

# 2019 Survey Summary

## Sandhill Lakes

### Northeast District

Andrew Glidden, Fisheries Biologist  
Jeff Schuckman, District Fisheries Supervisor  
Phil Chvala, Fisheries Biologist



This summary pertains to those Sandhill lakes located in the Northeast District that were surveyed in 2019. Earlier data has been retained for comparisons. Panfish species and northern pike are sampled at various times in the spring with frame nets. Largemouth bass are sampled in the spring with night-time electrofishing gear. Walleye are best sampled with gill nets in the fall. Some lakes are sampled annually but most are surveyed rotationally every other year or every 3 years. Sandhill lakes can be naturally formed and are typically shallow and spring fed. Sometimes these lakes were formed when upstream hay meadows were ditched during the early settlement days or a drainage was blocked. These lakes are very productive and well suited to panfish species such as black crappie, bluegill and yellow perch as well as largemouth bass and northern pike. Additionally, we now have an expanding walleye population in Willow Lake. Current regulations include an aggregate 15 fish daily bag limit on panfish with a possession limit of 30. Statewide minimum length limits are 15" for bass and walleye with a daily bag of 5 and 4 respectively, possession limit is twice the daily bag. Only one bass in the daily bag limit can be over 21" and only one walleye over 22" is allowed. The statewide daily bag limit for northern pike is 3 with only one 34" or longer with a possession limit of 10.

The drought of 2012 has been affecting many lakes in the Sandhill region, extended periods of low water levels may lead to summer and/or winter kills. While rainfall was above average in 2013-16 in the NE District, some of the lakes discussed in this report continued to decline in depth due to lower ground water levels. In 2017 Brown County recorded the driest spring on record, then after late July, one of the wettest falls. Last year was one of the wettest recorded and these lakes began to fill. There are 8 lakes discussed in this summary: Clear, Cozad, Goose, Swan, Tower, Twin and Willow. All were full or overflowing at the end of 2019. Only Peterson falls short of being at full pool. Drought years can provide an excellent opportunity to conduct renovations to remove common carp from Sandhill lakes. Because renovations are so costly and very difficult for 100% success in large Sandhill lakes, anglers must not move carp or other unwanted species back into renovated lakes from a minnow bucket. After the completion of the Twin Lakes carp barrier in the fall of 2018, record high runoff in March filled the lake and carp were found above the screens this summer.



Upstream



Downstream

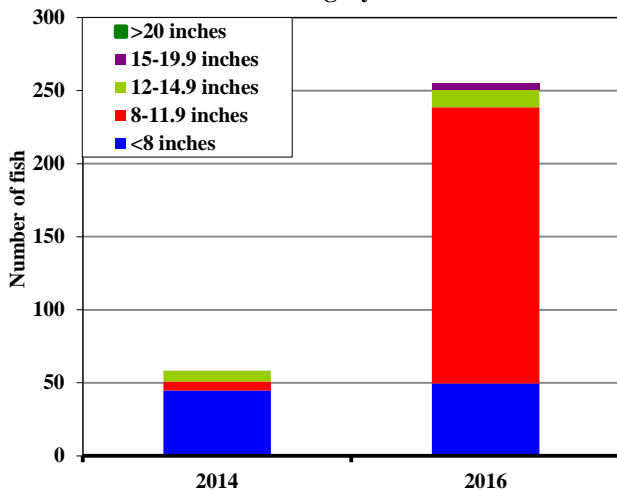
Fall 2018

Spring 2019

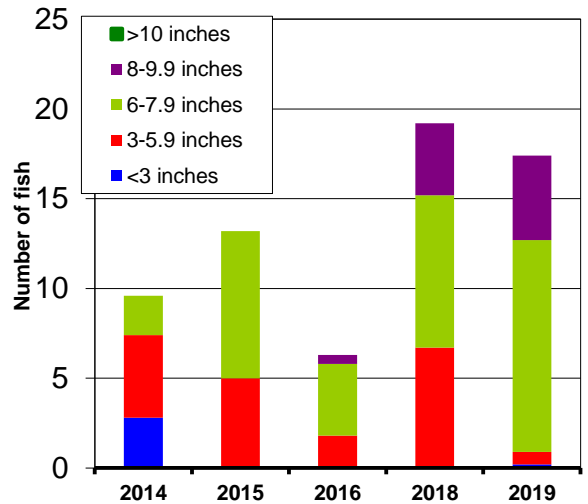
# Clear Lake

**Clear Lake** is located approximately 19 miles south and 9 miles west of Ainsworth. It is a privately owned natural sandhills lake with no inflow or natural outflow. Carp had gained access to the lake via a man-made ditch and they eventually destroyed the water quality. This drainage ditch has since been filled. The lake was renovated in December of 2012 by NGPC Fisheries Division. The New Clear Lake Club, the US Fish & Wildlife Service and the Sandhills Task Force split the cost of the chemical (rotenone) that was used to remove the carp population. A year-round public fishing access on the east end of the lake has been provided through an agreement with the New Clear Lake Club. The lake is at “full pool” plus with current maximum depth of over 12 feet. The Club is currently investigating options for an outlet.

