2018 Lewis and Clark Lake Fish Sampling Summary

Nebraska Game and Parks Commission

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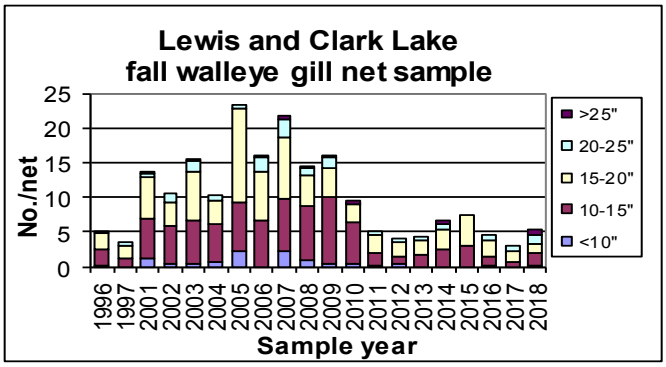
The following text and graphs summarize data from the fall fish survey on Lewis and Clark Reservoir. Night-time electrofishing for young-of-the-year (YOY) and gill netting was conducted on October 1-2, 2018. Sampling consisted of 6 gill nets and 2 hours of night-time electrofishing. Gill nets targeted walleye, sauger, white bass, and channel catfish and the electrofishing was used to monitor abundance of young-of-the-year walleye, sauger, and white bass as an index of 2018 production. Both sampling methods are normally conducted on an annual basis.

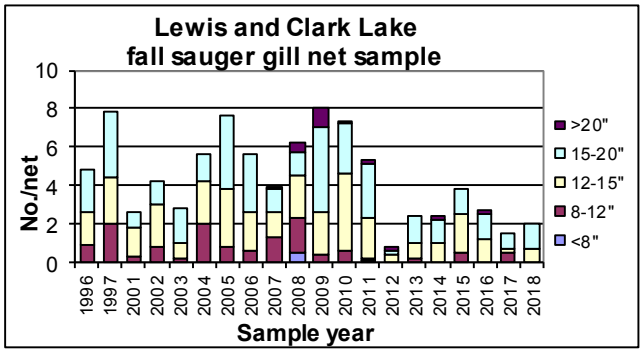
Historical data has shown that periods of low flows through the dam have corresponded to higher abundance of walleye in the reservoir. That certainly wasn't the case in 2018 as the average release through Gavins Point Dam of 39,400 cubic feet per second was the 5th highest on record. Walleye and sauger angling success was again spotty in 2018 but the anglers who know the lake and fish the "chutes" at the upper end of the lake had good success. White bass and smallmouth bass angling was good at times also, both in the reservoir and in the Gavins Point tailwaters.

Walleye

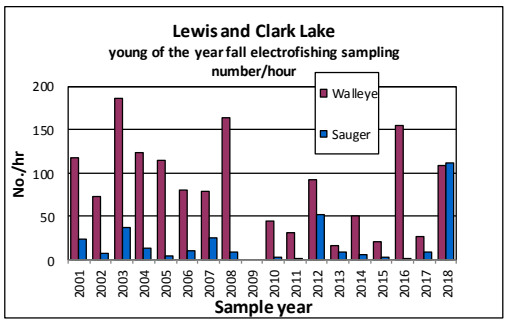


Walleye numbers in our sample remained low in 2018, as they have been since the flood in 2011. The 2016 year class strongly contributed to the current walleye population as they made up almost 40% of the walleye sample. Additionally, with those fish progressing through their third growing season they also contributed to the 65% angler-harvestable portion of the population. Research and stocking has been conducted in recent years to try to understand and address the low walleye numbers in the reservoir. These activities will continue over the next several years. Flow and releases from Gavins Point Dam and suspected habitat changes following the 2011 flood are considered to be the likely factors limiting walleye recruitment in the reservoir. Graphs and discussion later in this report provide some background on the relationship between dam releases and walleye numbers. 2018 was another high flow-through year at Gavins Point Dam which doesn't typically bode well for walleye numbers in Lewis & Clark. However, experienced anglers have had good angling success in the "delta" located in the Santee and Springfield areas. Seasonal movement patterns concentrate both walleye and sauger that can provide good angling opportunity. Sporadic good fishing also occurs below Gavins Point Dam and areas downstream. These areas are basically "stocked" from Lewis and Clark Lake due to movement of fish out of the reservoir. Growth rates did slow somewhat, most notably for younger fish (≤ age 2), but walleye from the sample did still average 15 inches after three growing seasons.

