

## 2017 April Summary

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

### **Recent Findings:**



**Dead/hitch-hiking Silver Carp in Lockport Pool.** IDNR crews found a floating silver carp in Lockport Pool. This is not a new finding, in fact several fish have been found in various states of decomposition in this pool over the years. Intense monitoring for live bighead/silver carp continues in Lockport pool, and fish of the sizes detected over the years are vulnerable to the gears being used. We believe that these dead floating fish (all silver carp) are caught/pinched between barges/tows or otherwise on decks that get liberated into Lockport dead. This particular fish may look fairly “fresh” but I have been guaranteed that this particular fish was in advance decay, phew.



**Black carp in upper LaGrange Reach.** A Black carp was reported by a commercial fisherman who caught it near Copperas Creek Lock on the Illinois River RM 136.8. This detection will extend the known detections of black carp in the Illinois River over 110 miles upstream. This is approximately 17 miles south of Peoria Lock and Dam. While the fisherman immediately froze this specimen (making ploidy analysis difficult/impossible) the fish may be valuable for otolith microchemistry and diet. IDNR/SIU will award the fisherman \$100 for surrendering the fish for analyses. Further details will be forthcoming, but this relatively small fish may be of similar size to diploids and likely the 2015-year class, a cohort found in other locations. The fish did appear skinny in the photos. IDNR will remind processors and fisherman that black carp may be in these new areas.

## Fixed, Random and Targeted Site Sampling Downstream of the Electric Dispersal Barrier

### *Electrofishing:*

- Crews from IDNR, USACE and USFWS completed 94 electrofishing runs at fixed and random sites (23.5 hours total) in the Lockport, Brandon Road, Dresden Island and Marseilles Pools in April.
- Crews collected 2,926 fish of 52 species and 2 hybrid groups.
- Fifteen Silver Carp were collected in the Marseilles Pool.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport, Brandon Road or Dresden Island Pools.**

### *Hoop and Mini Fyke Netting:*

- Crews from IDNR set and pulled 16 hoop nets (6' diameter) and 16 mini fykes from fixed sites in Lockport, Brandon Road, Dresden Island and Marseilles Pools in April.
- Crews collected 73 fish of 7 species and 2 hybrid groups during hoop net sampling and 135 fish of 19 species during mini fyke sampling.
- One adult Bighead Carp and 40 adult Silver Carp were collected during hoop net sampling in the Dresden Island and Marseilles Pools, respectively.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport or Brandon Road Pools during hoop net sampling.**
- **No Bighead Carp or Silver Carp were reported captured or observed during mini fyke sampling in any of the pools.**

### *Commercial Netting:*

- Contracted commercial fishers along with assisting IDNR biologists set 21.4 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 1,589 fish of 17 species.
- **No Bighead Carp or Silver Carp were captured or observed in the Lockport or Brandon Road Pools.**
- Ten Bighead Card and 5 Silver Carp were collected in Rock Run Rookery.
- Fifty-four Bighead Carp and 91 Silver Carp were collected in the Dresden Island Pool downstream of I-55.
- One Silver Carp and 11 Bighead Carp were collected upstream of I-55 (~0.4 upstream of the chute that leads to the Rock Run Rookery).

Sampling results by pool below the electric dispersal barrier through April 2017, along with same time period in 2015 and 2016 for comparison:

<b>Lockport</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	18,700	20,600	15,000
<b>Miles of Net Fished</b>	10.6	11.7	8.5
<b>Hoop Net Nights</b>	16	8	4
<b>Mini Fyke Net Nights</b>	8	4	4
<b>Electrofishing Runs</b>	36	16	24
<b>Electrofishing Time (hrs)</b>	9.0	4.0	6.0
<b>Total Asian Carp (AC)</b>	0	0	0
<b>Tons of AC Harvested</b>	0	0	0

<b>Brandon Rd</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	17,300	19,700	16,700
<b>Miles of Net Fished</b>	9.8	11.2	9.5
<b>Hoop Net Nights</b>	16	8	8
<b>Mini Fyke Net Nights</b>	8	4	4
<b>Electrofishing Runs</b>	36	16	24
<b>Electrofishing Time (hrs)</b>	9.0	4.0	6.0
<b>Total Asian Carp (AC)</b>	0	0	0
<b>Tons of AC Harvested</b>	0	0	0

