

October Summary

Bottom Line: Monitoring occurred in the CAWS and upper Illinois Waterway downstream of the Electric Dispersal Barrier in May. **NO BIGHEAD CARP OR SILVER CARP were any found in new locations downstream of the Electric Dispersal Barrier.**

Fixed and Random Site Sampling Downstream of the Dispersal Barrier

Electrofishing:

- Crews from IDNR, USFWS, and U.S. Army Corps of Engineers (USACE) completed 32 electrofishing runs at fixed locations (8 hours total) and 64 runs at randomly selected locations (16 hours total) in the Lockport, Brandon Road, Dresden Island, and Marseilles pools downstream of the Barrier during the weeks of September 29 and October 15.
- Crews collected 3415 fish of 42 species during electrofishing.
- No Bighead or Silver Carp were reported captured or seen during electrofishing in the Lockport, Brandon Road, Dresden Island. 6 Silver Carp and 1 Bighead Carp were collected during sampling at fixed and random sites in the Marseilles Pool. Additionally, >100 Silver Carp were observed but not captured during electrofishing runs in the Marseilles Pool.

Netting:

- Contracted commercial fishing crews and assisting IDNR biologists set 3.6 miles of net (32) at the four fixed sites and 12.2 miles of net (108 sets) at random and additional sites within the Lockport, Brandon Road, Dresden Island, Marseilles Pools, and Rock Run Rookery downstream of the electric dispersal barrier during the weeks of 10/13/2014 and 10/27/2014.
- Crews collected 290 fish of 11 species during commercial netting.
- No Bighead or Silver Carp were reported captured or observed during commercial netting in the Lockport and Brandon Road Pools.
- One Silver Carp was collected in the Dresden Island Pool on 10/14/2014.
- Fifteen Silver Carp were collected in the Marseilles Pool on 10/17/2014

- One Silver Carp was collected in the Marseilles Pool on 10/31/2014.
- Two Silver Carp and 2 Bighead Carp were collected in Rock Run Rookery on 10/31/2014.

Hoop and Mini Fyke Netting:

- Crews from IDNR set and pulled 16 hoop nets (6' diameter) downstream of the electric dispersal barrier in Lockport, Brandon Road, Dresden Island and Marseilles Pools during the week of 10/20/2014.
- Crews collected 15 fish of 2 species during hoop net sampling.
- No Bighead or Silver Carp were reported captured or observed during hoop net sampling in Lockport, Brandon Road, Dresden Island, and Marseilles Pools.
- IDNR crews set and pulled 16 mini fyke nets downstream of the electric dispersal barrier in Lockport, Brandon Road, Dresden Island and Marseilles Pools during the week of 10/20/2014.
- Crews collected 1,948 fish of 24 species and one hybrid group.
- No Bighead or Silver Carp were reported captured or observed during mini fyke sampling in Lockport, Brandon Road, Dresden Island and Marseilles Pools.

Strategy for eDNA Monitoring in the CAWS

USFWS collected eDNA samples from the North Shore Channel (60 samples), Chicago River (60 samples), Little Calumet River (60 samples), and Lake Calumet (60 samples). Results will be posted on a later date

<http://www.fws.gov/midwest/fisheries/eDNA.html>.

Barrier Defense Asian Carp Removal Project

In October, barrier defense occurred the week of the 6th, 20th and 27th. Modified from previous years, barrier defense specifically takes place in the Marseilles and Starved Rock Pools. Also in 2014, contracted commercial fisherman are deploying and fishing modified 6 foot diameter hoop nets in the main channel border and side channel habitats as conditions allow. These habitats have been difficult to fish with gill and trammel nets. Below is a summary of the barrier defense activities including hoop netting totals for 2014.

QUICK SUMMARY:		
Number of Days Fished	55	days
Number of Net Crews	291	crew-days
Yards of Net Fished	492150	Yards
Miles of Nets Fished	279.6	Miles
Number of Hoop Net Sets	196.0	Sets
Number of Bighead Carp	10850	Fish
Number of Silver Carp	53790	Fish
Number of Grass Carp	433	Fish
Number of Asian Carp (AC)	65073	Fish
Tons of AC Harvested	306.0	Tons

Understanding Surrogate Fish Movement with Barriers

Currently a total of 1513 surrogate fish have been captured and floy tagged while monitoring in the Lockport, Brandon Road and Dresden Pools downstream of the Electric Dispersal Barrier. A species list of floy tagged fish; 852 Common Carp, 594 Smallmouth Buffalo, 37 Bigmouth Buffalo, 18 Black Buffalo, 4 Goldfish and 8 Common carp X Goldfish hybrid.

