

Box Butte Reservoir

2022 Survey Summary

prepared by
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Box Butte Reservoir is located approximately 9 miles north of Hemingford, south of the Pine Ridge escarpment, in the Nebraska panhandle. The reservoir was constructed in the early 1940's and impounds the Niobrara River which originates about 60 miles upstream. Box Butte Reservoir was designed for irrigation, flood control, and recreation.

Box Butte Reservoir is owned by the Bureau of Reclamation (BOR) and encompasses 2,212 acres while the reservoir itself impounds approximately 1,600 of those acres at conservation pool (Elevation 4007ft) . A State Recreation Area (SRA) encompasses the northeast end of the reservoir while the rest of the property is managed as a Wildlife Management Area (WMA). These areas are all managed by the Nebraska Game and Parks Commission. The SRA offers electrical and primitive camping, water, boat ramp, fish cleaning station, swimming, picnic tables and shelters, and primitive restrooms.

Game fish species present in Box Butte Reservoir include: walleye, northern pike, channel catfish, yellow perch, bluegill, black crappie, rock bass, largemouth bass, smallmouth bass, and pumpkinseed sunfish. Rainbow trout and blue catfish have both been stocked in years past, and are possible to exist in the lake, but none have been collected in recent surveys or reported by anglers. One flathead catfish was collected in 2013 during a fall survey although they have never been stocked in the reservoir before. It is an excellent open water fishery for all game fish species as well as a top ice fishing destination for pike, bluegill, and yellow perch. Box Butte is also known for its water clarity, making it desirable for bow fishing, underwater powered spear gunning, and surface spear action.

A spring frame net survey was conducted on March 29, 2022 to sample the northern pike population and a gillnet survey was conducted on September 27th and 28th, 2022 to look at the channel catfish and walleye populations. Panfish populations were not targeted in 2022 and survey results may underestimate the true abundance and size structure of those populations. The following text and graphs are the result of netting surveys completed during these surveys. For comparative purposes it also shows the results from previous years. Surveys are conducted each year at approximately the same locations and dates as previous years to allow for trend comparisons.

Anglers at Box Butte noticed a welcomed addition in 2022. A new Barracuda fish cleaning station replaced the old disposal type fish grinder. The Barracuda unit is virtually maintenance free, quieter, and processes fish faster than the old unit. This type of fish cleaning station is the new standard upgrade to all units across the state over time.

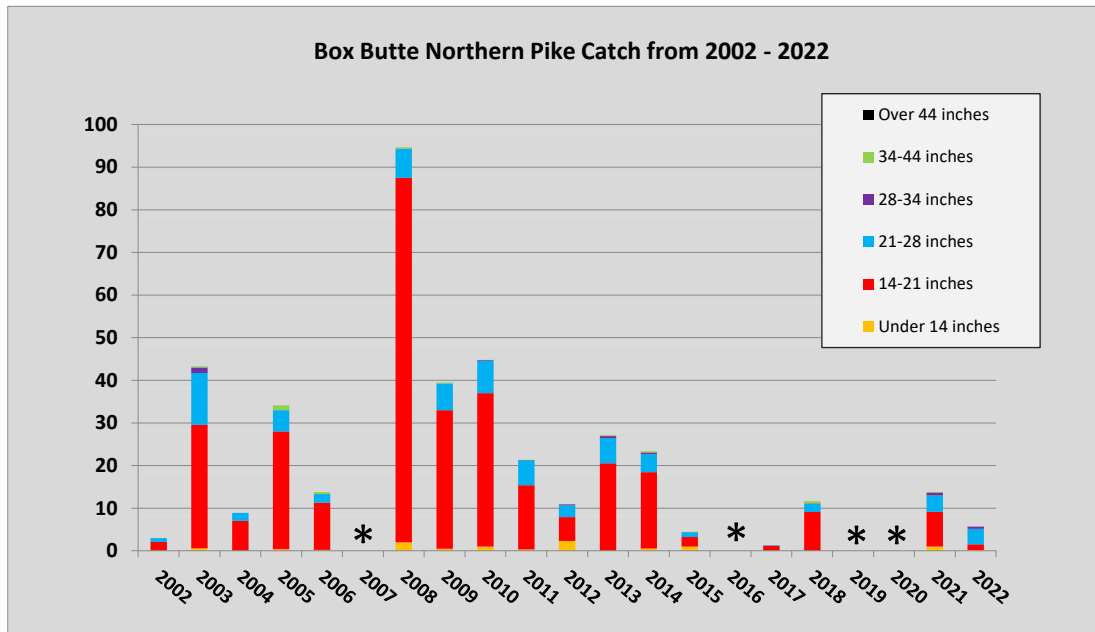
Other park amenities scheduled for the near future include a new shower house, dump station and a new 20 electrical site campground.



