Northwest District Sandhill Lakes

2021 Survey Summary

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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 2021. 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

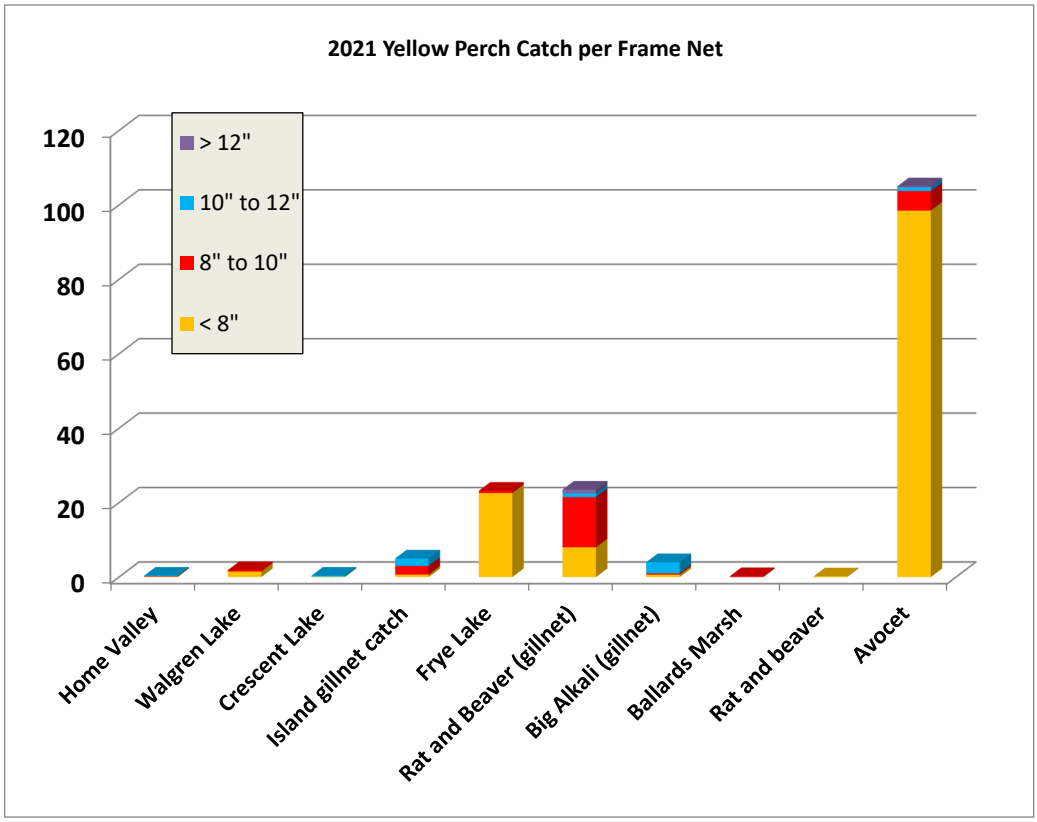
Sandhill lakes typically get surveyed at least once every 3 years for each priority species. Largemouth bass are surveyed at night by electrofishing while shoreline oriented species (bluegill, crappie, yellow perch, and northern pike) are sampled using frame nets. A couple sandhill lakes have walleye, saugeye and catfish populations that get sampled by gillnets in the fall. Species collected during surveys are counted, measured, weighed, and some scales removed for aging before releasing. 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 2021 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.

2021 was one of the driest years in the books for the sandhills region. If it wasn't for the high water levels and flooding in 2019, several lakes might have been in trouble for summer or winter kill events. Even with the drought, lakes like Cottonwood Steverson WMA and Island Lake still hold higher than normal water levels. The picture here demonstrates how high the water remained at the boat ramp at Cottonwood Steverson WMA. Water levels dropped slowly throughout the summer but the ramp and parking lot remained flooded.

Surveys were conducted on nine sandhill lakes in 2021. Walgren Lake is not a sandhill lake but functions like one. It is included in this report and is counted as one of those nine lakes. Spring frame net surveys were conducted on Avocet, Frye Lake, Crescent Lake, Home Valley, Walgren, Rat and Beaver Lakes and Ballards Marsh. Bass populations were surveyed on Frye Lake and Walgren Lake. Fall gillnet surveys were conducted on Rat and Beaver, Crescent Lake, Island Lake, Cottonwood Steverson and Big Alkali to monitor walleye, saugeye, and catfish populations.

