

## 2016 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 either upstream of, or immediately downstream of the Electric Dispersal Barrier.**

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

#### *Electrofishing:*

- Crews from IDNR, USACE and USFWS completed 83 electrofishing runs at fixed and random sites (20.75 hours total) in the Lockport, Brandon Road, Dresden Island, and Marseilles Pools in July.
- Crews collected 10,204 fish of 51 species and 2 hybrid groups.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport or Brandon Road Pools.**
- Seven adult Silver Carp were collected in the Dresden Island Pool, all downstream of the I-55 Bridge
- Four hundred fourteen adult Silver Carp and one adult Bighead Carp were collected in the Marseilles Pool.

#### *Commercial Netting:*

- Contracted commercial fishers along with assisting IDNR biologists set 40.5 miles of net (302 sets) at fixed and targeted sites in the Lockport, Brandon Road and Dresden Island Pools (including Rock Run Rookery) during the month of July.
- Crews collected 827 fish of 16 species.
- **No Bighead Carp or Silver Carp were captured or observed in the Lockport or Brandon Road Pools.**
- Thirty-one Bighead Carp and three Silver Carp (all adults) were collected in Rock Run Rookery.
- One adult Silver Carp was collected in the Dresden Island Pool ~0.4 miles upstream of the I-55 Bridge in Mobil Bay.
- Four Bighead Carp and 15 Silver Carp (all adults) were collected in the Dresden Island Pool downstream of the I-55 Bridge.

### *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 during the week of July 25th.
- Crews collected 77 fish of 8 species during hoop net sampling and 1,022 fish of 20 species during mini fyke sampling (189 of which were state threatened Banded Killifish).
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport, Brandon Road or Dresden Island Pools.**
- Forty Silver Carp and eight Bighead Carp (all adults) were collected during hoop net sampling in the Marseilles Pool.

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

Barrier Defense, which specifically takes place in the Marseilles and Starved Rock Pools, occurred the week of July 4<sup>th</sup>. Below is a summary of Asian Carp removal for all Barrier Defense activities in 2016, along with the same time period in 2015 for comparison:

<b>QUICK SUMMARY:</b>	<b>2015</b>	<b>2016</b>
<b>Number of Days Fished</b>	40	52
<b>Number of Net Crew Days</b>	184	268
<b>Yards of Net Fished</b>	255,550	285,295
<b>Miles of Nets Fished</b>	145.2	162.1
<b>Number of Pound Net nights</b>	24	65
<b>Number of Hoop Net nights</b>	69.6	768.7
<b>Number of Bighead Carp</b>	3,929	6,064
<b>Number of Silver Carp</b>	49,757	66,051
<b>Number of Grass Carp</b>	486	415
<b>Number of Asian Carp</b>	54,172	72,530
<b>Tons of Bighead and Silver Carp Harvested</b>	190.4	265.2

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

These are the tagging results for July 2016:

Fish Tagged:

- Bigmouth Buffalo – 10

- Black Buffalo – 2
  - Common Carp – 79
  - Grass Carp – 1
  - Smallmouth Buffalo – 185
- Total – 277 fish tagged

Recaptures:

- Lockport Pool – 1 Common Carp
- Brandon Road Pool – 1 Common Carp, 1 Smallmouth Buffalo
- Rock Run Rookery – 2 Black Buffalo, 1 Common Carp, 23 Smallmouth Buffalo
- Dresden Island Pool – 5 Smallmouth Buffalo

Total – 34 recaptures

**Distribution and Movement of Small Asian Carp in the Illinois Waterway**

In July, USFWS Wilmington and Columbia offices conducted sampling in the Illinois River for small Asian carp ( $\leq 153\text{mm}$ ). These efforts were separated by river pool, and documented below (Table 1). No small Asian carp ( $\leq 153\text{mm}$ ) were captured.

**Table 1.** May USFWS sampling effort by gear and river pool.

Pool	Gear	Effort
Starved Rock	Mini Fyke Net	9 single or tandem sets
Starved Rock	Electrofishing	3 runs (45 minutes)
Marseilles	Electrofishing	18 runs (270 minutes)
Dresden Island	Electrofishing	24 runs (360 minutes)
Dresden Island	Dozer Trawl	13 runs (62 minutes)
Brandon Road	Dozer Trawl	4 runs (20 minutes)

### **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, Brandon Road, and Dresden Island reaches of the Illinois Waterway the third week of July 2016 to determine fish density within the study reaches.

