Northwest District Sandhill Lakes

2020 Survey Summary

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(Fisheries Biologists)

Introduction

The sandhill region of Nebraska is a unique geographical region comprised of stabilized sand dunes, exposed groundwater lakes in the valleys, and perched mineralized lakes on poorly drained soils. A few lakes are watered by artesian wells and springs while the majority of lakes depend on the water table and fluctuate with its seasonal levels. Most lakes in the sandhill region are either too shallow or too alkaline to support a long-term fishery. Sandhill lakes are typically shallow, vegetated, highly productive systems with fisheries that consist of Yellow Perch, Bluegill, Black Crappie, Largemouth Bass, Northern Pike, Black Bullhead, and Green Sunfish. Some lakes may include additional species such as Walleye, Saugeye, Smallmouth Bass, Catfish, or Muskellunge. The following summary is for sandhill lakes with public access that were surveyed in 2020. Fisheries data from the Valentine NWR is not included in this report but can be found at http://outdoornebraska.gov/fishsamplingreports/. An interactive map of lake locations and species composition can be found at http://maps.outdoornebraska.gov/fishing/.

Sampling Methods

Sandhill lakes typically get surveyed at least once every 3 years for each priority species. Largemouth Bass are surveyed at night by electrofishing while shoreline oriented species (Bluegill, Crappie, Yellow Perch, and Northern Pike) are sampled using frame nets. A couple sandhill lakes have Walleye, Saugeye and Catfish populations that get sampled by gillnets in the fall. Species collected during a survey are counted, measured, weighed, and some scales removed for aging before releasing them back. Biologists use this information to monitor the health and size structures of each fish population. The following graphs and commentary are from surveys conducted in 2020 with suggestions on which sandhill lakes should produce quality fishing for each species. Anglers are reminded they should not rely solely on what the surveys indicate as patterns of weather and timing of the surveys could have effects on catch rates for certain species. For example Yellow Perch and Northern Pike are sampled in late March or early April when they are moving into the shallows to spawn; this can happen relatively quickly even within a few days making sampling of these species in several waterbodies relatively difficult.

Sandhill Surveys.

Water Levels were at an all time high at the end of 2019 and made access to some sandhill lakes difficult or impossible. Although 2020 was one of the driest years on record, water levels remain high in most sandhill lakes. Blue Lake Trail has been under water for all of 2020 and remains inaccessible. Most access roads through the sandhill are experiencing record water levels and have been closed most of 2020 to public use including Cottonwood Steverson WMA and around Crescent Lake National Wildlife Refuge (NWR). Crescent Lake NWR staff worked hard building up roads in 2019 and 2020 to open access up and get anglers to Island Lake. Although all access points and fishing piers remain flooded, small boats are still able to get on Island Lake. The Island Lake Loup trail has been moved to allow vehicle access back to Crane Lake. Water levels have dropped for now on Cottonwood Steverson WMA to open the road, but the parking lot and boat ramp remain flooded. Spring flow throughout the winter may result in additional flooding before spring of 2021. Not only has high water affected travel to and from lakes, it also has an impact on sampling effectiveness. Several waterbodies that were sampled in 2020 may have better fisheries than the surveys suggest.

Only 6 sandhill lakes were surveyed in 2020. Panfish surveys were conducted on Smith WMA, Frye Lake, Home Valley, Cottonwood-Steverson, and Rat and Beaver WMA. Bass populations were surveyed on Frye Lake and Rat and Beaver WMA. Saugeye/ Walleye and Catfish populations were surveyed on Big Alkali.

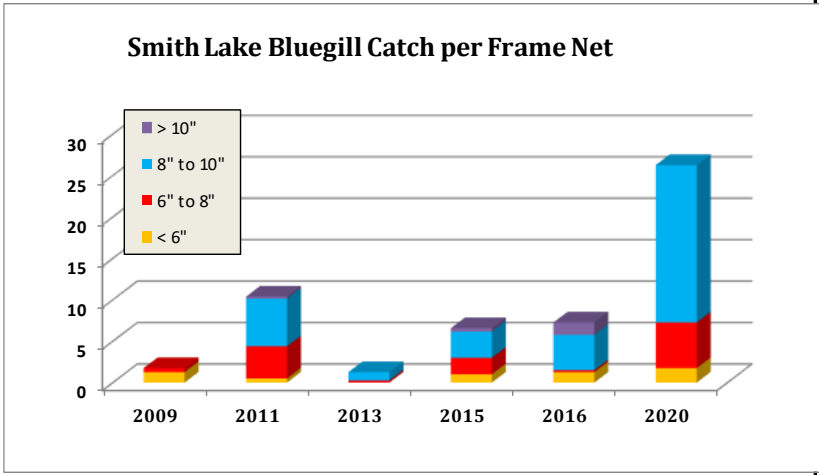
Access road through Cottonwood -Steverson WMA in January 2021.

Top: Access road to Crescent NWR in the spring of 2020.

Bottom: Fishing pier on the South side of Island Lake.

Smith Lake WMA:

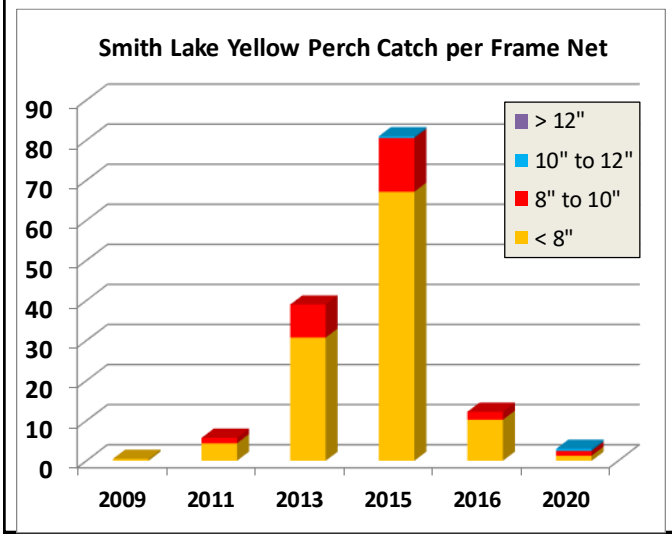
A frame net survey was conducted on Smith Lake WMA on March 25, 2020 targeting Northern Pike and panfish.