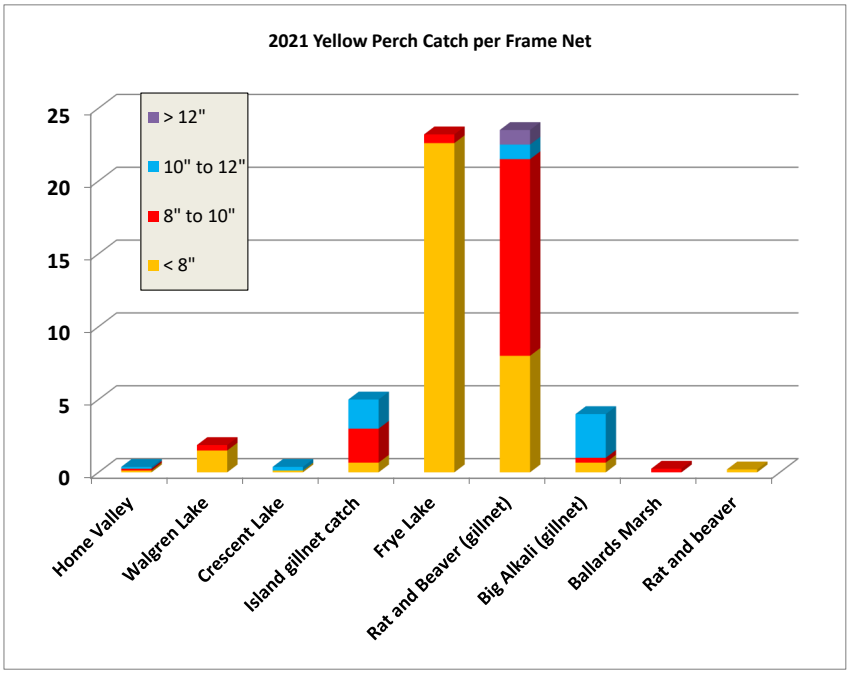
Yellow Perch



Yellow Perch (continued)

Yellow perch were collected from 9 lakes in 2021. Avocet had the highest catch at 105 perch per frame net, however, 94 percent of the population was under 8 inches. The largest perch collected at Avocet was 12.8 inches but it was the only one sampled over 12 inches.

The graph to the right is the same graph as on the previous page but with the Avocet data removed to better display the remaining survey results as they were all under 25 fish per net.



Frye Lake had the second highest catch that was targeting perch at 23.2 fish per frame net although more perch were collected during the fall gillnet survey on Rat and Beaver (23.5 fish per gillnet). All the perch in Frye Lake were under 10 inches with the vast majority under 8 inches in length. It is likely that there are some larger perch still in the system but at a very low density. The spring frame net survey at Rat and Beaver only caught a couple small perch, however some larger perch were collected in the fall during a gillnet survey targeting saugeye. Rat and Beaver has a 12 inch minimum length limit and some perch over 12 inches were collected. The largest perch sampled from Rat and Beaver was 13.1 inches.

