

## 2017 July 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 immediately downstream of the Electric Dispersal Barrier.**

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

#### *Electrofishing:*

- Crews from IDNR, USACE and USFWS completed 77 electrofishing runs at fixed and random sites (19.25 hours total) in the Lockport, Brandon Road, Dresden Island and Marseilles Pools in July.
- Crews collected 2,665 fish of 40 species.
- One Bighead Carp and one Silver Carp were collected in the Dresden Island Pool downstream of I-55.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport, Brandon Road or Marseilles Pools.**

#### *Hoop and Mini Fyke Netting:*

- Crews from IDNR set and pulled 12 hoop nets and 12 mini fykes from fixed sites in Lockport, Brandon Road and Dresden Island Pools in July.
- Crews collected 166 fish of 5 species during hoop net sampling and 3,522 fish of 27 species and 1 hybrid group 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 along with assisting IDNR biologists set 37 miles of gill net at fixed and targeted sites in the Lockport, Brandon Road and Dresden Island Pools (including Rock Run Rookery) in July.
- Crews collected 492 fish of 14 species and 1 hybrid group.
- Fifteen Bighead Carp were collected in Rock Run Rookery.
- Two Bighead Carp were collected in the Dresden Island Pool upstream of I-55. One was caught .75 miles upstream of the chute leading to Rock Run Rookery, the other was caught .20 miles downstream of the chute.
- Six Bighead Carp and 16 Silver Carp were collected in the Dresden Island Pool downstream of I-55.
- **No Bighead Carp or Silver Carp were captured or observed in the Lockport or Brandon Road Pools.**

Sampling results by pool below the electric dispersal barrier through June 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>	58,000	55,400	41,400
<b>Miles of Net Fished</b>	33.0	31.5	23.5
<b>Hoop Net Nights</b>	35.8	30.3	25.1
<b>Mini Fyke Net Nights</b>	17.3	14.7	13.9
<b>Electrofishing Runs</b>	72	71	68
<b>Electrofishing Time (hrs)</b>	18.0	17.8	17.0
<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>	57,500	51,050	46,400
<b>Miles of Net Fished</b>	32.7	29.0	26.4
<b>Hoop Net Nights</b>	35.6	30.5	27.7
<b>Mini Fyke Net Nights</b>	17.5	14.9	14.8
<b>Electrofishing Runs</b>	64	67	71
<b>Electrofishing Time (hrs)</b>	16.0	16.8	17.8
<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>	70,400	46,700	49,500
<b>Miles of Net Fished</b>	40.0	26.5	28.1
<b>Hoop Net Nights</b>	88.3	30.2	319.5
<b>Mini Fyke Net Nights</b>	18.9	15.8	19.2
<b>Electrofishing Runs</b>	96	131	119
<b>Electrofishing Time (hrs)</b>	24.0	32.8	29.8
<b>Asian Carp (AC) upstream I-55</b>	25	11	15
<b>AC downstream I-55</b>	134	199	473
<b>Total AC</b>	159	210	488
<b>Tons of AC Harvested</b>	1.2	1.5	5.1

<b>Rock Run Rookery</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>2016</b>			
<b>Yards of Net Fished</b>	25,250	29,150	23,450
<b>Miles of Net Fished</b>	14.3	16.6	13.3
<b>Bighead Carp</b>	143	121	152
<b>Silver Carp</b>	26	29	24
<b>Total Asian Carp (AC)</b>	169	150	176
<b>Tons of AC Harvested</b>	2.8	2.4	2.9

## **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 June 2017, which includes the Unified Fishing Method in HMS W Pit, along with same time period in 2015 and 2016 for comparison:

<b>Marseilles</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	106,590	216,475	140,630
<b>Miles of Nets Fished</b>	60.6	123.0	79.9
<b>Pound Net nights</b>	24	67	74
<b>Hoop Net nights</b>	60.7	116.1	70.0
<b>Mini Fyke Net Nights</b>	19.4	15.4	17.4
<b>Electrofishing Runs</b>	96	96	61
<b>Electrofishing Time (hrs)</b>	24.0	24.0	15.3
<b>Bighead Carp</b>	2,806	4,762	757
<b>Silver Carp</b>	28,647	37,944	22,994
<b>Grass Carp</b>	64	60	54
<b>Total Asian Carp</b>	31,517	42,766	23,805
<b>Tons of Bighead and Silver Carp Harvested</b>	123.6	182.4	102.8

<b>Starved Rock</b>			
<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Yards of Net Fished</b>	63,630	68,120	65,150
<b>Miles of Nets Fished</b>	36.2	38.7	37.0
<b>Hoop Net nights</b>	69.6	683.1	823.2
<b>Bighead Carp</b>	1,611	1,277	718
<b>Silver Carp</b>	24,159	28,738	47,474
<b>Grass Carp</b>	429	373	566
<b>Total Asian Carp</b>	26,199	30,388	48,758
<b>Tons of Bighead and Silver Carp Harvested</b>	79.3	84.4	147.4

## Understanding Surrogate Fish Movement with Barriers

Tagging results for July 2017

### Fish Tagged:

Lockport Pool

- Common Carp – 8

Brandon Road Pool

- Common Carp – 6

Dresden Island Pool/Rock Run Rookery

- Common Carp – 18
- Bigmouth Buffalo – 3
- Black Buffalo – 2
- Smallmouth Buffalo – 38

Total – 75 fish tagged

### Recaptures:

Dresden Island Pool

- Smallmouth Buffalo – 1
  - **No fish demonstrated movement between pools**

## Operation Silver Bullet Summary

The Silver Carp collected in the Little Calumet River on June 22<sup>nd</sup> prompted two additional weeks of intensive sampling in Lake Calumet, Calumet River and Little Calumet River the weeks of June 26<sup>th</sup> and July 3<sup>rd</sup> as outlined by the Contingency Response Plan (2017 MRP). **No additional Asian carp were observed or collected.** Below is the summary of the two weeks of additional sampling. Electrofishing and commercial netting occurred in Little Calumet River, Calumet River and Lake Calumet. Trap nets and a pound net were fished exclusively in Lake Calumet. Daily situation reports were shared with ACRCC and Agency staff.

## Operation summary:

### *Electrofishing:*

- Crews from IDNR, USACE and USFWS completed 365 electrofishing runs at target and random sites (91.25 hours total).
- Crews collected 18,523 fish of (43 species and 5 hybrid groups).

### *Trap Nets:*

- Crews from IDNR set seven trap nets in Lake Calumet, totaling 41 net nights of effort.
- Crews collected 145 fish of 9 species and 1 hybrid group.

### *Pound Net:*

- Crews from IDNR set one-pound net in Lake Calumet, totaling 9 net nights of effort.
- Crews collected 63 fish of 7 species.

### *Commercial Netting:*

- Contracted commercial fishers along with assisting IDNR biologists set 43.4 miles of gill net (382 sets) at target and random sites.
- Crews collected 1549 fish of (21 species and 1 hybrid group).

### *Electrified Paupier:*

- Crews sampled for 398 minutes.
- Crews collected 385 fish (0.96 fish per minute)
- A total of 20,665 fish representing 47 species and 5 hybrid groups were collected in all gear types combined. (6 grass carp were collected and removed, ploidy (fertile/infertile) will be identified for each)
- Total numbers and species composition are preliminary until data has been verified
- Total staffing for field portion of Operation exceed 1,952 person\*hours
- Additional planning, logistics, travel are not assembled at this time but a resource tracking exercise will accompany a final after-action report that is in preparation.