<b>Dresden Island</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	15,000	14,550	16,600
<b>Miles of Net Fished</b>	8.5	8.3	9.4
<b>Hoop Net Nights</b>	16	8	8
<b>Mini Fyke Net Nights</b>	8	4	8
<b>Electrofishing Runs</b>	48	32	34
<b>Electrofishing Time (hrs)</b>	12.0	8.0	8.5
<b>Asian Carp (AC) upstream I-55</b>	0	6	12
<b>AC downstream I-55</b>	22	138	150
<b>Total AC</b>	22	144	162
<b>Tons of AC Harvested</b>	0.2	1.0	1.2

<b>Rock Run Rookery</b>			
<b>QUICK SUMMARY: 2016</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	4,950	12,400	7,800
<b>Miles of Net Fished</b>	2.8	7.0	4.4
<b>Bighead Carp</b>	111	24	12
<b>Silver Carp</b>	24	23	8
<b>Total Asian Carp (AC)</b>	135	47	20
<b>Tons of AC Harvested</b>	1.2	0.4	0.2

### **Barrier Defense Asian Carp Removal Project**

Barrier Defense specifically takes place in the Marseilles and Starved Rock Pools. Below is a summary of all IDNR Barrier Defense activities through April 2017, which includes the Unified Fishing Method in HMS WEST Pit, along with same time period in 2015 and 2016 for comparison.

<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of Days Fished</b>	12	26	22
<b>Number of Net Crew Days</b>	60	140	148
<b>Yards of Net Fished</b>	92,590	147,620	120,230
<b>Miles of Nets Fished</b>	52.6	83.9	68.3
<b>Number of Pound Net nights</b>	0	50	65
<b>Number of Hoop Net nights</b>	0	0	0
<b>Number of Bighead Carp</b>	1,983	2,963	708
<b>Number of Silver Carp</b>	25,845	34,069	30,015
<b>Number of Grass Carp</b>	261	162	59
<b>Number of Asian Carp (AC)</b>	28,089	37,194	30,782
<b>AC/1000 yds of gill net</b>	303.4	245.8	250.7
<b>Tons of Bighead and Silver Carp Harvested</b>	107.7	139.7	122.9

<b>Marseilles</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	64,610	119,950	97,630
<b>Miles of Nets Fished</b>	36.7	68.2	55.5
<b>Pound Net nights</b>	0	50	65
<b>Hoop Net nights</b>	16	8	8
<b>Mini Fyke Net Nights</b>	8	4	8
<b>Electrofishing Runs</b>	48	24	12
<b>Electrofishing Time (hrs)</b>	12	6	3
<b>Bighead Carp</b>	1,339	2,611	457
<b>Silver Carp</b>	18,525	25,103	16,836
<b>Grass Carp</b>	42	19	21
<b>Total Asian Carp</b>	19,906	27,733	17,314
<b>Tons of Bighead and Silver Carp Harvested</b>	78.9	114.1	75.8

<b>Starved Rock</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	27,980	27,670	22,600
<b>Miles of Nets Fished</b>	15.9	15.7	12.8
<b>Hoop Net nights</b>	0	0	0
<b>Bighead Carp</b>	646	352	251
<b>Silver Carp</b>	7,353	8,989	13,234
<b>Grass Carp</b>	220	153	42
<b>Total Asian Carp</b>	8,219	9,494	13,527
<b>Tons of Bighead and Silver Carp Harvested</b>	28.7	25.6	47.2

## **Understanding Surrogate Fish Movement with Barriers**

Tagging results for April 2017

### Fish Tagged:

Lockport Pool

- Common Carp – 7

Brandon Road Pool

- Common Carp – 1

Dresden Island Pool/Rock Run Rookery

- Bigmouth Buffalo – 15
- Black Buffalo – 1
- Common Carp – 53
- Smallmouth Buffalo – 77

Total – 154 fish tagged

### Recaptures:

Dresden Island Pool/Rock Run Rookery

- Smallmouth Buffalo – 22

Brandon Road Pool

- Common Carp – 1

- No fish demonstrated movement between pools

## **Telemetry Monitoring**

USACE biologists captured 14 Common Carp from the Upper Lockport Pool on 28 April 2017 and implanted V16 acoustic telemetry transmitters into each fish. All fish were released at the Cargill boat launch within the Lower Lockport Pool.

## **Barrier Maintenance & Fish Suppression**

The Electric Dispersal Barriers were successfully operated with minimal loss to power in water in the month of March and did not require fish suppression or clearing actions. There were 6 severe weather events which required the barriers to be operated on generator power resulting in 12 minor power outages at the Barrier IIB arrays. Barrier IIA maintained power to the water continuously while Barrier IIB was transferred to and from emergency generator power. 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. On 19 April, the barriers facility manager issued a new directive to cease power transfers during heavy weather and to allow the equipment to complete the switch automatically should utility power be lost. USACE is confident that Barrier IIA will maintain continuous power to the water with the new Uninterrupted Power Source (UPS) installed. Additionally, Barrier IIB generators are sufficiently covering any utility outages that may occur by transferring power in 30 seconds or less. The narrow, high field array of Barrier IIA, wide and narrow arrays of Barrier IIB and the demonstration barrier are currently operational. The wide array of Barrier IIA is offline.