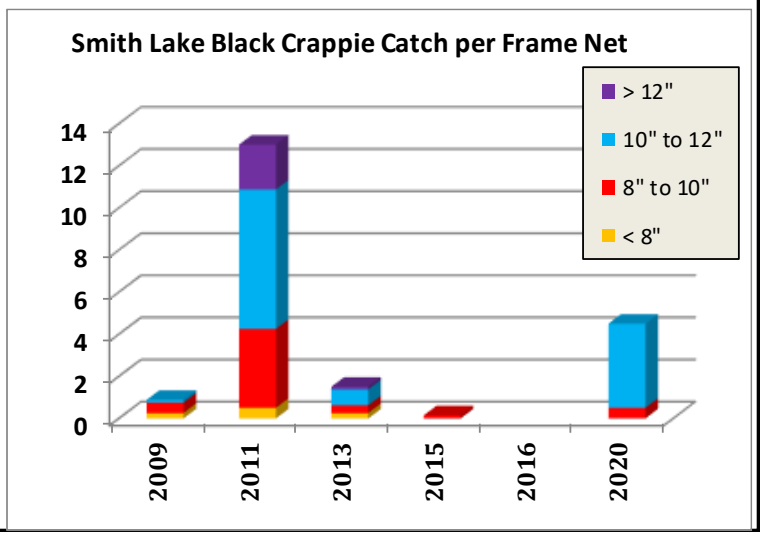


Bluegill was the most abundant species caught at 26.5 fish per net. The size structure remains excellent with 72% of the population over 8 inches although no Bluegill over 10 inches were collected in 2020. Body condition was exceptional and Smith Lake should continue to be one of the top destinations in the panhandle for Bluegill fishing in 2021.

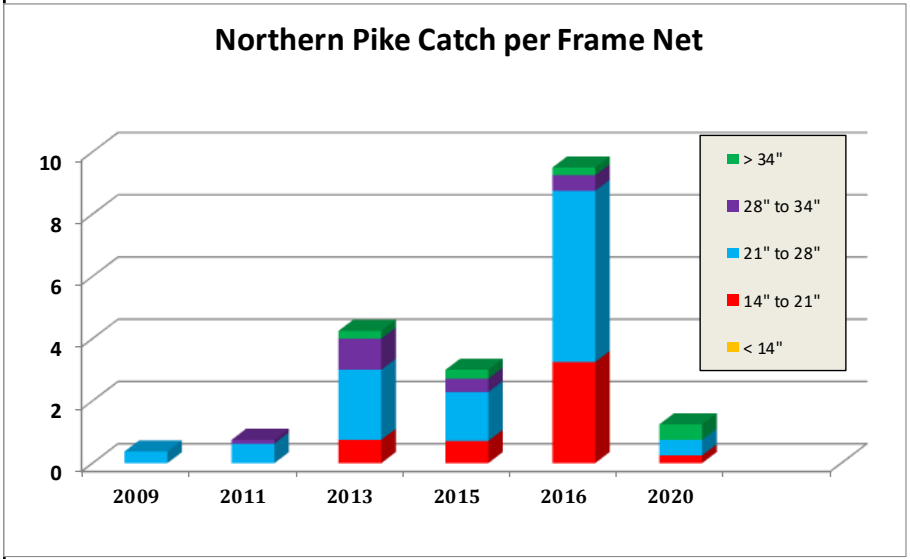
Smith Lake Yellow Perch population was lower in abundance in 2020 compared to previous years at 3 Perch per frame net, but the size structure of the Perch population is improving. Over 58 percent of the catch was over 8 inches with the largest Perch sampled at 10.3 inches. Perch in Smith Lake have historically had a yellow grub parasite in the flesh of the fish. This parasite is common in many sandhill lakes and is not harmful to anglers who eat the meat. The parasite goes through a series of hosts in it's life cycle that include snails, fish, and fish eating birds. If anglers encounter the parasite it is recommended to remove the visible worms when cleaning the fish, or practice catch and release on Perch at Smith Lake.

Smith Lake has historically been an excellent Crappie destination. The 2020 catch rate for Crappie was 4.5 fish per net, but likely not representative of the true population. Crappie are typically targeted later in the spring when they move shallow to spawn. The average size Crappie captured in 2020 was 10.4 inches with 89% of the catch over 10 inches.





Smith Lake WMA (continued):



Smith Lake is a top destination in the panhandle for Northern Pike. Pike abundance was down in 2020 to 1.25 fish per net. However, the size structure remains good with some very large fish reported annually. The biggest Pike collected in the 2020 survey was 36.1 inches and weighed 12.2 pounds.

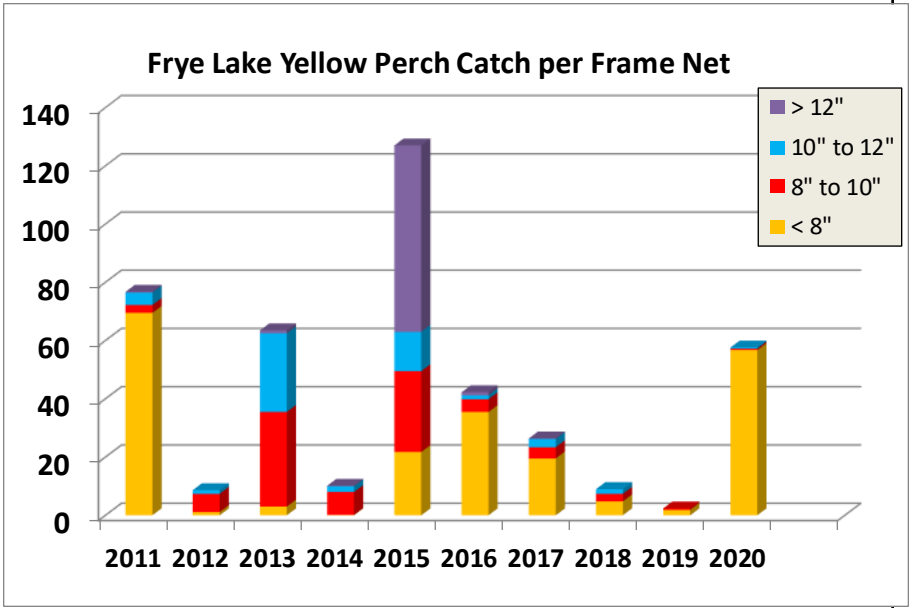
Largemouth Bass were not sampled in Smith Lake in 2020, however a few large individuals were captured in the panfish survey as pictured below. This bass was 19.6 inches and weighed 5.75 pounds.

Invasive species are a big concern to all of our lakes in Nebraska, but vegetation such as Eurasian Watermilfoil and Curly-leaf Pondweed are two of the top threats to sandhill lakes. These plants produce dense mats that vegetate to the surface and out compete other native vegetation. They can be spread to other waterbodies by just a fragment off a live plant.

Smith Lake was first confirmed with Curly-leaf Pondweed in 2014 but likely had been infested before that. Most years, the vegetation covers nearly 100 % of the lake surface by mid-May making spring fishing difficult. Curly-leaf Pondweed dies back in July and the released nutrients can result in blue-green algae blooms late summer. Fishing after July can produce some of the best opportunities of the year. Remember to remove all plant material from your fishing equipment, including your boat and trailer before leaving the launch area, and practice clean, drain and dry before venturing to a different lake.

