Merritt Reservoir

2020 Fall Survey Summary

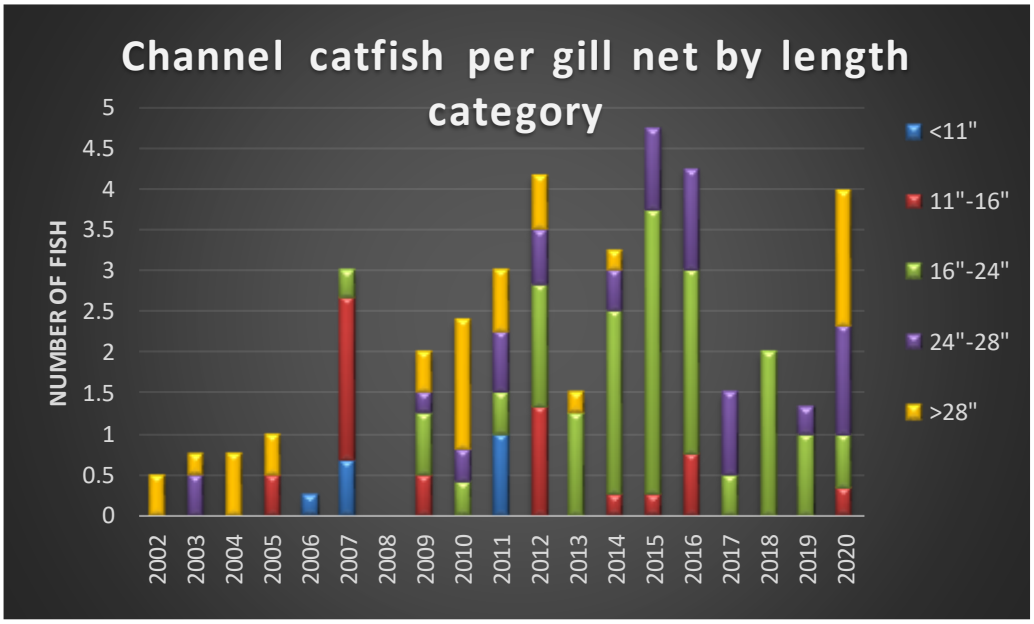
Zac Brashears Fisheries Biologist

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 2020 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 at approximately the same locations and dates as previous years to allow for trend comparisons.

Channel Catfish



Catch rates for channel catfish have historically been low at Merritt compared to other irrigation reservoirs across the state. Gill net surveys completed in 2020 showed an increased abundance of channel catfish compared to the three previous years with a catch rate of 4 catfish per net and resembled catch rates in 2012, 2015, and 2016. In 2020 41% of the catfish sampled were over 28 inches with the largest at 31.5 inches and weighed approximately 15 pounds. Very few fish of this size category have been sampled in the past 5 years during standardized surveys.

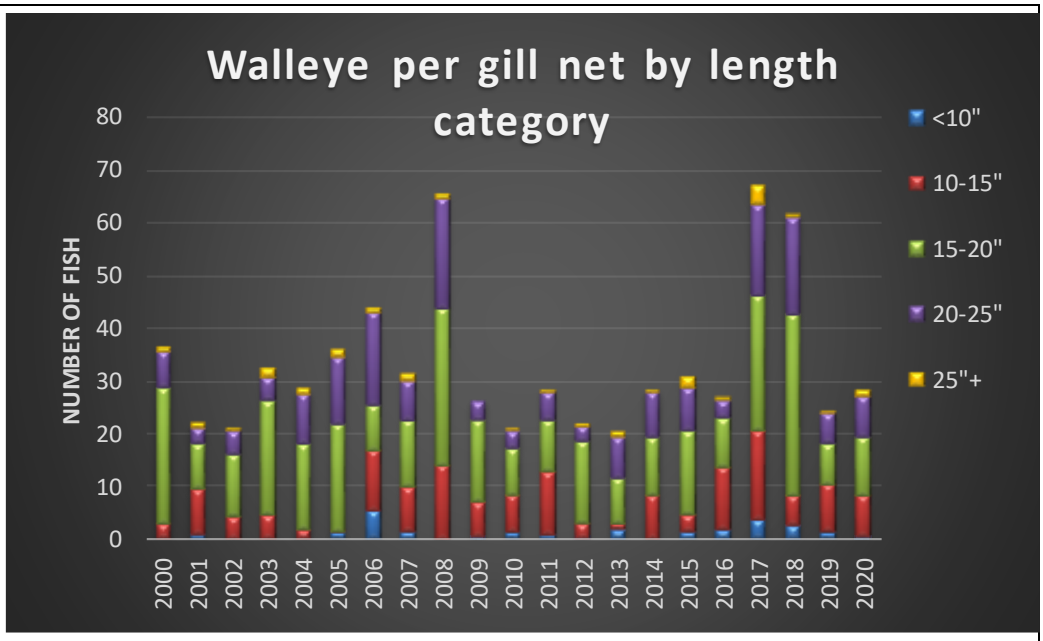
Anglers usually do well at Merritt drifting cut bait or dough balls and working the edges of drop-offs in late summer and early fall. Catfish can also be targeted during the early spring when they move into the weed beds and timber to spawn.