To date, sixteen recaptures (12 tagged fish and 4 marked with no tag) have occurred.

Fish Movement

- 1 recapture had a tag and showed movement downstream through Dresden Lock and Dam
- 11 recaptures had tags but showed no movement between Barrier/Dam
- 4 recaptures by Upper Caudal Fin but didn't have tags (No data on movement)

Notable

- 1 recapture in Lockport was tagged by USFWS in 2013
- Bigmouth Buffalo Caught in Dresden Pool Traveled 9 miles down the Kankakee before killed by Bow fisherman

- Smallmouth Buffalo caught in Dresden Pool traveled downstream through the lock and dam to Material services east pit and was captured again by commercial fisherman on the Barrier Defense Program

Telemetry Monitoring Project

USACE biologists tagged and released 13 fishes including Smallmouth Buffalo, Bighead and Silver carp within the Dresden Island pool in October 2014. USACE collaborated with IDNR and commercial fishermen to utilize Asian carp captured during Barrier Defense Removal activities in the Des Plaines River, Kankakee River and back water habitat such as Rock Run Rookery. Low numbers of Asian carp have been available for tagging efforts in the Dresden Island pool this year and Smallmouth Buffalo were tagged as a surrogate species near the Brandon Road Lock to increase tagged fish presence near this point of interest. Additional tagging days are scheduled for November to increase the number of tagged Bighead and Silver carp in this reach. Vemco positioning system data was returned to USACE from the manufacturer this month which covered tagged fish movements at the barriers from December 2013 through June 2014. That data is being analyzed now but preliminary investigations have not discovered any positions which would indicate upstream passage occurred over an active barrier.

Barrier Maintenance Fish Suppression

Canal closures and barrier operational changes to accommodate dive work for the installation of Barrier I electrodes was completed on 17 October and normal barrier operating conditions resumed. Barrier IIB was powered down during in water dive activity to allow safe installation of electrodes. Power in water was maintained through Barrier IIA during dive operations since 21 July. No barrier maintenance fish suppression activity was required throughout the process.

Optimal Harvest Strategies to Minimize Asian Carp Propagule Pressure on the Electric Dispersal Barrier

Hydroacoustics Surveys

Hydroacoustic surveys were conducted in the Peoria (6-10 October), Starved Rock (15-16 October), and Alton (26-30 October) reaches of the Illinois River. Selected main channel and backwater habitats were surveyed in all reaches, as per 2012 and 2013 surveys. Detailed analysis is ongoing.

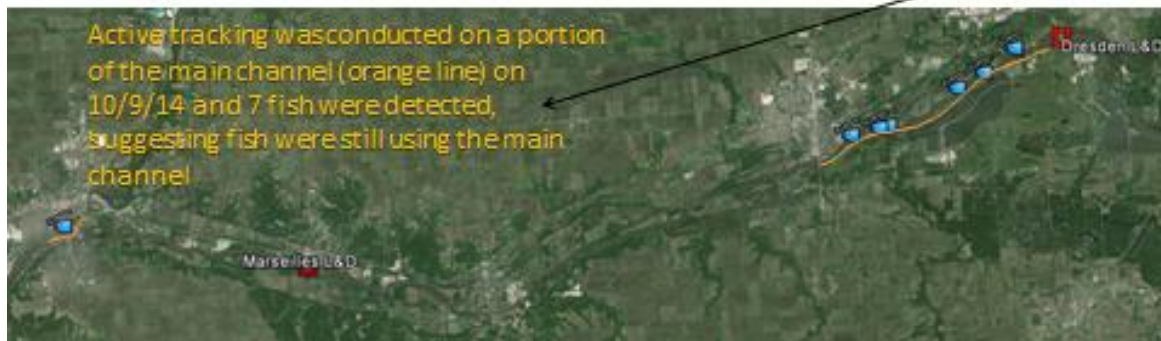
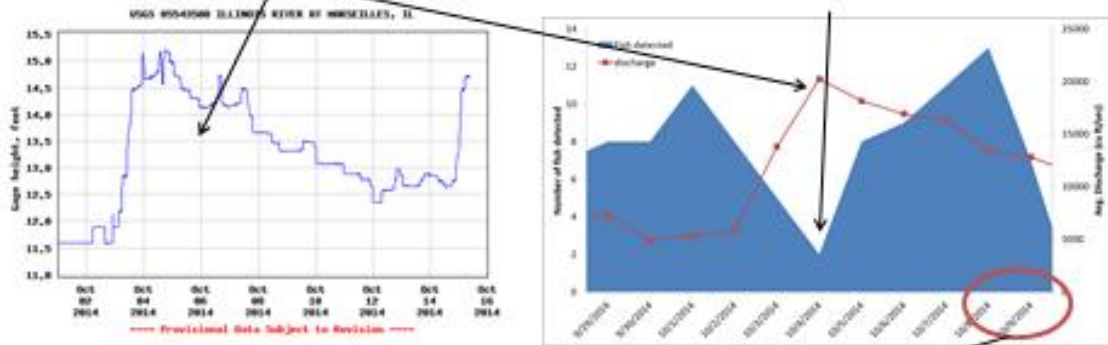
Telemetry