**Bass per 1 hr electrofishing by length category**

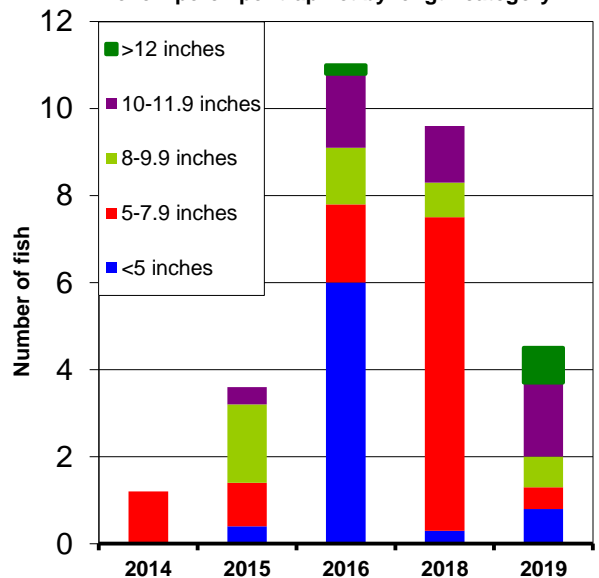


**Bluegill per trap net by length category**



The lake was frame netted in May of 2019. No black bullhead or carp have been sampled since the renovation and only six black crappie were collected, very similar to last year’s five. The illegal crappie stocking may have had a negative influence on the establishment of perch and bluegill populations. All fish populations usually “boom” following a renovation but we are finally seeing improvement. Later May frame netting targets bluegill and crappie and may miss the larger perch. This year the perch catch rate was cut in half but at least all size classes were sampled. Bluegill catch was very similar to last year and the population exhibited good size distribution. We did not electrofish for bass due to flooded roads, hopefully we can next year. Angler success has been improving for summer/fall and through the ice with some crappie being caught. The bass population looks good and it will have its work cut out for it to control panfish numbers as aquatic vegetation becomes established. Water clarity is excellent, it is once again “Clear Lake”.

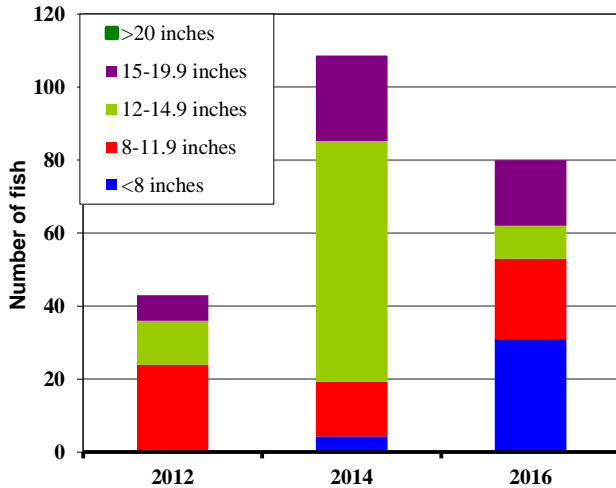
**Yellow perch per trap net by length category**



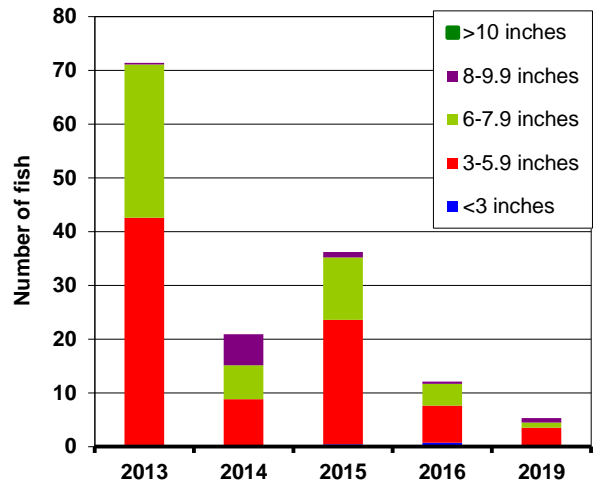
# Cozad Lake

**Cozad Lake** is located on South Pine Wildlife Management Area (WMA) approximately 12 miles south and 1 mile west of Long Pine. It is a natural sandhill lake which usually has no inflow or outflow. During very high water events, water can come from a marsh to the south and runs out the northeast corner of the lake and flows down a bar ditch headed east, but runs out into a pasture. It has never had a carp population, water quality is excellent and it grows a tremendous amount of vegetation. A handicap accessible parking area and boat ramp were installed in 2001. The biggest challenge with this lake is related to water levels. In June of 2010 there was water over the road for almost a mile of the county road leading to the parking area. From 2013-17 it was over 3 feet below the high water mark. Currently the lake is at full pool, over the road again and running out, the boat ramp is fully in the water.

**Bass per 1 hr electrofishing by length category**

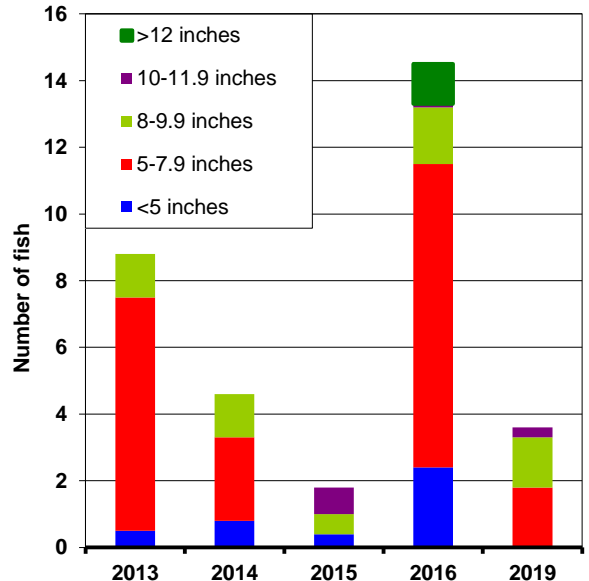


**Bluegill per trap net by length category**



Frame netting was conducted in mid-April, which was a similar timeframe for the 2016 perch sample. Bluegill are typically sampled in June but we were unable to access Cozad at that time due to road conditions so the 2019 data in the graph are from the April sample. At the end of 2019 this lake was full and running out. All of the species in this lake should respond favorably to the high-water. Bluegill condition (plumpness) tends to be below average in this lake, but with low numbers they showed some improvement in the last two surveys. We ran into some weather issues in 2015 that was reflected in our perch catch but showed improvement for the 2016 survey. Bass numbers do not fluctuate as rapidly with the water levels and predators tend to capitalize on crowded panfish. This lake can produce fish over the 5 pound mark during those years with near or above average water levels. It would be a fair assumption that ice anglers have a tendency to crop the top end of the perch and bluegill populations.

