

2016 Lewis & Clark Reservoir Fall Fish Survey

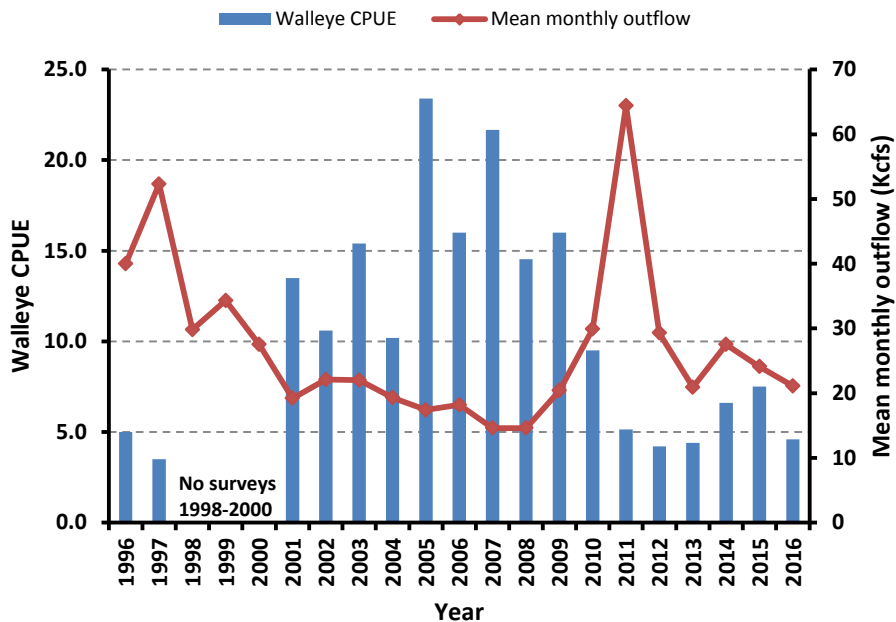
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The following text and graphs summarize data from the fall fish survey on Lewis and Clark Reservoir. Night-time electrofishing for young-of-the-year (YOY) was conducted on September 20th, 28th, and 29th and the gill net sample took place on October 4-5th, 2016. Sampling consisted of 6 gill nets along with approximately 1.5 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 2016 production of those species. Both sampling methods are normally conducted on an annual basis.

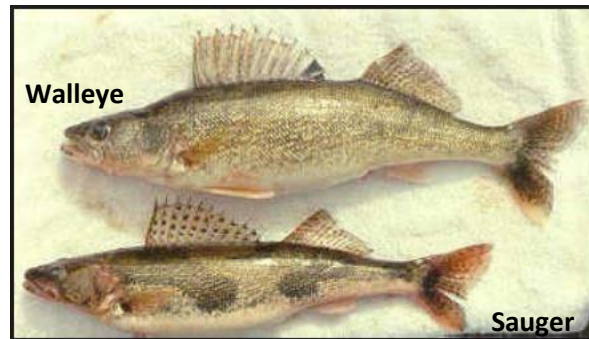
Historical data has shown that periods of low flows through the dam have corresponded to higher abundance of walleye in the reservoir. Average flow through the dam has been on a declining trend for the last three years and, if it continues, could help in the recovery of the fish community in the reservoir. Adult game fish numbers remained low in 2016 but numbers of YOY collected during our electrofishing survey were outstanding.



2015 Fall Fishery Survey Results

Walleye/Sauger

Walleye abundance had shown a slight increasing trend since the 2011 flood but dropped off again in 2016 with a catch rate of less than 5/net. Walleye size structure was decent with about 2/3 of the sampled fish exceeding 15 inches. Sauger catch was also down in 2016 with a catch rate of less than 3/net with about half of those fish being of harvestable size. Sauger exhibited body condition that was comparable to previous years while walleye condition was the best it's been in the last 10 years.



Young-of-the-year (YOY) electrofishing indicated high numbers walleye juveniles while sauger YOY were nearly non-existent. Natural reproduction and recruitment have historically provided and maintained the game fish populations in Lewis & Clark. However, in response to low net catches and low angler catch rates in the years following the 2011 flood, walleye were stocked in the reservoir in 2014, 2015, and 2016 to see if the recovery of the walleye fishery could be accelerated. The following table lists those stockings over the last 3 years.