Stocking requests are for 10,000 ten-inch catfish to be stocked on alternate years at Merritt (even numbered years). Efforts are being made to provide anglers with opportunities for catching trophy channel catfish.

New Regulation:

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

Walleye



Fall surveys indicated an increased walleye abundance from 2019 with 28.3 walleye per gill net sampled. This catch rate is slightly lower than the 21 year average of 33.3 walleye per net. Size structure looked great with approximately 71% of the walleye sampled above the statewide minimum of 15 inches and 31% were larger than 18 inches. The largest walleye sampled during the 2020 fall surveys was 26.7 inches and weighed 8.5 pounds.

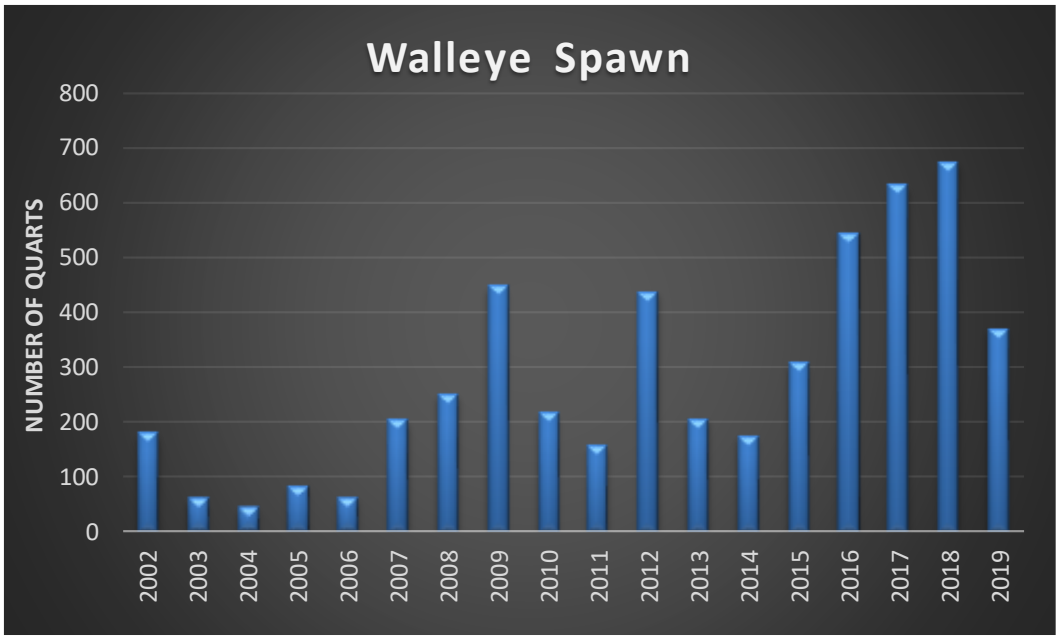
Young-of-the-year walleye are usually not big enough to recruit to our standardized gill nets, however, fall night electofishing indicated a strong year class of 2020 walleye.

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. Anglers find success in the early spring and summer targeting walleye at Merritt. Common fishing techniques include slip bobbers along weed beds, running slow death rigs along flats and drop offs, and pulling crankbaits during later summer months.

