2016 April Summary

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

Fixed and Targeted Site Sampling Downstream of the Electric Dispersal Barrier

Electrofishing:

- Crews from IDNR, USACE and USFWS completed 69 electrofishing runs at fixed and random sites (17.25 hours total) in the Lockport, Brandon Road, Dresden Island and Marseilles Pools in April.
- Crews collected 1,937 fish of 41 species and 2 hybrid groups.
- One Bighead Carp was collected in the Kankakee River, approximately 2.5 miles upstream from the confluence with the Illinois River.
- Twenty-three Silver Carp were collected in the Marseilles Pool.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport and Brandon Road Pools.**

Hoop and Mini Fyke Netting:

- Crews from IDNR set and pulled 16 hoop nets (6' diameter) and 16 mini fykes in Lockport, Brandon Road, Dresden Island and Marseilles Pools in April.
- Crews collected 9 fish of 4 species during hoop net sampling and 134 fish of 15 species during mini fyke sampling.
- **No Bighead Carp or Silver Carp were reported captured or observed in any of the pools.**

Commercial Netting:

- Contracted commercial fishers with assisting IDNR biologists set 23.9 miles of net at fixed and targeted sites in the Lockport, Brandon Road and Dresden Island Pools (including Rock Run Rookery) in April.
- Crews collected 856 fish of 13 species.
- Fifteen Bighead Carp and 11 Silver Carp (all adults) were collected in Rock Run Rookery.
- Forty Bighead Carp and 80 Silver Carp (all adults) were collected in the Dresden Island Pool downstream of the I-55 Bridge

- **No Bighead Carp or Silver Carp were captured or observed in the Lockport or Brandon Road Pools.**

One dead Silver Carp was observed floating near the Cargill boat launch during fixed site sampling. The fish appeared to be fairly desiccated indicating it may have spent some time out of water (picture below). Further sampling within Lockport pool that week by contracted commercial fishermen returned low catch rates for any species and no other Asian carp were observed. It is believed that this fish was transported to the Lockport Pool on the decking of a barge before being kicked off. Additional signage has been requested for Lockport and Dresden Island Locks reminding captains to turn in any fish which may have jumped onto the decking of vessels before locking upstream.

Barrier Defense Asian Carp Removal Project

Barrier Defense occurred the weeks of April 12th and 19th. Barrier Defense specifically takes place in the Marseilles and Starved Rock Pools. Below is a summary for Asian Carp removal for all Barrier Defense activities in 2016, which includes the Unified Method, along with the same time period in 2015 for comparison:

QUICK SUMMARY:	2015	2016
Number of Days Fished	16	21
Number of Net Crew Days	64	136
Yards of Net Fished	89,120	140,820
Miles of Nets Fished	50.7	80.0
Number of Pound Net days	0	47
Number of Bighead Carp	1,983	2,908
Number of Silver Carp	25,845	32,852
Number of Grass Carp	261	161
Number of Asian Carp	28,089	35,921
Tons of Bighead and Silver Carp Harvested	105.3	138.9

Understanding Surrogate Fish Movement with Barriers

In April a total of 169 surrogate fish were floy tagged, currently 552 fish have been tagged to determine movement through barriers. Below are the results of tagging and recapture locations, analysis will be ongoing throughout study period.

Floy Tagged
- Brandon - 10
- Lockport - 3
- Dresden - 122
- Rock Run - 34

Recaptured
- Dresden - 6 fish with tags retained and 2 with fin clip and no tag
- Brandon - 1

Distribution and Movement of Small Asian Carp in the Illinois Waterway

In April, USFWS Wilmington sub-office conducted sampling in the Illinois River for small Asian carp (≤200mm). These efforts were separated by river pool, and documented below (Table 1). No small Asian carp were collected.

Table 1. April sampling effort for USFWS Wilmington sub-office by river pool.

Pool	Gear	Effort
Starved Rock	Electrofishing	15 runs (225 minutes)
Marseilles	Electrofishing	49 runs (735 minutes)
Dresden Island	Electrofishing	28 runs (411 minutes)

Monitoring Asian Carp Using Netting with Supplemental Capture Techniques

Netting for adult Asian carp with supplemental capture techniques took place in Starved Rock and Brandon Road Pools during the month of April. In Starved Rock, 1200 yards of net was deployed from April 12th – 13th resulting in the capture of 326 fish, 320 of which were Silver Carp. In Brandon Road, 375 yards of floating trammel nets were used to target main channel habitat, resulting in zero fish captured. Three hundred yards of gill nets were also deployed in Brandon Road, resulting in one fish capture (Common Carp). Sampling in Brandon Road took place on April 14th.