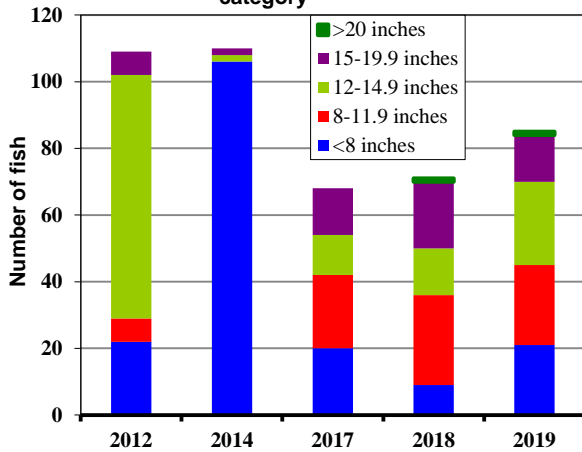
**Yellow perch per trap net by length category**



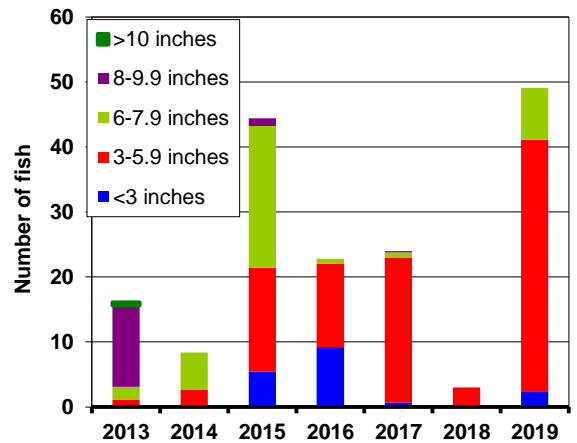
# Goose Lake

**Goose Lake** is located approximately 23 miles south and 4 miles east of O’Neill. It is state owned and managed as a WMA. It is a natural sandhill lake which has seasonal inflow and outflow. The inflow and outflow channels are diked with screened flow-through structures. The lake was last renovated in 2003 but carp re-entered in the fall of 2009 and spring of 2010 when the barriers were inundated and overwhelmed by extremely high water levels. In 2015 an infestation of Eurasian Water Milfoil completely covered the lake but was successfully treated with an aquatic herbicide. Currently the lake is at “full pool” with 8-9 feet max depth. A renovation that was planned for the fall of 2017 has been postponed until water levels allow. A concrete boat ramp is available and there is an irrigation well that can be used to maintain water levels during dry years. Over the last two years the bright spot for the lake has been bass fishing. Anglers have been catching good numbers of bass, many of them really nice fish. Bluegill numbers are improving but most of the fish were small. Unfortunately, pike have become relatively rare in the lake and harvestable-size perch have also been tough to come by.

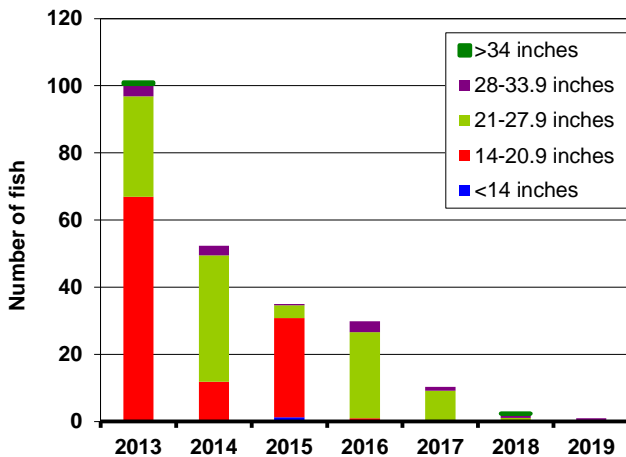
**Bass per 1 hr electrofishing by length category**



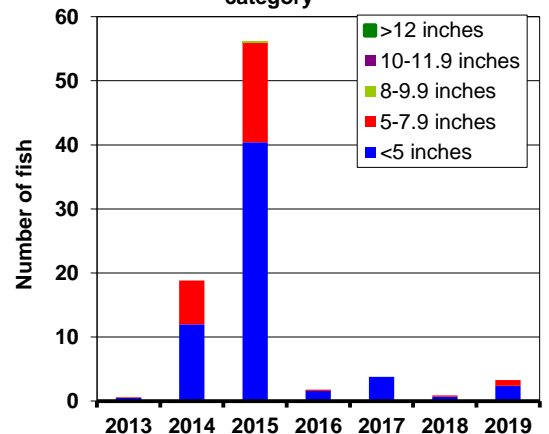
**Bluegill per trap net by length category**



**Northern pike per trap net by length category**



**Yellow perch per trap net by length category**

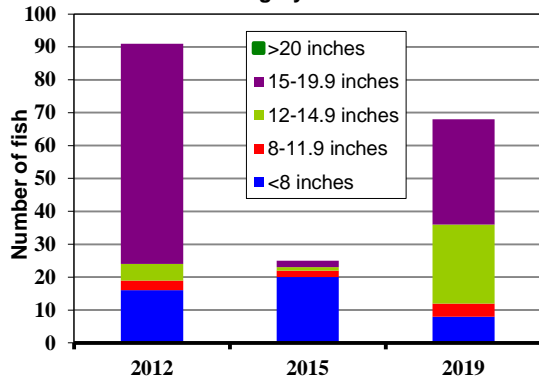


Frame netting was conducted in early March to target pike and perch while later frame net sampling occurs in May or June to assess the bluegill population. Bass are also sampled in the May to June time period. High carp densities in the lake cause most other fish species to decline whether it be in abundance or size structure or both. Without carp the lake it is capable of growing thick stands of native aquatic vegetation and supporting a fast growing bass and panfish fishery along with an exceptional pike fishery. However, given the lake’s current state, fishermen are struggling to catch much outside of early spring bass opportunity.