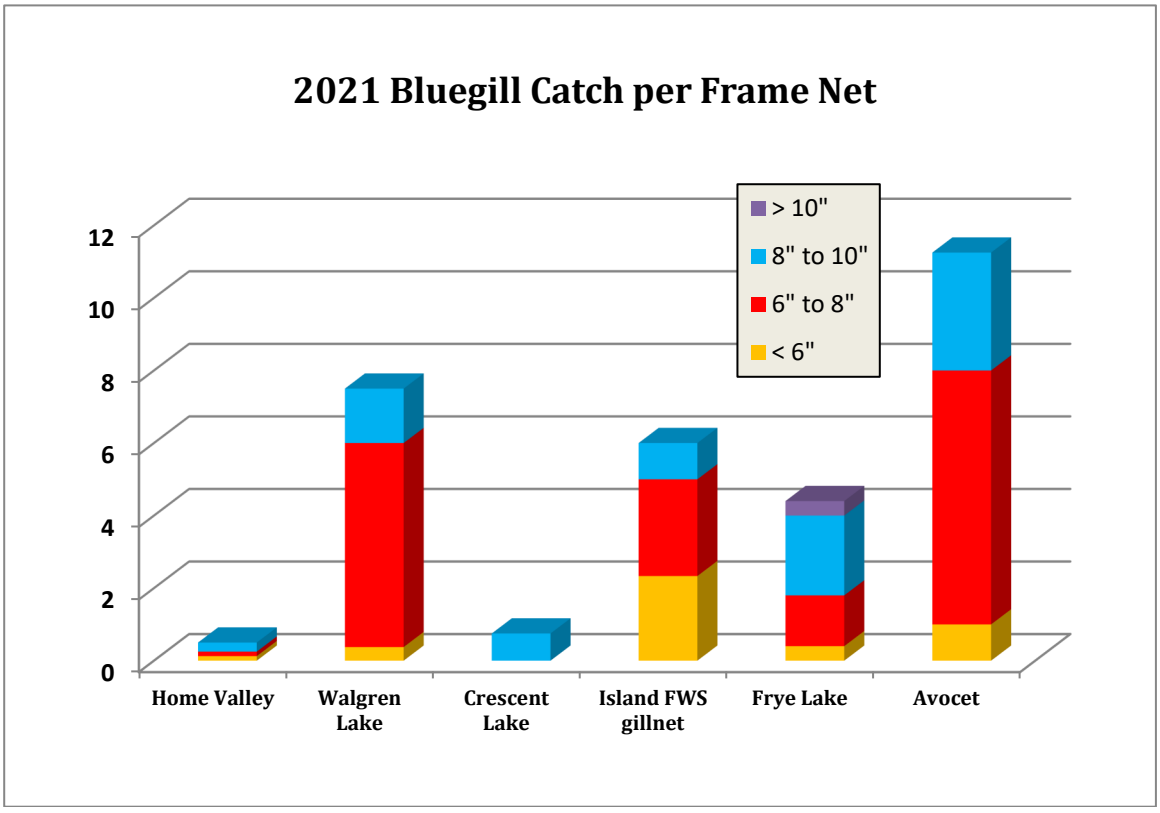
Anglers looking to harvest perch should consider Island Lake or Big Alkali. Although these lakes were not surveyed for perch in 2021, some fish over 10 inches were documented in the fall gillnet surveys.

Nice perch collected from Island Lake during a fall gillnet survey targeting walleye.

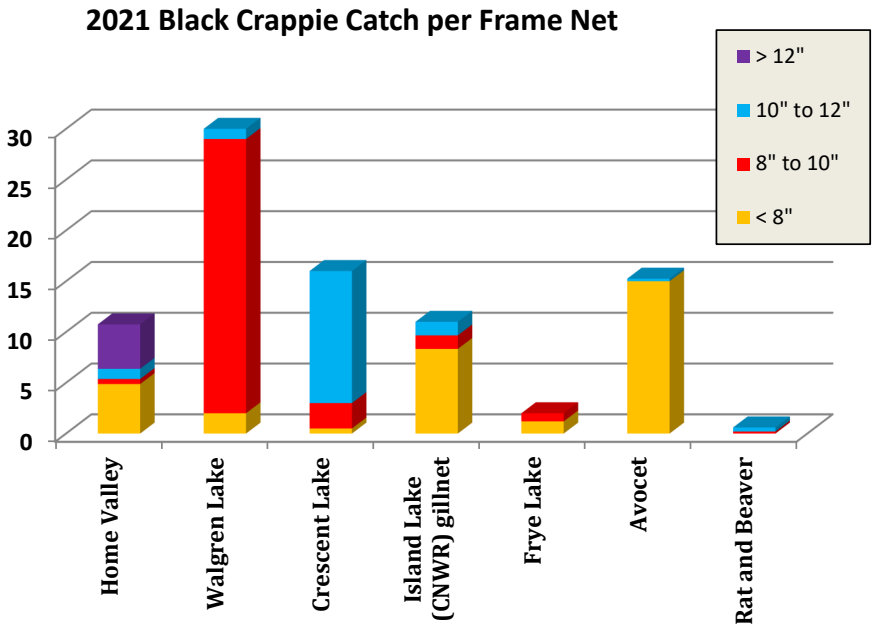
Bluegill

Bluegill abundance is typically low in sandhill lakes compared to other water body types on Nebraska. This season was no different as all of the lakes sampled had catch rates less than 12 bluegill per frame net. Avocet had the highest catch with 11.25 bluegill per net with 28% of the population over 8 inches.

Anglers looking for trophy bluegill should concentrate on Frye Lake. All of the lakes sampled in 2021 had bluegill over 8 inches, but Frye was the only one where fish over 10 inches were sampled. Smith Lake WMA was not sampled in 2021 but it also consistently produces bluegill over 10 inches and would be worth a trip.