Sauger



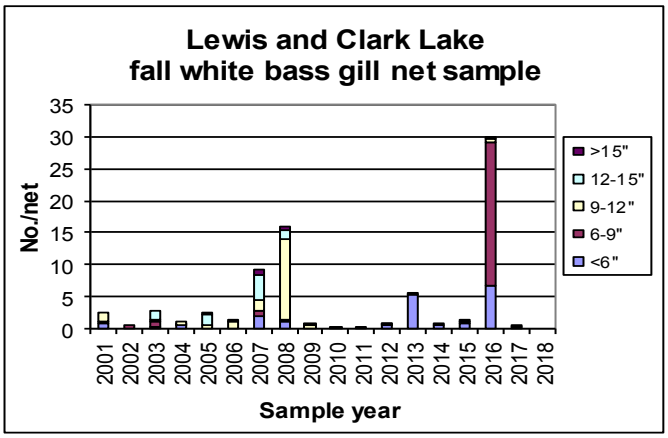
Similar to the walleye, sauger numbers remained low in 2018. This continues a trend of low net catches following the 2011 flood. The mean net catch from 2012 to 2018 was 2.2 compared to 6 for the period 2006 to 2011. Like walleye, the good news about sauger for anglers is that over half of the fish collected exceeded the 15 inch minimum length limit. Sauger growth rates did slow in 2018 compared to recent years but they still averaged 15 inches through three growing seasons. As can be seen in the graph to the left, walleye and sauger young-of-the-year (YOY) production was very good in Lewis & Clark in 2018, including a sauger index that was by-far the highest it's ever been. Those sauger may provide some really good angling opportunities over the next few years, especially when they start to reach that 15-inch mark in 2020. They may be more likely than walleye to stay in the reservoir considering they are adapted to flow a little more than walleye and the negative relationship of flow to catch is not as evident with sauger as it is with walleye. The best angling opportunity for sauger includes the upper end of Lewis and Clark Lake and the "chutes" area of the delta from Santee to Springfield S.D. and the riverine areas.

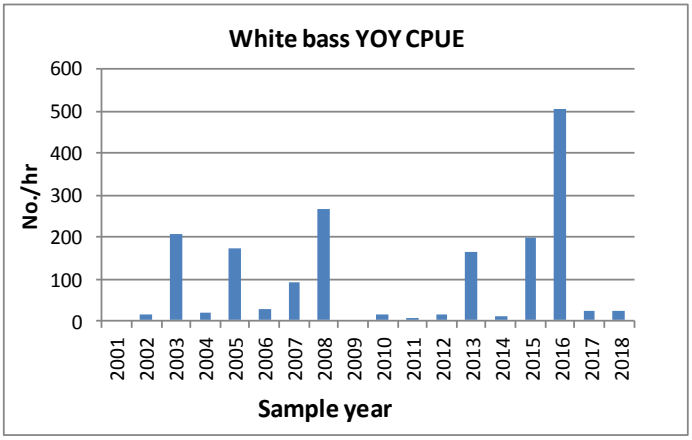


White Bass

Although our sampling doesn't necessarily reflect it, the white bass population seems to have increased at least somewhat since the 2011 flood. Good year classes were produced in 3 of the last 6 years with the 2016 year class the highest seen during our young-of-the-year sampling. Although very few white bass were captured in the gill nets in the last two years, anecdotal angler information indicates that white bass angling has been decent but very spotty over the last 2-3 years with some quality fish being caught. Oftentimes gill net sampling fails to accurately represent white bass numbers due to their schooling propensity which makes them very "hit or miss". Overall, white bass numbers would likely be considered quite low reservoir-wide but, as mentioned, they are producing some pretty good catches on a localized basis. When anglers do find them they have been picking up some really nice fish, with many approaching or exceeding 15 inches. White bass in Lewis and Clark Lake exhibit excellent body condition and growth rates, typically reaching 12 inches in length by age 3.