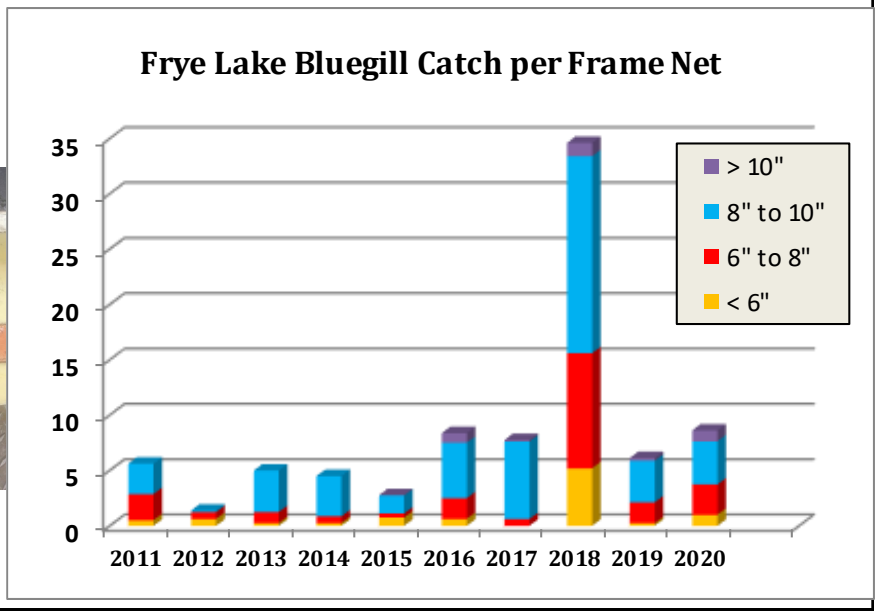
Frye Lake

Frye Lake is a 243 acre lake in Grant County located on the North side of Hyannis. Species present include Bluegill, Black Crappie, Yellow Perch, Largemouth Bass, Walleye, and a few remaining Channel Catfish. Bank access is very limited but the lake has a designated sand bottom boat launch area that does not have a service pier. Four-wheel-drive vehicles are recommended. Frye Lake was surveyed in 2020 to monitor the panfish and Largemouth Bass populaitons. Spring Frame nets were run April 21 and 22 2020 to target Yellow Perch and Bluegill. This survey was too early in the year to effectively sample the Crappie population and the following results may not be representative of the true Crappie abundance. Largemouth Bass were sampled at night on May 21, 2020 using night-time electrofishing.



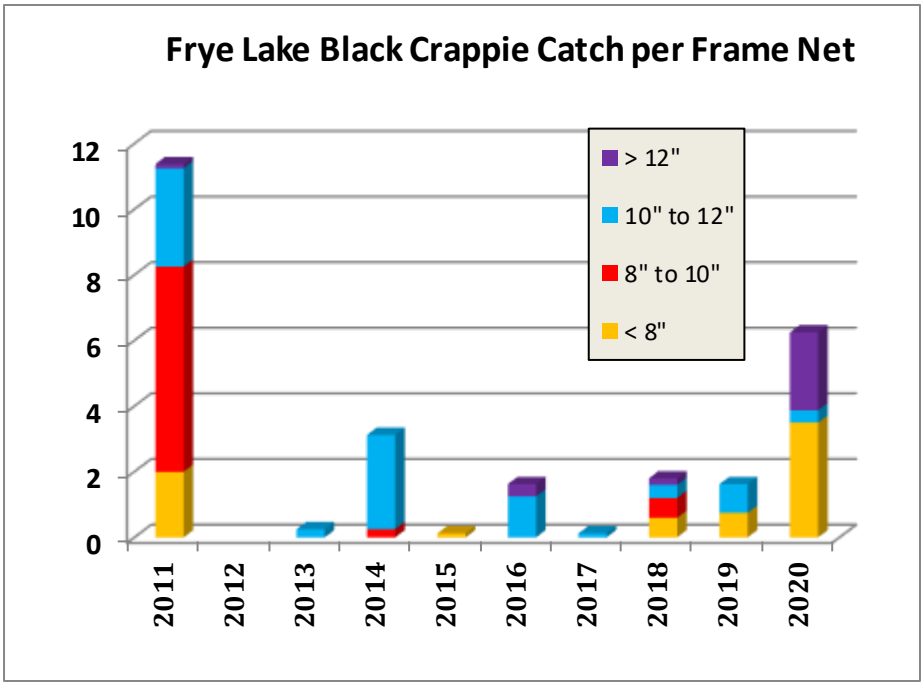
Yellow Perch was the most abundant species collected at 57.6 fish per net. Although some Perch over 10 inches were collected in the survey, a strong 2018 year-class made up 87% of the catch. This is encouraging as surveys suggested a declining population following the peak in 2015.

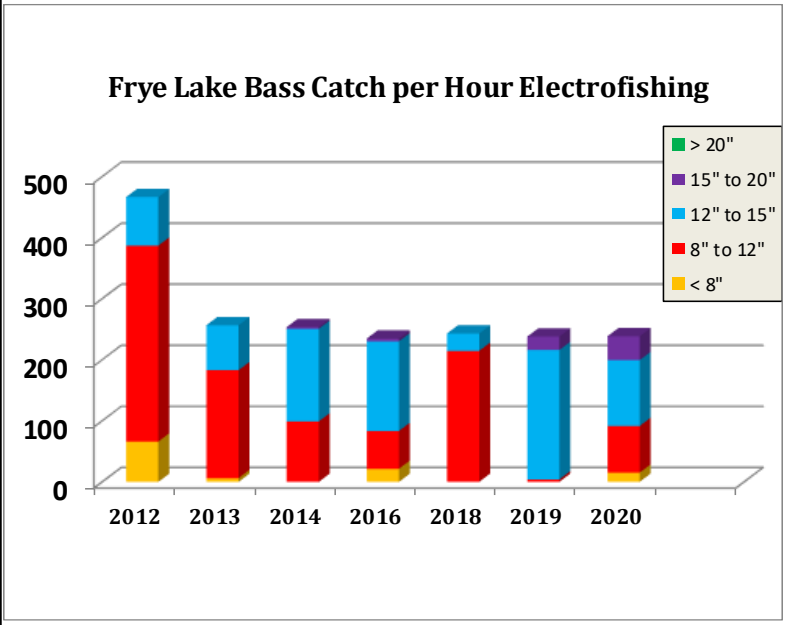
Frye Lake Bluegill are doing extremely well. With a catch rate of 8.6 Bluegill per net the abundance is typical of a sandhill lake. Most sandhill lakes have lower abundance than found in eastern Nebraska lakes and reservoirs but the size structure is exceptional. Nearly 57 percent of the population was over 8 inches with 11 percent of the population over 10 inches. Age and growth analysis suggests that there is consistent recruitment with all year-classes present from age-2 up to 11 years old. The biggest bluegill sampled at Frye was 10.5 inches and weighed 1.27 pounds.



Frye Lake (continued)

Even though the 2020 Crappie catch was up from previous years to 6.25 fish per net, this sample is likely not representative of the true abundance due to the time of year of the survey. However, the survey does suggest a the presence of a good proportion of population over 12 inches. The survey catch was dominated by two sizes of crappie (4.5 to 6 inch fish and 11.5 to 12.5 inch fish). The biggest Crappie sampled in 2020 was 12.7 inches.