Northern Pike

Northern pike sampling at Box Butte Reservoir is conducted in mid to late March or when the ice comes off, whichever comes first. The sampling gear consists of frame nets that are set perpendicular to the shoreline to intercept pike as they move into vegetated spawning areas. The 2022 survey was conducted on March 29th using six frame nets.

Thirty-four northern pike were collected for a total catch rate of 5.7 fish per net. The pike population catch has indicated a declining abundance since the peak catch rates in 2008. The average size was 22.8 inches. Although the largest pike collected during the survey was 29.3 inches, several fish over 32 inches were collected during the fall gillnet survey. Angler reports also indicated more larger pike in 2022 than years past.



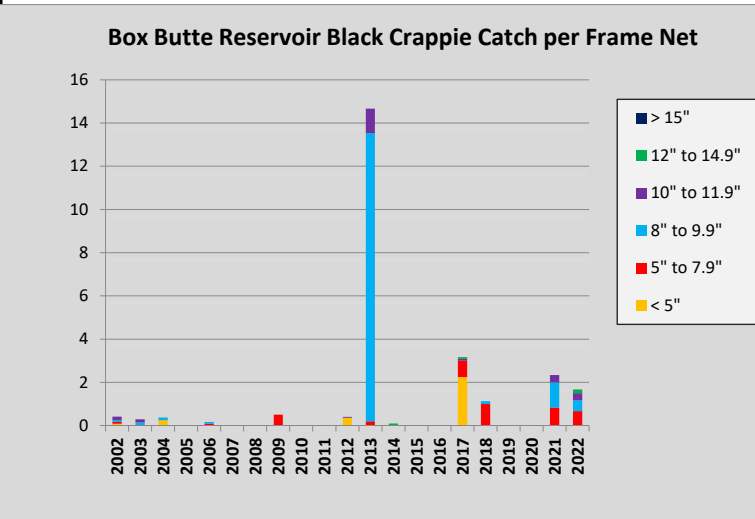
The northern pike regulation in 2008 was changed to include a 10 fish daily bag limit with a protected slot. Anglers were required to release any pike between 28 and 34 inches and only one pike over 34 inches was allowed in the daily bag. This regulation appeared to be reducing the pike abundance, but few pike were growing into the 28 inch protected slot. A new regulation was imposed in 2019 that maintained the 10 fish daily bag limit but only 3 pike could be longer than 22 inches and only one of those pike could be over 34 inches. This regulation concentrates the extra harvest on smaller, slower growing males, and reduces harvest on the larger, faster growing females. Although the size structure of pike in Box Butte appears to be improving, this regulation will continue to be monitored for the next several years.

Popular methods to catch pike include casting or trolling lures such as spinnerbaits, spoons, jigs with plastics, or crankbaits. Live bait is also very effective. Past creel surveys indicate that the best months to target pike are May and June and late into the fall.