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

Mobile split-beam acoustic surveys were conducted at the Electric Dispersal Barrier on several occasions during the month (June 30 and July 15). These surveys will provide data on temporal changes in patterns of fish density

### **Monitoring Asian Carp using Netting with Supplemental Capture Techniques**

Netting for adult Asian carp with supplemental capture techniques took place in Starved Rock Marseilles and Brandon Road Pools during the month of June. In Starved Rock 700 yards of net were deployed, resulting in the capture of 60 fish; including, 12 Silver Carp and 40 Bighead Carp. In Marseilles 2,200 yards of net were deployed, resulting in the capture of 258 fish; including, 94 Silver Carp and 77 Bighead Carp. In Brandon Road 800 yards of net were deployed, resulting in the capture of zero fish.

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

During the month of July eight Grass Carp were collected for the purpose of ploidy testing. Seven of these carp were collected in Marseilles Pool, while one was collected in Dresden Island Pool. The results from the La Crosse Fish Health Center indicated that all eight Grass Carp were diploid. Our telemetry gear arrived and five stationary receivers were deployed among Dresden Island and Brandon Road Pools.

## **Telemetry Monitoring**

A complete network download occurred within the month of July with 31 VR2W receivers downloaded. Receiver network coverage spans from the Upper Lockport Pool at the confluence of the Cal-Sag and CSSC to the Dresden Island Lock and Dam and Kankakee River. Analysis is ongoing but some preliminary results are as follows. The highest detections in Dresden Island Pool occurred from the 1.5 miles upstream on the Kankakee to the Dresden Island Lock to Harborside Marina. The highest number of individual ID's came from Harborside Marina where we detected 79 unique IDs from late May to late July. A receiver within the DuPage River just downstream of the first dam did have several detections of Asian carp indicating some use of this habitat. No tagged fish crossed the barriers in either direction and no Asian carp were detected upstream of the Brandon Road Lock and Dam. Further analysis is ongoing.

## **Barrier Maintenance & Fish Suppression**

The Electric Dispersal Barriers were successfully operated with minor loss to power in water in the month of July and did not require fish suppression or clearing actions. There were 14 occasions which required Barrier IIB to be powered on generator power causing 28 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 all transfer events at Barrier IIB. The Demonstration Barrier remained fully operational through 21 July. In the early morning hours of 21 July the Demonstration Barrier was struck by lightning causing the fault of Pulsers 1 and 2. These pulsers operate a full water column array and were shut down after the fault. Pulsers 3 and 4 remained operational throughout the full month and operate a benthic array. Barrier IIA was powered down for less than two hours on 12 July for Uninterrupted Power Supply testing during the 11:00 and 12:00 hours. The UPS will supply power to Barrier IIA equipment in the short gap between future transfers from Utility to Generator power. Barrier IIB was operational during the Barrier IIA loss of power to the water. In the evening of 13 July, Barrier IIA utility power was lost and the UPS system and back-up generator completed a power transfer automatically without incident. This was the first use of the UPS and there was no loss of power to the water during the transfer.

## **Asian Carp Gear Development and Evaluation**

INHS purchased and completed construction of a 2 m wide push trawl during the month of July. Testing and modification of this gear was performed to prepare it for use concurrent with other sampling gears. Continuing evaluation of sampling gears targeting juvenile (age-0 to age-2) Asian carp will begin in August.

## **Larval Fish Monitoring**

INHS conducted ichthyoplankton sampling at 14 main channel and backwater sites located throughout the Illinois Waterway during June 30 – July 1, July 5 – 7, and July 18 – 20. 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. Sample processing is ongoing, and results will be reported once available. Ichthyoplankton sampling will continue on a bi-weekly basis through October or more frequently if river conditions appear to be conducive to Asian carp spawning.

## **Unconventional Gear Development**

During the month of July, INHS coordinated with USGS to plan and schedule upcoming deployments of pound nets at Lily Lake as part of the feeding attractant / sound stimuli studies. INHS also coordinated with IDNR for future deployments of pound nets at Lake Calumet and other backwater sites in the Illinois Waterway. Updates on these efforts will be provided as they develop.

