2020 Lewis and Clark Lake Fish Sampling Summary
Nebraska Game and Parks Commission

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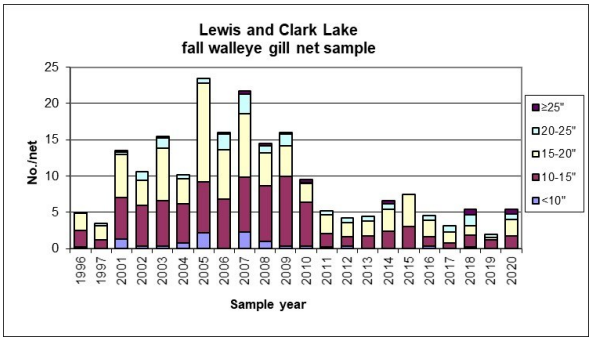
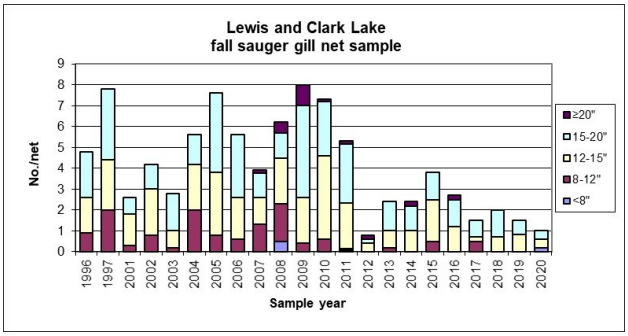
The following text and graphs summarize data from the fall fish survey on Lewis and Clark Lake. Night-time electrofishing for young-of-the-year (YOY) was conducted during the latter part of September and gill netting occurred on October 6. Sampling consisted of 2.5 hours of night-time electrofishing and 5 gill nets. Gill nets targeted walleye, sauger, white bass, and channel catfish while electrofishing was used to monitor abundance of YOY walleye, sauger, and white bass as an index of 2020 production. Both sampling methods are normally conducted on an annual basis. Historical data has shown that periods of high flows through the dam have corresponded to lower abundance of walleye in the reservoir. That pattern is apparent over the last 10 years when the annual releases through Gavins Point Dam averaged 33,850 cfs (cubic feet per second) from 2010-2019 (compared to a 10-year average of 19,500 cfs from 2000-2009). Walleye and sauger angling success was again limited on the reservoir proper in 2020 but the anglers who fish the "chutes" at the upper end of the lake and the riverine portion upstream had good success at times. White bass fishing was poor in the reservoir in 2020 but anglers fishing the Gavins Point tailwaters were able to pick some up.

Walleye

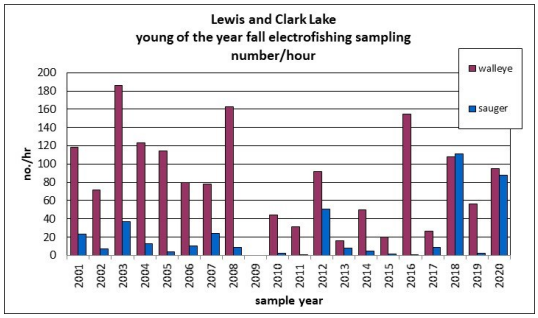


Walleye catch rebounded somewhat in 2020 with a catch rate similar to the most recent 10-year average around 5/net. The trend of relatively poor walleye catch rates since 2011 continued but some nice fish have been observed over the last few years. Despite the low catch, anglers who were able to find walleye in the reservoir were able to take some fish home as sampling indicated that nearly 70% were legally-harvestable fish. Supplemental stocking and associated analysis has been carried out over the last several years and will continue in an effort to understand and address the low walleye numbers in the reservoir. Moderate to high catch rates of YOY walleye, of which a high proportion have been stocked fish, have not equated to an increased adult population in the reservoir. However, the stockings may be helping to maintain the populations levels that we are currently seeing in the reservoir and are likely contributing to the fishery below Gavins Point Dam. The high flows and associated releases from Gavins Point Dam since 2010 and suspected habitat changes following the 2011 flood are considered to be the likely factors limiting walleye recruitment within the reservoir. Graphs and discussion later in this report provide some background on the relationship between dam releases and walleye numbers. Sporadic good fishing occurs below Gavins Point Dam and areas downstream as these areas, as mentioned above, are basically "stocked" from Lewis and Clark Lake due to movement of fish out of the reservoir, especially during high flow-through years. Walleye growth rates in the reservoir have slowed recently but data indicate that most walleye continue to reach legal harvestable size (15 inches) sometime in their third growing season.

