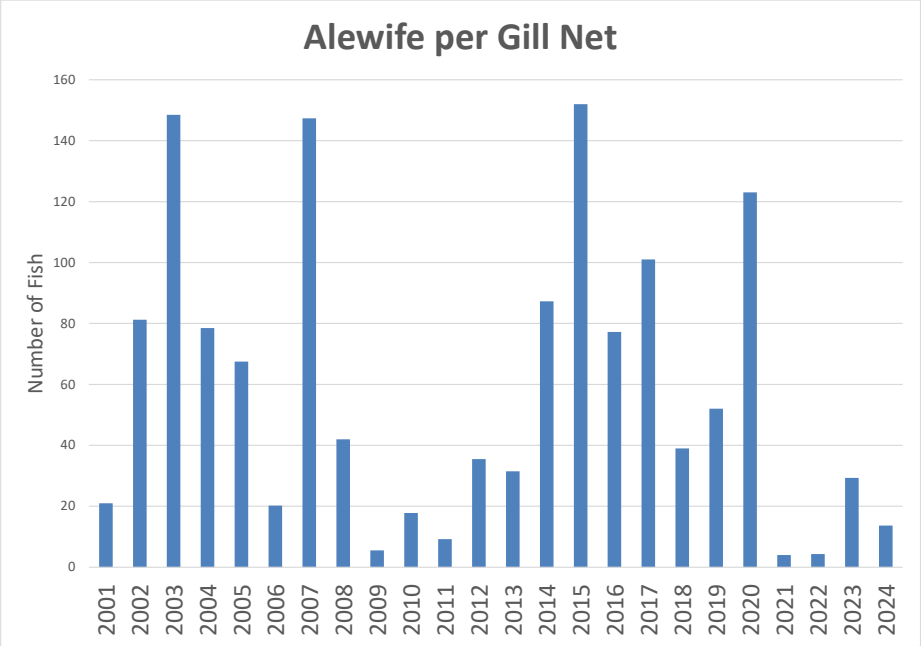
Regulation:

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 is allowed in the daily bag.

Alewife

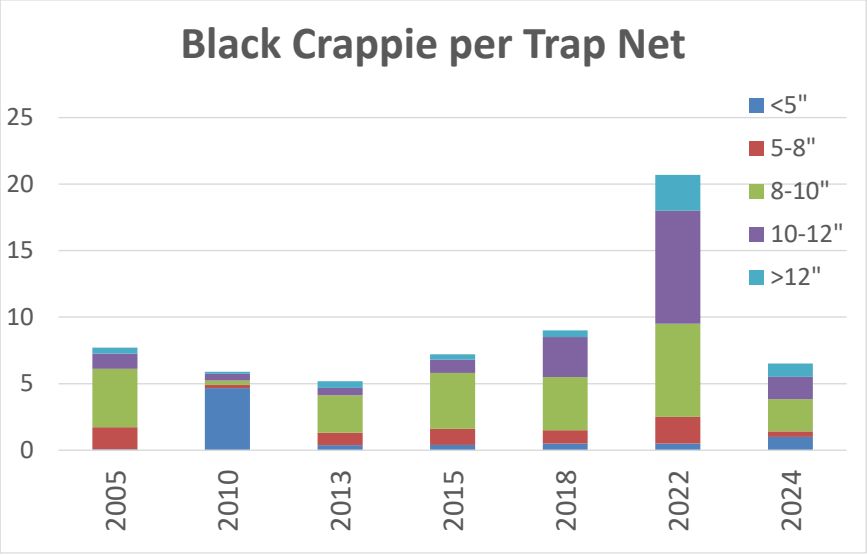
Alewife are the dominant prey species in Merritt for Walleye, Northern Pike, Muskellunge, Largemouth Bass, and Channel Catfish. Gill net surveys since 2020 have shown low abundance of alewife especially during the 2022/2023 winterkill time frame. Electrofishing efforts in 2023 and 2024 have indicated a higher abundance of alewives than gill net data represents. The fish are relatively small and not recruiting to our standardized gill nets.



Alewife grow and maintain great Walleye populations but also prey on eggs and fry of other species causing poor recruitment at times. Stocking of other species is sometimes needed to supplement and maintain these populations.

Other Species

Panfish populations at Merritt include: Black Crappie, Bluegill, Yellow Perch, Pumpkinseed, Green Sunfish, and Rock Bass. These fish provide opportunities during the hot summer months as well as through the ice. The 2024 surveys had a catch rate of 6.5 Black Crappie per net and showed an excellent size structure. Each size category was represented with about 15% over 12 inches and 41% over 10 inches. The largest crappie sampled measured 13.8 inches. Angers are reminded that these fish are targeted during the spring spawning period. Cold weather patterns can affect catch rates and could be the reasoning for lower abundance in 2025.



Regulation:

Bluegill, Yellow Perch, Crappie, Green Sunfish, Etc. Bag limit of 15 fish in combination and a possession limit of 30 fish.

