

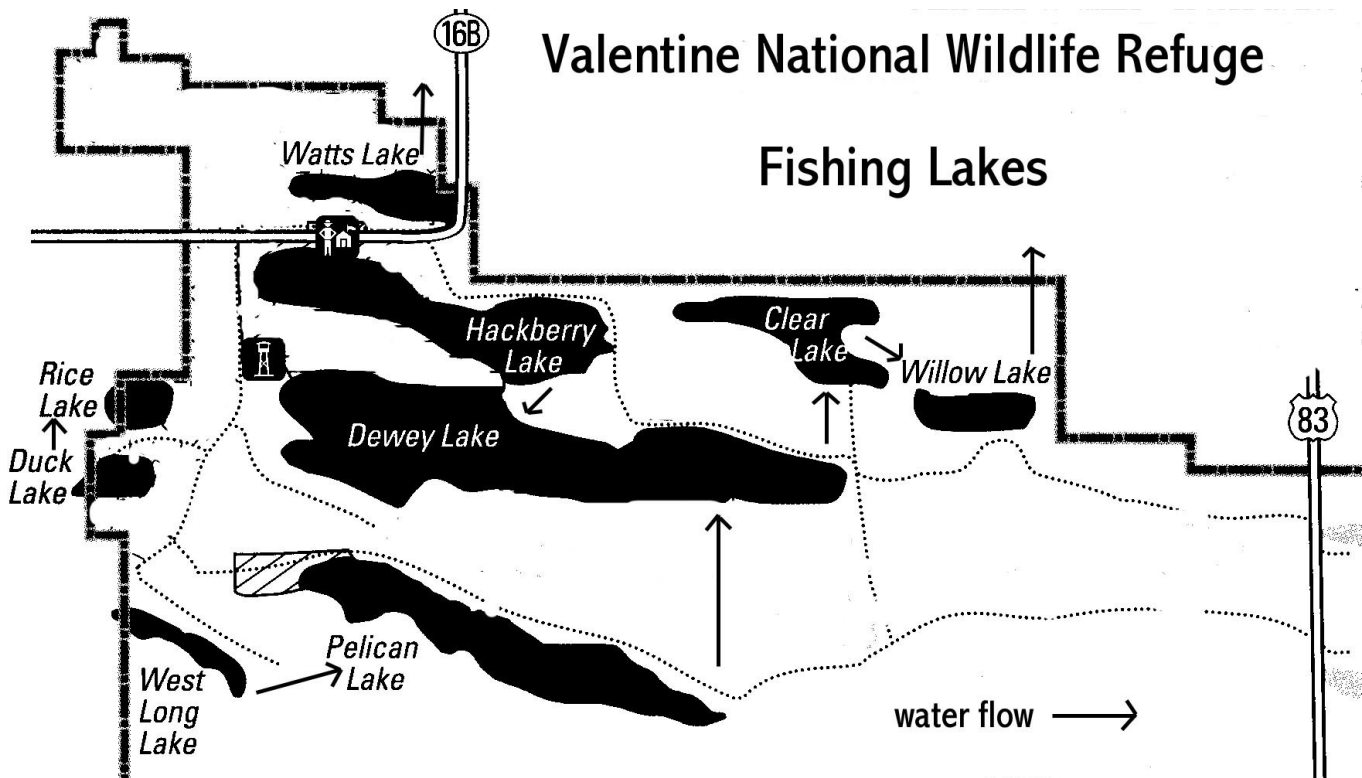
Valentine National Wildlife Refuge

2024 Fish Survey Report

Zac Brashears Fisheries Biologist



The Valentine National Wildlife Refuge (VNWR) is 71,516 acres and was established in 1935. The refuge not only protects a portion of the Sandhills but provides a resting, feeding, and nesting area for migrating waterfowl and habitat for many species of wildlife that use the refuge lakes, marshes, mid and tall grass prairies, and meadows. Public recreation including hunting and fishing are promoted at the VNWR. Nebraska Game and Parks Commission (NGPC) manages the lakes for recreational fishing in cooperation with the U. S. Fish and Wildlife Service (USFWS) as defined in a cooperative agreement between the USFWS and the NGPC. The VNWR contains 39 lakes of which 9 are open to fishing. Some of these lakes are too alkaline to support fish and a majority of the lakes are very shallow and can be heavily vegetated which makes them susceptible to frequent winter-kills and summer-kills. Those lakes that are open to fishing are: Watts, Hackberry, Dewey, Clear, Willow, Rice, Duck, West Long, and Pelican. Fish species found in these lakes include largemouth bass, bluegill, yellow perch, northern pike, black crappie, grass pickerel, black bullhead, and common carp. Fishing is permitted on the Refuge from 1/2 hour before sunrise to 1/2 hour after sunset. The use of internal combustion motors is prohibited on all Refuge lakes. Boats propelled with oars, paddles, or electric motors may be used. The possession or use of live or dead minnows and the possession of any fish not taken from Refuge waters is prohibited. Frozen or dead smelt may be used as bait.



Map of the Valentine National Wildlife Refuge lakes open to fishing south of Valentine, NE.

Survey Methods

Nebraska Game and Parks personnel took over fish population surveys on the VNWR in 2014. Prior surveys were conducted by USFWS personnel out of the Pierre, SD office. Biologists use electrofishing to target largemouth bass at night and common carp during the day. Frame netting surveys are used to target shore-oriented species such as bluegill, yellow perch, black crappie, and northern pike. Once these fish are collected they are weighed, measured, and a few scales are removed to determine the age of the fish and evaluate growth compared to other lakes. 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, sometimes lasting only a few days making sampling these species in several waterbodies relatively difficult. Winterkill severity also had impacts of abundances and size structure of many species sampled for across the refuge.