## **ASSESSING POPULATION, MOVEMENT, and BEHAVIOR OF ASIAN CARP TO INFORM CONTROL STRATEGIES**

### *Hydroacoustics*

Bi-monthly hydroacoustic surveys are being conducted in the Dresden Island pool during 2016 to assess temporal and spatial patterns in Asian carp densities, and to assess relationships with contracted harvest. During each bi-monthly survey, the entire main channel, Mobil Bay backwater (41.4249 N, -88.1850 W), Treats Island side-channel (41.4351 N, -88.1689 W), and two miles up the Kankakee River tributary are sampled. Analysis of a hydroacoustic survey conducted on 8-June 2016 was completed this month and compared with the survey from April. Pool-wide density estimates displayed a significant decrease in both numerical and biomass density from April to June (Figure 1) for Silver Carp. This pattern was apparent for Bighead Carp but was not statistically significant. Overall Asian carp numerical and biomass densities (Silver and Bighead Carp combined) were lower in June compared to April. Asian carp densities were spatially different between months; April densities were relatively high in several backwaters, especially the Treats Island side-channel, whereas June densities were highest in the Mobil Bay backwater (Figures 2 – 4). In contrast, densities in the Kankakee River decreased slightly from April to June (Figure 5).

### *Telemetry*

Forty-three of our 47 active acoustic receivers were downloaded the third week of July, 2016. As of 7/20/16, we have detected no upstream movement of Asian carp through any lock or dam upstream of Peoria Lock and Dam (L&D; Table 1). Seven different Asian carp have passed upstream through LaGrange L&D, with one individual passing through the L&D twice (Figure 6). Three of these seven individuals continued upstream and passed through Peoria L&D. Upstream passage appeared to occur in two pulses: (1) 4/5/16 - 4/18/16, and (2) 5/9/16 - 6/1/16. We will continue to monitor movement through all Illinois River L&D structures to determine what factors may influence upstream movement.

Table 1. Acoustic detections of Asian carp upstream passage through Illinois River Lock and Dam structures (date range: 1/1/2016 to 7/20/16).

Lock and Dam	# Upstream Passages	# Unique Fish with Upstream Passage	# Fish with Multiple Upstream Passages
LaGrange	8	7	1
Peoria	3	3	0
Starved Rock	0	0	0
Marseilles	0	0	0
Dresden	0	0	0