The Largemouth Bass abundance has been pretty consistent over the last seven years with a 2020 catch of 238.5 fish per hour of electrofishing. Age and growth analysis indicated consistent recruitment with all year-classes present from age 2 up to age 9 fish. Bass at Frye Lake are growing slightly slower than the statewide average as it takes 7 years for a bass to reach 15 inches. 16 percent of the catch in 2020 was over the minimum length limit of 15 inches. With a high density of bass, Frye Lake would be a great location to get a new angler on some fishing action in 2021.

Following the Frye Lake renovation in 2002, Walleye and Channel Catfish were both stocked for a couple years to establish extra predators in case Common Carp survived. Natural reproduction of Walleye has been documented in Frye Lake but the population remains low. If an angler encounters one it is likely to exceed 20 inches and may exceed 25 inches. A few Channel Catfish still roam the lake as well. They don't show up in many surveys but when they do, they are typically over 15 pounds.

Cottonwood - Steverson WMA (Cottonwood - Steverson and Home Valley Lakes)

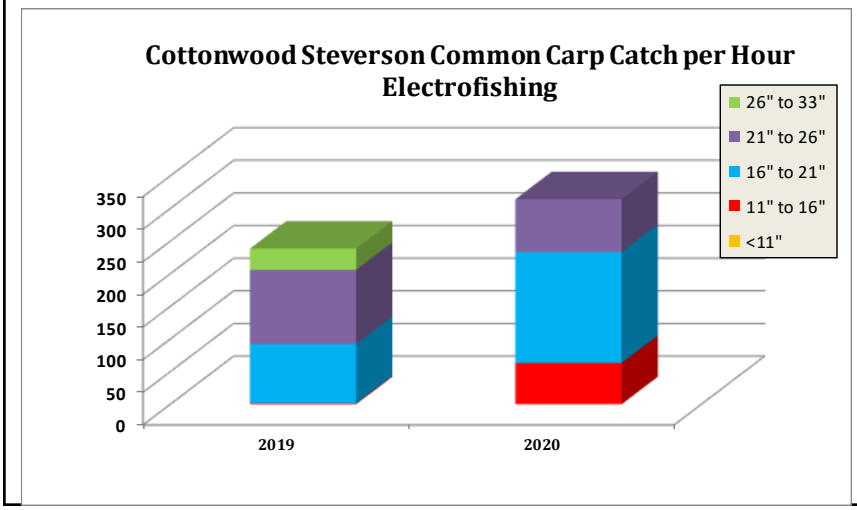
Cottonwood -Steverson WMA is located 30 miles north of Hyannis Nebraska or 35 miles south of Merriman in Cherry County. Cottonwood -Steverson WMA includes Steverson Lake, Cottonwood Lake, and Home Valley Lake. Cottonwood and Steverson Lakes are connected by a narrow passage and are managed as one system comprised of 680 acres with Walleye/ Saugeye, Yellow Perch, Crappie, Wiper, Muskellunge, Largemouth Bass, Bluegill, and Common Carp. A boat ramp is located on the south bank of Steverson Lake.

Home Valley is located north of Cottonwood Lake across a range of hills. Access to Home Valley is by foot or ice anglers can take a snowmobile, 4-wheeler, or UTV across the ice surface of Cottonwood and Steverson Lake to a designated trail to Home Valley. Anglers should use extreme caution when driving across Cottonwood and Steverson Lakes to look out for springs and weak ice. Home Valley is 220 acres and has Yellow Perch, Crappie, Bluegill, Walleye, Largemouth Bass, and Common Carp.

Cottonwood - Steverson was sampled on May 27, 2020 targeting Common Carp with daytime electrofishing, May 28 and 29, 2020 targeting Perch and Crappie using frame nets, and 0ctober 23, 2020 targeting Walleye/ Saugeye. Home Valley was surveyed on April 28 and 29, 2020 targeting panfish.

Cottonwood - Steverson Lakes

Common Carp are an invasive species that cause problems in sandhill lakes. Their feeding behavior roots up the bottom making the lakes more turbid which shades out vegetation and makes feeding for species such as Bass, Bluegill, and Perch difficult. The nutrients that typically grow into vegetation are transferred into algae and can result in dense green algae blooms throughout the summer months. Common Carp are very abundant in Cottonwood - Steverson with a catch rate of 314.25 fish per hour of daytime electrofishing. Management goals for sandhill lakes is to maintain a carp abundance below 100 per hour electrofishing.



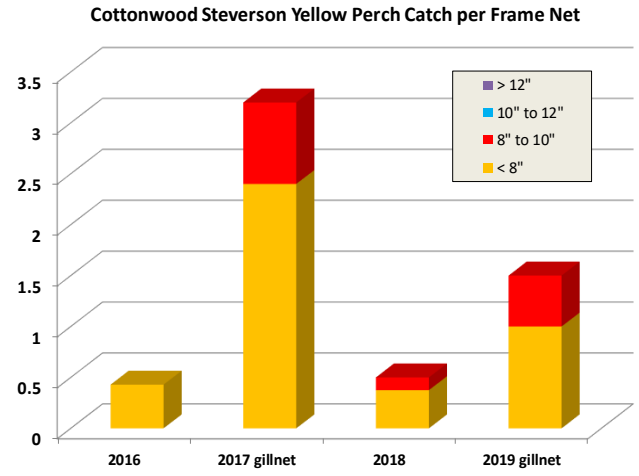
High water levels in 2019 and 2020 provided ideal spawning habitat and the 2020 survey suggests a good recruitment of young Carp to the population. Due to the Carp in Cottonwood-Steverson Lake, the management goals for the fishery consist of establishing predators such as Walleye and Muskie, that can persist inspite of the abundance of Carp rather than panfish species that are typical of a sandhill lake.

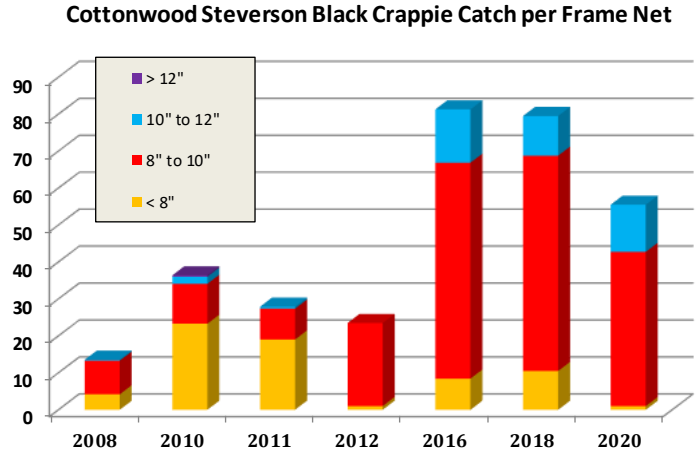
Cottonwood - Steverson Lake (continued)

The panfish populations in Cottonwood - Steverson Lakes are Black Crappie and Yellow Perch. Although some Bluegill do persist, they are extremely low density and rarely show up in a survey. Black Crappie are doing excellent with a catch rate of 55.5 fish per frame net in 2020. Over 22 % of the population was over 10 inches with the largest Crappie surveyed at 10.8 inches. Gizzard Shad were stocked as a forage species in Cottonwood - Steverson in 2017 to provide food for predator species and help manage around Common Carp. Larger Crappie benefited from the added food as body condition has improved as indicated in the 2020 survey.