Sauger

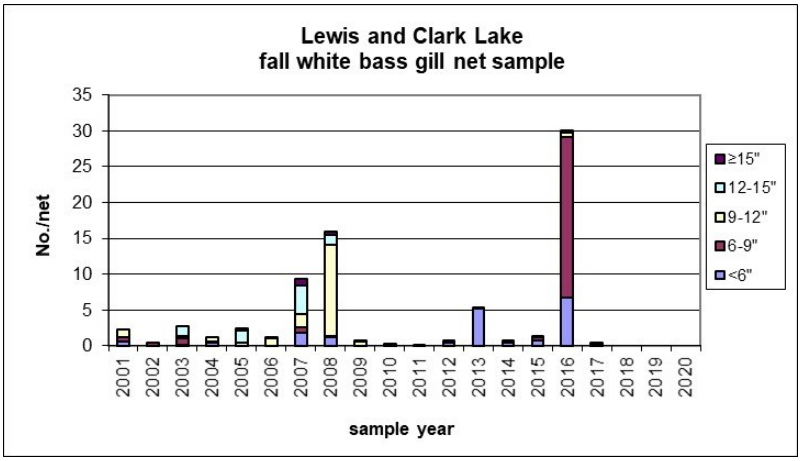


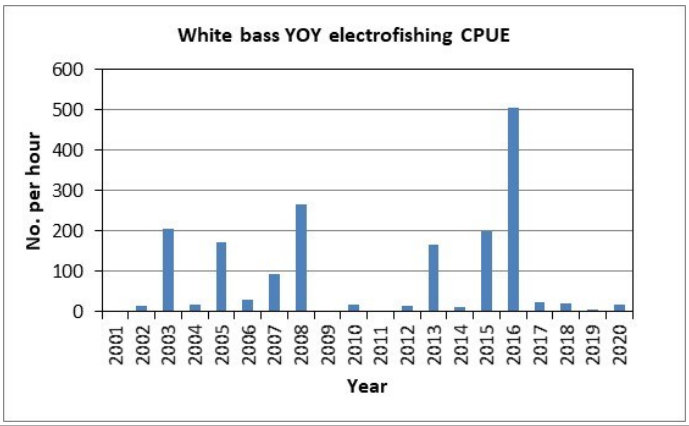
Despite a record catch rate of YOY sauger in 2018, catch in the gill nets continued the declining trend observed since 2015 and the reduced catch observed since the 2011 flood. The 2020 gill net catch was nearly the lowest in the sampling history of the reservoir, second only to 2012. Similar to walleye, sauger growth rates appeared to slow somewhat. Past growth analysis has indicated that they have typically reach 15 inches sometime in their third growing season. Sauger collected during the 2020 survey did exhibit slower growth rates but the sample size was very small so inferences on growth are limited. As mentioned, the high young-of-the-year sauger catch in 2018 didn't appear to equate to higher adult abundance in Lewis & Clark in 2019 or 2020. Considering the high flows of 2019, they may be contributing to the river fishery below Gavins Point Dam. However, they are adapted to flow more so than walleye so they could have moved upstream and are inhabiting the delta portion of the reservoir where sampling just hasn't occurred. This area, often referred to as the "chutes", is in the vicinity of Springfield, SD and Santee, NE and normally provides some of the best angling opportunity for sauger associated with Lewis and Clark Lake. The riverine stretch upstream of the delta has also provided good angling opportunity at times.