Panfish

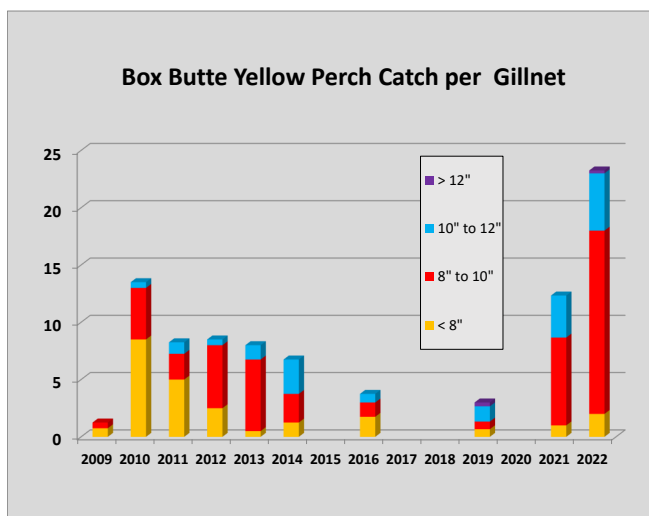
The panfish populations were not targeted in the spring frame net survey of 2022. Panfish surveys typically occur in April for yellow perch and May for bluegill and crappie. Both spring frame nets and fall gillnets do indicate some of the size structure of panfish even if the abundance does not represent the populations.

Bluegill are doing very well in Box Butte with anglers reporting exceptional catch rates of 8 to 9 inch fish in 2022. Spring frame net catch suggests 22 percent of the population is over 8 inches.

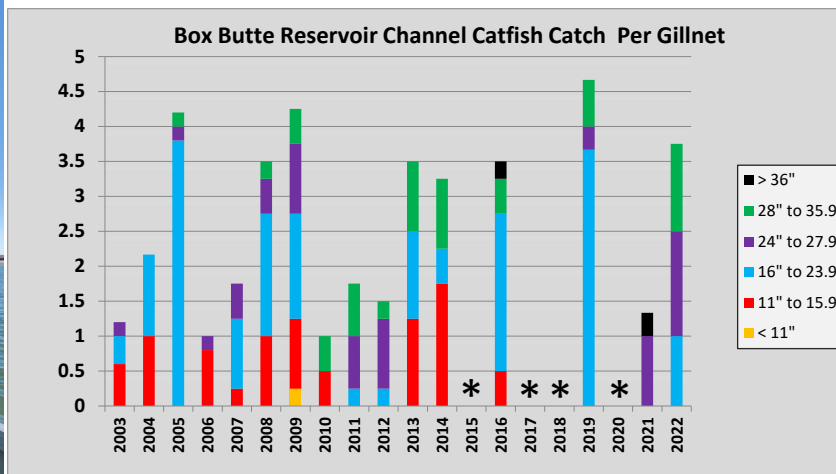


Black crappie have been rare in frame net surveys but are becoming more common with consistent year-classes. The majority of the crappie population is around 10 inches with some fish over 12 inches.

Yellow Perch catch per gillnet has been increasing since 2019. The average size perch collected in 2022 was 9.1 inches but some fish over 12 inches are present in the fishery. With lower northern pike abundance, and good water levels, yellow perch may continue to do well in the reservoir in the coming years.



Channel Catfish



The channel catfish gill-net catch in 2022 was 3.75 fish per net. The catfish population remains low in Box Butte as indicated by the 20 year average of 2.1 fish per gillnet. Low abundance, however, consistently produces a trophy class fishery with channel catfish exceeding 28 inches on a regular basis. The average size catfish sampled in 2022 was 26 inches with the biggest one at 33 inches and 17.5 pounds.

To maintain this trophy population a new regulation was put into effect in 2021 to allow only one channel catfish over 30 inches in the daily bag limit. The daily bag limit remains at 5 channel catfish with a possession limit of 20.

Box Butte receives an annual stocking of 1600 fish channel catfish that are approximately 9-10 inches in length. This is a stocking rate of 1 fish per acre.

Anglers should also know that blue catfish were stocked in Box Butte in 2007 and again in 2008 to add species diversity and create a potential trophy fishery. Although only one blue catfish was sampled in 2008 and none since then, it is possible for them to show up in the fishery. It is the anglers responsibility to be able to differentiate species as channel catfish have a bag limit of 5 fish per day and blue catfish are managed as a trophy fish statewide with a bag limit of 1.



Blue or Channel?