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

**Preliminary Results 7-25-2017:** High flow conditions and associated debris within the canal created difficult conditions for acoustic data collection during this survey. The density of small fish (< 6") observed during the survey was relatively high compared to previous surveys conducted this year (Table 1). Densities of large fish (> 6") between the active barriers were low (Table 1). One very large target was detected in close proximity to the Barrier IIB high field array (41.38.536 -88.03.592). The fish track contained four single targets with mean TS (db) of -17.01. Estimated mean length of this target was 936 mm. Analysis of single target ping number vs. beam axis distance for this fish track suggested that the target moved through the acoustic beam linearly. While this large target cannot be ruled out as being a fish given these data, uncertainty of the identity of the target does exist due to the large amount of debris that was present within the canal.

**Actions:** USFWS will conduct additional acoustic surveys at the EDBS on 7-28-2017 in response to the results of this survey. Additionally, a USFWS research team will be on site at the EDBS to collect DIDSON and stationary split beam acoustic data at the Barrier IIB high field array and downstream of the Barrier IIB high field array. This data is forthcoming.

### **Distribution and movement of juvenile Asian carp**

Sampling to monitor for juvenile Asian carp (TL <160mm) was conducted for the Marseilles and Starved Rock reaches during July 2017. Boat electrofishing was conducted in Marseilles (7/17/2017 to 7/20/2017) and 7/31/2017 at 30 locations (7.5 hours of fishing time). Electrofishing resulted in 1472 fish captured. Only adult silver carp (n=53) were captured in this reach.

Boat electrofishing was used in Starved Rock pool (7/18/2017 to 7/20/2017) at 13 locations (3.25 hours of fishing time) throughout the reach. An electrified dozer trawl was also used at 5 locations (25 minutes fishing time) in this reach on 7/19/2017. This effort resulted in 783 fish captured from electrofishing and 144 fish from trawling. Adult silver carp were captured with both methods (electrofishing, n=116; dozer trawl, n=74) but no juveniles were observed.

## **Telemetry Monitoring**

USACE biologists completed a full system download of receivers within the CAWS from the Cal-Sag Channel to the Dresden Island Lock and Dam on 24-26 June. These receivers were analyzed for the period of 22-May to 26 June. There were no detections indicating Electric Dispersal Barrier passage in either direction and no tagged Bighead or Silver Carp detected within the Lockport or Brandon Road Pools. The furthest upstream detection of Bighead or Silver Carp within the Dresden Island Pool occurred at the navigation marker island just upstream of Rock Run Rookery. The greatest number of detections occurred at the Harborside Marina in the lower pool (n=126,689). One Common Carp was detected moving through the Lockport Lock downstream into the Brandon Road pool during the period of analyses. There was no further inter-pool movement detected.

## **Barrier Maintenance & Fish Suppression**

USACE continued operation of the Electric Dispersal Barriers throughout June and July. However, there were several events that resulted in a temporary loss of power in water and subsequent fish monitoring or clearing actions. During this time, there were 9 severe weather events and 1 power fault in which Barrier IIB lost utility power and switched to generator power. The process of switching resulted in 20 minor power outages (<30 sec each) at the Barrier IIB arrays. Barrier IIA's high field array remained operational during the switches.

The Demonstration Barrier was shut down in support of Permanent Barrier I construction activities 10-21 July. Barrier IIB and IIA were operational during this period. Barrier IIB experienced a power fault which transferred power to the back-up pulse generating equipment on 22 July. This outage resulted in a loss of power to water at the IIB narrow array of less than 30 seconds. Barrier IIA and the Demo Barriers were operational during the brief outage along with the wide array of Barrier IIB. Barrier IIA experienced a power outage of 10 minutes on 24 July at approximately 16:45 due to a power fault. Barrier IIB and the Demonstration Barrier were fully operational during the outage. Barrier IIB was taken offline for several hours on 25 and 26 July for repairs to the primary pulse generating equipment. The primary pulse generating equipment was recommissioned on 26 July.



The MRWG convened a call on 28 July to discuss the outages and performed the following actions in response:

ILDNR netting crews deployed to Lockport pool.