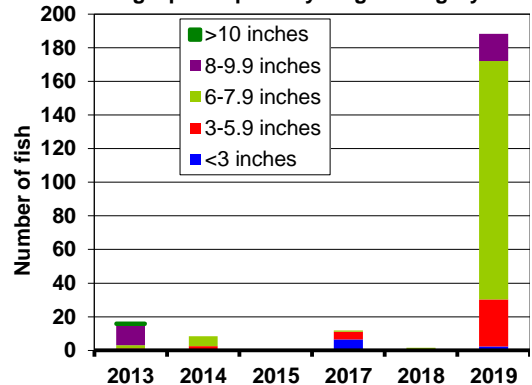
# Swan Lake

**Swan Lake** is located 25 miles south of Atkinson and is a privately owned lake that is leased for public fishing access (no hunting access). It was renovated to remove carp in 2006 and they have not been sampled since. One was observed on the east side of the outlet structure in 2010 but it does not appear any were able to swim into the lake even after high water the following year. In 2012 improvements were made to the berms and outlet to keep carp from re-entering the lake. Following above-average precipitation in 2017-18 the lake attained its 9' max depth and water has been running out the overflow, something that hasn't happened since 2012. The lake was high enough in March to run out of both new emergency outlets. A blacktop road runs along the north side of the lake to the parking area and primitive boat launch. Bank anglers can access a parking area directly across the lake on the south shore via two track trail.

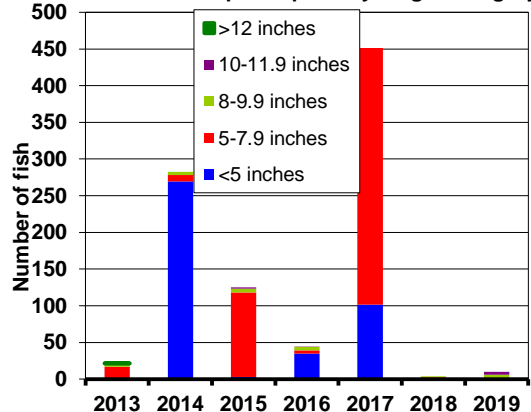
**Bass per 1 hr electrofishing by length category**



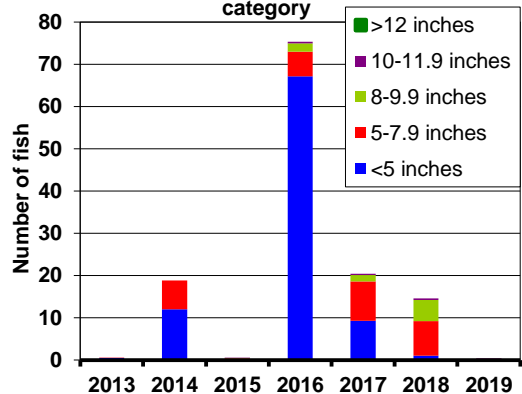
**Bluegill per trap net by length category**



**Bullhead per trap net by length category**



**Yellow perch per trap net by length category**

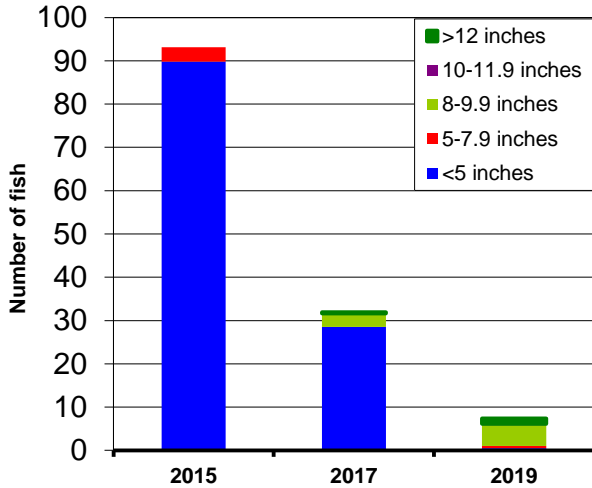


Fish populations in Swan have struggled due to water quality issues. A partial summer kill in 2009 along with substantial winterkill in 2014-15 impacted all game species. During subsequent sampling in the spring of 2015 electrofishing efforts collected mostly small bass with very few over 8 inches while frame net sampling failed to catch any bluegill or perch, just numerous bullheads and a few green sunfish. Following some intense stocking efforts the game fish populations have greatly improved, both in abundance and size structure. Additionally, bullhead catch declined substantially, likely due to the rebound in bass numbers, and only 69 were sampled in 2019 (1,806 in 2017). In the graph above bluegill catch appeared quite poor prior to 2019. The 2015 (winter kill year) and 2019 numbers are representative of later sampling times (i.e., June) while the others were from early to mid-April during perch sampling efforts when the water was quite a bit colder. Perch catch dropped off quite a bit in 2019 but may have been a function of the survey occurring too late. Open water fishermen were picking up some perch along with abundant bluegill this past summer though, so they are there. Recruitment issues for the various fish populations have been dealt with through the aggressive stocking efforts mentioned above but a full lake should help with natural recruitment.

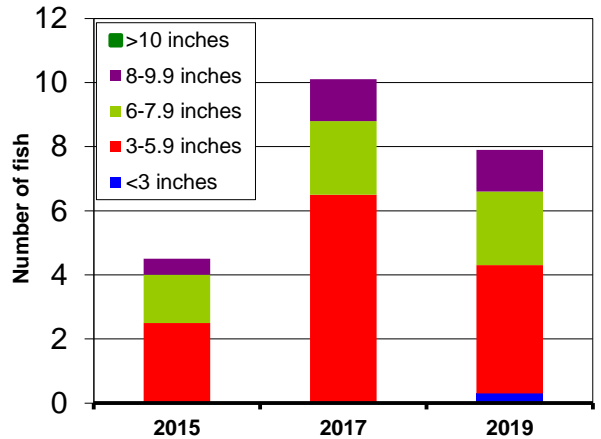
# Tower Lake

**Tower Lake** is located 12 miles south and 2 miles east of Ainsworth and is owned by the US Fish and Wildlife Service. This is a natural sandhill lake with no inflow or outflow. There is a berm that separates this lake from a marsh to the west with a drop-board structure to control flow into Tower. These lakes are carp free and can grow tremendous amounts of aquatic vegetation. Water levels in these lakes vary greatly in association with precipitation. With the record rainfall in 2019, Tower is full pool with a max depth near 8 feet. We did not survey here in 2016 due to the low water levels and resulting poor access and time constraints prevented us from surveying in 2018. The last bass survey was in 2014 which showed a high catch of fish from 15 to 20 inches. This lake full of water with all the flooded cattail and willows may make getting a fish on the end of a line more difficult, but within the next two-three years this should be a lake full of fish as well!