Yellow Perch abundance remains low and very few show up in surveys. Although some Perch over 8 inches are in the population, most of the ones collected during a survey are less than 8 inches. Athough fall gillnet surveys are not targeting Perch, the largest Perch collected have been sampled during these surveys.

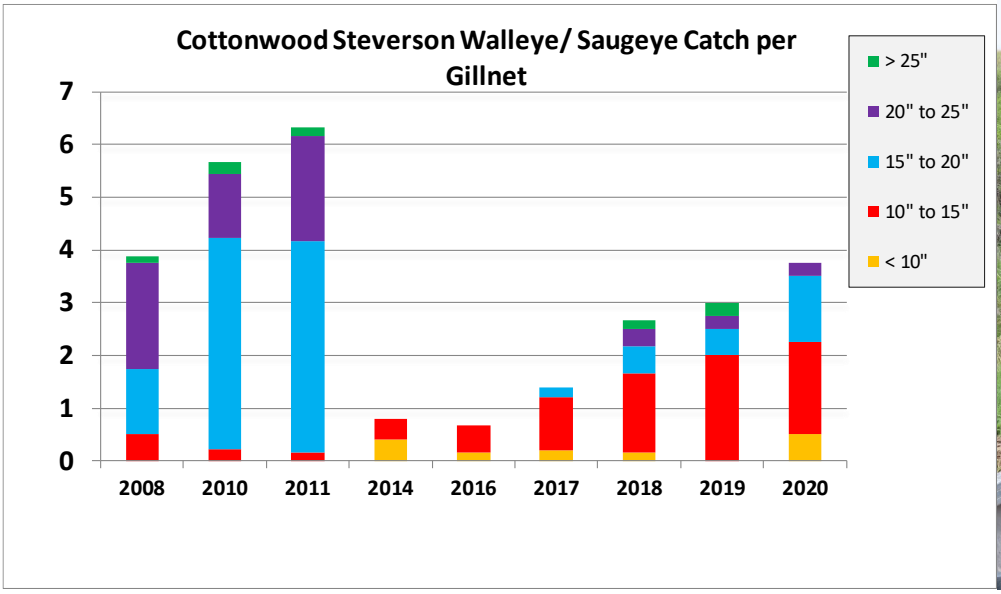
With turbid water most of the years, anglers may find better success fishing early in the year, or during ice fishing season when Carp activity is slower and the water clears up.





Largemouth Bass abundance has been very low in Cottonwood - Steverson. In 2018, the population was at 2 Bass per hour electrofishing. After stocking Gizzard Shad in 2017, there was food available to grow Bass if they can get a year-class going. Adult Largemouth were moved from salvaged lakes in 2018, 2019, and 2020 along with a fingerling stocking in 2020 to help boost the Bass population. A night-time Bass survey is scheduled for 2021 to continue to monitor the population.

Cottonwood - Steverson Lake (continued)



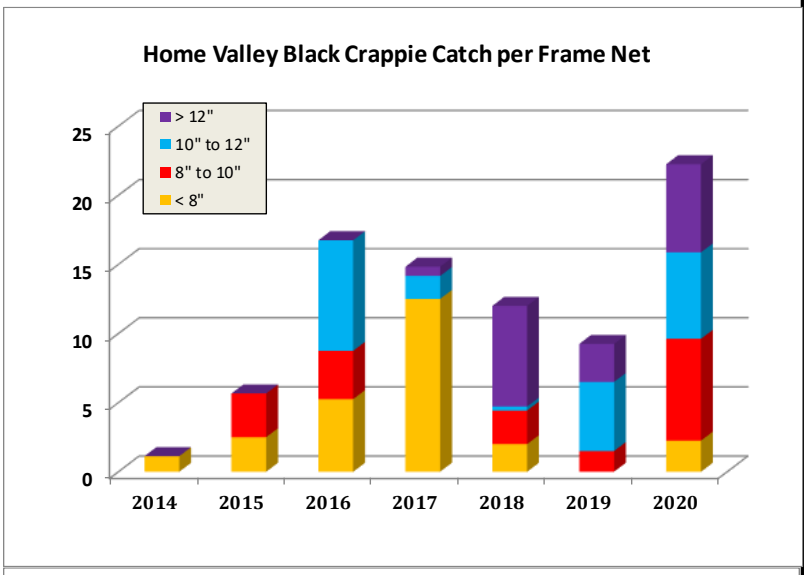
In 2020 the Walleye / Saugeye catch was up to 3.75 fish per gillnet which although is still very low, it is moving in an upward trend since the low in 2014. Walleye and Saugeye have both been stocked in a variety of sizes ranging from fry to advanced fish since 2014 in an attempt to boost the population. Although, most of the gillnet catch has been less than 15" fish, some large adults are still persistent in the population. Spring frame net surveys have caught some larger females that don't show up as regularly in fall gillnets.

Muskellunge are not targeted in a standard survey in Cottonwood-Steverson but are periodically collected in all methods of sampling. Several large Muskie have been collected over the years including the 47 inch fish pictured here in 2019. To get a better understanding of growth and survival of Muskellunge in Nebraska waters, Cottonwood –Steverson Muskie, starting in 2021, will be tagged with PIT-tags and more extensive sampling will be done in the future to monitor the population.

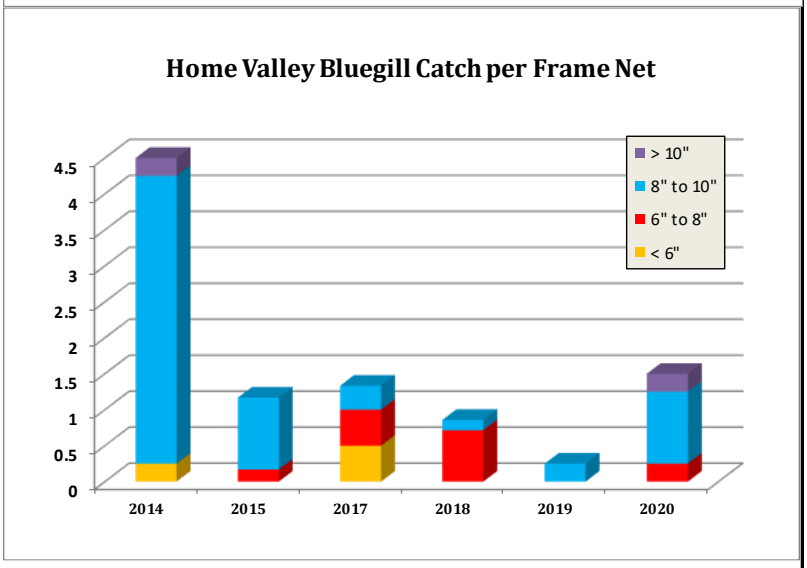
High water levels are continuing to make access to Cottonwood-Steverson difficult. Although the water levels have receded off the county road, it may come back up with good spring flows. Anglers should be aware that the boat ramp and parking lot are still flooded.