USFWS Hydroacoustics crew was deployed immediately on site to scan from above the Demo down to the narrow array of Barrier 2A. High debris load within scan ranges. Relatively high amount of small (<6 in) fish, yet lower numbers of larger fish compared to previous scans. Large object (936mm) detected near Barrier 2B, will be evaluated with a follow up scan on Friday. The object had cleared the area by the time of the Friday scan. The MRWG operating agencies continue to maintain vigilance within the Upper Illinois Waterway with routine monitoring activities.

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. Current operating parameters for all barriers are provided below:

Barrier IIA narrow: 2000 V (2 V/in); 34 Hz, 2.3 ms

Barrier IIB wide: 800 V (.75 V/in); 34 Hz, 2.3 ms

Barrier IIB narrow: 2200 V (2.3 V/in); 34 Hz, 2.3 ms

Demo Barrier: 400 V (.5 V/in); 5 Hz; 4 ms

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

Ten Grass Carp were collected during the month of July. Of the 10 fish, 2 were recaptures in Dresden Island pool and 5 new fish were collected and implanted with acoustic tags in Dresden Island. One new fish was collected and implanted with an acoustic tag in the Marseilles Pool and 2 fish were collected in T.J. O'Brian Pool. Effort was focused below the Brandon Road and Dresden Island lock and dams. Blood was collected from all but one Grass Carp implanted with acoustic tags. To date, 2 samples have come back as triploid.

### **Des Plaines River and Overflow Monitoring**

USFWS deployed 500 yards of net and shocked 2.5 hours on the upper Des Plaines River. **No Bighead or Silver Carp were collected or observed.**

USFWS investigated a potential overtopping flood event. No surface water was observed passing from the upper Des Plaines River to the CSSC.

## **Larval Fish Monitoring**

INHS conducted ichthyoplankton sampling at 12 main channel and backwater sites located in the Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, and LaGrange Pools during the weeks of July 10 and July 24. 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. Coinciding with a rise in water levels, large-diameter eggs were observed in samples from the Peoria and LaGrange Pools during the week of July 24, with large numbers of such eggs being observed at Havana (LaGrange Pool). Processing of samples and identification of larval fish and eggs is ongoing. Ichthyoplankton sampling will continue on a biweekly basis through October. Results, particularly regarding occurrences of Asian carp eggs or larvae, will be reported once available.

## **Evaluation of Gear Efficiency**

INHS sampled for juvenile Asian carp using several gear types (mini-fyke nets, beach seines, pulsed-DC electrofishing, dozer trawl, hydroacoustic surveys) at four sites in the LaGrange Pool during the week of July 24. A total of 13,014 fish were captured during these efforts, including 2,858 age-0 Silver Carp (22-41 mm TL). Mini-fyke nets captured the highest numbers of all fish ( $n = 6,419$ ) and age-0 Silver Carp ( $n = 2,852$ ). However, the majority of age-0 Silver Carp sampled by this gear were captured in a single net ( $n = 2,817$ ), once again highlighting the extremely patchy distribution of age-0 Silver Carp in floodplain river systems. Both beach seines (all fish:  $n = 2,836$ ; age-0 Silver Carp:  $n = 3$ ) and dozer trawls (all fish:  $n = 3,331$ ; age-0 Silver Carp:  $n = 3$ ) captured lower numbers of fishes and only a small number of age-0 Silver Carp. Pulsed-DC electrofishing captured 428 total fish, but did not capture any age-0 Silver Carp. Sampling was conducted concurrently with USFWS trawls in the LaGrange Pool. USFWS trawling data will be compared to INHS juvenile gears.

**Distribution and movement of juvenile Asian carp**

The USFWS - Columbia Fish and Wildlife Conservation Office sampled the Marseilles and Starved Rock pools with the electrified dozer trawl and electrified paupier 7/19/2017- 7/20/2017. No Silver Carp less than 153mm were captured in the Marseilles or Starved Rock pools (Table 1).