Crappie



Walgren Lake had the highest crappie catch in the sandhills in 2021 with 30 crappie per frame net. Although the graph indicates that most of the crappie are 8 to 10 inches, they are pushing that upper limit with an average size caught at 9.2 inches. This population has been slow growing with an age structure up to 8 years old, but body condition was excellent in 2021.

Anglers looking for big crappie should target Home Valley Lake. Over 40% of the catch was over 12 inches with another big year-class of crappie coming on. The biggest crappie collected was 14.6 inches. Crappie age structure ranged from one to nine years old with all years collected suggesting consistent recruitment.

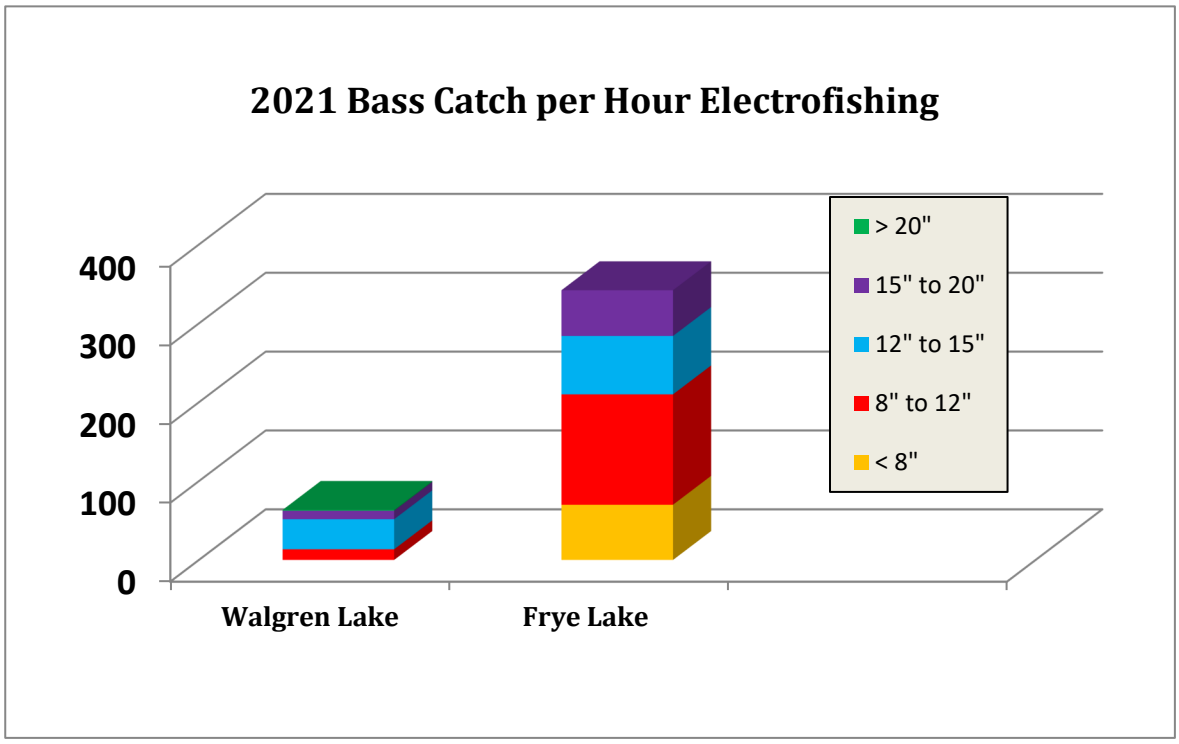
Crescent Lake crappie population is improving and angler reports suggest some crappie over 13 inches were harvested this past fall. Cottonwood Steverson and Smith Lake WMA were not sampled for crappie in 2021 but both lakes consistently have strong crappie populations.

Largemouth Bass

Frye Lake and Walgren Lake were the only two sandhill lakes outside of the Valentine Refuge Lakes that were surveyed for largemouth bass in 2021 in the NW district. Frye Lake had the highest catch at 342 bass per hour electrofishing. This is and exceptionally high density of bass for a sandhill lake. Almost 17 % of the catch was over 15 inches with the largest bass sampled at 17.2 inches. Age and Growth analysis suggests bass from age 2 to 10 years old made up the population with a big year-class of 3 year-old ranging from 10 to 12 inches recruiting to the population.

