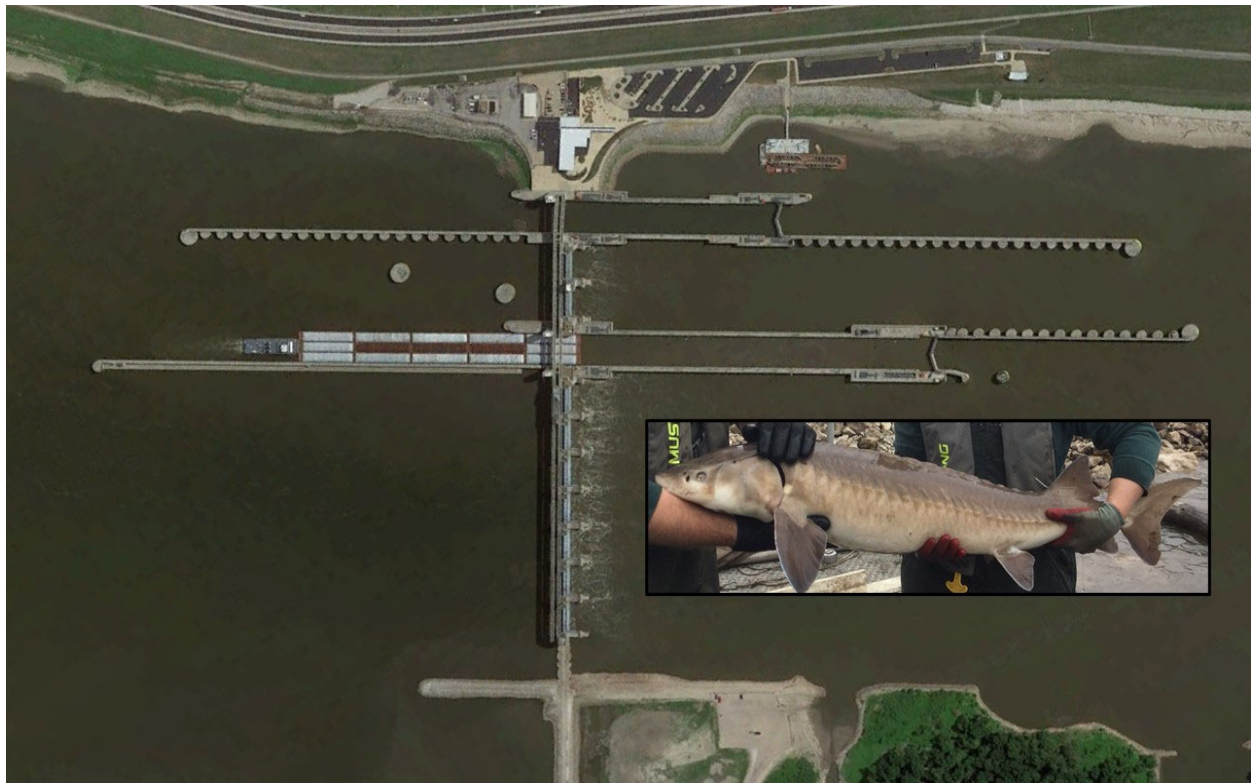


Lake Sturgeon Spawning at Mel Price Locks and Dam

Sustainable Rivers Program



Summary Report

November 2021



**US Army Corps
of Engineers®**



Introduction

Melvin Price Locks and Dam (Mel Price) is a dam and two locks at river mile 200.78 on the Upper Mississippi River, about 17 miles north of St. Louis, Missouri. Mel Price is operated by the U.S. Army Corps of Engineers St. Louis District (MVS) and is authorized to provide a nine-foot navigation channel.

The lake sturgeon (LKSN) is a charismatic fish species that is unique due to its longevity and sheer size. Lake sturgeon, also known as “rubbernose” sturgeon can reach 8 feet long, weigh over 200 pounds and live over 100 years. LKSN are designated as state endangered species in Illinois and Missouri. In 2015, lake sturgeon were observed spawning in the Melvin Price Locks & Dam tailwater along the right descending bank. This site became the first confirmed sturgeon spawning location in Missouri, however some of the specifics around this event aren’t fully understood. It is known that water temperature, time of year, water velocity, and substrate are critical to spawning. This project seeks to operationalize environmental flows for lake sturgeon benefits by investigating flows for targeted operations, collaboratively monitoring lake sturgeon activity/response in the area, and agency coordination and public outreach.

Year one focused on establishing a baseline flow conditions of prior use years in HEC-RAS 2D modeling, sturgeon sampling, tracking and spawn monitoring, as well as development and implementation of an SRP lake sturgeon conservation outreach plan.