White Bass

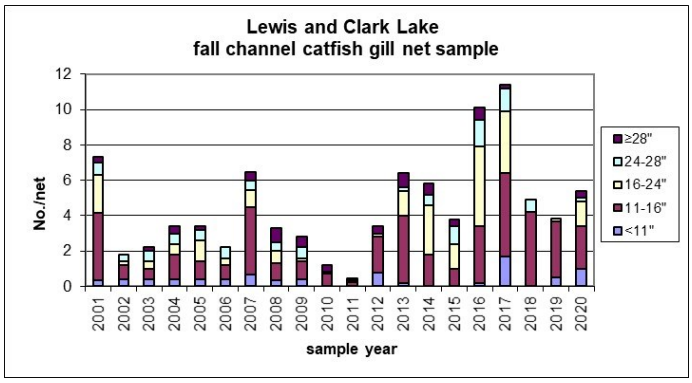
There really isn't much to say about the white bass in Lewis & Clark in recent years. They can be inherently difficult to sample due to their schooling nature, being very "hit or miss", but very low electrofishing catch rates of YOY coupled with not seeing a single white bass in our gill net catch for several years now indicated that the population is very low. They may be even more prone than other species to "go with the flow" and end up downstream of Gavins Point Dam where angler catch has been decent at times over that same time period. However, as can be seen in the graph, even in the years when there have been good numbers of them in the reservoir it is rare to see a catch rate over 5/gill net. Although they weren't collected during our surveys over the last three years there were reports of some good localized fishing for them in the reservoir in 2017 and 2018. However, not much was heard about white bass angling success on the lake in 2019 and 2020. Growth rates have typically been excellent in the reservoir so if anglers are able to find them they should see some nice fish.





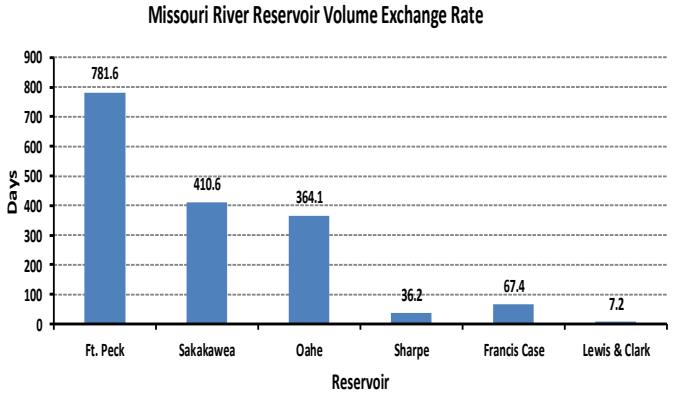
Channel Catfish

Unlike the other priority game fish species in the reservoir, channel catfish catch rates in Lewis and Clark continued to be noticeably higher after the big flood year as compared to pre-2011. Catfish over 16 inches were quite limited in number in 2018 and 2019 but started to show up again in 2020, including fish over 28 inches. As we've seen in other waterbodies in the Northeast district, catfish catch can be quite variable in spite of having relatively stable populations. That is likely the case in Lewis and Clark also. The delta and river upstream of the reservoir also provide some very good catfish angling opportunities. Catfish should provide decent catch rates in 2021 with some larger fish available to the angler. Often overlooked by anglers, catfish are fun to catch and possess good fighting ability.