Analysis of Feral Grass Carp in the CAWS and Upper Illinois River

During the week of April 25th, six Grass Carp were collected in Marseilles Pool via electrofishing during fixed/random sample sites. Eyeballs were removed from the fish and will be analyzed for ploidy by the Lacrosse Fish Health Center.

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

A mobile split beam acoustic survey was conducted on April 26th inside the Brandon Road Lock chamber. Additionally, 200 yards of experimental gill net (1/2”-2” mesh) was fished inside the lock chamber. Survey results suggested fish density within the lock chamber was low. One adult Longnose Gar and one juvenile Gizzard Shad were captured by gillnetting.

Des Plaines River and Overflow Monitoring

USFWS set 1500 yards of net and completed 2.7 hours of electrofishing in April. No bighead or silver carp were captured or observed in the Des Plaines River.

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

Mobile split beam acoustic surveys were conducted at the Electric Dispersal Barrier on a bi-weekly basis during April (Apr. 11 and Apr. 27). These surveys will provide data on temporal changes in patterns of fish density.

Telemetry Monitoring

One USACE boat and two biologists successfully downloaded receiver data that was collected from 10 March through 13 April within the Dresden Island Pool on 13 April 2016. This data collection trip was in addition to scheduled bi-monthly trips to supplement data during potential spawning seasons. A preliminary review of the data indicated no Asian carp detections at the Brandon Road Lock with the furthest upstream detections near the Hollywood Casino at RM 282.8. There were over 101,000 detections during the time period analyzed. Ninety percent of detections occurred at a receiver located at Harborside Marina, RM 273.6. The greatest inter-pool movement occurred on 19 March with multiple fish detected moving together between the upper and lower pool. USACE receivers detected a total of 11 Asian carp recently tagged by SIUC in April with the majority of detections on these fish recorded within the connecting

channel to Rock Run Rookery. Data has been shared with SIUC for further analysis.

Barrier Maintenance & Fish Suppression

The Electric Dispersal Barriers were successfully operated with minimal loss to power in water in the month of April and did not require fish suppression or clearing actions. There were four occasions which required Barrier IIB to be powered on generator power causing 8 minor interruptions to power in the water for less than one minute each. Each power transfer from utility to generator or generator to utility results in a momentary loss of power to the water (< 30 sec) at that specific array. Barrier IIA was operational during each of these minor interruptions. Barrier IIA experienced one minor outage of less than one minute for power to the water as it transferred operations from Pulser 2 to Pulser 1 on 18 April. Barrier IIB was fully operational during this minor outage. No Barrier outages occurred during the month of April that would trigger the need for fish suppression or clearing activities.

Asian Carp Gear Development and Evaluation

The week of April 11th, the USFWS Columbia Fish & Wildlife Conservation Office sampled the Starved Rock, Marseilles, and Dresden Island pools with the electrified dozer trawl, paupier, and surface trawl.

The electrified dozer trawl was tested on a surface drive boat in the Dresden Island Pool to determine its ability to sample the shallow backwaters as well as the optimal speed and electric settings at which to sample. This gear configuration is well-suited for the shallow backwaters of the Dresden Island Pool. The vegetation that covers most of the backwaters in the summer had not yet appeared and it is expected that slight modifications will be necessary for the electrified dozer trawl to effectively sample in thick vegetation. The surface drive boat was capable of sampling at speeds of 4-5mph while electrofishing with the dozer trawl frame (Figure 1). Conductivity in the Dresden Island Pool exceeded 1,000 microsiemens (µS) during sampling efforts. These are very challenging environmental conditions for electrofishing. Small fish are less susceptible to electricity, higher amperage is needed to effectively immobilize and capture this size class of fish. We found that 20-30 peak amps are needed to successfully immobilize juvenile Gizzard Shad. The dozer trawl

successfully captured 20 species including 180 Gizzard Shad 103-387mm (Table 1).

The paupier and surface trawl were used in the Starved Rock, Marseilles, and Dresden Island pools. Only 1 juvenile Silver Carp (188 mm) was captured and was caught with the surface trawl in the Heritage Harbor Marina, Starved Rock pool Illinois River mile 242. Efforts to use the paupier and surface trawl in the Dresden Island Pool were mostly unsuccessful, as the conditions were either too shallow or too swift for safe and efficient sampling. The paupier successfully sampled Rock Run Rookery capturing four species including Gizzard Shad 94-132 mm (Table 1).

Figure 1. Gizzard Shad are shocked and swept up into the dozer trawl net at 4 mph in 2 feet of water in the Dresden Island Pool, April 2016.