Year	Size	Number	Stocked by	% contribution to fall age-0 year class in L&C
2014	Fry	14,100,000	NGPC	<1%
2015	Fry	12,800,000	NGPC	11%
2016	Fry	13,450,000	NGPC	8%
2016	Fingerling	1,400,000	SDGFP	51%

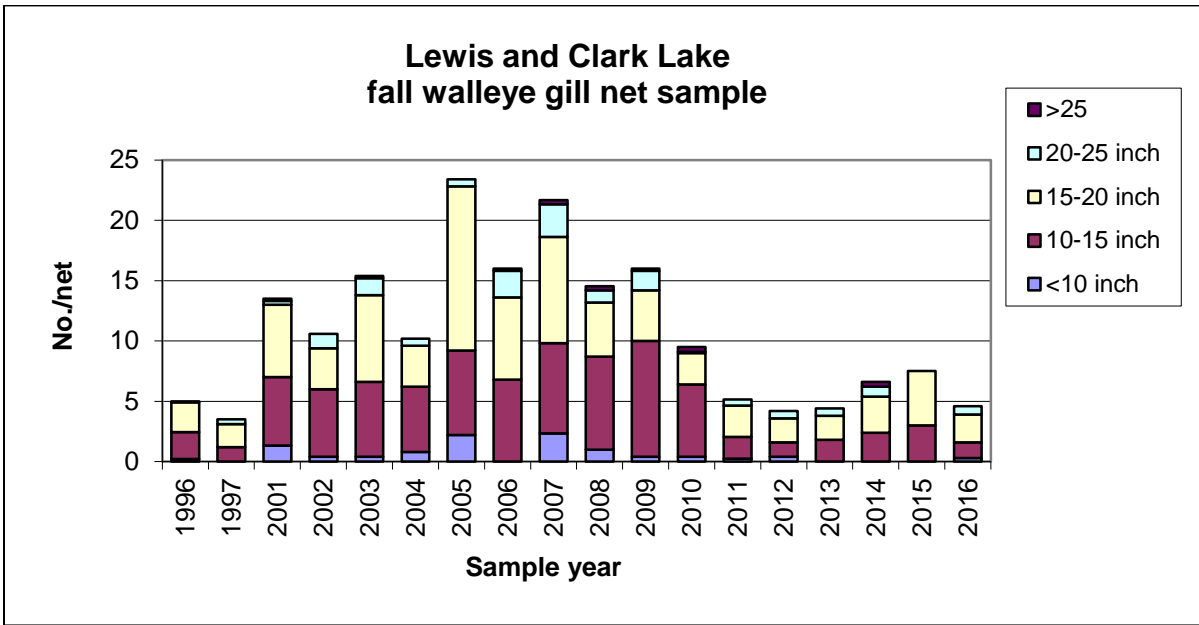
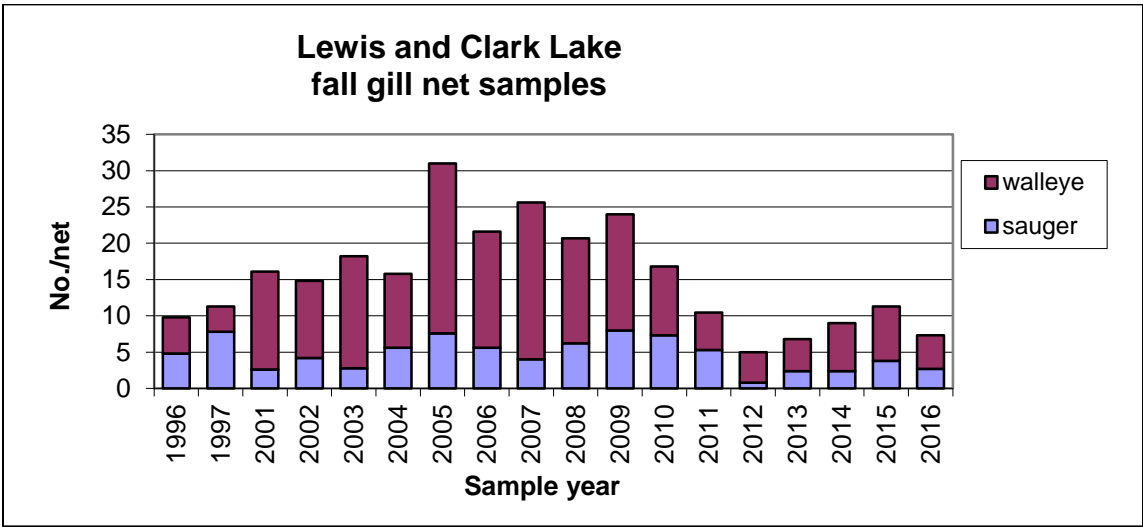
The stocked fish were chemically marked to evaluate their contribution to year class strength. Otoliths, or “ear bones”, were collected and analyzed from 200 YOY walleye in 2014, 130 in 2015, and 288 in 2016 to look for marked fish. As seen in the table above, otolith analysis indicated that stocked fry made up 1%, 11%, and 8% of the YOY samples in 2014, 2015, and 2016, respectively; hardly enough to justify the fry stocking efforts. However, the fingerling-stocked fish made up 51% of the 2016 YOY walleye sample. Based on these results, when it is determined that supplemental stocking of walleye is needed, fingerling-size fish will be utilized