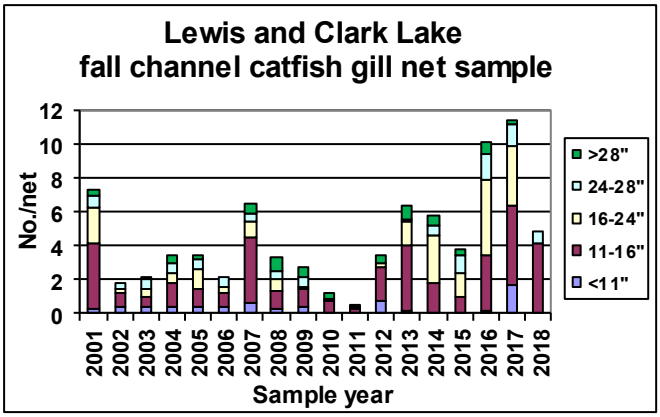
Additionally, good white bass production in the reservoir contributes to higher numbers of white bass in the Gavins Point tailwaters as the fish produced in the lake pass through the dam into the river below. Anglers will likely continue to see decent white bass fishing in the Gavins Point tailwaters in 2019.





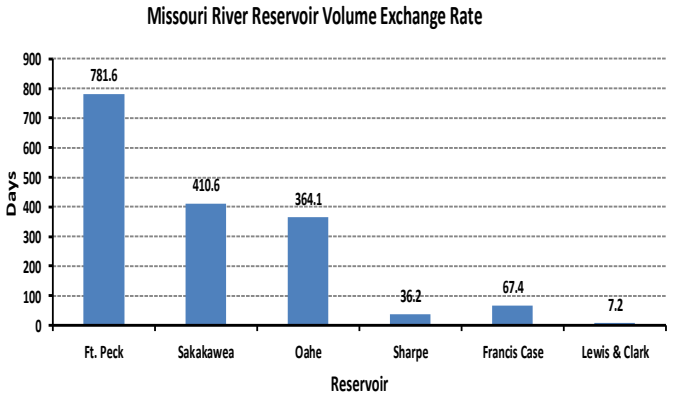
Channel Catfish

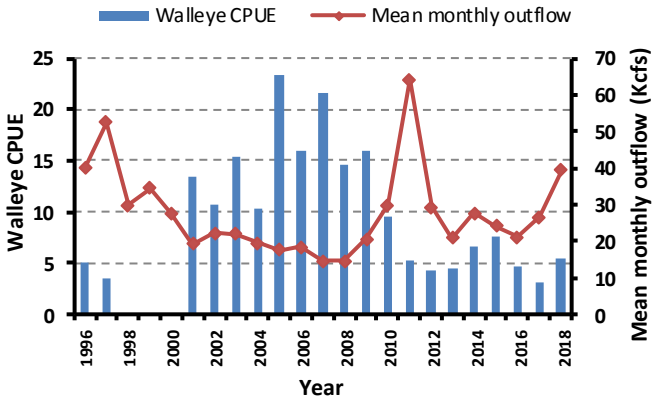
Contrary to the other priority game fish populations in the reservoir, channel catfish catch rates in Lewis and Clark have been higher after the big flood year as compared to pre-2011. The number of larger fish in the sample was down in 2018 but more troubling is that there were no 16-24 -inch catfish captured. That length group has made up a substantial portion of the population over the last five years. The reservoir is sampled on an annual basis, thus we will gather future data to see if this was an anomaly or if there is an issue. The water temperature at the time of the 2018 sample was one of the lowest of the last several years and may have reduced catfish activity resulting in the lower catch. Additionally, 2018 marked some of the highest flows on record which could have also influenced catfish activity. Catfish angling opportunity should still be decent in 2019. Often overlooked by anglers, catfish are fun to catch and possess good fighting ability. Fishing for channel catfish near the mouth of tributaries following a runoff event can provide good action.