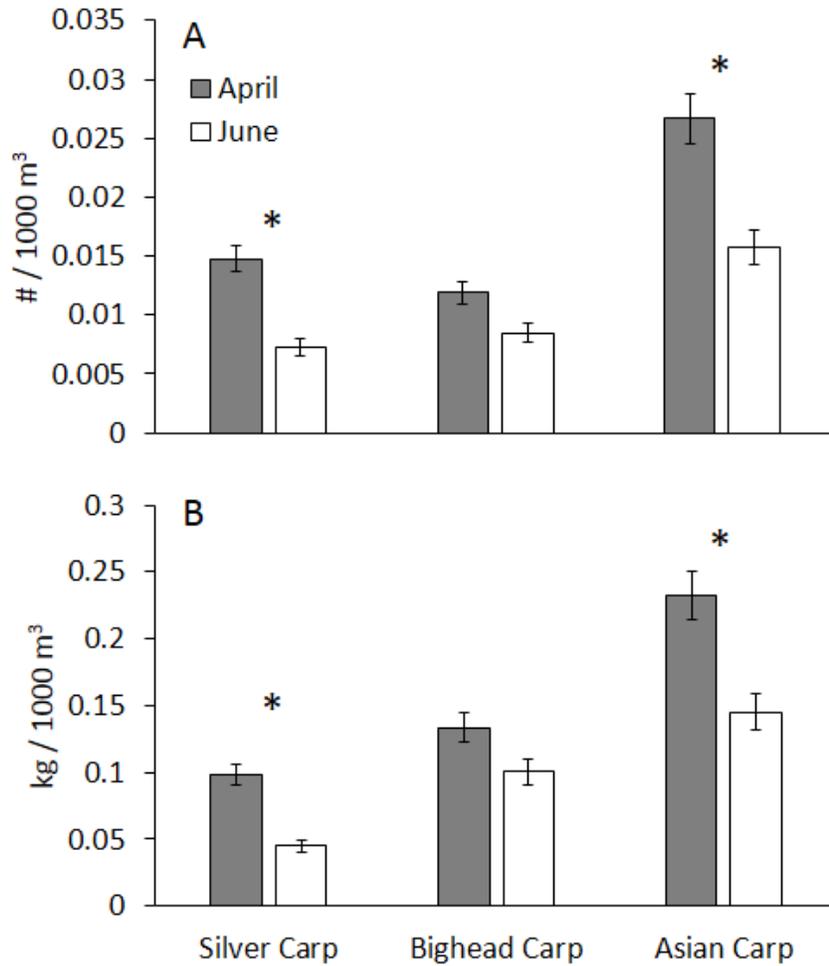


Figure 1. Mean (standard error) numerical (A) and biomass (B) densities of Silver Carp, Bighead Carp, and Asian Carp (Silver and Bighead Carp combined) in the Dresden Island pool during April and June 2016. Asterisks denote significantly different densities between months ( $\alpha = 0.05$ ).

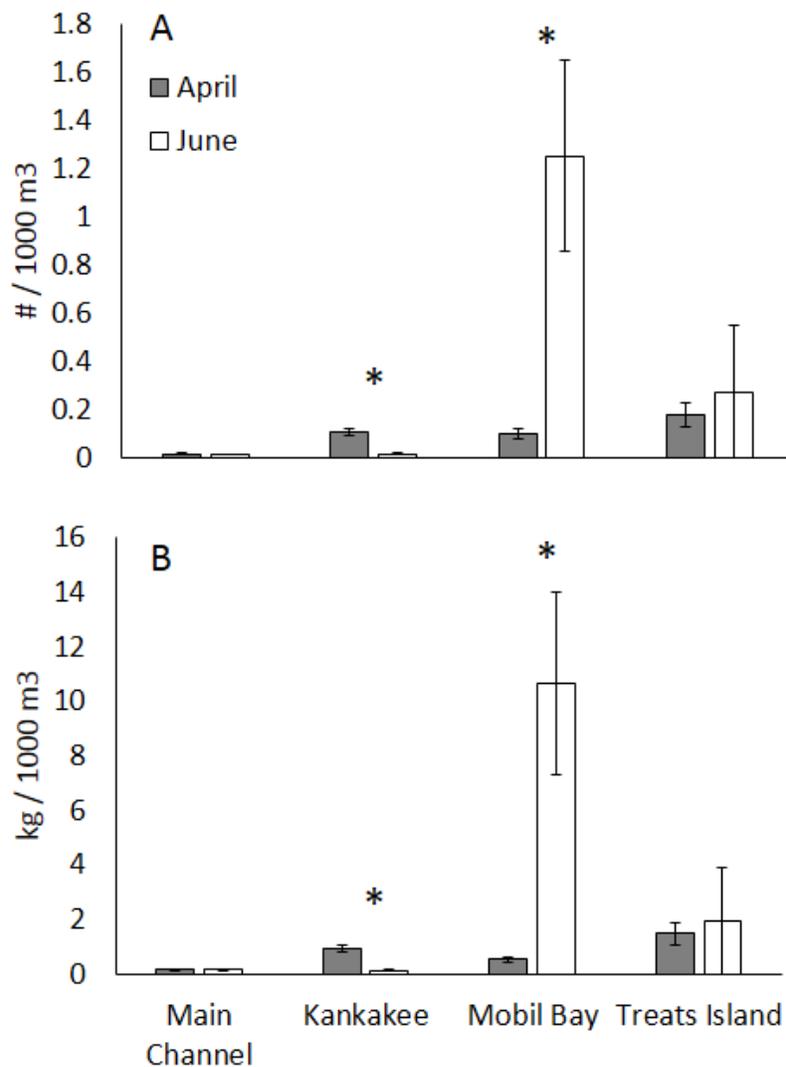


Figure 2. Mean (standard error) numerical (A) and biomass (B) densities of Asian carp (Silver and Bighead Carp combined) across habitats in the Dresden Island pool during April and June 2016. Sites included the entire main channel, one mile up the Kankakee River tributary, Mobil Bay backwater, and Treats Island side channel. Asterisks denote significantly different densities between months ( $\alpha = 0.05$ ).