instead of fry. On a side note, the OTC marking has helped document the passage of walleye through Gavins Point Dam. In addition to the reservoir fishery, the stockings may be contributing to the river fishery downstream. The stocking assessment sampling documented marked fish as far downstream as Ponca, thus providing proof of un-impeded walleye movement through Gavins Point Dam.

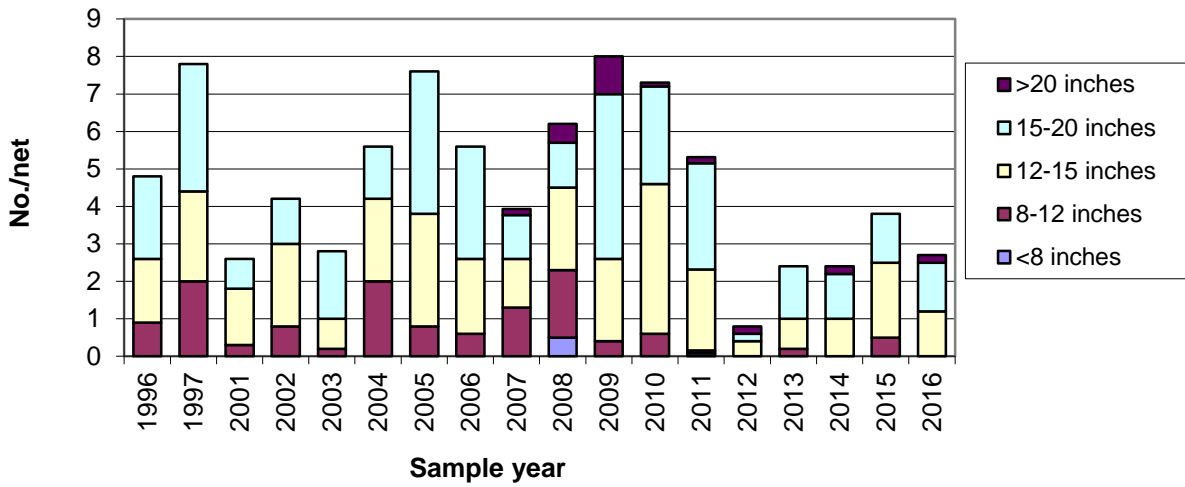
Anecdotally, channel degradation that occurred upstream of the reservoir during the 2011 flood altered the morphology of the river substantially, including areas where sauger spawning had been documented, possibly to the point that their spawning success is limited compared to pre-2011. Additionally, nursery areas utilized by young walleye and sauger could have been compromised in the river and/or reservoir. All said, the system was altered substantially by the 2011 flood event which could be affecting some fish recruitment in the system. Furthermore, as mentioned earlier, reduced annual flows through Gavins Point Dam are instrumental in boosting or maintaining walleye numbers (and potentially other species such as white bass as well) in the reservoir, especially when they occur in consecutive years as was the case from 2004 to 2008. Provided that relatively low flows continue in subsequent years, coupled with this year's YOY production, we could start to see some numbers like those of the mid to late 2000's.