During the week of 20 October, SIU researchers tagged and released 50 Asian carp in the Starved Rock reach and 50 Asian carp in the Marseilles pool. Additional active tracking was also completed on 10/9/14 from the Dresden Lock and Dam to the boat ramp at Morris and at the mouth of the Fox River. Seven fish were detected using main channel habitat. These detections correlated with increased discharge in the Marseilles

reach and very few detections on the receivers in the HMSC Pits (suggesting net movement into the main channel). Further analyses are still being conducted, but a brief summary of those data are shown below. In addition, half of the VR2W receivers and HOBO loggers were downloaded (from Dresden Lock and Dam to Starved Rock Lock and Dam. The additional receivers will be downloaded in November.

River discharge spiked on 10/3 and 10/4, but continues to be elevated relative to September and early October.

Low fish detections on East pit receiver = fish in main channel



Monitoring Fish Abundance and Spatial Distribution in Lockport, Brandon Road, and Dresden Island Pools and the Associated Lock and Dam Structures

USFWS Carterville FWCO coordinated and planned fall split beam hydroacoustic and side scan sonar surveys of the Lockport, Brandon Road, and Dresden Island pools that are scheduled to take place during the first week of November.

Monitoring Fish Abundance, Behavior, Identification, and Fish-Barge Interactions at the Electric Dispersal Barrier, Chicago Sanitary and Ship Canal, Illinois-USFWS

An intensive fixed DIDSON sonar survey was conducted from a boom mounted platform by Carterville FWCO during October. 134 ten minute data collection periods took place during both daytime and nighttime sampling periods directly over the barrier IIB narrow array. Concurrently, fish collection efforts were undertaken by Columbia FWCO by

utilizing Paupier and Mamou trawling to identify community composition and size frequency distributions of fish. Data analysis is ongoing; however, initial results suggest low fish abundance near the barriers during October.

Water Gun Development and Testing

USGS found new suppliers of water guns. USGS-UMESC is in the process of purchasing six new water guns that range in size (i.e., air chamber size) from 100 to 200 in³. The new guns are safer and more reliable than the older 80 in³ water guns. They are safer because they vent to the surface which lessens the need to have personnel near a pressurized gun. The new guns have a modified piston with larger and more robust wear rings/O-rings that will reduce maintenance needs during field operations. In addition, parts and tools needed for the new guns are interchangeable. Two of the six guns were delivered to UMESC on October 8th, 2014.

UMESC hosted a water gun training session October, 9-10th. USFWS, USGS-IL Water Science Center, and USGS-UMESC staff attended the two day training course. Attendees were given a history lesson on water gun seismic technologies, and given hands-on training. Hands-on training consisted of complete disassembly and reassembly of 100 and 200 in³ water guns; each member was exposed to standard operating procedures for a high-output, high-pressure air-compressor and water gun firing system; each attendee was allowed the opportunity to test-fire the new water guns. Interestingly, the new water guns were deployed in a test pond that contained bigheaded carp. After approximately ten minutes of test firing the new guns some of the fish were observed belly-up at the surface. In all, 10 of 16 (62%) test fish were injured by the new water guns and gross necropsies by USFWS verified injured fish had ruptured anterior swim bladders. Following the training session, each attendee was provided a water gun handbook and some relevant literature to disseminate.