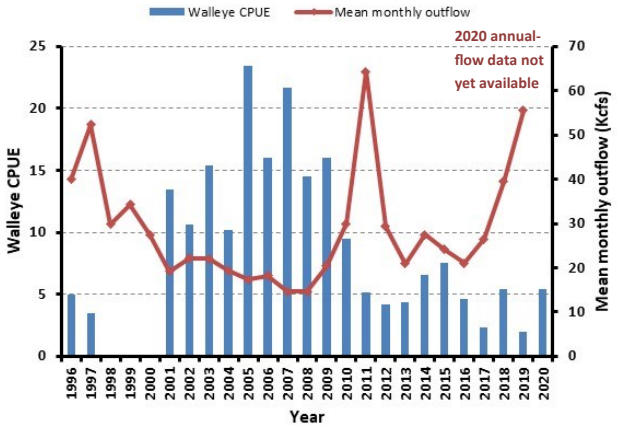


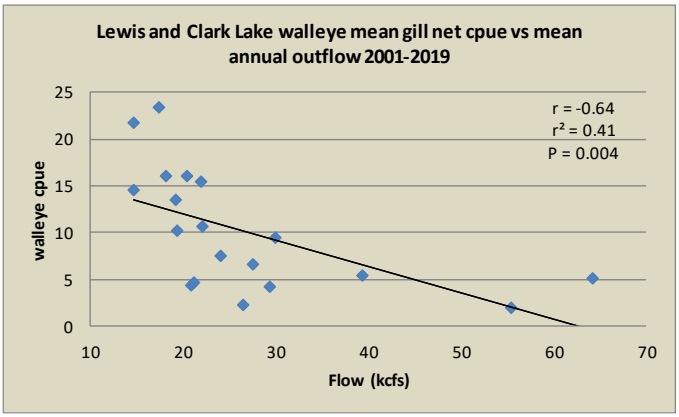
Other Species and Information

Although no data is presented in this summary report, other species available for anglers to catch in Lewis and Clark include abundant smallmouth 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 the bays around the lake, in the delta backwaters, and around docks in the marinas while bluegill can be caught along 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.



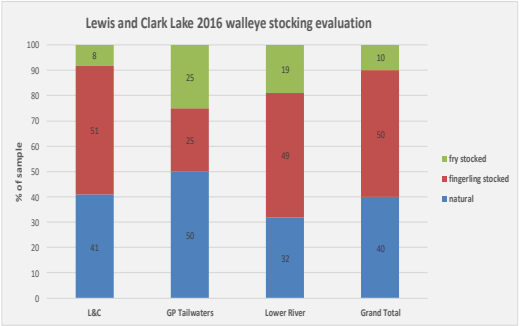
Any discussion of the fishery in Lewis and Clark Lake quickly turns to flows through Gavins Point Dam and turnover time in the reservoir. Fish of all species are highly vulnerable to escapement or flushing through the dam into the tailwaters. This is a one way trip since fish cannot get back upstream 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 and white bass being 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. Flows through the dam have been relatively high since that time, with no years of mean annual flow less than 20,000 cfs, and have likely played a substantial role in limiting walleye abundance within the reservoir.



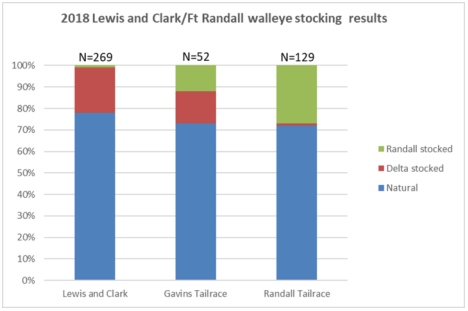


Additional evidence of walleye movement out of the reservoir and through the dam can be found in the evaluation of the 2016, 2018, and 2019 walleye stockings which utilized marked fish. The walleye stocked in those years were marked with oxytetracycline (OTC) which allowed us to evaluate not only the 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%, 27%, and 69% of the young-of-the-year walleye collected **below** Gavins Point Dam in 2016, 2018, and 2019, 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.

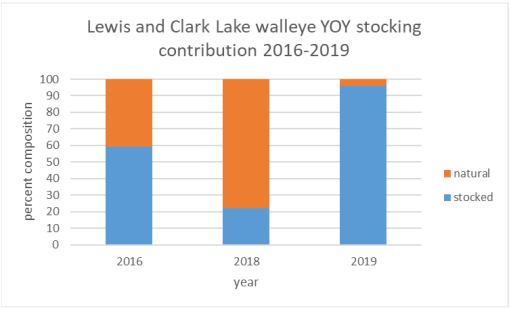
Stocking Evaluation & Research



Various stockings have occurred since 2014 in an attempt to address low walleye numbers in the reservoir since the major flood year of 2011. 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 2016, South Dakota Game, Fish, and Parks (SDGFP) stocked 1.4 million fingerlings in addition to Nebraska's fry stocking. That fingerling stocking proved much more 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 have been stocked since.