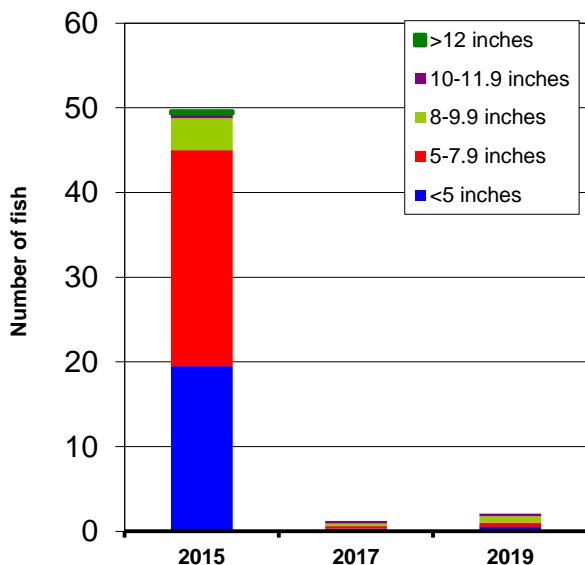
**Black crappie per trap net by length category**



**Bluegill per trap net by length category**



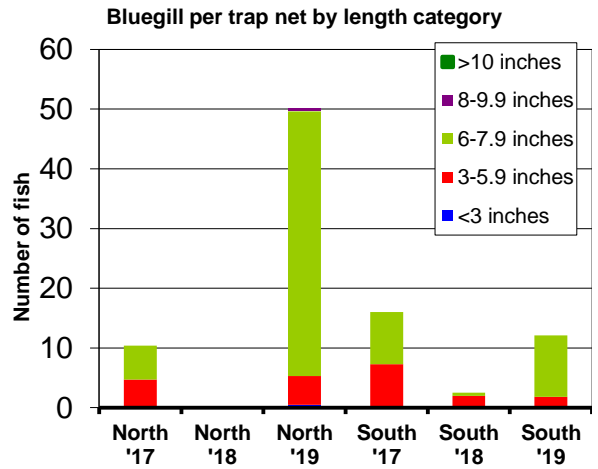
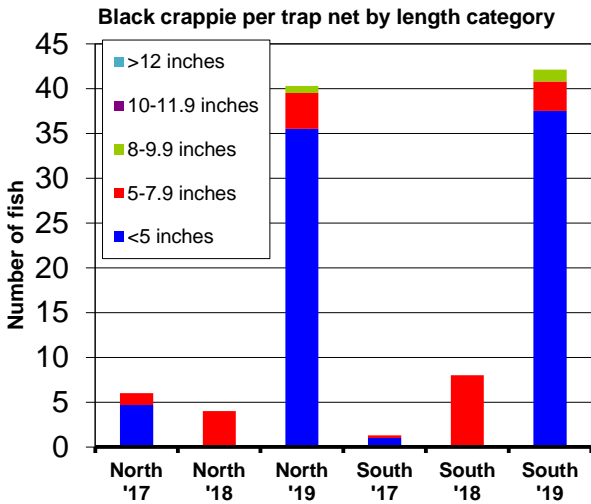
**Yellow perch per trap net by length category**



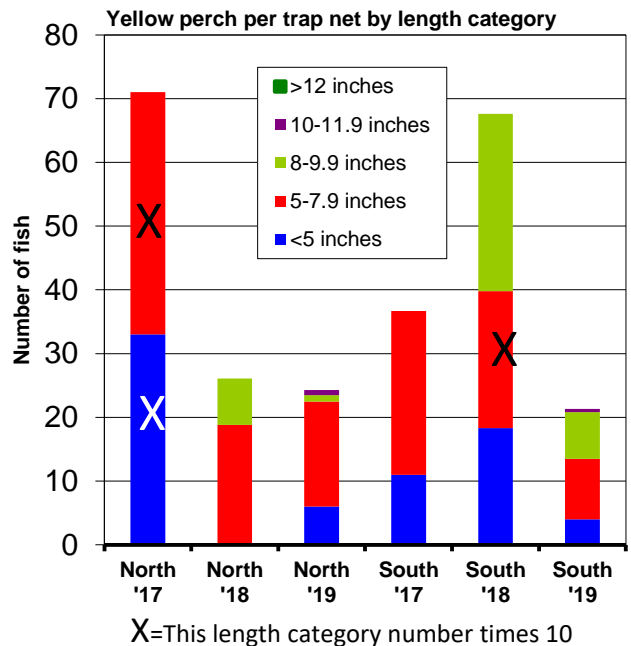
This lake struggled to reach “full capacity” following the very high back-to-back water years in 2010-11 and even with record precipitation in 2018 still remained below a “full pool” status. Some beavers that were hindering the flow of water from the west marsh were removed and water began flowing into the east lake last year. With record precipitation again in 2019 the lake is finally full. The lake was frame netted in mid-April, we had an fairly low catch of crappie, but the majority of them were over 8 inches. Bluegill size structure was acceptable but catch could have been twice as high. We only collected 8 perch total with none of the larger size present. I don’t know where these fish were hiding, but open-water anglers were fairly successful finding them in the fall. Ice fishermen were also fairly successful on the perch in addition to some larger bluegill. With the improved water level and associated flooded habitat, reproduction and recruitment should be fantastic and equate to some excellent angling opportunities in 2-3 years.

# Twin Lakes

**Twin Lakes North and South** are located 18 miles south and 2 miles east of Bassett and are part of a state owned WMA. They are natural sandhill lakes and water levels fluctuate widely depending on wet or dry seasons. Water flows into the North lake from the west almost annually with average precipitation, but has only left the lake twice in the last 30 years. On those occasions water floods the county road to the west of each lake and flows out to the northeast, the last time was 2010-11. In April of 2015 we salvaged and relocated adult bass, black crappie, yellow perch and northern pike to other nearby public fishing lakes. In March 2016 both lakes and many small puddles in the watershed were renovated. The last couple marshes were renovated under the ice in February of 2017. Four larger private sandhill lakes and some associated marshes were also renovated in 2015 by the NGPC but since public fishing access wasn't an option the chemical was purchased by the Sandhills Task Force. Fish stocking began at Twin Lakes in April 2016 and continued through July with largemouth bass, bluegill, black crappie and yellow perch. Considering the high water the two lakes are currently connected with both at their approximate max depth of 8.5'. A handicap accessible concrete boat ramp and a vault toilet were installed at Twin South and a concrete ramp at Twin North. Both are accompanied by larger designated parking areas. These ramps are designed to be user friendly for vessels large & small. Funding was provided in part from the boat launch facility deferred maintenance & matching U.S. Coast Guard boating safety dollars.