Native mussels were exposed to one of the new water guns. During the week of 13October2014, native freshwater mussels were exposed to a water gun to observe survival, shell damage and movement. This observational trial was completed to establish methods for future work with the new water guns and to begin to address questions that may arise regarding the effects of water guns on sensitive aquatic species (i.e., ESA Section 7 consultations). In general, 300 mussels consisting of three different mussel tribes with varying shell thicknesses were divided into four groups: 1) mussels were placed in cages at measured distances from the water gun, 2) mussels were placed in the test pond cage-free, individually placed in lines perpendicular to the water gun at measured distances similar to the caged mussels, 3) mussels were placed in isolated holding troughs in cages and cage-free to serve as controls, and 4) a portion of the mussels were used to develop methods for radiographic (i.e., X-rays) examination of shell damage. The holding troughs contained the same sediment, water and algal composition as the test pond. Pressures put forth from the new water gun were measured by USGS-IL Water Science Center during the exposures. In general, 100% of mussels survived 100 exposures of a water gun firing at 2,000 psi. Mussels were

exposed to pressures >5 psi. All mussels are currently being held at UMESCs mussel research laboratory to observe if delayed mortality may occur.

Asian Carp Gear Development and Evaluation

A crew of four revisited the La Moine River and Lily Lake, off-channel habitats in the LaGrange Pool of the Illinois River, on October 9, 2014, to target juvenile Asian carp using the butterfly frame trawl and surface trawl. Sampling in late July 2014 yielded high numbers of young-of-year (YOY) Asian carp in the LaMoine River and Lily Lake. In October 2014, no juvenile Asian carp were captured in the LaMoine River while 316 juvenile silver carp averaging 107mm were captured in Lily Lake. Silver carp catch per unit effort in Lily Lake was 22 fish per two minute trawl and they comprised 43% of the total catch. Only three juvenile bighead carp, averaging 134 mm in length, were caught.

High water on the Missouri River in October 2014 provoked an investigation for juvenile invasive carps in central Missouri tributaries. On October 22 and 23 two boats sampled four tributaries and one side channel with the push trawl and the surface trawl, two experimental gears, for the presence of small invasive carps. The push trawl detected one juvenile invasive carp in one of the three locations sampled. The surface trawl detected juvenile silver carp in three of the four tributaries and the one side channel sampled. Juvenile invasive carps measured 39-74 mm in length and were primarily captured individually, except in the largest tributary sampled (the Lamine River) where six were captured in one surface trawl. Adult invasive carp were observed jumping in all sample sites and the surface trawl captured one adult silver carp (520 mm) and one adult bighead carp (850 mm).

Evaluation of Gear Efficiency

INHS used multiple gear types (pulsed-DC electrofishing, mini-fyke nets, small-mesh purse seine, cast net, small-mesh gill nets, hydroacoustic transects) to target juvenile Asian carp at Havana and Matanzas Lake during the week of September 29 – October 3. A total of 615 fish were captured at Havana, including 20 silver carp. Juvenile silver carp (32 – 75 mm) were captured in beach seines and mini-fyke nets, whereas electrofishing and gill nets captured only adult silver carp (> 500 mm). No Asian carp were captured in cast nets or purse seines at Havana. At Matanzas Lake, a total of 1,939 fish were captured, including 44 silver carp. Juvenile silver carp (47 – 69 mm) were captured in beach seines and mini-fyke nets, whereas adult silver carp (> 500 mm) were captured via electrofishing. No Asian carp were captured in cast nets, gill nets, or purse seines at Matanzas Lake. Hydroacoustic data is currently being analyzed.

Larval Fish Monitoring

INHS sampling for larval fish and eggs occurred during the week of September 29 – October 3, concluding larval fish sampling activities for 2014. Sampling was conducted at 14 sites located throughout the Illinois Waterway, with 4 samples taken at each site. No larval fish or eggs were collected in any samples from any site during this time period.

Alternate Pathway Surveillance in Illinois - Law Enforcement

Invasive Species Unit (ISU) attended training in rolling surveillance and covert operations.