Project Objectives:

- 1) Identify gate settings and downstream flow patterns that elicited spawning conditions during the 2015 spawning season, conduct flow **modeling** to identify target conditions for 2021 season, manipulate gate settings to mimic desired flow targets for spawning.
- 2) **Monitor** for spawning behavior – utilize radio telemetry, egg mat sampling, and visual detection methods to confirm spawning occurrence
- 3) Conduct **outreach** about SRP and sturgeon biology. Develop an outreach display about SRP and sturgeon monitoring to highlight this effort at the National Great Rivers Museum located at Melvin Price Locks and Dam.

Modeling

The summary for this objective can be found in a separate summary titled “**Mel Price Lock and Dam Hydraulic Assessment of Conditions Surrounding the 2015 Lake Sturgeon Spawn**”

Monitoring

Lake sturgeon monitoring around Mel Price Locks and Dam began in March of 2021 and continued into May. Monitoring consisted of two efforts: direct sampling for lake sturgeon and passive shoreline monitoring of the spawning location. USACE worked cooperatively with Missouri Department of Conservation - Fisheries Management.

Direct sampling occurred during March and early April 2021 and involved setting trot lines in the Mel Price Tailwater. Ten trot lines were set each week with 10 hooks per line. If river and weather

conditions cooperated, lines were set for two nights per week and checked each day (Figure 1). Hooks were baited with earthworms. Lines were set as far as three miles downstream from Mel Price. No lake sturgeon were captured during the 2021 season. It was noted that rivers flows remained elevated during the sampling period causing Mel Price to operate at Open River stage. All dam gates are completely out of the water during this stage and presumably fish can pass through the dam without difficulty. While checking trot lines, we searched for tagged fish using radio telemetry. MDC captured and tagged lake sturgeon during 2016-2018. It is believed some or all of those fish could still possess functioning transmitters, however none were detected during spring 2021.

In the event a lake sturgeon was captured, it would have been implanted with a transmitter for future tracking efforts. Eight Vemco V16-6x rounded case tags were purchased from InnovaSea using SRP funds costing \$360.00 each. Estimated battery life is estimated at 2,557 days from deployment. Additionally, a VR2W-69kHz Coded Acoustic Receiver was purchased with the same funds. The VR2W is a hydrophone data logger deployed under the water surface. The hydrophone passively “listens” for tagged fish and logs those detections for subsequent analysis. Due to supply chain shortages and delays of goods crossing the Canadian border, these items were received in late summer. Consequently, we will attempt to deploy the tags and the VR2W receiver unit in the winter of 2021/2022.



Figure 1. Biologist setting trot line baited with earthworms below Mel Price Locks and Dam (USACE photo).

Passive sampling efforts began in early April as water temperatures warmed and possible conditions for spawning occurred. Daily visits to the Maple Island Boat Ramp provided great visibility of the shoreline

where the 2015 spawning event occurred. Observers monitored for LKSN behavior such as grouping, cruising and porpoising that could indicate possible spawning. LKSN have a very distinct pre-spawning behavior that is easily identified as males will breach the surface of the water in a “porpoising” behavior near the spawning site. Additionally, anglers at the site were routinely interviewed about any observed spawning activity. While on site, observers collected data on water temperature, dissolved oxygen, the settings for gates 8 and 9, as well as the tailwater and headwater levels. Passive monitoring concluded on May 10th following reports from Missouri Department of Conservation that spawning had concluded in the far northern reaches of LKSN range suggesting that the spawning window in our area had likely concluded. No spawning behaviors were observed via the passive sampling effort.

In summary, no LKSN were captured, found via radio tracking, or observed exhibiting spawning behavior during Spring 2021. No active spawn was observed, and this could be due to several factors that are speculative at this time:

- Flow or water temperatures were not ideal enough to establish a chosen spawning site in the monitored area.
- It is possible that spawning did occur however it was difficult to detect due to high water levels in early/mid-April
- LKSN passed this area in search of an alternate location

Outreach

FY 2021 Outreach initiatives for the Sustainable Rivers Program - Lake Sturgeon Project included: 1) the creation of museum exhibit materials currently on display at the National Great Rivers Museum, 2) incorporation of conservation efforts into educational and public programming, 3) media distribution, 4) and a call-to-action campaign.

- 1) The new exhibit at the National Great Rivers Museum brings awareness to lake sturgeon conservation as well as the current research project taking place at Melvin Price Locks and Dam. The exhibit occupies a 28' x 7' section of wall within the museum and is organized into three main sections (Figure 2). The first section focuses on over river health and the diversity of species within the Mississippi River, and was created using pieces recycled from the Missouri History Museum's *Mighty Mississippi* exhibit that came down in June 2021. This partnership allowed us to tell a fuller story regarding lake sturgeon as well as reach additional audiences for the exhibit's debut. The second section of the exhibit introduces the Sustainable Rivers Program, lake sturgeon life history, and the current research project. The third section consists of a life-sized lake sturgeon and acts as a “pledge wall”, where visitors can write and then hang their commitments to make choices that can make a positive impact on lake sturgeon conservation. The exhibit was debuted on August 14th, 2021 during an event called *Mississippi Monsters: Fishy Festivities at the National Great Rivers Museum* (Figure 3). This event was held in partnership with the Illinois Natural History Survey and the Missouri Department of Conservation and featured the Lake Sturgeon Coordinator from the Missouri Department of Conservation, Travis Moore, as a guest speaker, children's activities such as making lake sturgeon buttons and answering lake sturgeon trivia questions for prizes, hourly tours of Melvin Price Locks and Dam where the public were informed of the nearby lake sturgeon spawning location, live river fish, and more. A total of 307 visitors attended the event, and over 50 of those visitors attended one