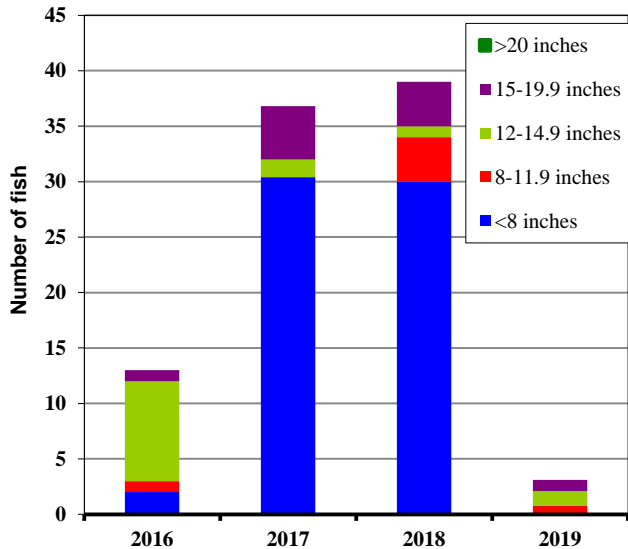
Frame net sampling was conducted around mid April in 2017 and 2018 but was delayed until June in 2019 to more effectively sample crappie and bluegill. Very high perch catches were observed in the north lake in 2017 and in the south lake in 2018 with moderate catches in other years. Notable is the improved size distribution that can be seen between 2017 and 2018. After 3 growing seasons in these lakes perch over 10" are present. The crappie population in each lake was characterized by moderate abundance and a size distribution dominated by small fish while the bluegill populations exhibited low to moderate density with decent size structure. Perch over 11" were caught through the ice early this winter with some bluegill and crappie angled as well. Thus, three years after the renovation the various fish populations appeared to be developing nicely. Now that these lakes have filled, all fish populations should have a positive response. However, an unfortunate result of the high water was abundant, prolonged connectivity that allowed carp to regain access to the lakes.



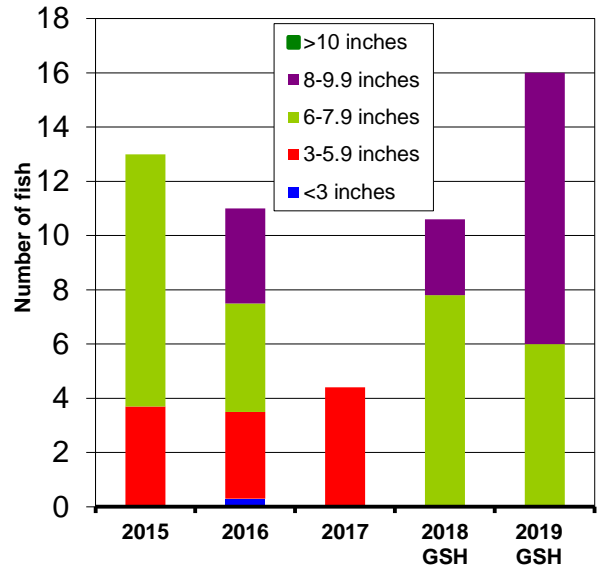
# Willow Lake

**Willow Lake** is located approximately 21 miles south and 11 miles west of Ainsworth. This is a state owned WMA. It is a natural sandhill lake with seasonal inflow from the west. When the lake is full water passes through a drop-board structure in a berm on the east end of the lake. Improvements to the berm and grated emergency overflow were completed in 2016. The lake was renovated in September of 2013 and due to an unexpected rise in the lake level we were not successful in eliminating the carp population. In addition to stockings of black crappie, yellow perch, bluegill and largemouth bass, walleye have been stocked annually since 2015 to provide an additional “toothed” predator to help limit carp recruitment and provide an additional angler opportunity. The lake reached “full pool” near 12’ last year after having been drawn down for the outlet work. Water flowed through both the main agri-drain outlet and the emergency outlet all of 2019.

**Bass per 1 hr electrofishing by length category**



**Bluegill per trap net by length category**

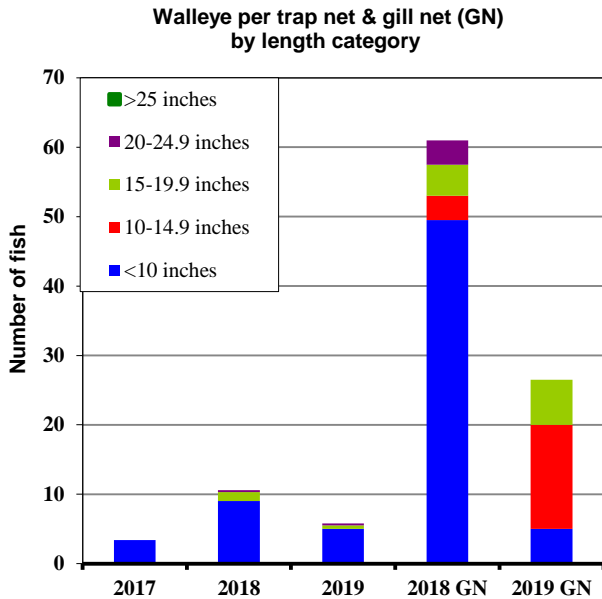


Nighttime electrofishing was conducted in early June to sample largemouth bass. Our bass catch is far below the numbers that are usually found following a renovation. Before we had carp in this lake the catch ranged from 29 to 55 bass  $\geq$  8 inches per hour of effort. Fish over 20 inches were commonly sampled. In 2015-16 we lost most of our bass population due to a bacterial infection. The infection also impacted the other fish species in the lake, including carp. We have been stocking fingerling bass when available and that is most likely what we saw in 2017, some of those fish have grown into the next size class in 2018. The larger sizes are remnants of the original stockings. A healthy population is crucial in an effort to control black bullheads and limit carp recruitment. Bass stockings are planned for 2020 to boost this population.