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 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 are now also located in Lewis and Clark Lake, Lake Yankton and the Missouri River. Zebra mussels and quagga mussels are small fingernail-sized mussels and adults are usually ¼ to ½ 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. However, it is important to note that Zebra Mussels are spreading quickly in nearby South Dakota with expansion up the Missouri River Reservoirs, eastern South Dakota Glacial Lakes, and Pactola Reservoir in the Black Hills. Anglers and boaters fishing those waterbodies as well as Merritt should be extra cautious and always follow CLEAN, DRAIN, DRY protocols.

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 State Park. 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.

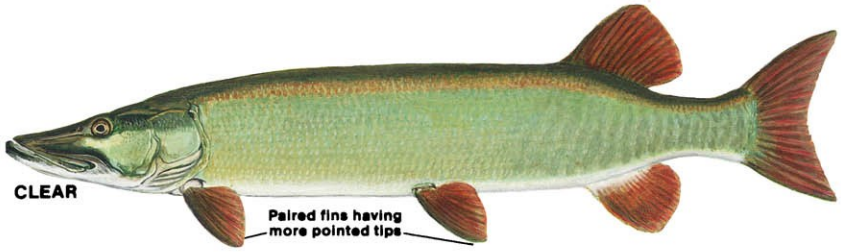
For more information on fisheries management or activities at Merritt Reservoir

Joe Rydell (NGPC District Manager), (308) 763-2940 joe.rydell@nebraska.gov

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

MUSKELLUNGE - NORTHERN PIKE

Know How To Tell The Difference!



CLEAR

NOTE: Faint indication of marking pattern is *sometimes* present on posterior ⅓ of body in "clear" variation of muskellunge.

Paired fins having more pointed tips

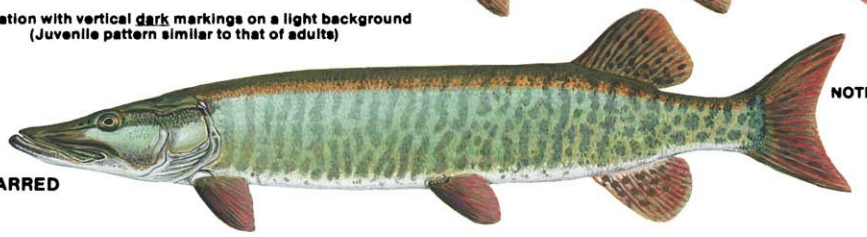
Caudal fin with pointed tips

MUSKELLUNGE
(Esox masquinongy)

3 COMMON PATTERN VARIATIONS

SPOTTED

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



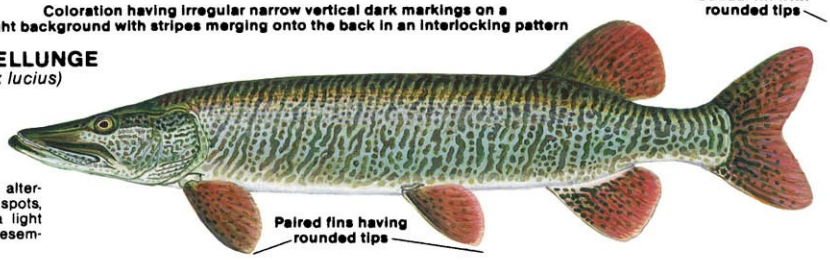
BARRED

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.

Caudal fin with rounded tips

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

HYBRID "TIGER" MUSKELLUNGE
(Esox masquinongy × Esox lucius)

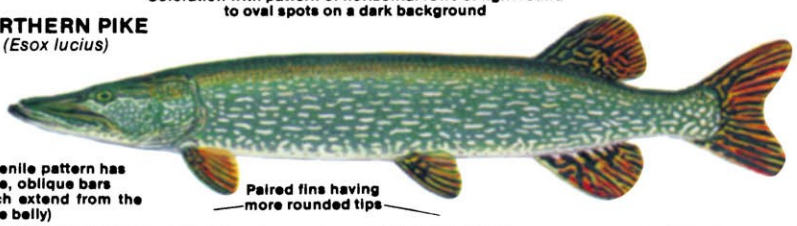


NOTE: Sides sometimes exhibit an alternating pattern of stripes and spots, or narrow paired-bars on a light background. Pattern *never* resembles that of northern pike.

Paired fins having rounded tips

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

NORTHERN PIKE
(Esox lucius)



Caudal fin with more rounded tips

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.

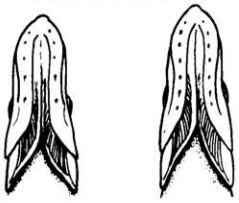
(Juvenile pattern has white, oblique bars which extend from the white belly)

Paired fins having more rounded tips

Color illustrations by:
IVAN PECK ©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

MUSKIES INC. Youth Fisheries Research

NEBRASKA GAME AND PARKS COMMISSION

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

Upper half of cheek and operculum with scales

MUSKELLUNGE

Entire cheek and upper half of operculum with scales

NORTHERN PIKE

NOTE: Hybrids have ⅔ or more of cheek and upper half of operculum with scales.