Table 1. USFWS Columbia effort expended, Gizzard Shad captured and Silver Carp captured by electrified dozer trawl and electrified paupier in July 2017.

Pool	Gear	# of Samples	Time (minutes)	# of Gizzard Shad	# Silver Carp	# of Silver Carp <153mm
Marseilles	Electified Dozer Trawl	4	19	611	16	0
Marseilles	Electified Paupier	7	28	351	38	0
Starved Rock	Electified Dozer Trawl	8	40	272	43	0
Starved Rock	Electified Paupier	5	16	415	373	0

**Gear Evaluation for Removal and Monitoring of Juvenile Asian Carp Species**

Table 1. Silver Carp (SVCP) captured by the USFWS - Columbia Fish and Wildlife Conservation Office in July 2017 during the gear evaluation study using three gears (PA – electrified paupier, DT – electrified dozer trawl, EF – standard electrofishing). Study sites are in the LaGrange (Lily Lake, Matanzas Lake, Quiver Lake) and Marseilles (Hansen Material Services East, Hansen Material Services West) pools of the Illinois River, IL. All Silver Carp less than 200 mm were captured in the LaGrange Pool.

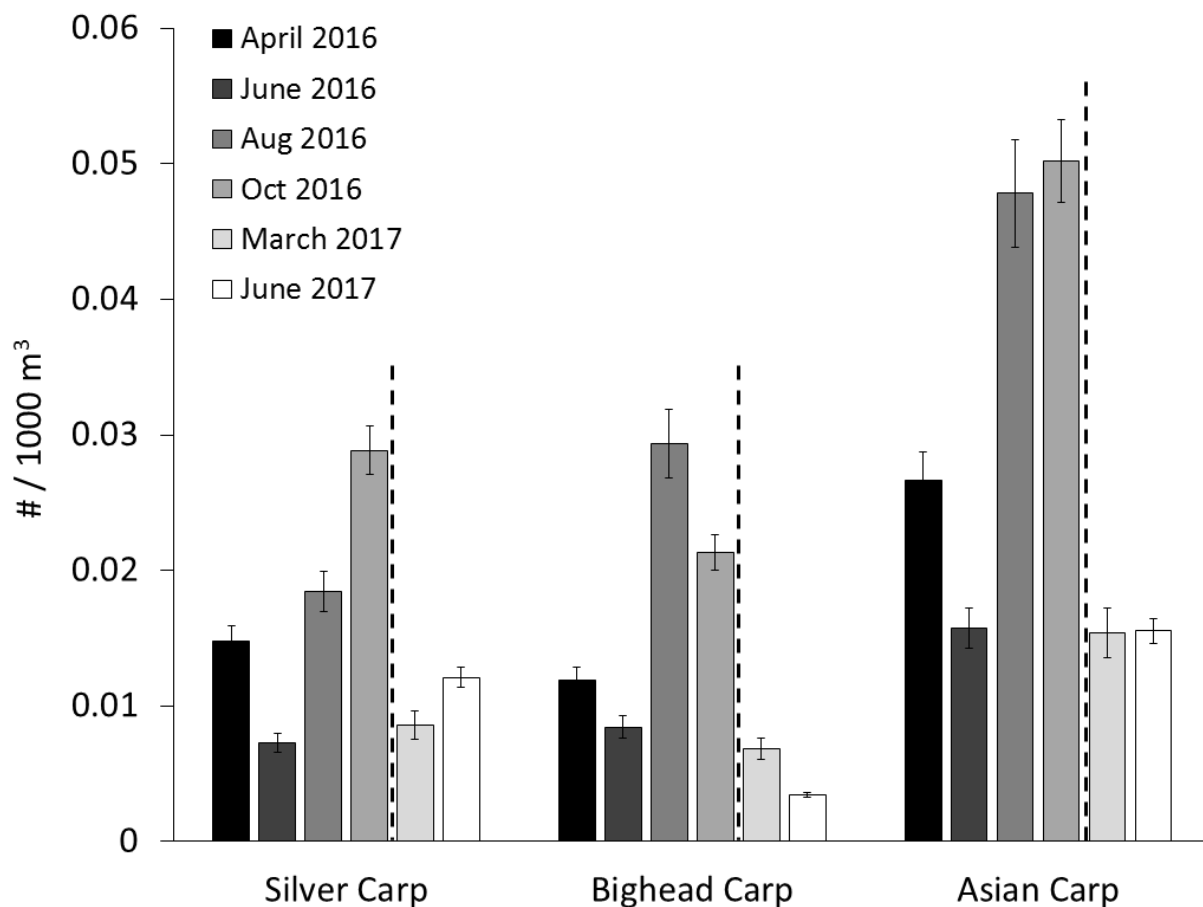
Site	Ge ar	N	Time (min)	SV CP	SVCP/5 min	SVCP < 200mm	SVCP range (mm)
Lily Lake	PA	8	40.0	180	4.5	3	38-782
	DT	8	40.4	89	2.2	0	374-660
	EF	8	40.4	12	0.3	0	566-743
Matanzas Lake	PA	7	35.3	65	1.8	0	211- 694
	DT	8	40.4	70	1.7	0	307-790
	EF	8	40.5	4	0.1	1	45-579
Quiver Lake	PA	9	45.0	50	1.1	12	33-764
	DT	8	40.5	46	1.1	0	405-726
	EF	8	40.5	9	0.2	0	564-637
Hansen Materials East	PA	8	40.0	62	1.6	0	564-872
	DT	8	40.8	15	0.4	0	645-843
	EF	8	40.6	12	0.3	0	661-900
Hansen Materials West	PA	8	40.0	31	0.8	0	545-890
	DT	8	40.3	2	0.0	0	607-671
	EF	8	40.6	2	0.0	0	649-661