Anglers are also reminded these are small surveys of the fish population and some sizes and species could have been missed in the sample. Overall, these surveys are important in determining long-term trends. Many sandhill lakes were impacted during the winter of 2022 and 2023. Game and Parks personnel will continue to monitor fish populations throughout these waterbodies each year. Some lakes may need rotenone renovations in the future as numerous game fish species perished during the winter but unfortunately common carp persisted in some of these waterbodies.



Valentine National Wildlife Refuge

During the winter of 2022/2023 the refuge lakes along with many of the smaller sandhill lakes experienced partial to severe winterkill across a majority of these lakes. When oxygen levels get low chances of winterkill become high. Drought conditions and thick ice covered with snow prevent sunlight from penetrating the ice and reaching the aquatic plants below. When photosynthesis stops these plants start to die and decay. As the plants decay they tie up oxygen levels by creating hydrogen sulfide which creates toxic conditions for fish. Once the lake drops in oxygen, fish will push towards springs located throughout the lake searching for oxygen levels needed for survival. Bluegill, largemouth bass, yellow perch, and northern pike populations were the species hit the hardest across the Valentine refuge. Some smaller lakes experienced almost complete winterkill while others had significant winterkill with some smaller fish making it. These smaller fish needed less oxygen and found springs to make it through.

Game and Parks personnel across the sandhills have worked hard trying to sample each waterbody over 2023 and 2024 to determine the overall fish populations and stocking needs. Species and numbers of fish stocked and requested for 2025 can be seen below. These lakes are very productive and should provide angling opportunities for catchable fish in the next few years. These fish just need time to grow and contribute more year classes to the overall populations.

2023	Watts	Rice	Duck	West Long	Pelican	Hackberry	Dewey	Clear	Willow	Total
Bluegill	91771		26682	39413	246135	251589				655590
Yellow Perch	57527	11720	8090	16954	200317	179881			40114	514603
Largemouth Bass	22689		6810	6697	39380	64163				139739
Northern Pike					24195	13862				38057
2024	Watts	Rice	Duck	West Long	Pelican	Hackberry	Dewey	Clear	Willow	Total
Bluegill	23,502		7261		105985	89043				225,791
Yellow Perch										
Largemouth Bass					41506					41506
Black Crappie	23054					67975				91029
Northern Pike					13530					13530
2025	Watts	Rice	Duck	West Long	Pelican	Hackberry	Dewey	Clear	Willow	Total
Bluegill	115000	23500	33000	31000		340000	275000			817500
Yellow Perch	46000	7050	13200	12400	159000	136000	110000			483650
Largemouth Bass										
Northern Pike					2800		2050			4850
									Total	3025845

Anglers are encouraged to report dead fish anytime so biologists are made aware and can document these reports to make decisions on management and stocking needs.