Table 1. Summary of effort and Gizzard Shad (GZSD) and juvenile Silver Carp (SVCP) captured during USFWS Columbia sampling efforts in the Starved Rock, Marseilles, and Dresden Island pools of the Illinois River in April 2016.

	Gear	Minutes	Distance (m)	Volume Sampled (m^3)	# of GZSD	# of GZSD/min	GZSD range (mm)	# of Juvenile SVCP <200mm
Starved Rock	Paupier	35	2350	8601	264	7.5	98-267	0
	Surface trawl	14	750	4703	8	0.6	133-184	1
Marseilles	Paupier	21	1072	3924	917	43.7	86-320	0
Dresden Island	Paupier	61	3218	11778	11	0.2	73-136	0
	Electrified Dozer Trawl	88	6858	6690	180	2.0	103-387	0

Unconventional Gear Development

During the month of April, INHS coordinated with USGS partners for planning upcoming use of Great Lakes trap (pound) nets as part of the feeding attractant and sound stimuli studies. Pound net deployment will begin in May at the Lily Lake backwater in the LaGrange pool. Nets will be checked daily and all fish will be measured and weighed. Data will be summarized and results will be reported once available.

Larval Fish Monitoring

INHS began 2016 ichthyoplankton sampling at 14 main channel and backwater sites located throughout the Illinois Waterway during April 27-29. Four larval fish samples were collected at each site, and zooplankton and water chemistry samples were also collected. Additional samples were collected in Illinois River tributaries to evaluate the potential for Asian carp spawning in these rivers. Processing of samples and identification of larval fish is ongoing. Results, particularly regarding occurrences of Asian carp eggs or larvae, will be reported once available. Additional classification of Asian carp eggs and larvae collected during 2014-2015 to developmental stages also occurred during the month of April. This data will help to pinpoint Asian carp spawning dates in the Illinois Waterway, and estimates of egg ages will be used to back-calculate spawning locations. These tasks are ongoing and results will be reported once available.

Identifying Movement Bottlenecks and Changes in Population Characteristics of Asian Carp in the Illinois River and Assessing Population, Movement, and Behavior of Asian Carp to Inform Control Strategies

Hydroacoustics

Surveys were completed in the Hanson Material Services west pit to estimate the density of Asian carp before and after harvest using the unified fishing method. Comparisons of surveys pre- and post-harvest indicated that Silver and Bighead Carp numerical and biomass densities were significantly reduced by > 80%, with overall Asian carp (Silver and Bighead Carp combined) numerical and biomass densities reduced by 82% and 84%, respectively (Figure 1).

A hydroacoustic survey was also conducted in the Dresden Island pool in early April. This was the first in a series of hydroacoustic surveys of the Dresden Island pool which will occur every other month during 2016 to assess temporal variation in Asian carp densities. Data from this survey are currently being analyzed.

Analyses of standardized hydroacoustic surveys during fall 2015 were completed for the Dresden Island and Marseilles pools. Numerical densities in Marseilles during 2015 were similar to densities in 2014, however biomass density was significantly higher in 2015 than 2014 (α = 0.05; Figure 2). In contrast, both numerical and biomass densities in the Dresden Island pool were similar between 2014 and 2015 (Figure 2).

Telemetry

All stationary receivers upstream of Starved Rock Lock and Dam were downloaded in early April. Three new stationary receivers were installed between Rock Run Rookery Preserve and the Brandon Road Lock and Dam (Figure 3). Thirteen additional Asian carp were implanted with acoustic telemetry tags in Rock Run Rookery Preserve. These fish were collected during Illinois DNR/commercial fishing efforts and released back into Rock Run. Additional Asian carp around Starved Rock Lock and Dam and Marseilles Lock and Dam will be implanted with acoustic telemetry tags during May.