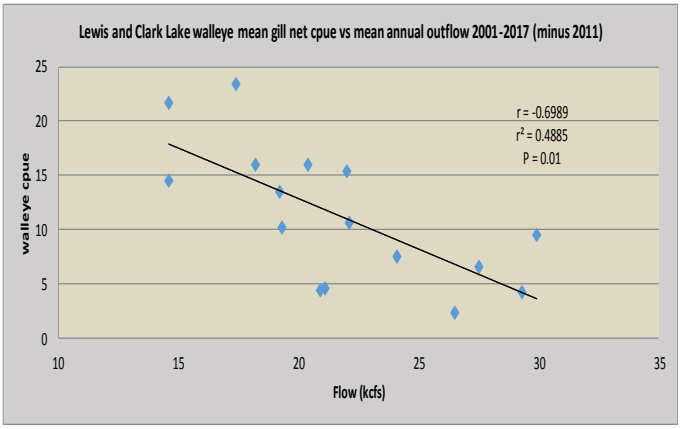
Other Species and Information

Although no data is presented in this summary report, other species available for anglers to catch in Lewis and Clark include abundant small-mouth bass along with some crappie, bluegill, and northern pike. Smallmouth bass are found throughout the lake and river system, usually associated with rock structure, both natural and man-made. Crappie are typically caught in bays around the lake, in the delta backwaters, and around docks in the marinas while bluegill can be caught along some of the rocked areas or anywhere one might find stands of vegetation in protected areas such as bays and behind the breakwaters that are present in the reservoir. Northern pike can provide an occasional catch anywhere in the system.





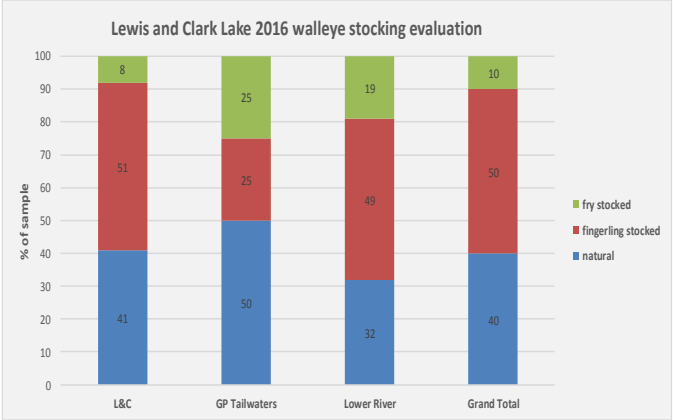
Any discussion of the fishery in Lewis and Clark Lake quickly turns to flows through Gavins Point Dam and turnover time in the reservoir. Fish of all species are highly vulnerable to escapement or flushing through the dam into the tailwaters. This is a one way trip since fish cannot get back upstream to the reservoir. The complete barrier is a very good thing to contain the ever growing Asian Carp population found below Gavins Point Dam and keep them from getting into the lake above. However, the barrier can lead to depressed sport fish populations in the reservoir if flows and escapement are too high. Consider the adjacent charts. The exchange rate, also known as turn-over time, for Lewis and Clark Lake is very short, especially when compared to the other Missouri River reservoirs. This means a high flow-through at the dam that can lead to high fish escapement. This phenomenon is depicted in the relationship between mean walleye gill net catch-per-unit-effort and mean annual outflow from Gavins Point Dam (mean annual outflow in cubic-feet-per-second). The analysis indicates a significant negative relationship. In other words, the higher the outflow through the dam the lower the walleye numbers in our reservoir samples. The less the outflow the higher the walleye numbers. This can also be applied to other species such as white bass. Some species are more prone to entrainment than others with walleye being a top candidate species for this downstream movement. This relationship, while not accounting for all variability in walleye numbers, is a major part of the equation. In the mid– to late-2000's the average flow through the dam was less than 20,000 cfs for a five consecutive year period. Consequently, sampling during that period produced the highest catch rates observed through our sampling history on the reservoir.