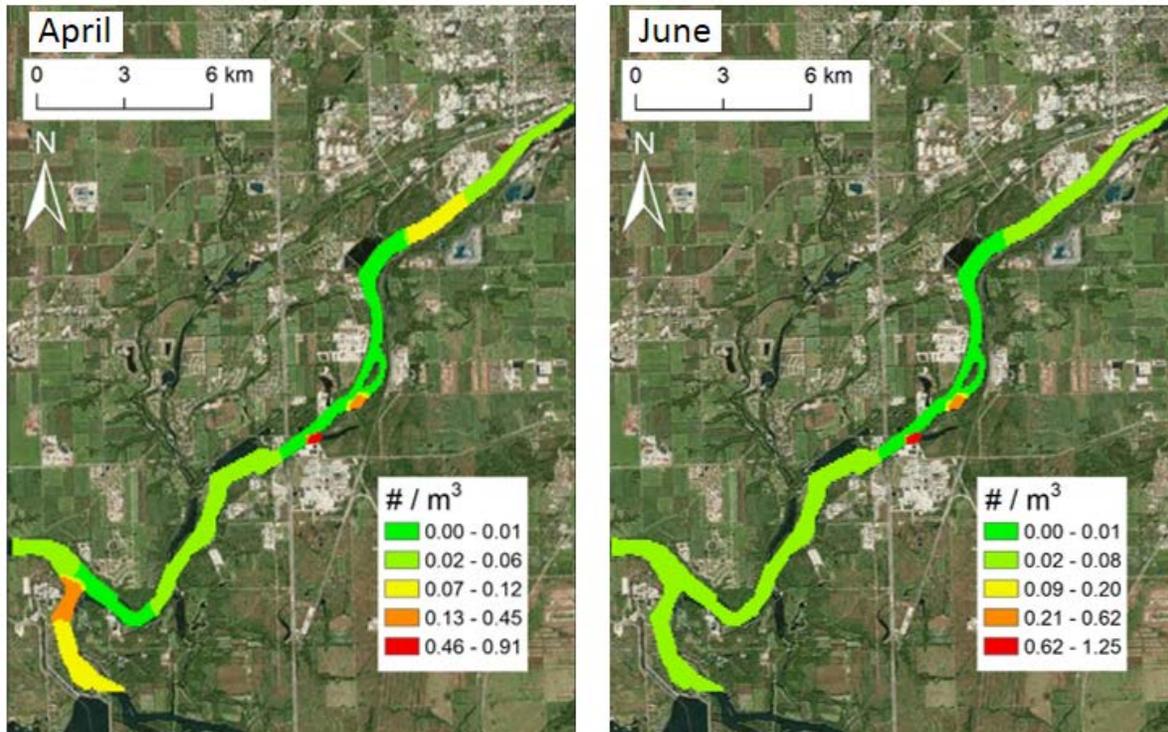


Figure 3. Mean Asian carp (Silver and Bighead Carp combined) numerical density in Dresden Island Pool during April (left) and June (right) 2016. Note differences in scale.