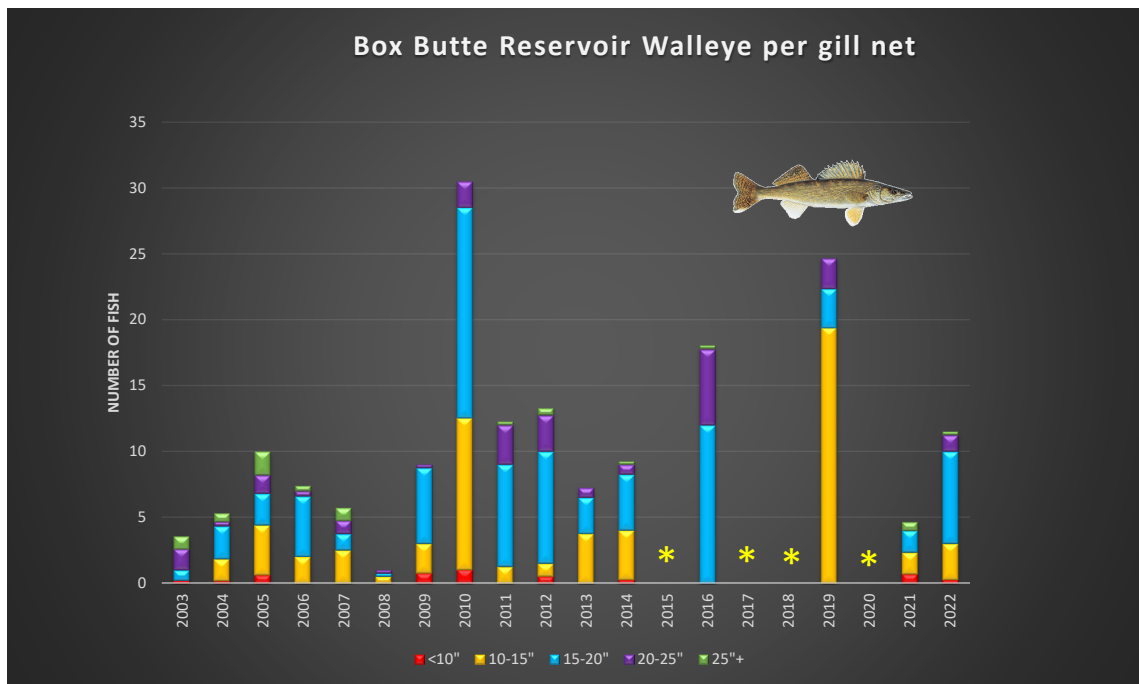
1. Blue catfish have a long straight anal fin while a channel catfish's anal fin is rounded.
2. Small channel catfish will have spots across its body while blue catfish will not.

Walleye

Walleye numbers in 2022 were slightly above the 20-year average of 10.8 walleye per gillnet with a gillnet catch of 11.5 fish per net. Of those fish that were sampled, 74% of them were above the statewide minimum length requirement of 15 inches. The average size of walleye collected during the survey was approximately 16.6 inches and the largest fish surveyed was 26.8 inches.



Strong year classes of walleye from 2018-2019 make up a bulk the population and will provide excellent fishing and harvest opportunities over the next couple years. Box Butte Reservoir is one of the few waterbodies that consistently produces natural recruitment, but in 2018 while the reservoir was held low for repairs on the dam, walleye fingerlings were stocked. The 2018 year-class was very successful and walleye fingerlings have continued to be stocked. Stock contributions will be evaluated in 2023 to see if the walleye recruitment is a result of stocking or good natural recruitment to the population.



Overall, the walleye fishery at Box Butte is excellent and can be contributed partially due to higher reservoir levels over the past few years. These higher reservoir levels have increased productivity of the lake and also the amount of flooded terrestrial vegetation which small walleyes and other species will use for cover. Anglers who target walleye at Box Butte reservoir should see decent numbers of walleye in their creel over 15 inches and there is a chance at some walleyes longer than 20 inches.