Walgren Lake had a more normal population for a sandhill lake with a catch of 63.4 fish per hour electrofishing. Although the majority of the catch was between 12 and 15 inches, some bass over 15 inches were present. The biggest bass collected was 20.3 inches and weighed 6.4 pounds.

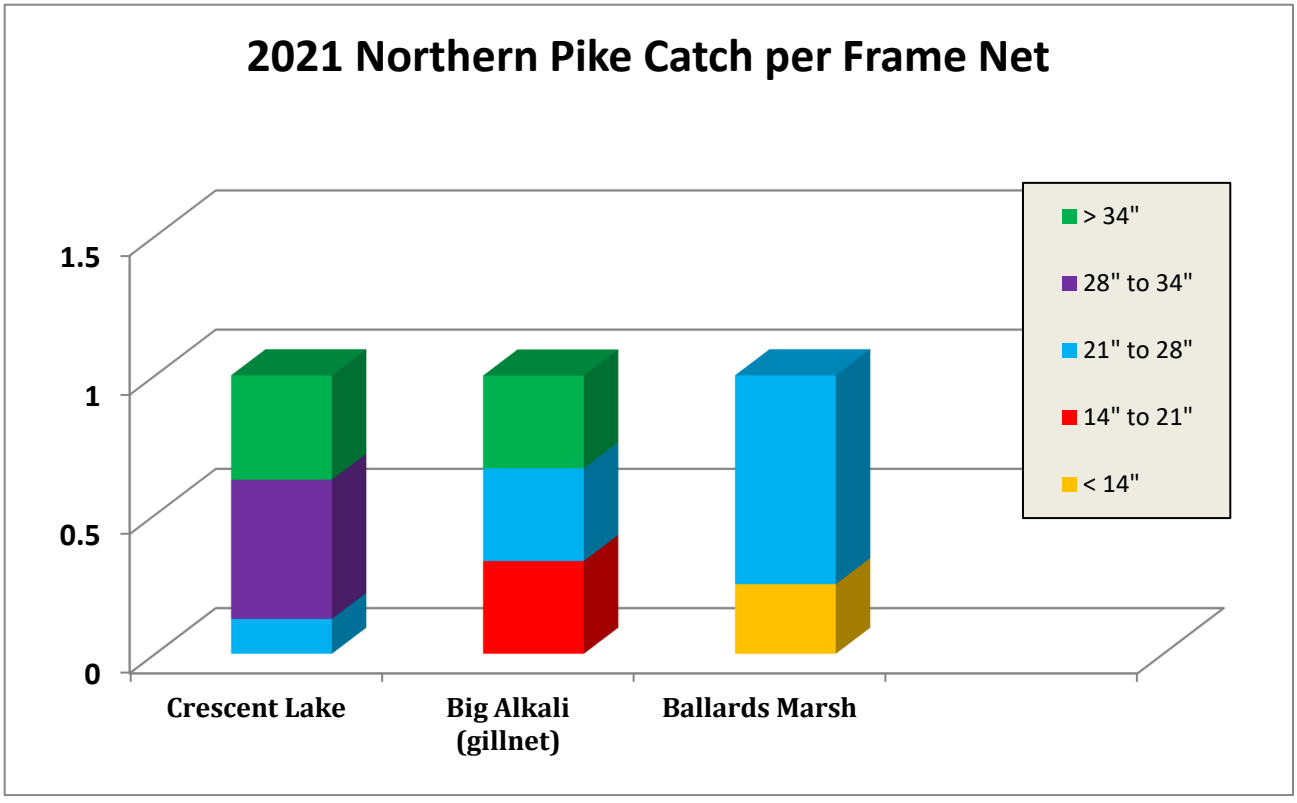
Sandhill lakes that are either carp free, or have a low density carp population typically have quality bass fishing opportunities. Some Lake that were not surveyed this year that would be worth targeting include, Home Valley, Avocet, Island Lake, Shell Lake, Rat and Beaver, and Smith Lake.



Northern Pike

Northern pike were sampled in three lakes in 2021. All three lakes had low catch rates at one per net. The biggest pike collected came from Crescent Lake and measured 38.7 inches long. The Big Alkali survey was not targeting northern pike but some were collected during the gillnet survey. Ballards Marsh experienced some winter kill during the 2020 / 2021 winter but the spring survey suggests some pike survived.