In summary, natural reproduction and recruitment have historically been sufficient to sustain the walleye population in Lewis and Clark Lake when conditions are favorable. Naturally-produced (wild) fish made up 41% of the fall age-0 year class which would have equated to a catch rate of 63/hour. Thus, in the absence of stocking, the naturally-produced cohort would have still produced a moderate year class. However, supplemental walleye stocking, when needed, should consist of fingerling-size fish. Habitat alterations resulting from the 2011 flood that occurred in both the river above Lewis and Clark and in the reservoir itself could be limiting reproduction and recruitment of walleye and, more notably, sauger in the system.

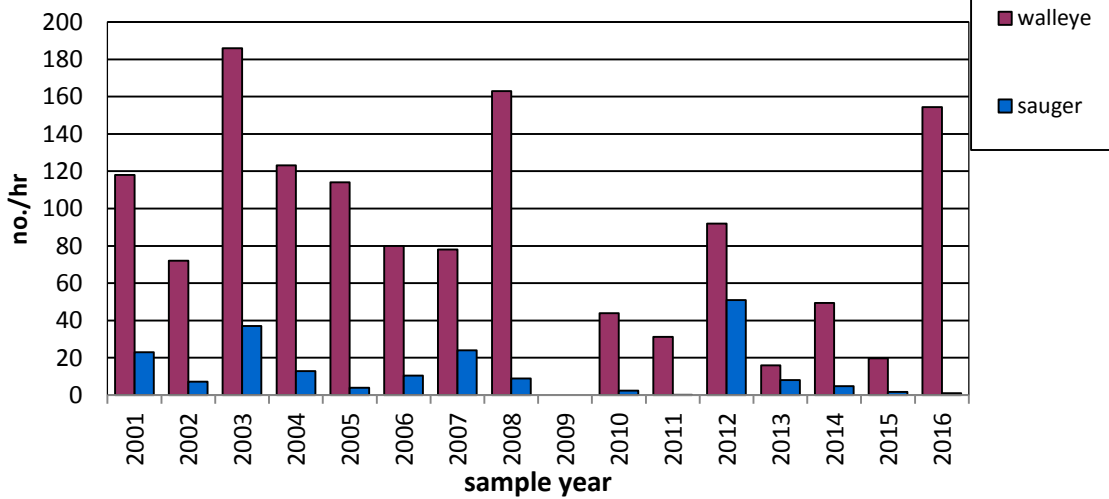
Sauger and walleye are managed under one regulation that includes a 15-inch minimum length limit and an aggregate (walleye and sauger combined) daily bag limit of 4 fish.



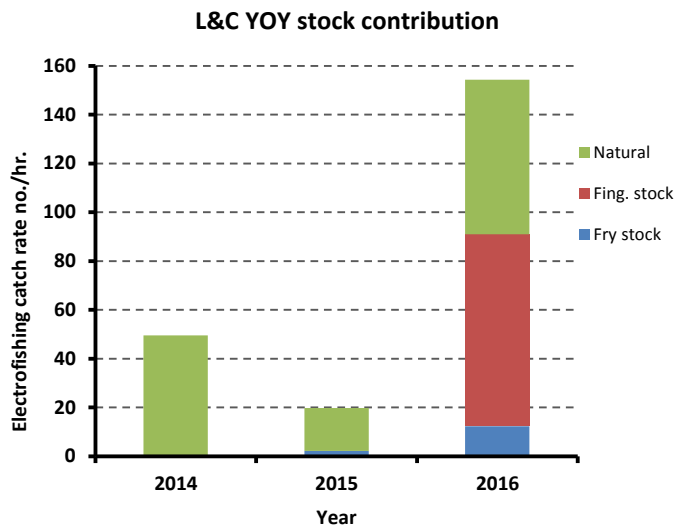
Lewis and Clark Lake fall sauger gill net sample