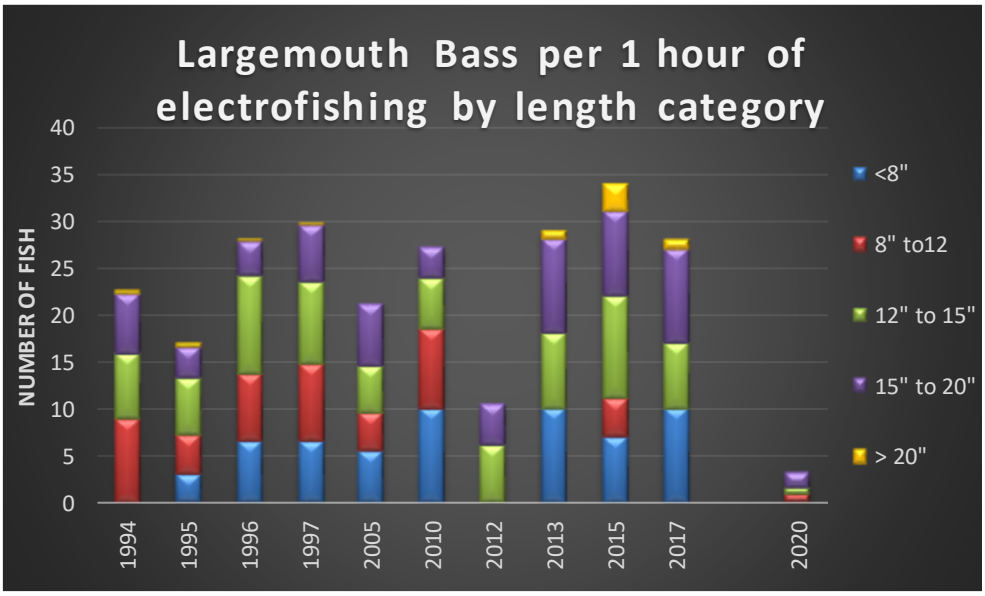
Walleye stockings at Merritt Reservoir occur during June with approximately 214,875 fingerling (2 inches) stocked to maintain the population. This stocking rate began in 2014 and is an increased stocking rate from 50 fish per acre to 75 fish per acre.

Walleye Spawn

Fisheries division plans to conduct walleye spawn operations at Merritt in 2021. During the 2020 spawning operations no walleye were collected from Merritt due to the covid-19 pandemic. However, fisheries personnel were able to collect enough walleye eggs from McConaughy Reservoir to meet statewide hatchery needs. On average 125,000 eggs per quart of walleye eggs are collected and yearly egg collection lasts until production needs are met. These operations usually occur during late March or early April with nets set parallel to the dam or shoreline in order to collect females as they move into shallower water to spawn. Nets are marked with a buoy on each end and anglers are reminded not to cast between the buoys or lures will be lost.



Largemouth Bass



Largemouth bass sampling in 2020 indicated very low numbers (3.2 largemouth per hour) which is not indicative of the bass population. These surveys are done during the spring when changing weather patterns and cold fronts are believed to have negatively influenced our catch rates in 2020. Resampling the largemouth bass population in Merritt is a priority in 2021. Historical records indicate a very good size structure at Merritt Reservoir from 2013-2017 with bass exceeding 20 inches. Additionally, when collecting bass in the fall of 2020 for Viral Hemorrhagic Septicemia (VHS) testing, the abundance and size structure was similar to historical data.

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 difficult to sample during our standard spring and fall surveys but are often collected during the spring walleye operations at Merritt. Muskellunge are typically spawning during a similar time frame. Walleye operations were not performed at Merritt Reservoir in 2020 but angler reports during the early spring indicated a healthy musky population with fish ranging from 28-50 inches. Merritt Reservoir continues to draw more anglers each year in search of trophy muskellunge. The state record came from Merritt in 1992 and weighed 41.5 pounds. Northern pike are also present in Merritt Reservoir adding additional fishing opportunities especially during the spring months and ice fishing season.