Northern Pike are an aggressive predator that remain shoreline oriented year-round. They can be caught on everything from live bait, to artificial lures such as crank baits, topwater lures, spinnerbaits, spoons, and jigs. Although many anglers target pike at ice out looking for pre-spawn fish, the best month to fish for pike is May and June when they are feeding in the post spawn period.



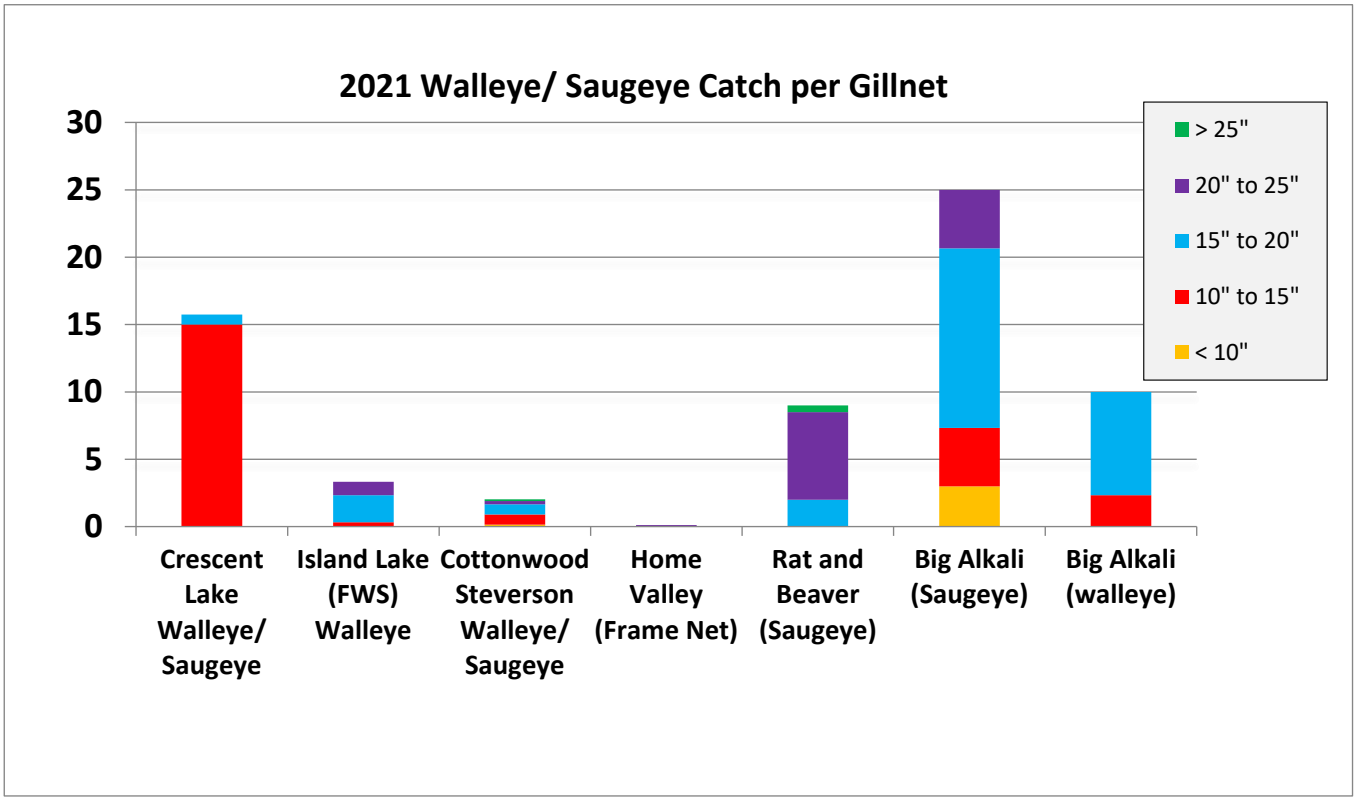
Walleye / Saugeye

Walleye and/or saugeye occur in 8 sandhill lakes of which 5 of those lakes were surveyed in 2021. Home Valley was not surveyed targeting walleye but one walleye was collected during the crappie survey.

Big Alkali has both saugeye and walleye present in the system and had the highest combined catch in 2021 at 35 fish per gillnet. In 2015, stockings switched from pure strain walleye to saugeye and the saugeye have taken off. Walleye, like most sandhill lakes, still get off some natural recruitment to sustain a few walleye in the system. The average size saugeye collected was 15.2 inches with 17% of the population over 20 inches.