Home Valley

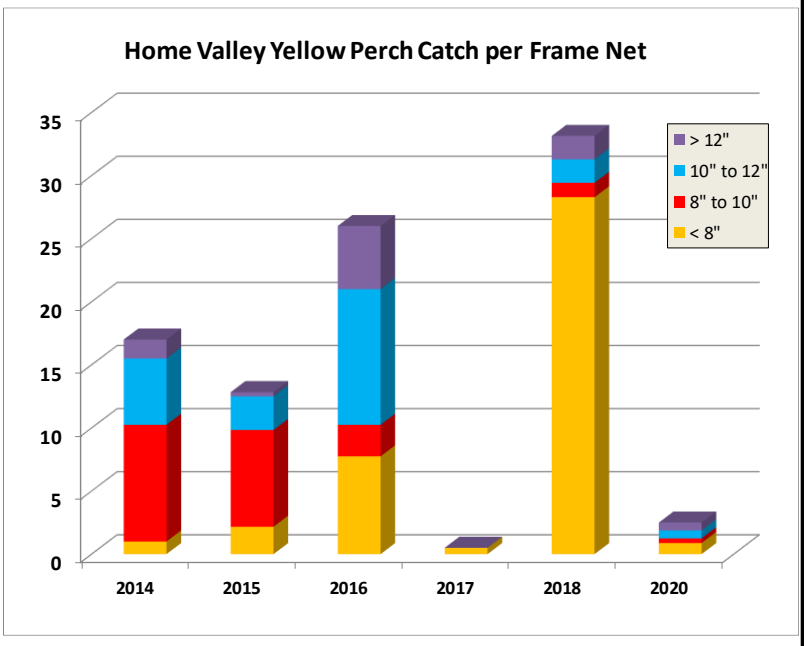
Although Crappie were stocked following the last renovation in 1998, they were absent from the fishery. An introductory stocking of 45,880 fingerling Crappie in 2013 got the Crappie population back in Home Valley. In the 2020 survey Crappie were looking excellent with a catch rate of 22.25 Black Crappie per frame net. Over 28 % of the population was over 12 inches. The largest Crappie collected measured 14.5 inches and weighed just under 2 pounds.



Bluegill abundance remains low in Home Valley at 1.5 fish per net. Like many sandhill lakes, eventhough abundance is low, the Bluegill regularly reach exceptional size with some fish over 10 inches.



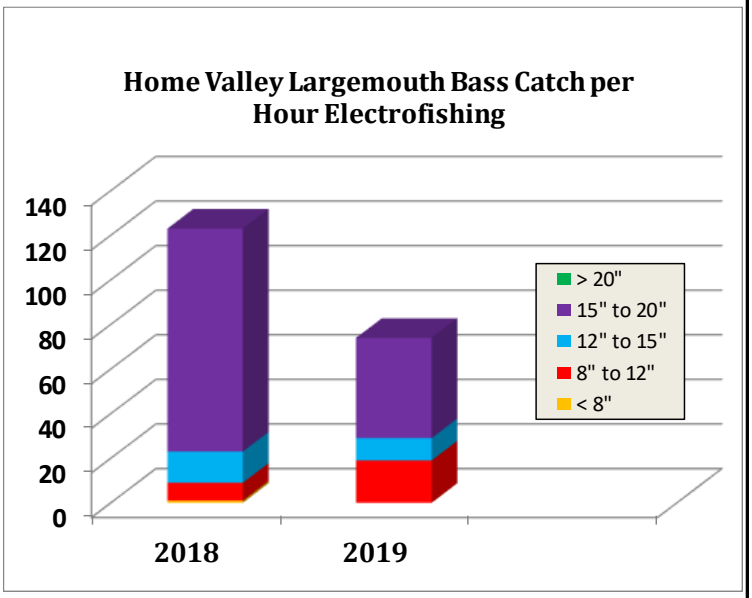
Home Valley continues to be one of the top destinations for Yellow Perch over 12 inches. Although abundance was low in 2020 at 2.5 per net, half the catch was over 10 inches. It is likely that with the high water levels, and a short window for sampling the Perch population during the spawn, that the total catch is under representing the true abundance of Perch. Poor ice condition this winter may result in better Perch fishing down the road as anglers were unable to drive to Home Valley. The majority of the fishing pressure on Home Valley is through the ice. Few anglers make the trek across the hills with waders, float tubes, or kayaks to fish in the open water months.



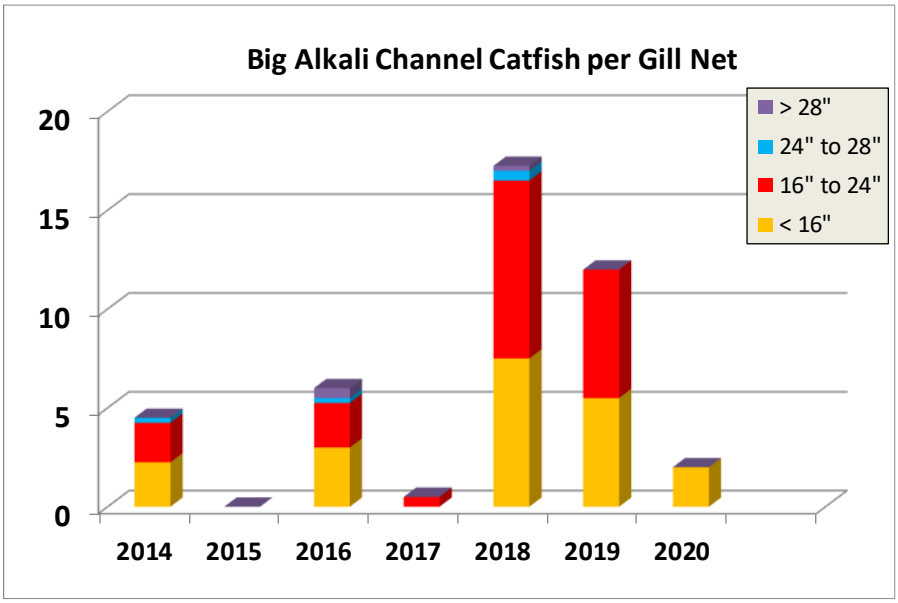
Home Valley (Continued)

Walleye were last stocked in Home Valley in 2007. A few fish still persist in the population and periodically show up during panfish surveys in the spring. All Walleye collected since 2014 have been over 20 inches with some being larger females over 25 inches.

