

Starved Rock Lock and Dam: Lock Chamber Dewatering Fish Relocation



The Rock Island District dewatered Starved Rock Lock on July 8, 2020. This was done as part of the 2020 Illinois Waterway Consolidated Closures to conduct repair and maintenance work. Dewatering resulted in the stranding of thousands of fish, primarily invasive Silver Carp, necessitating a massive cleanup effort. After several months of construction, the District rewatered the lock to move equipment for miter gate replacements. A subsequent dewatering was planned so that construction could be completed in dry conditions. Prior to re-watering, Starved Rock Lock & Dam staff placed fencing material over all intake and outlet structures in the lock chamber to prevent fish from being trapped or hiding in these areas.

District biologists consulted with the Illinois Department of Natural Resources (DNR) and U.S. Geological Survey (USGS) to determine appropriate methods to reduce the number of fish stranded during the second dewatering event.

Biologists from both the USGS Columbia Environmental Research Center and USGS Upper Midwest Environmental Sciences Center agreed to assist the District on-site for the second dewatering event. Using a combination of technologies and methods known to deter invasive Silver Carp, they were able to reduce the stranding of these invasive fish.

On September 24, 2020, USGS installed four, fixed ARIS (Adaptive Resolution Imaging Sonar) (Sound Metrics, Bellevue, WA; two 3000 models set to 1.8 MHz frequency, and two 1800 models set to 1.1 MHz frequency) multi-beam imaging sonars inside the Starved Rock Lock chamber. The ARIS were mounted within recessed areas of the lock walls to monitor and compare fish activity before, during, and after the fish clearing effort. USGS also deployed four boats on-site for the effort. There were two dual-deterrent boats which were outfitted with electricity and underwater acoustic equipment to deter Silver Carp, thus driving them out of the lock chamber. Another boat was outfitted with side-scan sonar to detect fish in each portion of the lock chamber, and the final boat had a block net which was deployed at the downstream end of the lock. USGS biologists in the dual-deterrent boats began driving fish from the lock chamber at dawn using their equipment, revving boat engines, and making circles at the upstream end of the lock to startle Silver Carp Schools.



Photo Top Circle: Rock Island District Fish Biologist, Bethany Hoster, holding a Northern Pike, one of the many sport fish successfully relocated alive from Starved Rock Lock back to the Illinois River.

Photos Left: USGS boats driving fish from lock chamber using dual deterrents.

Photos Right: USGS observing fish movement on ARIS sonars (left) and deploying a block net to limit fish movement back into the lock chamber (right).

Dewatering Continued

The boat equipped with side-scan sonar tracked Silver Carp school movements and gave directions to the dual-deterrent boats. USGS biologists stationed on the lock walls monitored the ARIS sonars for fish movement in a downstream direction. After a period of monitoring, USGS biologists estimated a few hundred fish remained in the lock, far fewer fish than during the July 2020 dewatering event. Since remaining fish would not leave the lock chamber, the net boat proceeded deploying the block net at the downstream end of the lock chamber. USGS left the block net in place until the District's dive team reinstalled bulkheads to close access to the lock.

The District began dewatering the lock chamber on the afternoon of September 24. By the morning of September 25, only one foot of water remained in the lock, with an additional 3-4 feet remaining in the miter gate recess. Pumping limitations in shallow water required an additional 24 hours before effective removal and relocation of remaining fish could commence. Recovery and relocation of stranded fish began on September 26. The District positioned two employees in the miter gate recess in the lock chamber with dip nets to catch stranded fish. The District also staged a concrete mixing bucket filled with water in the lock chamber to place fish. Once the bucket was sufficiently full of fish, a heavy lift crane raised the bucket onto the lock wall for Bethany Hoster, the District's Fish Biologist, to identify and enumerate fish. Following data

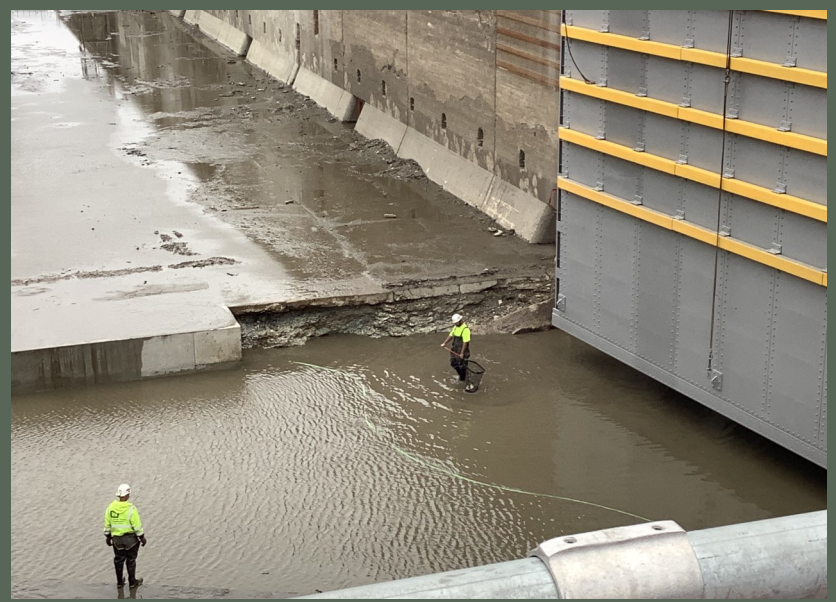


Photo Above: U.S. Army Corps of Engineers employees netting fish to be lifted out of the lock chamber at Starved Rock Lock and Dam.

collection, the crane lifted the bucket and emptied it into the Illinois River downstream of the lock. All fish were relocated into the Illinois River downstream of Starved Rock Lock and Dam. The relocation effort lasted approximately eight hours and led to the relocation of 702 fish. Relocated fish were primarily native species and included many sport fish species, such as Channel Catfish, Northern Pike, Black Crappie, White Crappie, Walleye, and Sauger. USGS's combined technologies and methods prevented the stranding of thousands of invasive Silver Carp. The significant coordination and partnership between the Rock Island District, USGS, and Illinois DNR allowed safe relocation of native fish while maintaining the construction schedule.



Photo Right Circle: Bucket lifted from the lock chamber onto the lock wall for Rock Island District Fish Biologist, Bethany Hoster, to identify and enumerate fish prior to release (Photo Above).

Article provided by Bethany Hoster, Biologist, Rock Island District