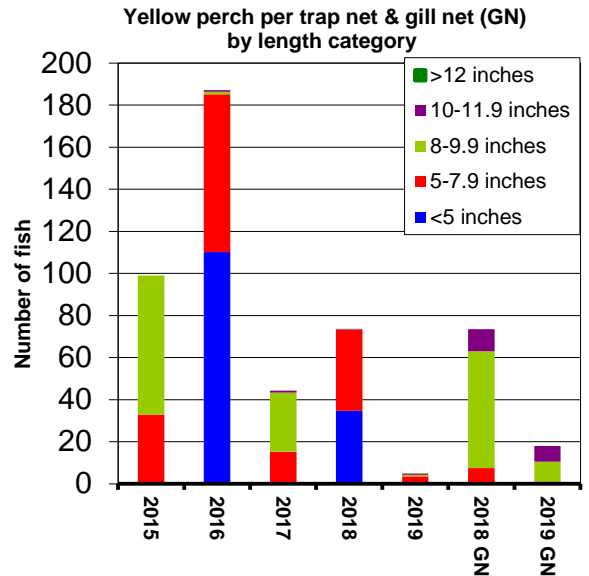
Frame nets were set in mid April to target the perch population, a later effort was made last year to sample bluegill and black crappie. An extremely high catch of carp and bullheads discouraged us from trying that again. As can be seen our bluegill catch has been declining since 2015, only 2 were sampled last year and 5 this year. However, there was a showing of Green Sunfish and Bluegill hybrids (GSH) in trap netting in May of 2018. The 2019 fish were collected while electrofishing. These fish can grow fairly fast and get over a pound. We may try some later frame netting after the bass population returns. A black crappie stocking is planned for 2020.



## Willow Lake - continued



Following our discovery of carp in the summer of 2014 we requested an annual stocking of 20,000 fingerling walleye to begin in 2015. Walleye were observed in decent numbers during spring-time frame net sampling in 2017 and 2018. However, the best method to evaluate a walleye fishery is with fall gill nets. In 2018, with the exception fish over 25", the gill net sampling captured representatives of all length groups. Those fish were represented by all four year-classes that had been stocked in the lake to that point. Some of these fish are reaching the 15" mark at the end of their second growing season and even if anglers find them difficult to corner, we hope they can help thin carp numbers in the future. These fish should provide an angling opportunity that isn't found too close by.



Perch catch has been fluctuating since initiating our sampling following the renovation. Things were looking really good after the 2015 trap net sample with a fair number of 8-10 inchers in the population. However, it seems we lost a large number of fish from those original stockings to the bacterial infection mentioned earlier. Prior to carp infestation the growth rates for Willow Lake perch were faster than any other sandhill lake we sampled in a statewide Sandhill Lake Study and it looks like we are beginning to see that again. Age analysis from 2019 indicated that they are approaching 10" by age 3. Our catch dropped for both the 2019 spring trap net and fall gill net surveys and, similar to 2018, we saw a few more of the angler desirable perch in our gill net sample than in the trap net survey.

## Peterson Lake

**Peterson Lake** is located 20 miles south and 4 miles east of Bassett. This is private lake that is leased for public fishing access through the Open Fields and Waters Program. It's a natural sandhill lake with no inflow but flows out to the north during extremely wet years. It is carp free and shallow so it can grow tremendous amounts of aquatic vegetation. The lake's water level fluctuates widely with precipitation and is currently near full pool @ 8' deep. It was trap netted in 2012 and electrofished for bass in 2013. Pike up to 36" have been observed in the lake but they are targeted heavily due to this lake being one of the closest pike fisheries to our heavier population centers. The bass population looked good when it was sampled in 2013 and it seems that it isn't heavily targeted due to the presence of good populations in other area lakes that are easier to access. Additionally, the lake has produced fair numbers of big bluegill and perch which are targeted heavily through the ice. Access to Peterson Lake was not possible for most of 2019 due to the conditions of the county road.

# Attention motorboat owners operating in Nebraska:

Starting in 2016, boaters whose motorized watercraft are registered in any state other than Nebraska must purchase and display a \$15 Aquatic Invasive Species (AIS) Stamp each year they launch their boat in Nebraska. The stamp will help fund AIS education and inspection programs.



- Boat inspections for AIS prior to launch in Nebraska are NOT mandatory at this time.
- Personal watercraft registered outside of Nebraska must have this stamp.
- Non-motorized craft registered in any state are exempt from the stamp.
- Stamps are not required for boats registered in Nebraska. A \$5 AIS fee is included on the residents' three-year boat registrations.
- Residents who register their boats in other states must have this stamp before launching in Nebraska.

This stamp is available online at **OutdoorNebraska.org** or at Nebraska Game and Parks permitting offices.

Learn more about invasive species at **neinvasives.com**.



Check the Boating Guide for details:

<http://digital.outdoornebraska.gov/i/1186614-2020-boating-guide-web>

Nebraska Invasive Aquatics:

<http://neinvasives.com/documents/Aquatics-Field-Guide.pdf>

Fishing regulation & public waters information consult the 2019 fishing guide at:

<http://digital.outdoornebraska.gov/i/1196022-fishing-guide-2020-web>

**Common carp** find their way into many Sandhill lakes. Sometimes they are unknowingly brought in via minnow bucket but often they swim in during high water. They degrade water quality by disrupting the lake bottom, thus destroying water clarity. This limits aquatic vegetation growth and prevents other desirable fish from maintaining healthy populations. A large amount of fisheries biologist's time and fishermen's money is spent trying to control common carp. In the Northeast District, carp are still found in Long Lake SRA & Goose Lake as well as many private sandhills lakes. As mentioned, Willow and Twin lakes also have carp once again. Additionally, carp swam back into Overton Lake from upstream sources. We do hope to renovate when funding is available, water levels decline, and all the landowners agree to chemically removing carp from those waterbodies. The MOU for public fishing has expired at Overton and all the lakes in the watershed should be renovated before it is renewed. An Aquatic Habitat Project on Valentine National Wildlife Refuge has installed water control structures that are also carp barriers. Pelican (found carp in 2019) & its downstream waterbodies were renovated in 2018, Hackberry is next on the list. Future barriers and renovations on other sandhill lakes may be possible with joint funding and other assistance from Ducks Unlimited, Sandhills Task Force, US Fish and Wildlife Service, NE Environmental Trust, NE Dept. of Environmental Quality, NE Game and Parks and possibly others. A study is being conducted to document the benefits to all wildlife populations by eliminating common carp from sandhills lakes.