Anglers are encouraged to call ahead of time if planning a trip out west to one of these lakes and we will share any information we may have for that particular waterbody.

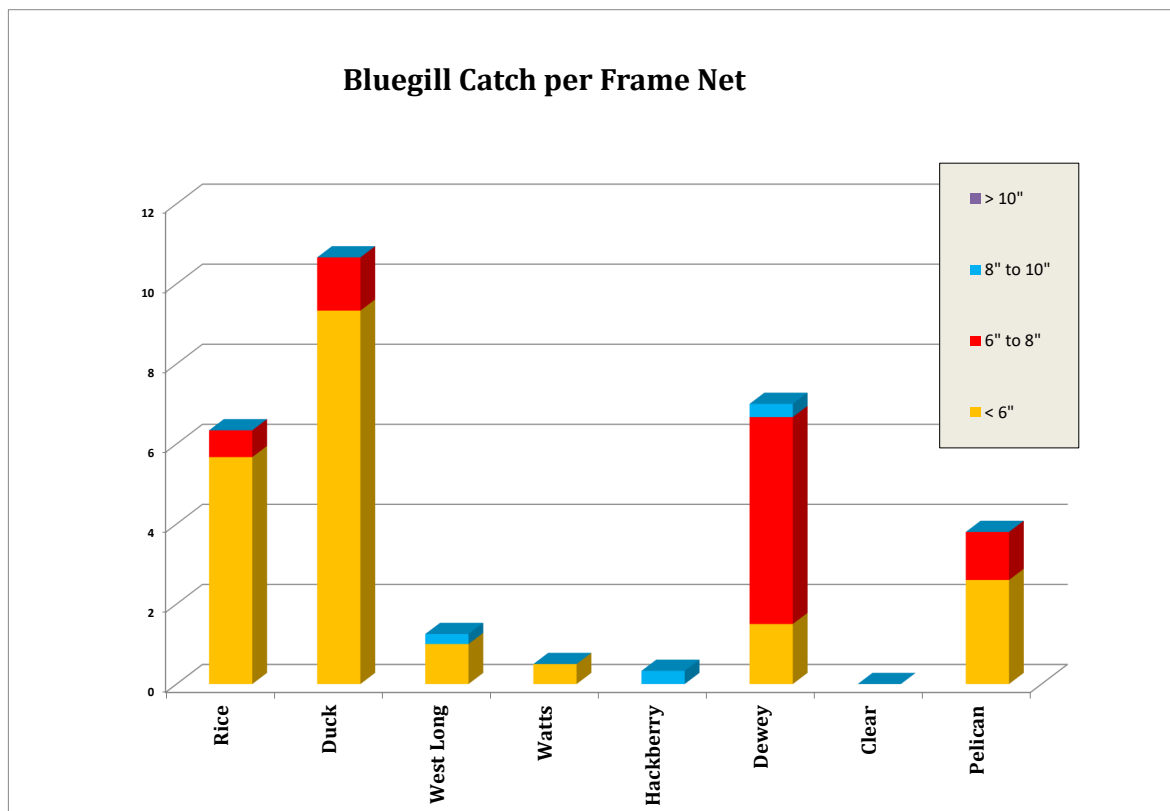
Bluegill

Bluegill populations were hit extremely hard during the 2022/2023 winterkill but as can be seen from the graphs populations are rebounding with some lakes exceeding others. Certain lakes produce better growth rates and have higher abundance each year. This all depends on factors such as water quality, vegetation, invertebrates,, and other fish species present.