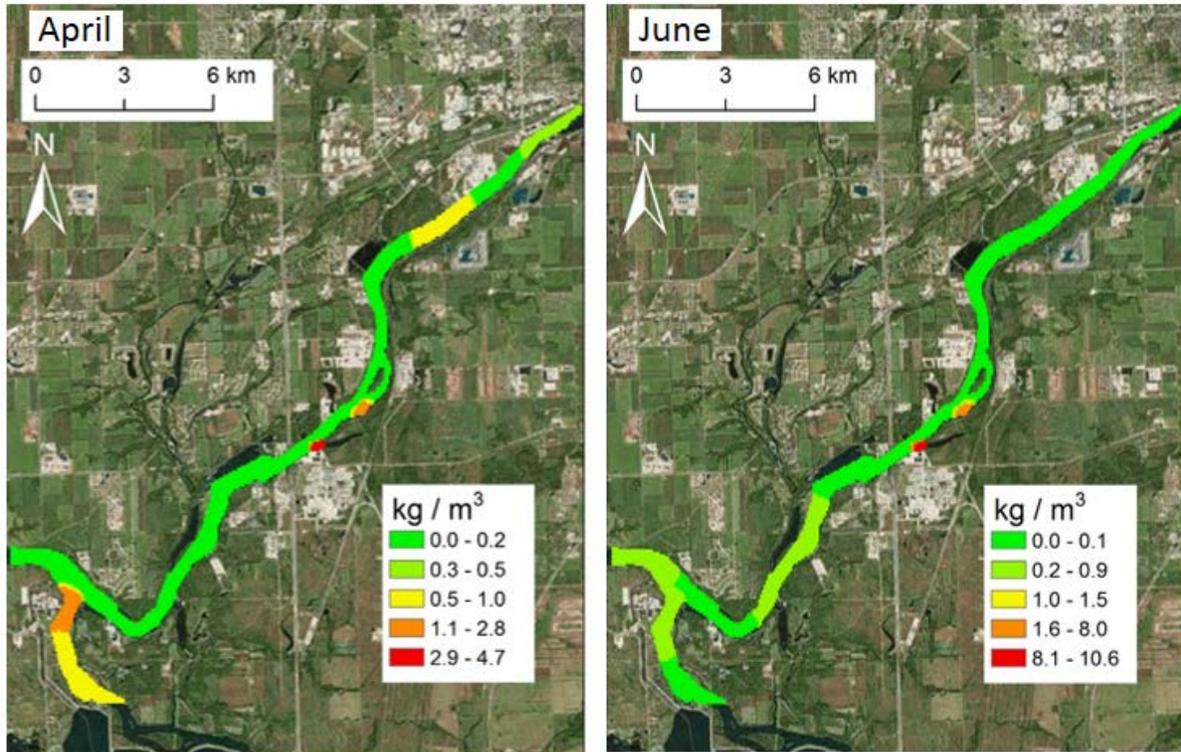


Figure 4. Mean Asian carp (Silver and Bighead Carp combined) biomass density in Dresden Island Pool during April (left) and June (right) 2016. Note differences in scale.