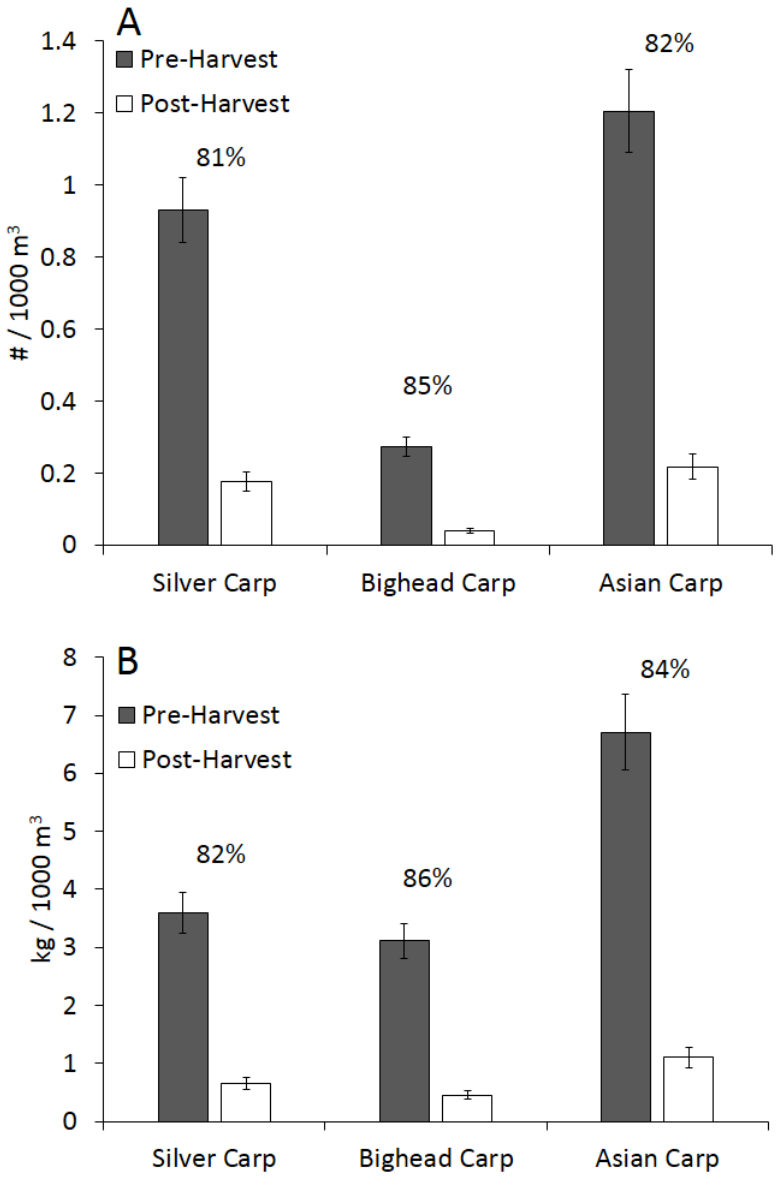

Figure 1. Mean (SE) numerical (A) and biomass (B) densities of Silver Carp, Bighead Carp, and both species combined (Asian carp) in the Hanson Materials Services west pit before and after a harvest event using the unified fishing method. Post-harvest densities were significantly lower for all species ($\alpha = 0.05$). Percentages represent the percent reduction in density after harvest of Asian carp.