The highest catch rate of bluegill in 2024 was at Duck Lake sampling 10.66 fish per net although a majority of these fish were under 6 inches in length. The second highest abundance came from Dewey with a catch rate of 7 bluegill per net. These fish showed a slightly higher size structure with 78% of the bluegill over 6 inches in length.

During 2023 and 2024, approximately 881,381 bluegill were stocked. Requests are in for an additional 817,500 bluegill for 2025 if deemed necessary. Bluegill populations will be sampled across all the refuge lakes in 2025 to determine if these supplemental stockings need to occur.



Panfish Regulations: Bluegill, yellow perch, crappie, green sunfish, Etc. Bag limit of 15 fish in combination and a possession limit of 30 fish.

New Panfish Regulation (initiated in 2024)- Special regulations now in effect for Pelican Lake and Duck Lake on the VNWR where the panfish daily bag limit of 15 shall include only one bluegill 9 inches or greater in length.

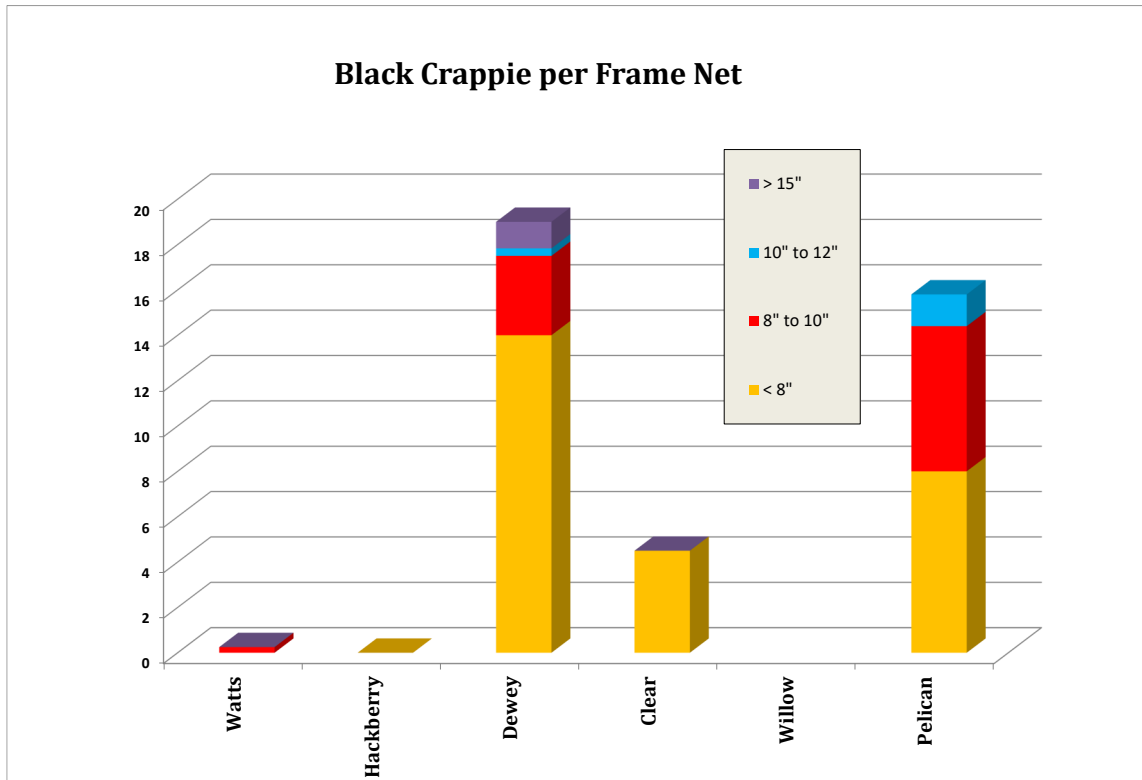
Black Crappie

Black crappie populations exist in 6 of the 9 lakes open to fishing. Black crappie were not affected as much during the 2022/2023 winterkill except on the more heavily vegetated lakes. The highest abundance of crappie in 2024 was at Dewey Lake. Trap nets captured 19 crappie per net with 26% of those fish over 10 inches. The largest crappie sampled also came from Dewey, a 14.6 inch fish. The next highest catch rate was at Pelican catching 15.8 fish per net. This population was initially started in 2019 and sampling is starting to show a few fish in the population over 10 inches.