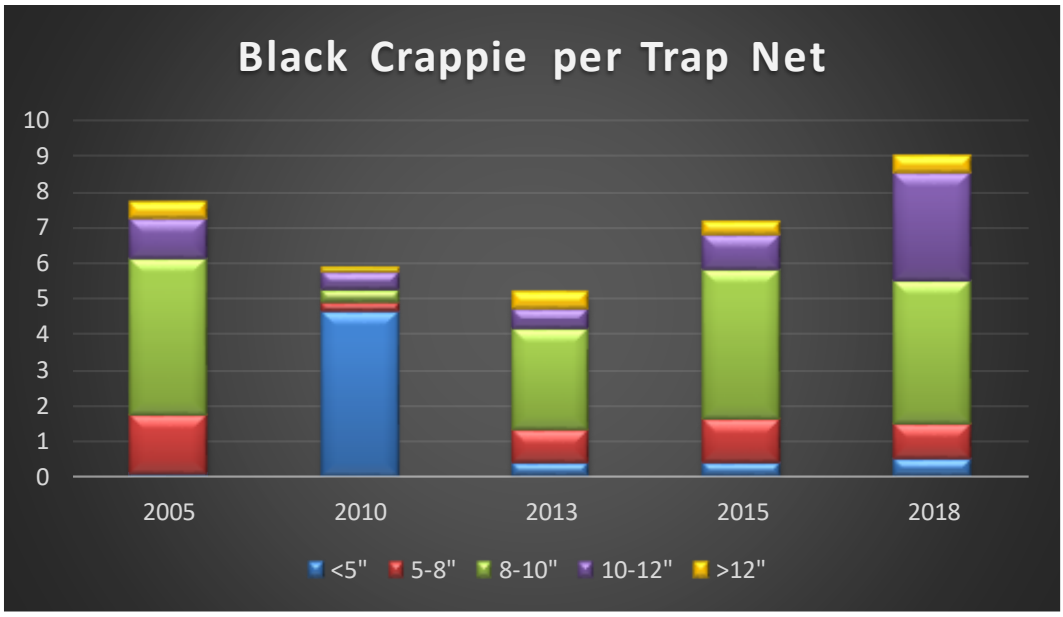
New Regulation:

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

Black Crappie

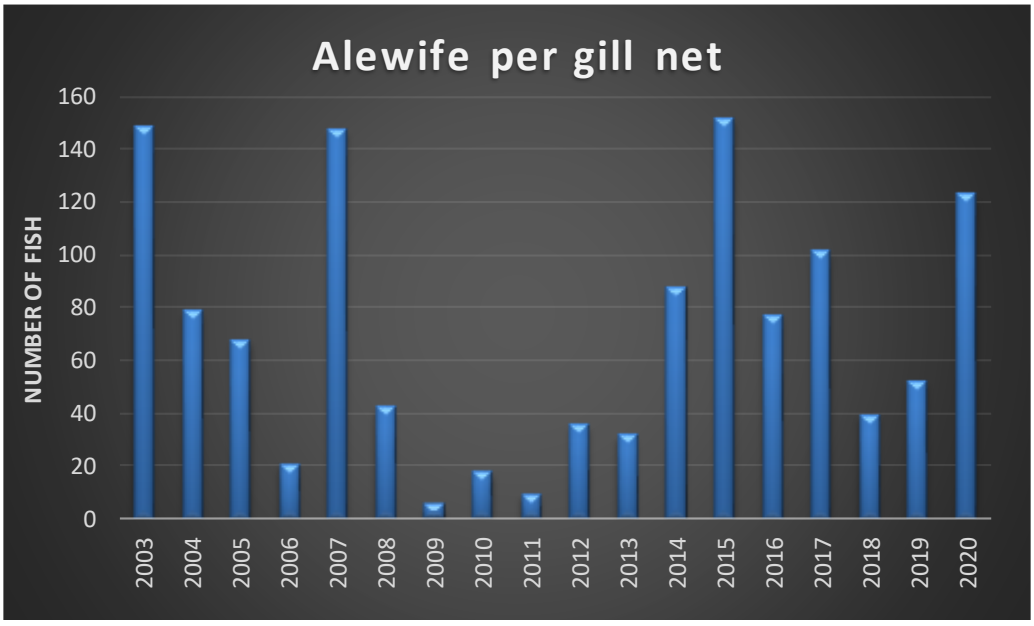
Panfish populations at Merritt consist of black crappie, bluegill, yellow perch, pumpkinseed, and green sunfish. These fish provide valuable opportunities in the late summer months when other species are difficult to find and also provide great angling opportunities through the ice during the winter months. In 2018, trap nets indicated 9 black crappie per net and was the highest recorded since 2005. Approximately 39 percent of the fish sampled were greater than 10 inches and 78 percent were over 8 inches. The largest crappie sampled measured 14.3 inches. Panfish populations are surveyed at Merritt every 2-3 years and will be done in 2021.

Panfish Regulations:
Combined daily bag limit of 15 fish with a possession limit of 30 fish.



Alewife

Alewife are the dominant prey species in Merritt for walleye, northern pike, muskellunge, largemouth bass, and channel catfish. Catch rates increased again in 2020 to 123 fish per net. Periods of high abundance of alewives can make fishing difficult due to an increase in forage. While these fish are a very valuable prey item that allow predatory fish to grow extremely well, alewife predate on eggs and young fish. This egg and young-of-the-year predation by alewife is the reason for most fingerling stockings in Merritt Reservoir.