Lewis and Clark Lake young of the year fall electrofishing sampling number/hour



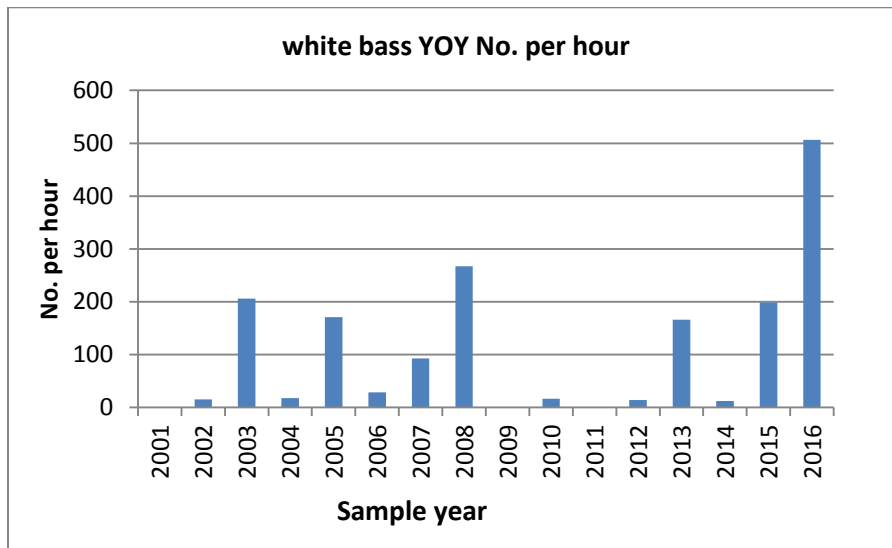
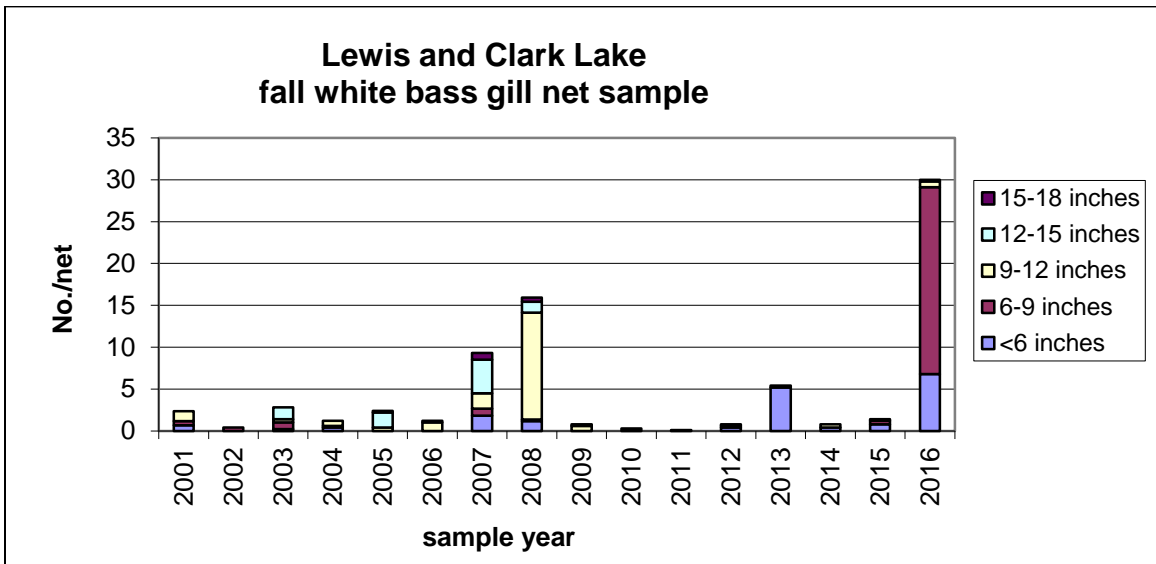
The graph to the right is a breakdown of the estimated walleye stock contribution from the various sources in years that walleye were stocked. All walleye production prior to 2014 in the graph above was made up of naturally-produced fish.