**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**

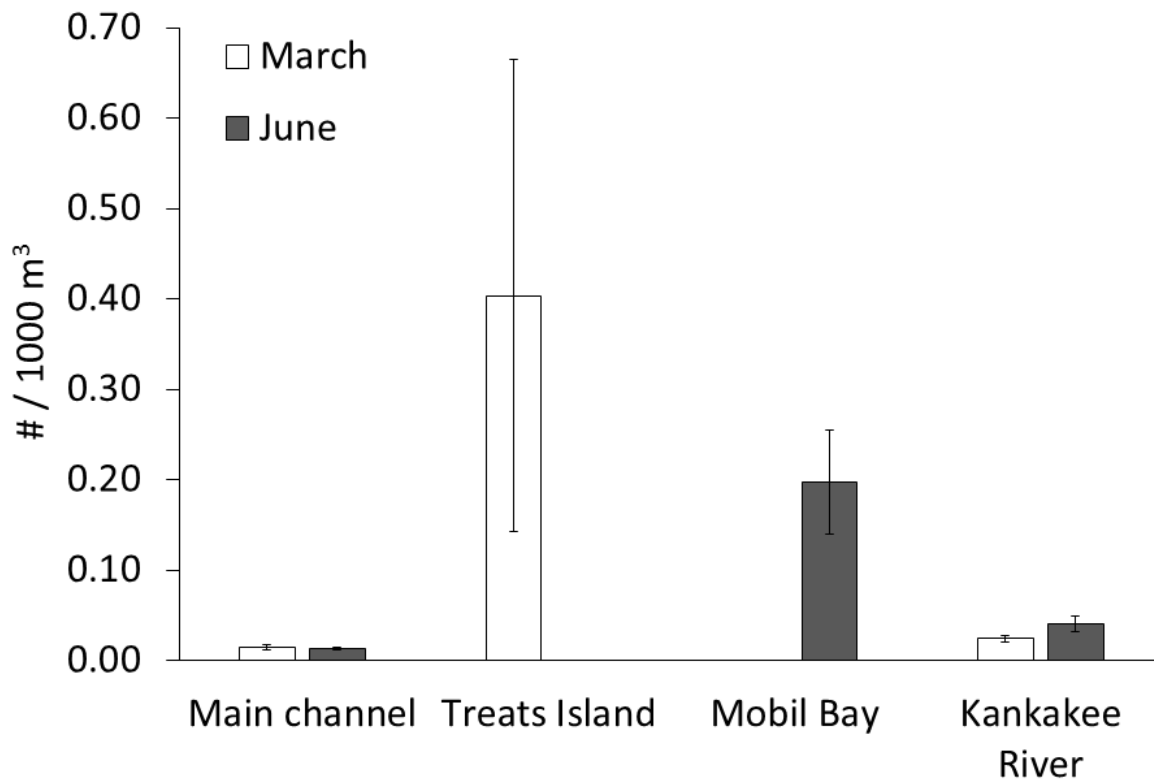
Analyses of June hydroacoustic surveys of Dresden Island Pool were completed. Pool-wide Asian carp densities (Silver and Bighead Carp combined) in early June 2017 were similar to densities in late March 2017 (Figure 1). However, this was comprised of higher densities of Silver Carp in June than in March but lower June densities of Bighead Carp. Asian carp densities in June 2017 were also similar to densities in June 2016. June 2017 densities in Dresden Island Pool were highest in the Mobil Bay backwater and increased from March densities in the Kankakee River (Figure 2). Densities in the main channel were similar to March and no Asian carp were detected in the Treats Island side-channel. It may be particularly advantageous for targeted contracted harvest to focus on the Kankakee River during summer. The Mobil Bay backwater had the highest