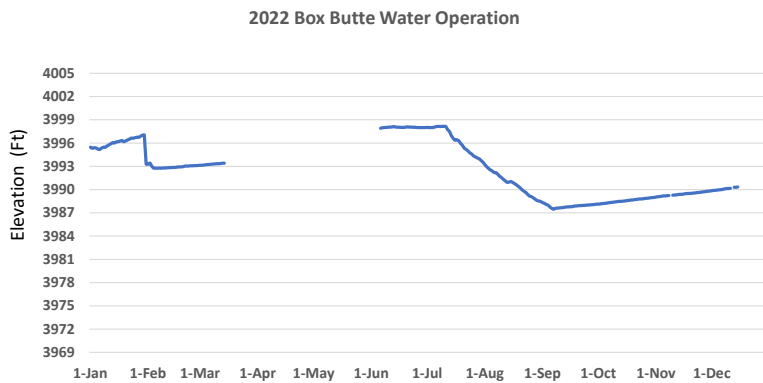
Anglers are reminded that they are allowed a daily bag limit of 4 walleye that must be greater than 15 inches and only one walleye over 22 inches may be included in the daily bag.

Bass

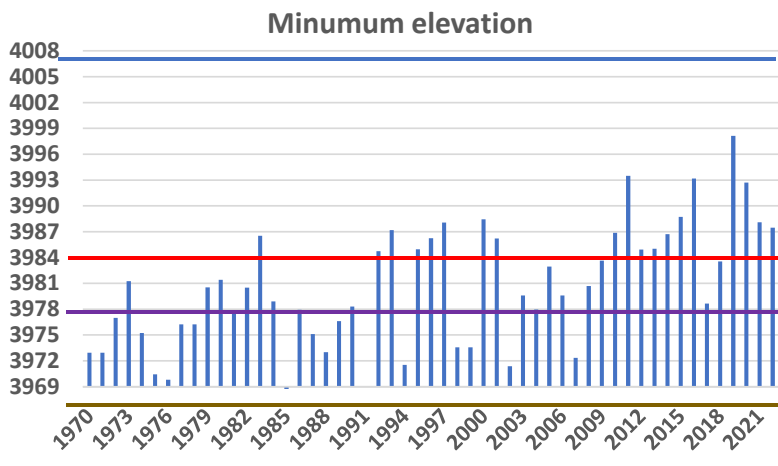
Bass populations were not surveyed in Box Butte in 2022. However, the reservoir consistently produces some quality bass fishing. Both smallmouth and largemouth can be found in Box Butte with some with some big fish reported by anglers.



Water Operations



Box Butte water levels topped out at elevation 3998.16 feet and a storage of 16,831 acre-feet in 2022. Irrigation used 9,971 acre-feet of water leaving the lake in pretty good shape for the season. The old minimum draw down agreement (purple line) at 3979 feet elevation expired in 2020 and no new agreement has been reached yet. The irrigation district has been able to leave more water in the reservoir with good water years than years past. The boat ramp is functionable down to elevation 3985 feet (red line). Maintaining higher water levels in the reservoir increases productivity and the results are showing up with the exceptional fishery.



Invasive Species

Over the past several years invasive species have become a rising concern in Nebraska. 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 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. Although no invasive mussels have been documented yet at Box Butte Reservoir, sampling for these veligers occurs throughout the summer when water temps are above 50 °F. With the growing number of lakes in South Dakota infested with zebra mussels and the presence of them in Lewis and Clark, Lake Yankton, and throughout the Missouri River system, it is important to practice **CLEAN, DRAIN, and DRY** to prevent the spread to other Nebraska waters.

Box Butte Reservoir is not fortunate enough to be free from aquatic invasive species. Curly-leaf Pondweed and Eurasian Watermilfoil are two invasive weeds present in the Reservoir. Both of these plant species 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. Removing any visible plant material from boats and trailers is a must and remember to **CLEAN, DRAIN, and DRY!**



Curly-leaf Pondweed from
Box Butte Reservoir

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

DRAIN- Drain all water before leaving, including livewells, bilge, ballast, and any parts or equipment that can hold water. Remember to remove all boat plugs before leaving the boat launch area and don't put them back in until ready to launch again.

DRY- Allow all equipment to dry completely before launching into another body of water. Don't fish more than one body of water in a day without drying all equipment first.

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

Don't forget to lower your outboard motor to drain all the water from your lower unit before leaving a boat launch facility.

For additional information about fisheries management at Box Butte Reservoir please contact the following personnel by phone or email addresses listed below.

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