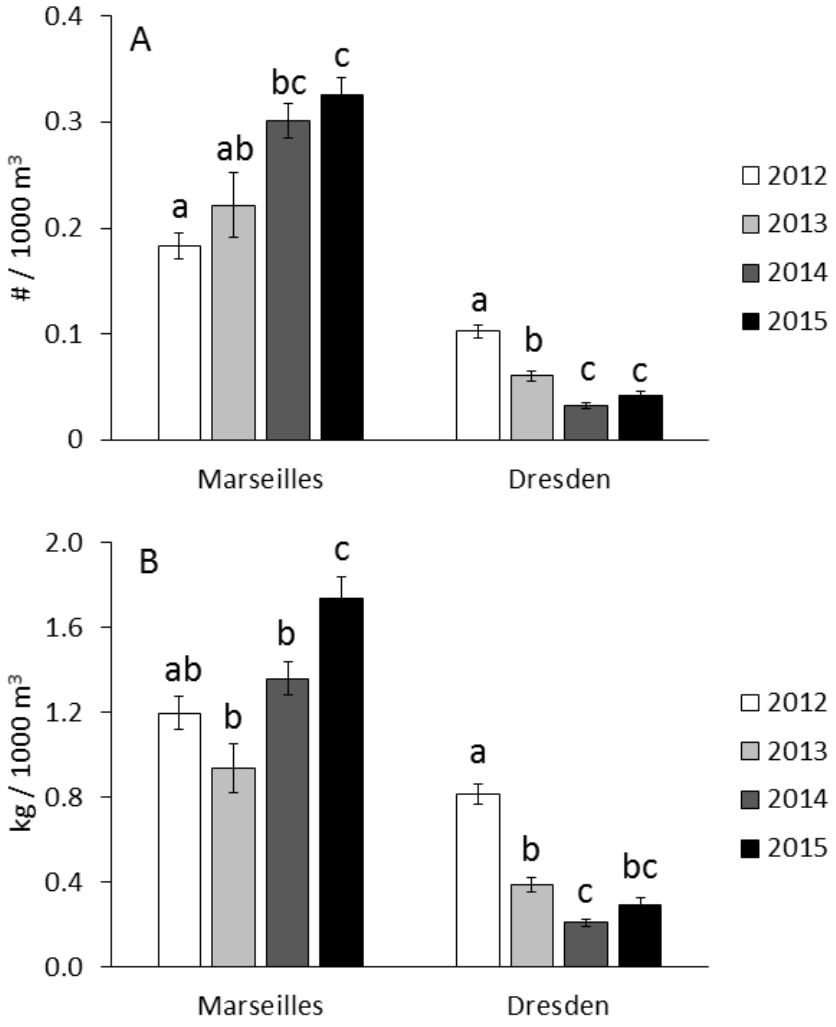

Figure 2. Mean (SE) numerical (A) and biomass (B) densities of Asian carp (Silver and Bighead Carp combined) from the Marseilles and Dresden Island pools from 2012 to 2015. Different letters indicate significant differences in densities across years within a pool.

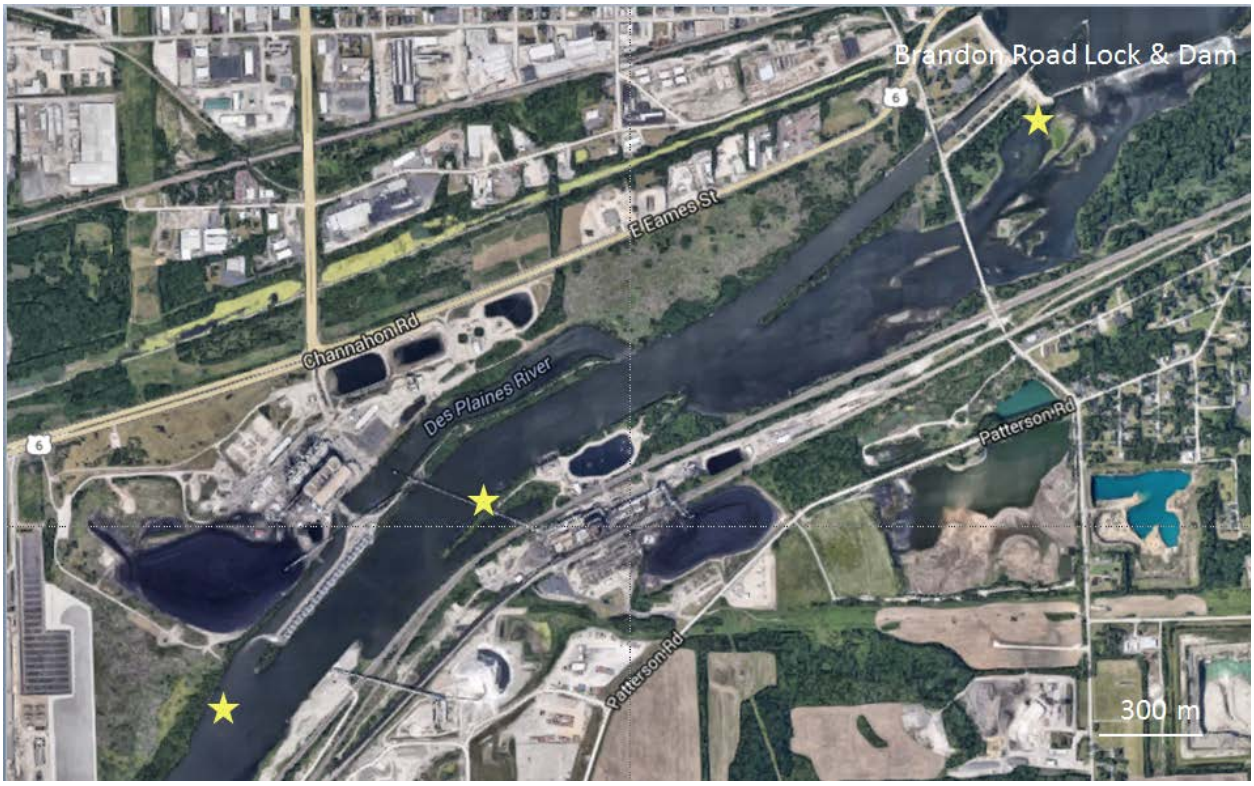

Figure 3. Locations of newly installed stationary receivers (indicated by stars) just downstream of Brandon Road Lock and Dam.

Alternate Pathway Surveillance in Illinois - Law Enforcement

The Invasive Species Unit is investigating an out-of-state fish hauler for selling untested VHS susceptible species without import permits or aquatic life dealer's license in Chicago.