June densities of all sites sampled but also had the greatest variability. Analyses of June Asian carp densities in Marseilles Pool are currently being completed and hydroacoustic surveys of Dresden Island and Marseilles Pools were completed in late July.

Sample collection for the project entitled “Assessing Asian carp populations in Pool 19 of the Mississippi River and the Cache River of southern Illinois”, including hydroacoustic surveys and electrofishing/gill netting, is complete. We are working to finalize data analyses and complete the final project report.



**Figure 1.** Mean (SE) bigheaded carp densities in Dresden Island Pool from seasonal hydroacoustic surveys during 2016 and 2017. Dashed lines indicate 2016 from 2017 surveys.



**Figure 2.** Site-specific mean (SE) Asian carp (Silver Carp and Bighead Carp combined) densities in Dresden Island Pool during March and June 2017.

### **Alternate Pathway Surveillance in Illinois - Law Enforcement**

The Invasive Species Unit (ISU) recently interviewed a fish hauler from Kentucky about fish sales and deliveries he made in Illinois. The subject had been importing and stocking shad, bluegill, and largemouth bass in ponds and lakes located in Southern Illinois for the past decade without the required aquatic life dealer's license or VHS import permits. The facilities in Kentucky where these fish originated from were not tested for VHS. Charges are pending in Massac County court.

ISU participated in the Illinois Environmental Crimes Task Force meeting and discussed pending cases and issues related to Aquatic Invasive Species enforcement in Illinois.

A Missouri Fish dealer pled guilty in McHenry County court to unlawfully importing a VHS susceptible species (catfish) into Illinois without the proper permits. As part of the plea agreement the owner of the company paid \$2400 in restitution to the Department.

ISU discovered an unpermitted aquaponics facility in Mundelein raising Tilapia that were illegally shipped via FedEx by a Missouri company that did not obtain a non-resident aquatic life dealer's license or apply for a restricted species transportation permit to import the fish. The Mundelein facility was inspected and the owner was given information on how to legally possess the tilapia. The investigation into the Missouri company is ongoing.