Clear, Willow, Hackberry, and Watts also have crappie populations. Many of these fish were stocked post winterkill in 2024 due to hatchery space being limited in 2023 with bluegill and yellow perch production. Hackberry and Watts lakes received 91,029 black crappie in 2024.

Anglers target black crappie with jigs that represent small baitfish such as bluegill which is a primary prey item.



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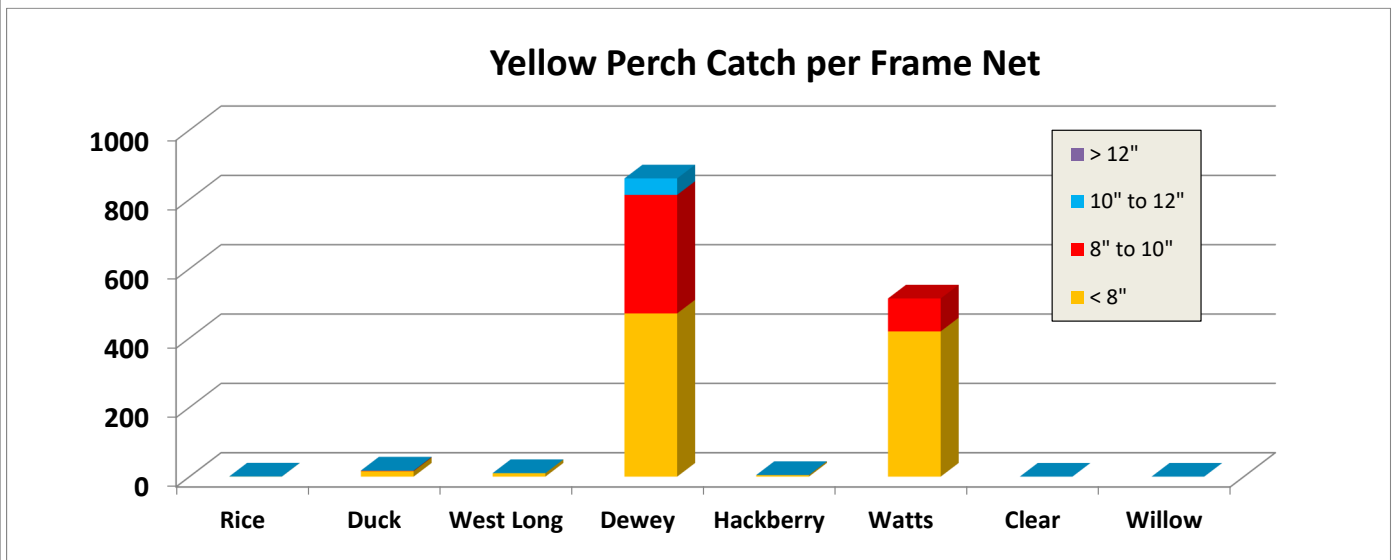
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Yellow Perch

Yellow perch populations fluctuate from year to year and like bluegill do better on certain lakes than others. Yellow perch are the most sought after fish in sandhill lakes especially during the winter months due to the fact they are easily cleanable and great table fare. The top two abundances of perch were found at Dewey (860 fish per net) and Watts (514 fish per net). The yellow perch size structure at Dewey did show some promise with 47.5 fish per net over 10 inches. These net catches are extremely high and we expect the numbers to balance out soon due to



predation and food competition. As can be seen from the graphs most of these perch populations are relatively small in size and still need time to grow and contribute to the population. Sampling of perch can definitely be hit or miss depending on water temperatures and timing of spawn. Sometimes spawning happens relatively fast and nets are not representative of the overall population. Due to their popularity and how well they do in these systems 514,603 perch were stocked across the refuge lakes in 2023 and 2024. Requests have been made for an additional 483,650 yellow perch if supplemental stockings need to occur in 2025.