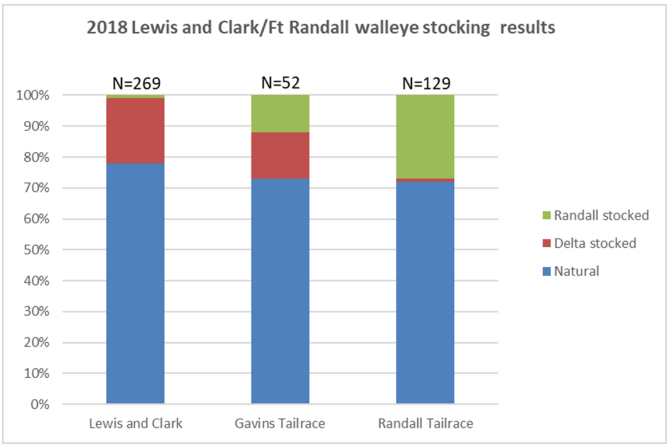


Additional evidence of walleye movement out of the reservoir and through the dam can be found in the evaluation of the 2016 and 2018 walleye stockings which utilized marked fish. The walleye stocked in those years were marked with oxytetracycline (OTC) which allowed us to evaluate not only the contribution of stocked fish to the reservoir population but also the movement of the stocked fish. Walleye stocked between Ft. Randall Dam and Gavins Point Dam comprised ≥50% and 27% of the young-of-the-year walleye collected **below** Gavins Point Dam in 2016 and 2018, respectively. These stocked fish are not "lost" but will contribute to the fishery in the river below Gavins Point Dam. Rather, this just illustrates the difficulty in keeping fish in the reservoir proper in a high turn-over, open system.

Stocking Evaluation

Various stockings have occurred since 2011 in an attempt to address low walleye numbers in the reservoir since the flood year. The stocked fish have all been marked with oxytetracycline (OTC) so that stock contribution could be determined. Fry stockings were attempted from 2014 through 2016 but proved relatively unsuccessful with stock returns ranging from <1% to 11% for those 3 years. In addition to Nebraska's fry stocking in 2016, South Dakota Game, Fish, and Parks (SDGFP) stocked 1.4 million fingerlings that year. Contrary to the fry stocking, the fingerling stocking proved quite successful with 50% of the 2016 walleye young-of-the-year (YOY) sample being from that fingerling stocking. Due to the success of the fingerling-stocked fish, fry stocking efforts were abandoned and only fingerlings were stocked in 2018.

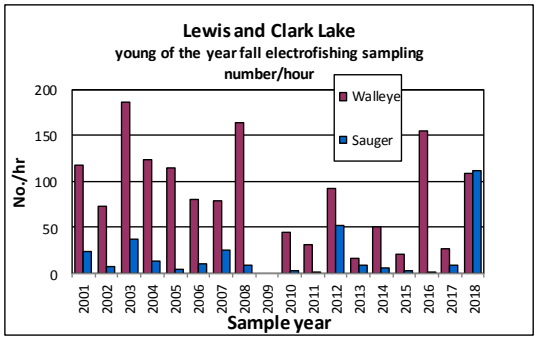




The fish stocked from 2014-2016 were distributed at the upper end of the reservoir only. In 2018, they were stocked at several locations ranging from the Fort Randall tailwaters to the upper end of Lewis & Clark Reservoir. YOY electrofishing indicated that both 2016 and 2018 had strong year classes of walleye in the reservoir, but appeared to lean on naturally reproduced fish more so in 2018. As mentioned, all fish, including the 1.4 million fingerlings, stocked in Lewis & Clark in 2016 were released at the upper end of the reservoir. Possibly influencing the lower contribution by stocked fish in the reservoir in 2018 is the fact that only 61% of them were stocked "in" the reservoir. Thus, the total that was stocked in-lake (i.e., the reservoir and/or associated delta) in 2018 was only about half of what was stocked in the lake in 2016. The others stocked in 2018 were released upstream at Running Water and the Ft. Randall tailwaters and, as can be seen in the middle graph, many of those stocked in the Ft. Randall tailwaters stayed there and didn't move down to the lake. The stocking assessment (i.e., stocking of marked fish) is planned to continue for the next four years. The plan is to stock one million OTC-marked fingerlings in Lewis & Clark in 2019. We will likely target that number for stocking each year through 2022 to continue to evaluate the contribution of stocked fish to year class strength and to document fish movement. This will continue to be a combined effort between the Nebraska Game and Parks and South Dakota Game, Fish and Parks.