White bass

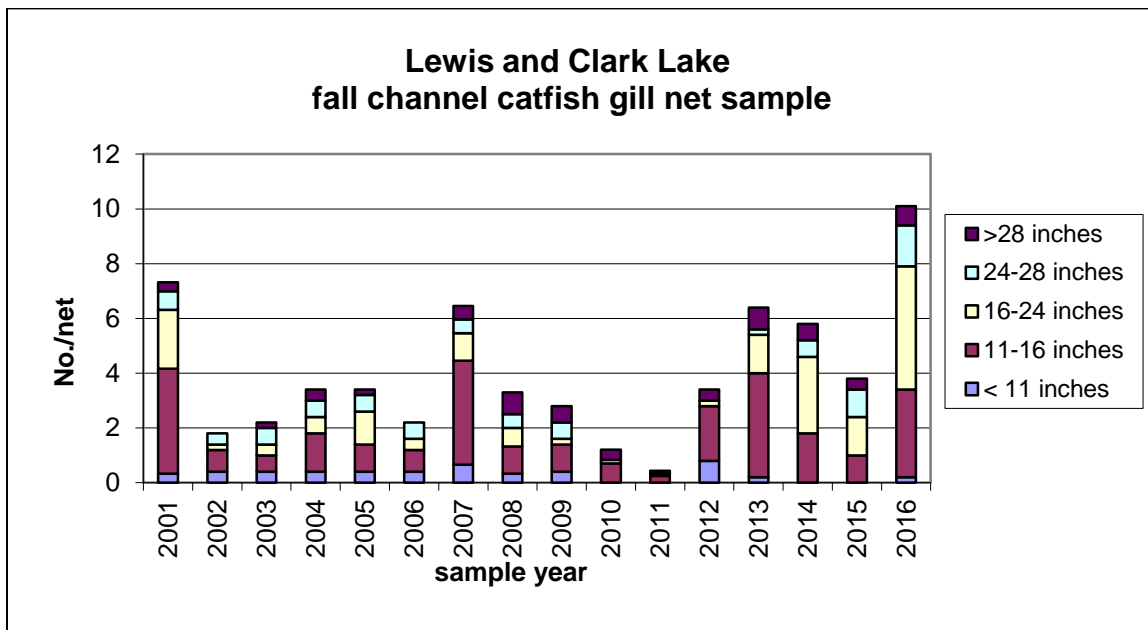
Low catch rates are typical for white bass in Lewis & Clark but it isn't necessarily a good indicator of their population abundance. They are an actively schooling species which can make them inherently difficult to sample consistently in a reservoir, especially one this large. That is, they can be very "hit and miss" when it comes to being captured in the nets. Young of the year white bass numbers were very high in 2016 with an electrofishing catch rate over 500/hour. Some of those YOY were large enough to be captured in the gill nets and bumped the white bass gill net catch rate to the highest it's been in the last 15 years. However, all of the white bass less than 9 inches in the gill net sample, which equated to 97% of the total number of white bass captured in the gill nets, represented the age-0, or 2016, year class. 2015 also produced a strong year class also but that did not reveal itself as age-1 fish in the 2016 gill net sample. Whether they just weren't sampled due to their schooling nature as mentioned above, or if they passed through the dam or are just using a different portion of the reservoir or river above is unclear. With two consecutive strong year classes of white bass there ought to be some pretty good angling opportunities for them if not in the reservoir then in the tailwaters below Gavins Point dam in subsequent years. White bass grow quickly in Lewis & Clark, approaching 10 inches by age 2 and 12 to 13 inches by age 3.

White bass harvest is regulated with a 15-fish daily bag limit.



Channel catfish

Catfish angling opportunities should at least be comparable to previous years if not better as the catch rate of channel catfish in 2016 was the highest seen in the last 15 years. The catch of channel catfish over 28 inches has been fairly consistent through the years so the opportunity to catch a really nice catfish will be similar to other years. Those fishing for what could be considered “eater” or “pan-size” catfish might be pleasantly surprised as the number of 16-28-inch fish really bumped up in 2016. Channel catfish typically reach 16 inches in 4 to 5 years in Lewis & Clark and they are regulated with a 10-fish daily bag limit in the reservoir and Missouri River.