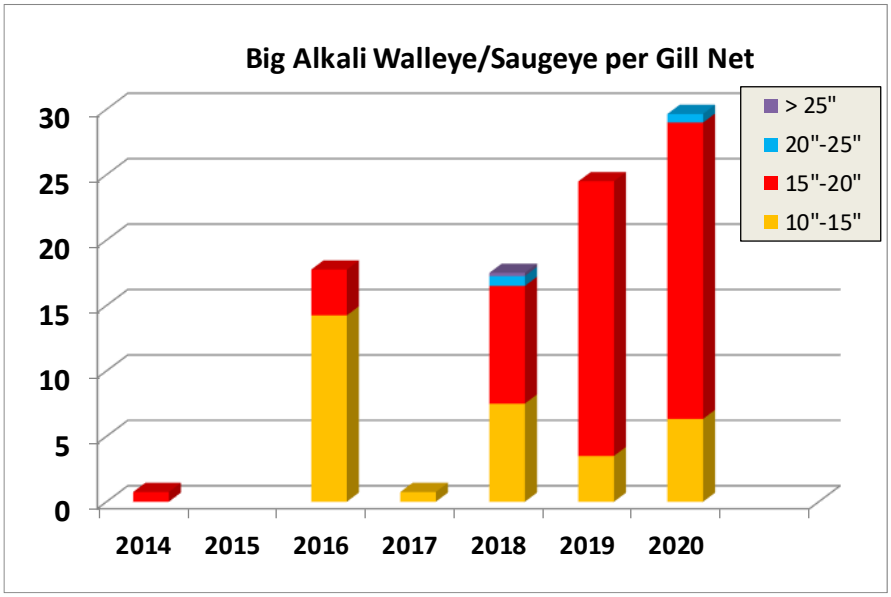
Largemouth Bass were not sampled in 2020. The 2019 survey suggested the population has a good size structure with over 60 % of the population over 15 inches. The average size Bass sampled in 2019 was 14.3 inches and the biggest Bass collected measured 19.3 inches. Home Valley should continue to be one of the top Bass lakes in the panhandle in 2021.



Big Alkali



Big Alkali Lake (842 acres) is located on a wildlife management area 16 miles south and 4 miles west of Valentine. This lake has a concrete ramp but no service pier and due to fluctuating lake levels launching watercraft can be relatively difficult at times. Species present in the lake include: Bluegill, Common Carp, Channel Catfish, Black Crappie, Largemouth Bass, Northern Pike, Saugeye, Walleye, and Yellow Perch. Gill netting surveys were completed on October 6 and 7, 2020. Gill nets target open water fish such as Channel Catfish, Saugeye, and Walleye.

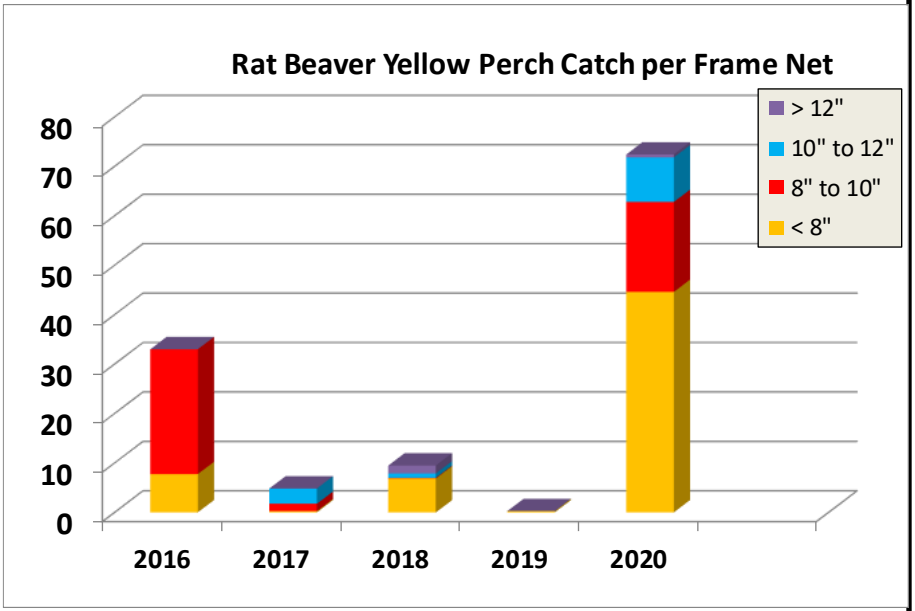


Channel Catfish abundance has declined over the past couple years. A catch rate of 3 fish per net and no fish sampled greater than 16 inches is well below management objectives for this lake. Angler reports indicated catching multiple fish during their outings at Big Alkali and fish over 16 inches, so maybe the surveys are misrepresented. This lake will be sampled with fall gill nets every year to document Catfish and Saugeye abundance. Channel Catfish stockings occur every other year with 8,400 ten inch fish and will be happening in the fall of 2021.

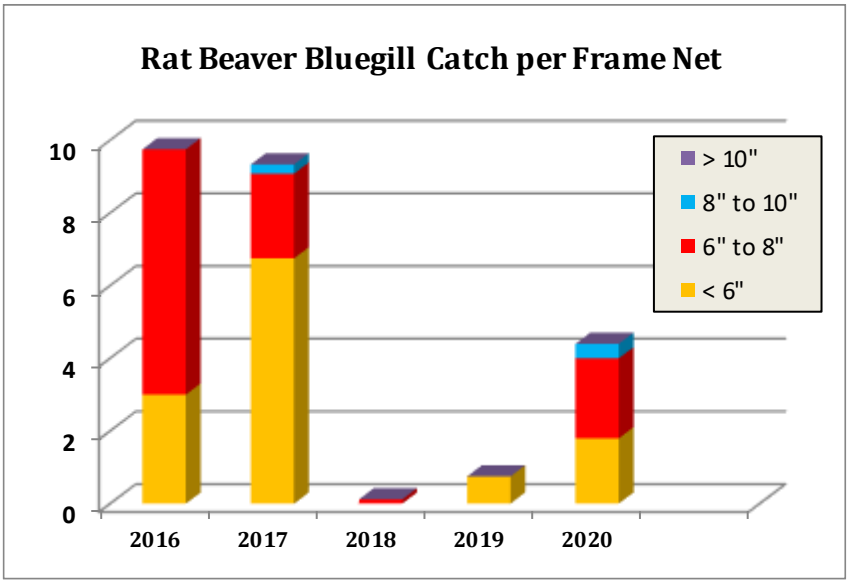
Walleye have existed in Big Alkali for a number of years but were never really meeting management objectives. In 2015 Saugeye were stocked. Research indicates these fish sometimes do a little better in turbid water and are more shoreline oriented than Walleye. Since stocking in 2015 Saugeye numbers have increased substantially. In 2020 gill nets caught 29.9 Saugeye/Walleye per net. The surveys also indicated that 77% of those fish sampled were over the statewide minimum of 15 inches. A request for 40,000 Saugeye fingerling is in place for 2021.

Rat and Beaver

Rat and Beaver Lakes are two connected lakes totaling 500 acres. These lakes are 30 miles south and 7 miles west of Valentine. Species present include Bluegill, Black Crappie, Largemouth Bass, Redear Sunfish, Saugeye, and Yellow Perch. These lakes are privately owned although access points have been established on each lake for access to the water. These access points are primitive rock ramps with very shallow launch points so smaller boats or kayaks are recommended. Spring trap netting surveys for Yellow Perch populations was completed on April 15, 2020. These surveys also capture Bluegill and Black Crappie but may not show their abundance due to the early timing of these surveys. Largemouth Bass were also sampled on May 26, 2020 with night electrofishing surveys. Rat and Beaver Lakes were renovated in 2014 to remove the Common Carp population using rotenone. Since then no Common Carp have been sampled or observed.