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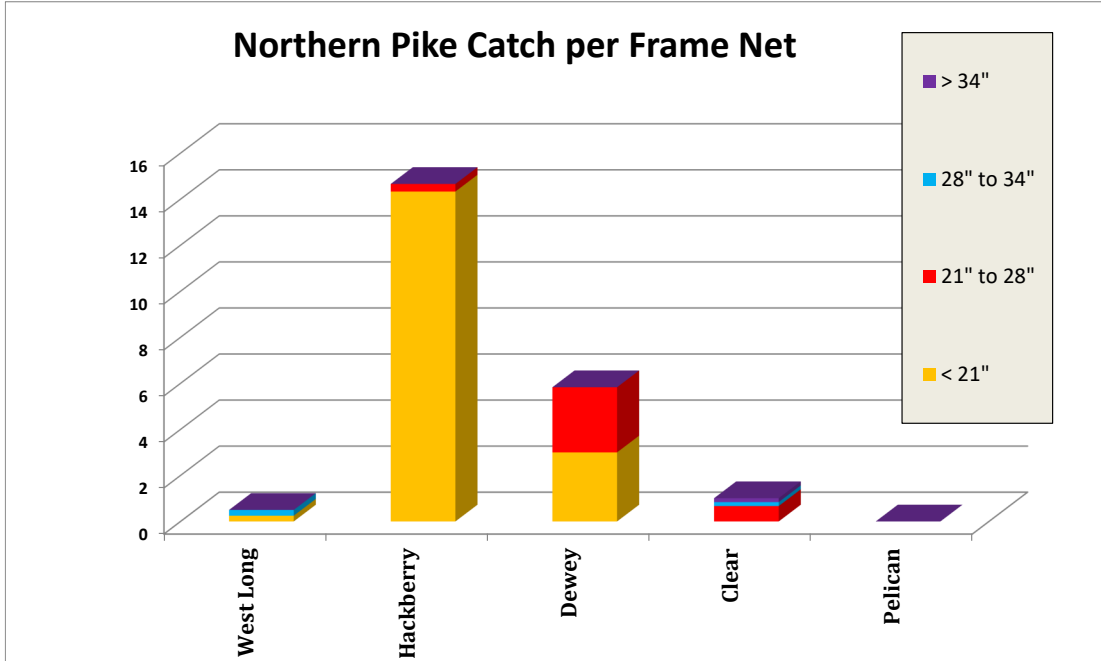
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Northern Pike

Northern pike are another sought after species on the refuge lakes especially through the ice and during the early spring months. Surveys in 2023 and 2024 showed these populations were affected somewhat by the winterkill and fishing pressure over the past several years. Hackberry Lake showed a very good abundance in 2024 sampling 14.66 pike per net. Hackberry was renovated in 2021 and three smaller carp were observed in 2022 therefore northern pike were stocked as an additional predator. Surveys post winterkill have not sampled any common carp. These northern pike are growing extremely well with the largest pike sampled in Hackberry right at 24 inches. Dewey Lake had the next highest abundance of pike with 5.83 fish sampled per net. Approximately half of these fish sampled were between 21 and 28 inches. The biggest pike sampled in 2024 came out of Clear Lake and measured 35.7 inches. The biggest pike sampled in 2024 came out of Clear Lake and measured 35.7 inches.



Supplemental stocking requests have been made for Dewey and Pelican in 2025 (12 inch fish). Efforts will also be made to transfer some adult fish from a lake with extremely high numbers of smaller pike. During the years of 2023 and 2024, 51,587 northern pike were stocked at Pelican, Hackberry, and Dewey Lakes.



New Northern Pike Regulation (initiated in 2025)- Clear Lake, Dewey Lake, Hackberry Lake, and Pelican Lake, the three fish daily bag limit has a protected slot of 24-34 inches, with no more than one fish 34 inches or longer in the bag.