Angler Access Project-Merritt Reservoir

A new boat ramp and breakwater was constructed in 2017 at the main area on Merritt Reservoir. The new boat ramp provides access during a wider range of water levels allowing access for a longer duration during the summer months.

Part of the project that has yet to be completed is a breakwater to the south-west of the boat ramp (near Willow Cove Campground). Construction of this breakwater will occur when the water level reaches a desirable level for construction.

This project is paid for by the Nebraska Aquatic Habitat, Angler Access Program, Capital Development Maintenance funds, and U.S. Coast Guard boating safety funding.

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 Air Force 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; mussels eliminated during drawdown) and below Gavins Point Dam in 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.

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. 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.

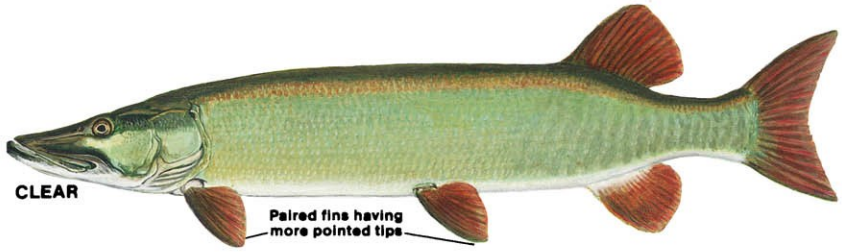
DRY-Allow all equipment to dry completely before launching into another body of water.

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 ⅓ of body in "clear" variation of muskellunge.

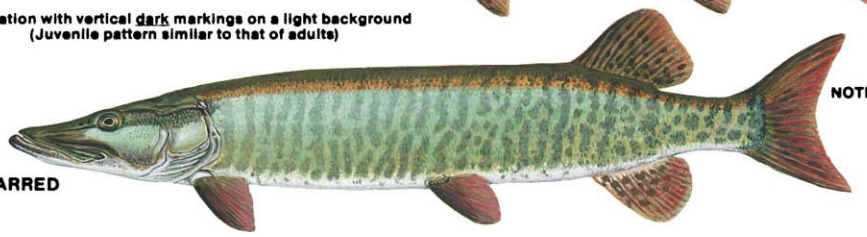
Caudal fin with pointed tips

MUSKELLUNGE
(Esox masquinongy)

3 COMMON PATTERN VARIATIONS

SPOTTED

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



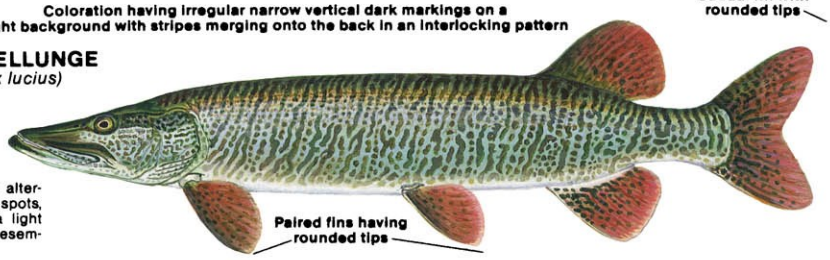
BARRED

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)

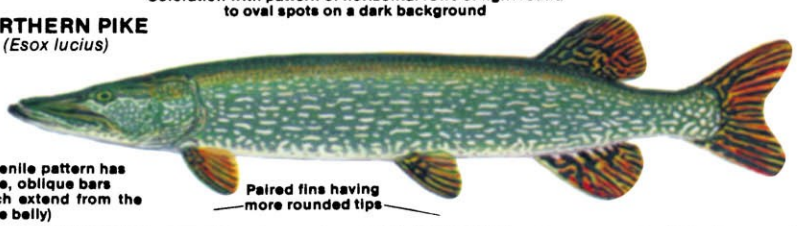


NOTE: Sides sometimes exhibit an alternating pattern of stripes and spots, or narrow paired-bars on a light background. Pattern *never* resembles that of northern pike.

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.

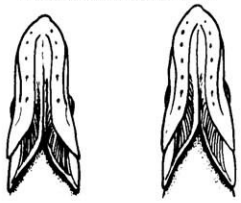
(Juvenile pattern has white, oblique bars which extend from the white belly)

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.