The fish stocked from 2014-2016 were released 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 remainder of the walleye stocked in 2018 were released upstream at Running Water and in the Ft. Randall tailwaters. Notice in the second graph that many of those stocked in the Ft. Randall tailwaters stayed there and didn't move down to the lake (they were stocked in June and sampled in late September and October). In 2019, the walleye fingerlings were once again stocked only at the upper end of the reservoir. The stocking assessment (i.e., stocking of marked fish) is planned to continue for two more years with a goal of stocking around one million fingerlings per year. 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%
2019	1,819,269	Fingerling	NE	96%
2020	953,360	Fingerling	NE	Not yet available

Despite the fact that we have been seeing good numbers of YOY walleye during our fall electrofishing, increases in the number of adult walleye in the gill net sample have not occurred. Aside from poor catch in 2017 and 2019, the gill net catch rate for walleye appeared to be fairly stable over the last decade, hovering around 5 per net. That is probably all that we can expect during these high flow periods, understanding that entrainment/escapement during that time contributes to reduced catch rates in the lake. Thus, that will also be a consideration taken into account when assessing the success and justification of stocking efforts in Lewis & Clark. Hopefully, we will see reduced flows through the system and have more fish stay in the reservoir to provide a better fishery within Lewis & Clark in the near future.

Future Research-Movement Study

Additional research is slated for the next several years. SDGFP is the lead on a tagging project monitoring movement of walleye and sauger in the Missouri River system downstream of Ft. Randall Dam. The University of Nebraska at Lincoln will have a graduate student on the project and NGPC will also be involved. Walleye and sauger will be collected from this reach and implanted with acoustic transmitters. Their movement will be monitored by "listening stations" installed at multiple locations throughout the reach from the Ft. Randall tailwaters to the Gavins Pt. tailwaters. Among other things, this study will provide movement data including where the adult walleye and sauger spending time in this stretch of the Missouri River system are ending up, thus providing for improved management of this fishery.

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 increased exponentially in subsequent years. Zebra mussel abundance appeared to drop off some in 2019 and 2020. Anecdotally, they weren't nearly as dense on boat docks and other structures in the reservoir like they were in previous years. This doesn't mean they are dying out in the system, it's likely a function of them reaching and exceeding their carrying capacity. From this point on their population will probably oscillate from year to year, some years with higher abundance than others. The high flows could also have influenced their population in 2018 and 2019. Although zebra mussel numbers did appear to be down in recent years, **boaters and recreational users need to remain vigilant**. Plankton net tows conducted around the lake in 2020 still indicated detectable numbers of veligers, the **microscopic** larval stage of the mussel. Lake water containing veligers can be pumped into livewells and outboard motor cooling systems, used to fill bait buckets, spilled in a boat, etc. and result in zebra mussels being unknowingly transferred to another waterbody. In other words, as you've heard before, please continue to Clean, Drain, and Dry your equipment.

Considering the Lewis and Clark Reservoir proper, 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 where one was observed in 2016 but none since. However, they (SDGFP) discovered zebra mussels in both Lake Sharpe and Francis Case Reservoir in 2019. Anglers who fish the Missouri River **whatsoever** need to be extra diligent with the Clean, Drain, and DRY protocol prior to leaving associated areas in order to control the spread of zebra mussels. Invasive mussels have also been documented in several other neighboring states including Iowa, Kansas, and Missouri. Zebra mussels are certainly not the only invasive species in Nebraska so please be sure to clean, drain, and dry your water craft prior to leaving **any** body of water and never arrive at a boat launch with water in your boat, livewell, etc.

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 a similar regulation.

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, the Missouri River, and other waterbodies in the state in 2020. 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 Lewis & Clark Reservoir contact:

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NONRESIDENT AQUATIC INVASIVE SPECIES STAMP

Motorized watercraft registered outside of Nebraska are required to purchase and display an Aquatic Invasive Species Stamp (image on the right) before launching from any Nebraska boat ramp.

- The fee for the decal-like stamp is $15, which includes a $2 issuing fee. (Fees may change in 2021; visit OutdoorNebraska.org.)
- The stamp can be purchased at OutdoorNebraska.org, at Commission offices (see list on page 2), or authorized permit agents.
- At the time of purchase, the purchaser will receive a valid temporary permit. The actual stamp will be mailed within 10 business days.
- The stamp is required annually.
- The stamp must be permanently affixed to the starboard and rearward side of the boat, on the outside of the hull above the water line. (See image on right.)