## **Larval Fish Monitoring**

INHS began 2017 ichthyoplankton sampling at 12 main channel and backwater sites located in the Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, and LaGrange Pools during April 26-27. 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. Water temperatures during this first week of sampling were below the threshold thought to be conducive to Asian carp spawning. No large-diameter eggs were observed upon initial inspection of all samples. Ichthyoplankton sampling will continue on a weekly basis through May and June, and will occur biweekly from July to October. Processing of samples and identification of larval fish and eggs is ongoing. Results, particularly regarding occurrences of Asian carp eggs or larvae, will be reported once available.

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

Mobile split-beam acoustic surveys were conducted in the Lockport, and Brandon Road Pools of the Illinois Waterway the last week of April 2017 to determine fish density within the study reaches. Preliminary results will be communicated when available.

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

Mobile hydroacoustic fish surveys were performed at the Electric Dispersal Barrier during the fourth week of April 2017. Preliminary results follow:

**Purpose:** The USFWS conducts hydroacoustic fish density surveys on a bi-weekly basis to estimate the number, sizes, and location of fish immediately downstream of the Electric Dispersal Barrier System (EDBS). These surveys provide “real time” information to fisheries managers and EDBS operations managers to facilitate fish management decisions and EDBS maintenance operations. Hydroacoustic surveys occur within the area downstream of the Romeoville, IL Electric Dispersal Barrier System (EDBS). The area of analysis extends from immediately downstream of Barrier IIA to a point approximately 300 m downstream of the EDBS. The acoustic beam produced by the side looking transducer sampled the water column across the entire canal.

**Preliminary Results 4-26-2017** Density of small (< 6”) fish near the EDBS was very low during this week’s survey (Table 1). No large fish were observed (> 6”). The largest estimated fish size was 121 mm. Water temperature was 15.8°C.

### **Distribution and Movement of Juvenile Asian carp**

Sampling to monitor for juvenile Asian carp (TL <160mm) was conducted for the Dresden Island and Starved Rock reaches during April 2017. Boat electrofishing was conducted in Dresden Island pool (4/3/2017 to 4/7/2017) at 8 locations (2 hours fishing time) throughout the reach. This effort resulted in 588 fish captured representing 35 species. No Silver or Bighead carp were caught. Boat electrofishing and mini-fyke nets were used in Starved Rock pool for 22 locations (5.5 hours fishing time) electrofishing and 6 locations/net-nights respectively. This effort resulted in 877 fish caught representing 38 species. Adult Silver carp (n=25 fish) and Bighead carp (n=3 fish) were captured during electrofishing but no juveniles were observed. In addition to targeted sampling for juvenile Asian carp, USFWS assisted the Illinois DNR with fixed and random electrofishing sites as part of the April seasonal intensive monitoring. No juvenile Asian carp were captured.

### **Analysis of feral Grass Carp in the CAWS and Upper Illinois River**

USFWS captured five Grass carp in the Dresden Island Pool and one in the Brandon Road Pool. Four of the Grass Carp were captured in the spillway area below Brandon Road Lock and Dam and the Grass Carp captured in the Brandon Road Pool was captured at the confluence of the Des Plaines River. All Grass Carp were implanted with Vemco transmitters and released at their capture locations for future monitoring using telemetry. Blood was collected from all Grass Carp and is currently undergoing ploidy analysis.



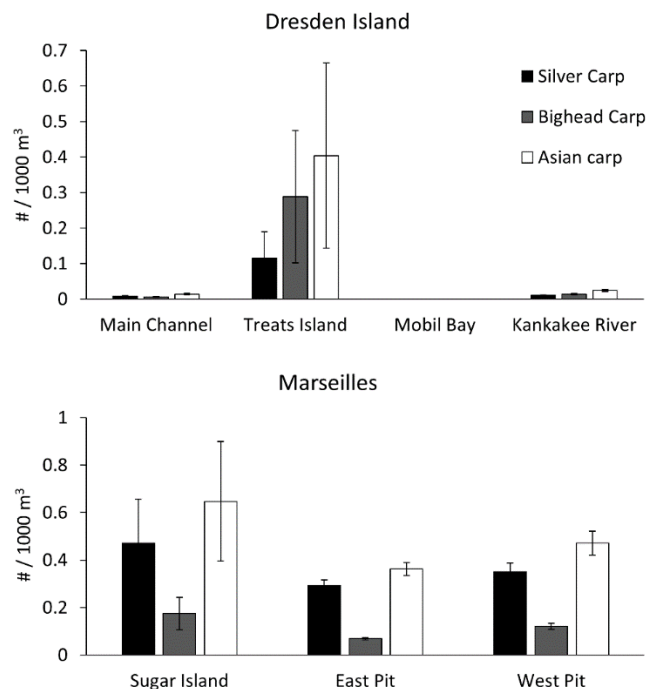
**Assessing movement and behavior of Asian carp at a lock and dam structure to inform control strategies and Assessing Asian carp populations across ecologically significant ecosystems: quantifying abundance, biomass, and size distributions**