Crescent Lake had the second highest density of walleye/ saugeye at 15.75 fish per gillnet. Contrary to Big Alkali, saugeye did not do well in Crescent Lake. Growth rates were very slow, and due to consistent high water and the possibility of saugeye escaping the lake and reaching Lake McConaughy (a walleye brood fish source for walleye production), saugeye stockings were switched over to walleye. The two years of walleye stockings have proved successful with walleye making up 92% of the catch.

Cottonwood Steverson continues to struggle to establish a walleye population and remained low in 2021 at 2 fish per gillnet. Some big walleye still persist in the lakes and show up occasionally during spring frame net surveys.



Other Species

Black bullheads and green sunfish are two native species to sandhill lakes. Black bullheads are easily preyed upon by predator species such as largemouth bass. The best locations to target bullheads are lakes with low predator populations or out of balance fisheries which occurs commonly in the presence of common carp. Cottonwood Steverson, Crescent Lake, and Blue Lake all have good numbers of black bullheads.

Green sunfish are present in many sandhill lakes but seldom show up in fish surveys in very high abundance. When green sunfish and bluegill occur in the same lake they frequently hybridize. These hybrids are sampled more commonly than green sunfish. Island Lake is a good example of a location with a fair abundance of hybrid sunfish.

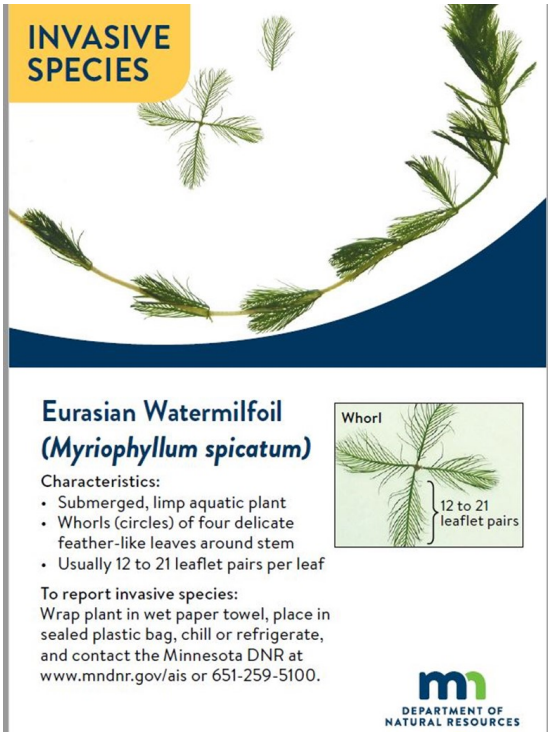
Channel Catfish are not typically stocked in sandhill lakes but Big Alkali and Walgren Lake are exceptions. Both of these lakes get an annual stocking and maintain quality catfish populations. In 2021, Walgren Lake was not surveyed, but Big Alkali had 7.6 catfish per gillnet. Although the majority of the catfish were less than 16 inches, some fish over 28 inches were collected. Frye Lake also received a couple catfish stockings following its renovation in 2002. The last stocking occurred in 2005 and a few individuals still show up in angler reports and occasional surveys.

Cottonwood Steverson Lakes has a strong Muskie population. A new research project began in 2021 to look at population dynamics of Nebraska Muskellunge. A total of 60 muskies were collected from Cottonwood Steverson in 2 days of shocking and netting. These muskie ranged from 26 to 46 inches.

Creighton Nemnich with a trophy catfish from Frye Lake. Photo Credit: Geoff Nemnich

46” Muskie Collected in Cottonwood Steverson in 2021

Aquatic Invasive Speceies



Over the past several years invasive species have become a rising concern in Nebraska. It is illegal to either arrive or leave any waterbody in Nebraska with water other than from a domestic source (water supply system, well or bottled) except for firefighting purposes.

Although Zebra mussels are a high concern across the state and nation, invasive plants such as Eurasian Watermilfoil and Curly-leaf Pondweed are both serious threat to sandhill lakes. These shallow lakes can become 100 percent covered and make fishing difficult to nearly impossible. Eurasian Watermilfoil was documented in Cottonwood Lake SRA, and Smith Lake in 2021. Curly-leaf pondweed has been documented in Smith Lake WMA since 2014. 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. 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.

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