Largemouth Bass

Largemouth bass were hit very hard as well during the 2022/2023 winterkill especially on the smaller lakes and more heavily vegetated lakes. Stocking of largemouth bass was completed in 2023-2024 totaling 181,245 fingerling bass. Sampling was done in 2024 on West Long, Watts, Hackberry, and Pelican but these fish were relatively small still so just presence/absence was conducted at these lakes and everything looked good for abundance and body condition. Efforts will be made in 2025 to get standardized surveys done across these



lakes. Rice and Dewey lakes still have fishable bass populations. Rice Lake has an excellent bass population sampling 174 bass per hour. Approximately 63% of these bass were over the statewide minimum of 15 inches and quite a few in the 17-18 1/2 inch range. Dewey survey resulted in 26 bass per hour with 50% of those fish over 15 inches. The largest bass also came from Dewey a 19 inch fish.

Aquatic Habitat Plan Phase II

The VNWR Aquatic Habitat Plan started in 2014 and since then numerous projects have been done throughout the refuge from road work, new ramps, docks, channel excavation and cleanout, fish barriers, and fish renovations. Watts Lake was renovated in 2015, Pelican in 2018, and Hackberry in 2021. Of the nine lakes Watts, West Long, Rice and Duck are 100% carp free and Hackberry is believed to be carp free. As was mentioned earlier 3 smaller carp were observed after the renovation in 2021 but no carp have been observed since. Pelican was renovated in 2018 and higher than normal precipitation occurred in 2019 causing flooding across the refuge and Pelican filled extremely fast. It is unsure if carp re-infested Pelican during the flooding or carp were not eliminated during the renovation. In 2019 flooded habitat provided carp optimal spawning habitat and little competition from game fish species. Common carp numbers drastically increased in 2019-2020. During the winterkill of 2022-2023 oxygen levels got really low and efforts were made to kill carp along spring seeps throughout the lake. Thousands of carp were eliminated during these efforts, but unfortunately some fish survived.

Due to the winterkill of 2022/2023, re-infestation of common carp into Pelican lake which lies towards the top of the watershed, and unavailability of liquid rotenone, the renovation of lakes has been put on hold over the past couple years. A joint meeting between USFWS personnel and NGPC personnel will be held during the spring of 2025 to determine the best path moving forward on the overall project.



Invasive Species

Over the past several years invasive species have become a rising concern in Nebraska. In 2015, a regulation was established to help prevent the spread of invasive species via boats and trailers. The regulation states: It is illegal to either arrive or leave any water body in Nebraska with water other than from a domestic source (water supply system, well or bottled) except for firefighting purposes.



Zebra Mussels (pictured right) were first documented in Nebraska in 2006 at Offutt Airforce Base Lake and are now also located in Lewis and Clark Lake, Lake Yankton and the Missouri River. 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. Sampling for these veligers occurs statewide from May through September. No evidence of these mussels has been discovered in any other lakes sampled. However, it is important to note that Zebra Mussels are spreading quickly in nearby South Dakota with expansion up the Missouri River Reservoirs, eastern South Dakota Glacial Lakes, and Pactola Reservoir in the Black Hills. Anglers and boaters fishing those waterbodies as well as Valentine Refuge should be extra cautious and always follow CLEAN, DRAIN, DRY protocols.

Aquatic vegetation such as curly-leaf pondweed and Eurasian water milfoil are also invasive species present in Nebraska. **Curly leaf pondweed is present in Merritt Reservoir.** Both of these plants form dense mats of vegetation near the water's surface which make recreational fishing, boating, and swimming difficult. Spread of these plants can happen through stem fragmentation where a single segment of plant material can be transferred to another water body and form a new colony. One or both of these species have been documented throughout NW Nebraska at Merritt, Box Butte, Walgren Lake, Smith Lake WMA, Cottonwood SRA and on Fort Robinson State Park. Therefore, removing any visible plant material from boats and trailers is a must and remember to **CLEAN, DRAIN, and DRY!**

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

DRAIN- Drain all water before leaving, including wells, bilge, ballast, and any parts or equipment that can hold water.

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

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

For more information on fisheries management or activities on the Valentine National Wildlife Refuge contact:

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