of six talks in the museum's theater presented by Moore. Since the exhibit's debut, over 6,500 visitors to the museum have seen the new sturgeon exhibit wall.



Figure 2. Lake sturgeon exhibit wall displayed at The National Great Rivers Museum at Mel Price Locks & Dam (USACE photo).

- 2) Lake sturgeon conservation and associated research efforts have been incorporated into public programming. Each day, the National Great Rivers Museum offers three free public tours of Melvin Price Locks and Dam, as well as additional private tours for school groups and tour buses. Melvin Price as the only known spawning location in the region has been incorporated into daily tours, and school groups are encouraged to interact with the sturgeon pledge wall, which currently has over 100 pledges. This information has also been incorporated into public kayak programming in Ellis Bay, reaching approximately 50 kayakers this year.




Figure 3. Mississippi Monsters Outreach Event August 14, 2021 (USACE photo).

- 3) Media distribution has included press releases, articles in the U.S. Army Corps of Engineers' Mississippi River Valley Division's quarterly publication "Our Mississippi" of which 50,000 copies were printed and distributed, event flyers (Figure 4), and approximately 250 identification cards obtained from MDC that are meant to help fishermen identify lake sturgeon to ensure release as well as educate on proper procedures to follow if a tagged lake sturgeon is found. These cards will be handed out to local organizations as well as visiting public by USACE Rangers.




Figure 4. Mississippi Monsters Event Brochure


- 4) Our call-to-action campaign consists of new interpretive signs that have been hung at the lake sturgeon spawning location, which are geared towards the area’s heavy angler presence. The Riverlands Migratory Bird Sanctuary sees over 200,000 visitors a year, and the Maple Island Access Recreational Area is a favorite destination for both fishing and birding enthusiasts alike. These new signs (Figure 5), like the identification cards, will help local fishermen to know proper identification techniques, as well as who to call if a tagged lake sturgeon is encountered.




Report Lake Sturgeon Sightings




The Missouri Department of Conservation (MDC) and US Army Corps of Engineers (USACE) are interested in knowing about possible lake sturgeon spawning activity. MDC and USACE staff will be in the area this spring watching for lake sturgeon in this area. But, you can also report sightings this spring. There are three activities that you may see lake sturgeon doing as they are preparing to spawn. See the pictures and descriptions below. If you see any of these activities, please stop by or call USACE staff at the Rivers Project Office at (636-899-2600) or call the Hannibal MDC office as soon as possible at (573-248-2530). For more information, you can send an email to Travis Moore at travis.moore@mdc.mo.gov.



Porpoising – Lake sturgeon can simply surface, nose up out of the water, or even leap out of the water.



Cruising – Prior to spawning, lake sturgeon will cruise the surface. You may see individuals or groups of fish cruising the surface at the same time. Their dorsal fin and top of the tail will stick out above the water.



Grouping and Spawning – Prior to and during spawning, lake sturgeon will group up. There may be as many as 10 fish in one group at a time. Spawning activity has been described as “big fish thrashing around on the rocks.” If you observe the fish grouping or spawning, **PLEASE DO NOT DISTURB THEM!** Spawning activity may last for several hours and the fish will rest between each spawning bout.

Call MDC immediately if you see these activities. 573-248-2530. Thank you for your assistance in helping manage Missouri’s lake sturgeon population.

Figure 5. Informational signs posted at lake sturgeon spawning location at Mel Price Locks and Dam

Conclusion

No evidence of spawning occurred in 2021, there are several theories as to why: 1) Mel Price operated at Open River leading up to and during peak spawning time frame making it difficult to observe a spawn; 2) perhaps having the gates out of the water allowed LKSN to pass through the dam in search of more favorable sites elsewhere; and 3) it is also possible that spawning occurred, and we simply did not detect it. After an investigation into the events surrounding

the 2015 event, we intend to manipulate gate settings based on head differential, flow and tailwater levels to hopefully enhance spawning habitat for the 2022 season. In addition, tagging, tracking, and monitoring efforts will continue to gain a better understanding of movements around the dam and possible interactions with water velocities resulting from gate manipulations. Continued outreach will help educate our constituents which may help provide additional observers at this location. The installation of water quality and velocity sensors would enhance model calibration and provide real-time water quality data.