**Eurasian Water Milfoil** is an invasive species of aquatic vegetation that completely chokes out native plants. This plant can spread rapidly from a single fragment of stem or leaf which takes root and forms a new colony growing up to 2 inches per day. Once established, the plant can form dense surface mats that interfere with boating, fishing, swimming, and other forms of recreation. Plant fragments can be transported on boats, trailers, and other aquatic sporting equipment. **Zebra Mussels** have been found as close as Lewis and Clark Reservoir and are within 100 miles of Goose. Anglers must be careful to follow the Clean-Drain-Dry protocol to keep our lakes free of unwanted hitchhikers. **Fishermen and all other boaters must be diligent not to move unwanted or destructive species from one system to another by boat or bucket.**



Headwater lake for Twin renovation 2015



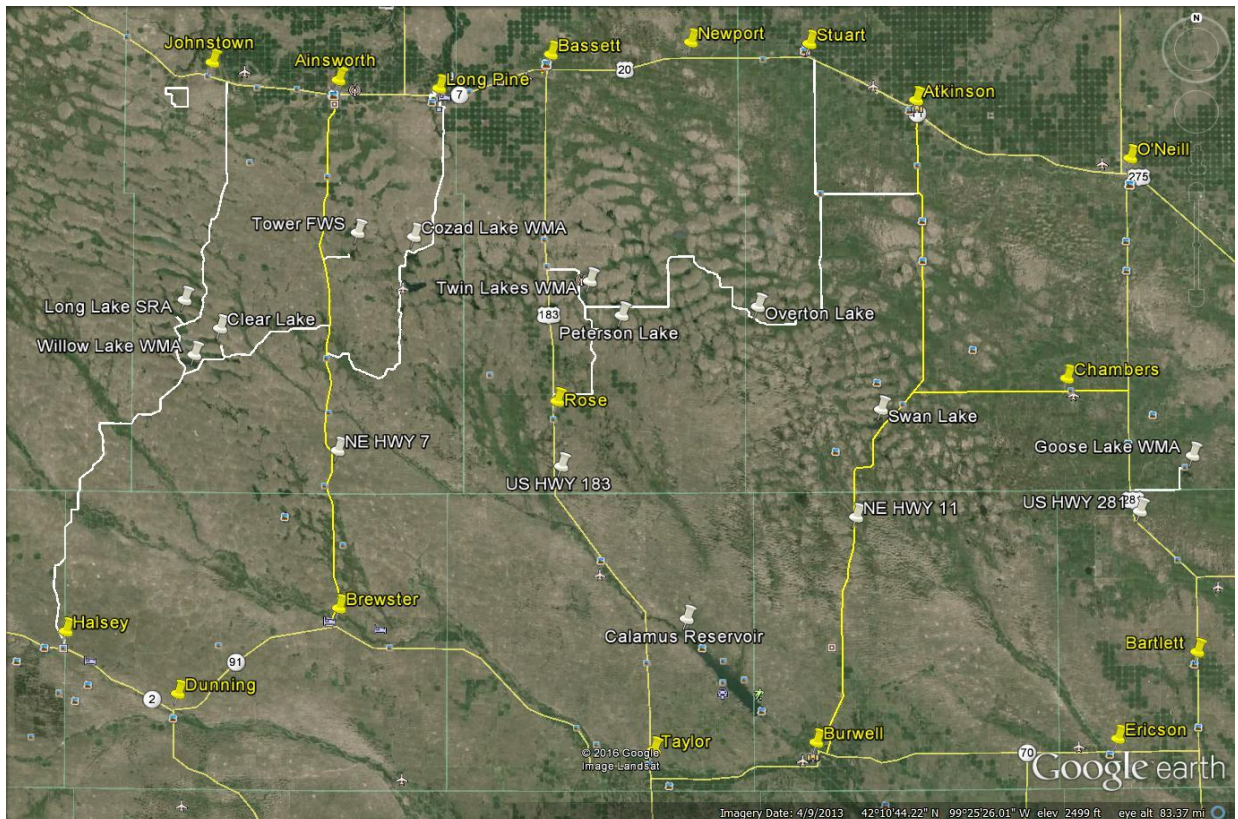
Eurasian Water Milfoil at Goose Lake 2015



Zebra Mussels at Lewis & Clark 2016

**Access** for these sandhill lakes vary due to ownership. Cozad, Goose, Twin & Willow are owned by the State of Nebraska and are managed under Wildlife Management Area regulations. Tower Lake is part of Yellowthroat WMA and is owned by the Fish and Wildlife Service. Clear, Overton, Peterson & Swan are privately owned lakes with public fishing agreements.

Access	Clear	Cozad	Goose	Peterson	Swan	Tower	Twin	Willow
Bank/Wading	NO	YES	YES	YES	YES	YES	YES	YES
Boat	YES	YES	YES	YES	YES	YES	YES	YES
Daytime Only	NO	NO	NO	NO	NO	YES	NO	NO
Ice Fishing Only	NO	NO	NO	NO	NO	NO	NO	NO
Modern Boat Ramp		YES	YES				YES	
Primitive Boat Ramp	YES			YES	YES	YES		YES



For more information contact the Game and Parks Fisheries staff:  
 Jeff Schuckman, Phil Chvala – Norfolk Regional Office – 402-370-3374  
 Andrew Glidden – Bassett Field Office – 402-684-2921

**Please remember that these fishing areas have limited services and no trash pick up. If you pack it in, pack it out, and keep our wild places looking wild!**