*Repeated sampling in Dresden and Marseilles*

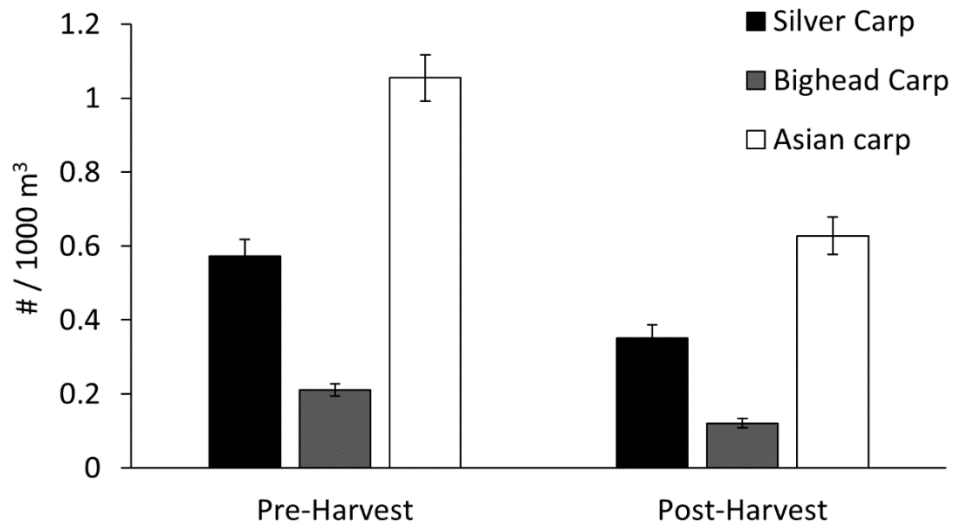
The first hydroacoustic surveys of 2017 were conducted throughout the Marseilles and Dresden Island pools in March. Observed Asian carp densities were low throughout Dresden Island Pool and were highest, and also relatively variable, in the Treats Island side-channel (Figure 1). In contrast, densities in Marseilles were relatively similar among the HMS East and West Pit backwaters and the Sugar Island side-channel (Figure 1). Densities in the main channel of Marseilles Pool are currently being analyzed.

*Asian carp densities before and after Unified Method harvest*

Hydroacoustic surveys were conducted before and after harvest from the Unified Method in the HMS West Pit. Mean (SE) pre-harvest density of Asian carp (Silver Carp and Bighead Carp combined) was 1.1 (0.1) fish/1000 m<sup>3</sup> and significantly decreased to 0.6 (0.4) fish/1000 m<sup>3</sup> after harvest (Figure 2). Changes in the size distributions of Asian carp following harvest are currently being analyzed.



**Figure 1.** Mean (SE) site-specific densities of Silver Carp, Bighead Carp, and all Asian carp (Silver and Bighead Carp combined) from hydroacoustic surveys throughout the Dresden Island and Marseilles pools in March 2017. Densities in the Marseilles Main Channel are currently being analyzed.