Other species

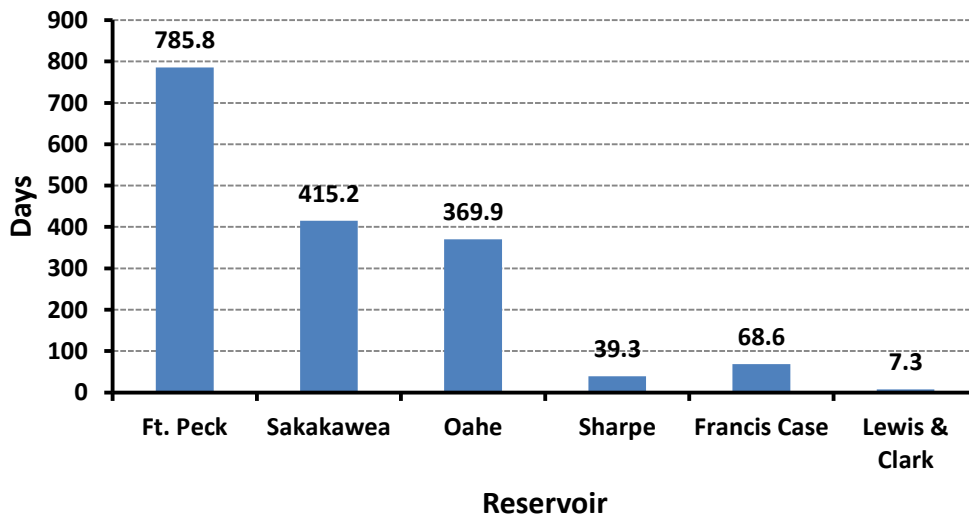
The lake is also a good destination for those seeking **black bass (largemouth and smallmouth bass)**. Rocky areas, bays, boat basins, and the marsh area on the west end will provide some of the better opportunities. **Flathead catfish** are picked up on occasion as are **panfish**. **Bluegill** can be caught along the rocks or in vegetated bays and anglers do pick up some **crappie** along the rocks and in the boat basins. Some pretty nice **northern pike** and **rock bass** are also picked up in the lake occasionally.

Additional notes

Anglers are again reminded that regulations require that **any boat that has been on a waterbody must drain all water from all compartments, equipment, or containers (including bait buckets) before leaving the launch area and that all aquatic vegetation must be removed from the boat and trailer before leaving the launch area.** These regulations are meant to control the spread of aquatic invasive species such as zebra mussels, Eurasian watermilfoil, and curly-leaf pondweed to name a few. Not only are these practices required by regulation, they have become even more important concerning Lewis and Clark and the Missouri River following the 2016 expansion of zebra mussels in the reservoir and river. After finding only a single adult in 2014 their numbers have increased exponentially in the reservoir, especially the lower half. Also, nonresident boaters launching in Nebraska waters are required to purchase the Aquatic Invasive Species Stamp and affix it to their watercraft. The stamp provides funding for dealing with invasive species that are already present in addition to education and prevention activities that are meant to limit their introduction and spread. Resident boaters also contribute to this fund through a surcharge on their boat registration. Additional information about these requirements and preventing the spread of aquatic invasive species can be found in the 2016 Fishing Guide, the 2016 Boating Guide, and at the University of Nebraska's Invasive Species Project website: <http://www.neinvasives.com>.



Missouri River Reservoir Volume Exchange Rate



The graph above is included to show how Lewis & Clark differs greatly from other reservoirs on the Missouri River system. It depicts the amount of time it takes, based on the volume of the reservoir and the outflow through the related dam, to replace the entire volume of the reservoir. Compared to the other reservoirs, Lewis & Clark is basically a “wide spot in the river” as it only takes about a week, on average, to replace its entire volume with “new” water. In 2011, when outflow peaked around 160,000 cfs passing through the dam, the exchange rate would have been just over 1 day (approximately 27 hours). The volume exchange rate, or turnover time as it is called, is instrumental in keeping fish in a reservoir. High exchange rates result in fish movement out of the reservoir. This is true for fish of all sizes, young-of-the-year through adult.