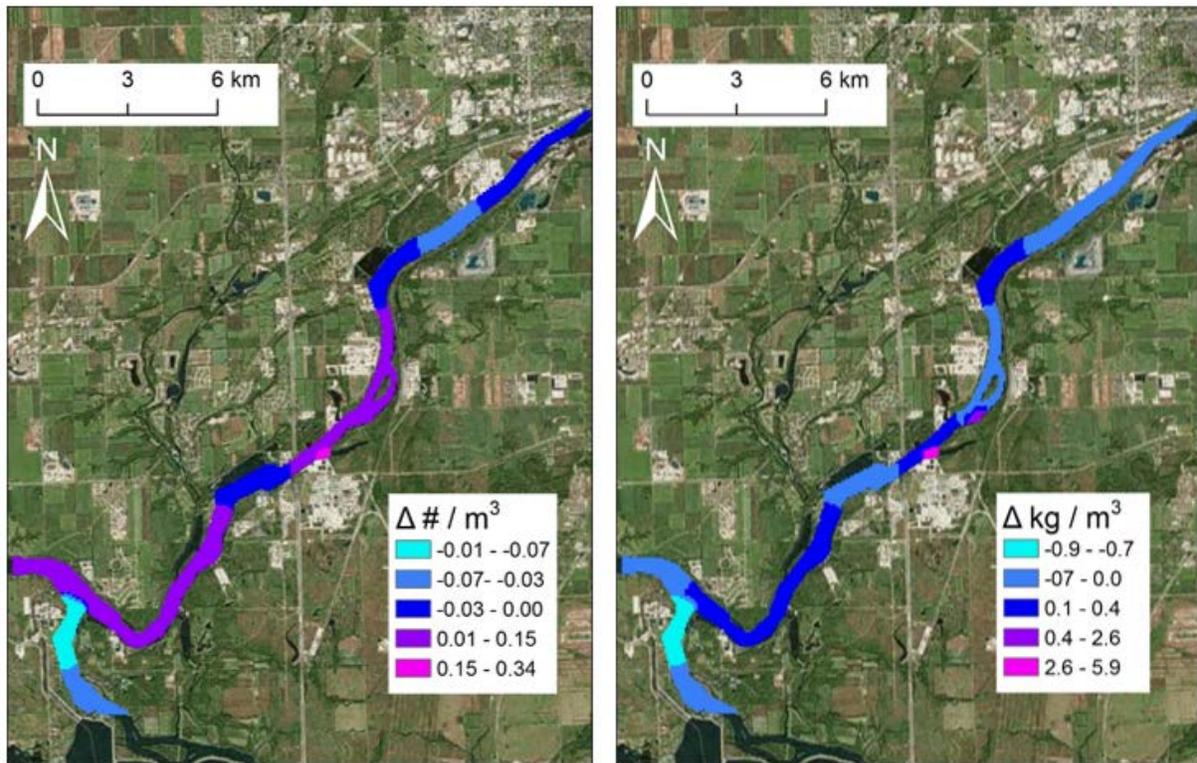


Figure 5. Difference in mean Asian carp (Silver and Bighead Carp combined) numerical density (left) and biomass density (right) between Dresden Island sites sampled during June and April 2016. Sites with positive values increased in density from April to June, while negative values indicate a decrease in density.

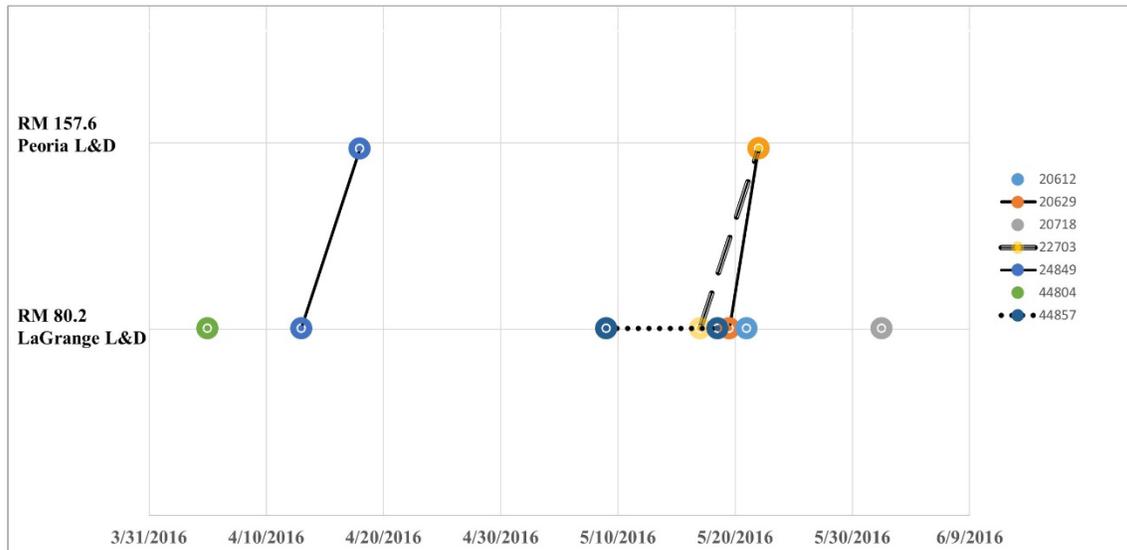


Figure 6. Date of upstream movement of Asian carp through LaGrange Lock and Dam (L&D) and Peoria L&D in 2016. Marker color identifies unique fish. Individuals that passed through both L&Ds are indicated by lines (solid and dashed) connecting the two L&Ds. The individual that passed through LaGrange L&D on two occasions is the horizontal dotted line.

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

The Invasive Species Unit (ISU) conducted eDNA testing on three separate bodies of water in Lake County for the presence of Asian Carp. None of the three locations tested positive for Asian Carp eDNA.

The ISU responded to a complaint of a local restaurant owner in Grayville, IL advertising he would buy Asian Carp dead or alive for his restaurant. A local Conservation Police Officer was assigned to inspect the facility and educate the owner on Illinois regulations prohibiting the sale, transportation, and possession of live Asian Carp.

The ISU investigated a resident retail aquatic life dealer for illegally importing over 600 grass carp in Illinois and stocking them in 27 different locations throughout the Northern portion of Illinois. The dealer did not possess the required restricted species transportation/stocking permit and provided false information in documents and to officials of the IDNR. The investigation is ongoing, but revealed the grass carp came from a fish farm in Arkansas and were certified as triploids.