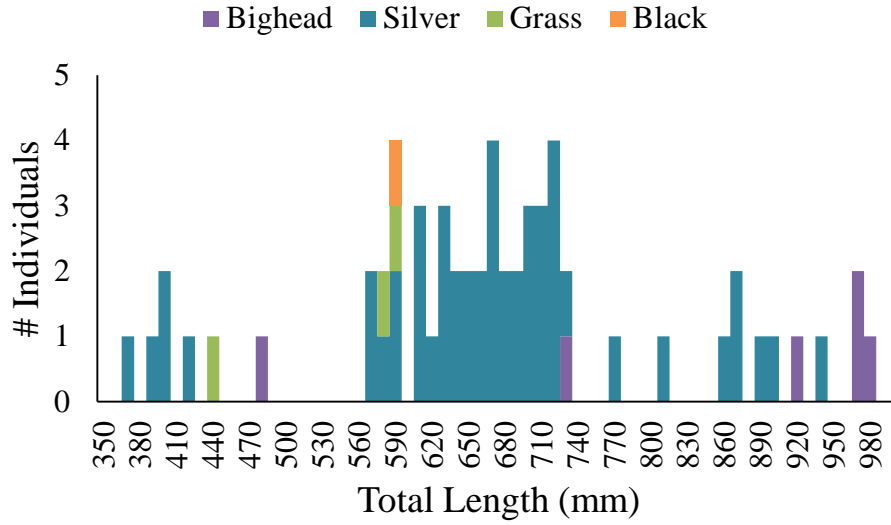
**Figure 2.** Mean (SE) Asian carp densities in the West Pit of the Marseilles Pool before and after harvest from the Unified Method in March 2017.

**Assessing Asian carp populations across ecologically significant ecosystems: quantifying abundance, biomass, and size distributions**

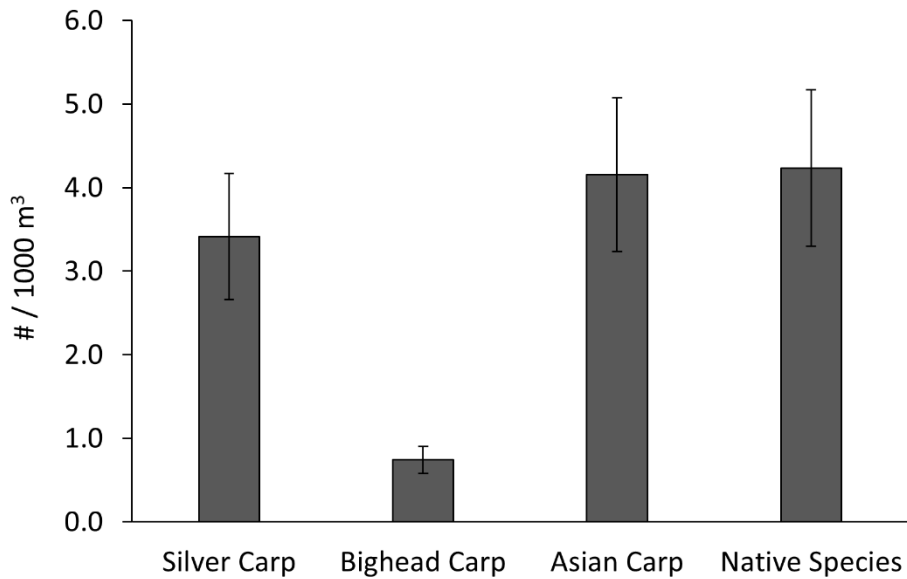
The fish community in portions of the Buttonland Swamp and adjacent Cache River (a 2 mile stretch) was sampled with gill nets (3 inch mesh, 2 net sets), boat electrofishing (3 runs, 40 minutes total), and mobile hydroacoustic surveys in late March 2017. Fourteen fish species were represented (Shannon Diversity Index = 1.96) in the catch, with Silver Carp and Gizzard Shad being the two most abundance species (Table 1). Catch also included one Black Carp which was immediately reported to IDNR. Asian carp collected represented a range of sizes (Figure 1). Asian carp densities were relatively high and were similar to density of native fishes (Figure 2), with Silver Carp comprising most of the Asian carp density compared to Bighead Carp.

**Table 1.** Fish catch from the Buttonland Swamp and Cache River.

Species	Electrofishing CPUE (#/10 minutes)	Netting CPUE (#/net)
Bighead Carp	-	3.0
Bigmouth		
Buffalo	2.1	2.5
Black Carp	0.3	-
Black Crappie	0.2	-
Bowfin	0.3	0.5
Channel Catfish	0.3	0.5
Common Carp	0.8	4.5
Freshwater		
Drum	0.2	-
Gizzard Shad	4.6	-
Grass Carp	0.3	1.0
Shortnose Gar	1.0	-
Silver Carp	4.9	16.0
Smallmouth		
Buffalo	2.6	5.5
Spotted Gar	0.3	-



**Figure 1.** Length distribution of Asian carp (Bighead Carp, Silver Carp, Grass Carp, Black Carp) collected with gill nets and electrofishing in the Buttonland Swamp and adjacent Cache River.



**Figure 2.** Mean (SE) densities of Asian carps and native fishes from hydroacoustic surveys in the Cache River and Buttonland Swamp (Asian carp: Silver Carp and Bighead Carp combined).