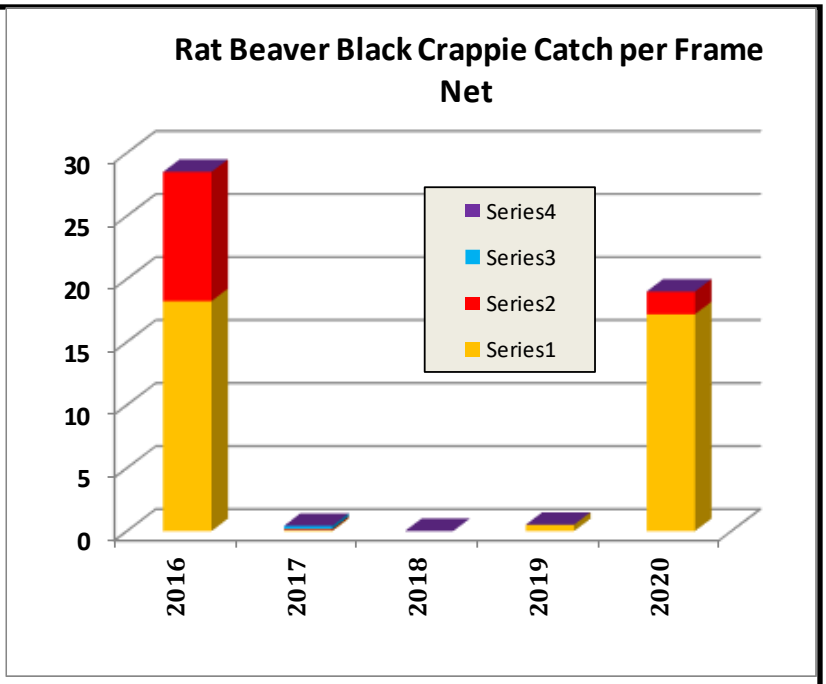
Yellow Perch had the highest catch in the spring trap netting surveys with a catch rate of 72.4 Perch per net. As can be seen from the graphs we likely missed the peak spawn the last several years to the relatively small window of opportunity to sample these fish. The Perch population looks good with every size category sampled and 46% of the fish were under 8 inches which should provide great fishing opportunities in the future. The largest Yellow Perch sampled measured 12.3 inches. Anglers are reminded there is a 12 inch minimum length limit for Yellow Perch at Rat and Beaver Lakes.



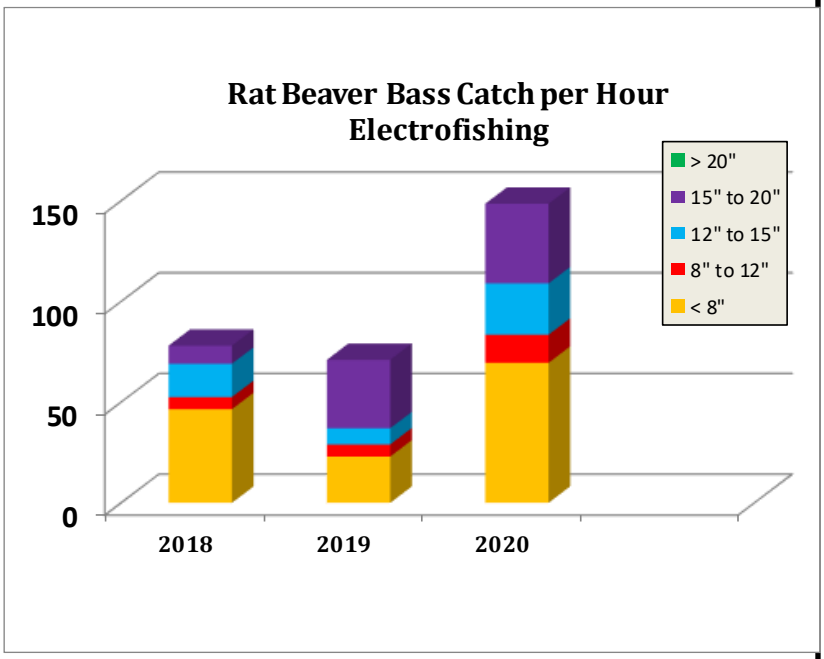
Bluegill abundance is lower than what we would like to see in a sandhill lake but remember the survey was completed in April and may not represent the population. Rat and Beaver Lakes had a catch rate of 4.4 Bluegill per net and approximately 60% of those fish were over 6 inches in length. The largest Bluegill sampled was 8.7 inches so there are some bigger Bluegill in the population. Efforts will be made in 2021 to sample later in the year to see if we can get a good look at the Bluegill population.

Rat and Beaver (continued)

Similar to Bluegill, Black Crappie should be targeted in later spring as they venture in shallow to spawn and will be completed in 2021. During the April 2020 surveys we collected 19 Black Crappie per net which was up from the previous 3 years of trap netting. Strong year classes of fish under 8 inches make up 85% of the population and should provide excellent fishing opportunities over the next several years. The largest Crappie sampled was 9.5 inches in length.



The Largemouth Bass population is doing extremely well with a catch rate of 148.5 Bass per hour electrofishing. Every size category was sampled except fish over 20 inches. We would not be surprised if fish over 20 inches in length are sampled during the 2021 surveys. These fish are growing extremely well with no Common Carp present and plenty of invertebrates and fish to feed upon. The survey suggested that 26 percent of the catch was over the statewide minimum of 15 inches with the largest Bass sampled measuring 18.9 inches.



Redear Sunfish have been stocked on a couple occasions but no fish have ever been sampled post stocking. These fish were thought to have recruited to the population due to the large amounts of native snails in Rat and Beaver Lakes. Saugeye were also stocked in Rat and Beaver Lakes in 2018. The largest Saugeye sampled in 2020 was 9 inches.

For additional information about fisheries management in the sandhills please contact the following personnel by phone or email address listed below.

District Supervisor:	Al Hanson	308-763-2940	al.hanson@nebraska.gov
Fisheries Biologist:	Joe Rydell	308-763-2940	joe.rydell@nebraska.gov
Fisheries Biologist:	Zac Brashears	402-376-8080	zac.brashears@nebraska.gov

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 (pictured right) 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 the months of May through September. Zebra mussels were first documented in Nebraska in 2006 at Offutt Air force Base Lake and have since been discovered at Zorinsky Lake (2010) (mussels eliminated via a winter drawdown that froze them out but has had a positive veliger sample since leaving it a suspect lake), Lewis and Clark Lake (2015), Lake Yankton (2017), Glen Cunningham Lake (2018) and below Gavins Point Dam in the Missouri River. 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. 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. 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, mud and thoroughly wash 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.

Photo of curly leaf pond weed at Smith Lake Wildlife Management Area