Year	Number	Size	Source	In-lake Contribution
2014	7,182,000	Fry	NE	<1%
2015	12,800,000	Fry	NE	11%
2016	13,449,865	Fry	NE	10%
2016	1,400,000	Fingerling	SD	51%
2018	1,047,446	Fingerling	NE	22%

Despite the fact that we are seeing good numbers of YOY walleye during our fall electrofishing, increases in the number of adult walleye in the gill net sample have been minimal. The gill net catch rate for walleye did improve somewhat in 2018 when compared to the previous year, aided in large part to the age-2 fish (2016 year class) which made up 40% of the walleye sample, but it was still well below our goal of 10-15 per net. As has been shown though, entrainment/escapement during high flows also contributes to reduced catch rates in the lake, especially in high flow years like 2018. Thus, that will also be a consideration to take into account when assessing the success of the stocking efforts in Lewis & Clark.



Zebra Mussels and Invasive Species

Anglers and recreational boaters should continue awareness for zebra mussels while using Lewis and Clark Lake and the Missouri River. Zebra mussels were found in Lewis and Clark Lake in 2014 and their numbers have exploded since and continue to increase exponentially. South Dakota Game, Fish, and Parks (SDGFP) considers them common on the north side of the reservoir as far west as the Tabor Access Area which is about straight north across the lake from Nebraska's Miller Creek access area. They have been regularly observed on the Nebraska side as far west as the Bloomfield Area access. There was a positive ID of an adult zebra mussel on a sampler at Miller Creek in 2016 but there hasn't been one since. Additionally, in 2018 SDGFP personnel found a single adult zebra mussel on a sampler placed at the Verdel Landing boat ramp. The most likely circumstance for this mussel, or its larval stage (veliger), to reach that location would have been via water in some sort of human conveyance such as a boat, PWC, kayak, bucket, etc. Please be sure to clean, drain, and dry your water craft prior to leaving Lewis and Clark Lake and never arrive at a boat launch with water in your boat, livewell, etc. Invasive mussels have also been documented in several neighboring states including Iowa, Kansas, Missouri, and South Dakota.

Invasive mussels will attach to almost any surface and have detrimental impacts on industry (power plants, water intakes, irrigation, etc), native fish and mussels, and recreational users (fouling boat motors, impacting beaches, etc). Invasive mussels cause an estimated $5 billion per year in economic impacts in the United States for monitoring and control efforts. Inadvertent transfer by humans is the major source of new infestation for zebra mussels; primarily by boats, boat trailers, and fishing gear. Boaters and anglers are reminded that it is important to **clean, drain and dry** their equipment and boats before moving to different bodies of water. Anglers and boaters are encouraged to educate themselves on these and other aquatic invasive species. An excellent source of information regarding invasive species can be found on the University of Nebraska's Invasive Species Project website: http://www.neinvasives.com.

Regulations that took effect in 2013 mandate that all vessels and conveyance be drained of water prior to entering or leaving a lake to prevent the spread of invasive species. This means all livewells, baitwells, and boat hulls shall be drained and free of water except for water from a domestic source for bait fish. Additionally, all aquatic vegetation must be removed from boats and trailers prior to leaving a lake. Boats are subject to inspection by authorized personnel. Regulations will be strictly enforced. Remember to bring ice on your fishing trip to transport your fish home. Also keep in mind South Dakota law requires plugs be pulled on all watercraft leaving the lake and while in transport. Nebraska is pursuing similar regulations in 2019.

All non-resident boats (those not registered in Nebraska) must have a non-resident AIS sticker affixed to the hull prior to launching at Nebraska boat ramps.

*****Boat inspections and zebra mussel sampling will continue on Lewis and Clark Lake and the Missouri River in 2019. We ask for your cooperation and patience in the boat inspection effort and ask for your assistance in stopping the spread of zebra mussels and other invasives species such as Asian carp, Eurasian watermilfoil, rusty crayfish and red swamp crayfish. All these invasives are found in the Missouri River below Gavins Point Dam.**

For more information on fishing rules and regulations visit the Nebraska Game and Parks website at OutdoorNebraska.org.

For more information on the fisheries at Calamus Reservoir contact:

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Andrew Glidden, Fisheries Biologist, Basset Field Office, Ph: 402-684-2921, email: andy.glidden@nebraska.gov

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.**

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