

## 2016 August 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 82 electrofishing runs at fixed and random sites (20.5 hours total) in the Lockport, Brandon Road, Dresden Island, and Marseilles Pools in August.
- Crews collected 6,090 fish of 56 species and 1 hybrid group.
- **No Bighead Carp or Silver Carp were reported captured or observed in the Lockport or Brandon Road Pools.**
- Two adult Silver Carp were collected in the Dresden Island Pool, downstream of the I-55 Bridge.
- Sixteen adult Silver Carp were collected in the Kankakee River.
- Two hundred forty-three adult Silver Carp were collected in the Marseilles Pool.

#### *Commercial Netting:*

- Contracted commercial fishers along with assisting IDNR biologists set 25.4 miles of net (215 sets) at fixed and targeted sites in the Lockport, Brandon Road and Dresden Island Pools (including Rock Run Rookery) during the month of August.
- Crews collected 399 fish of 12 species.
- **No Bighead Carp or Silver Carp were captured or observed in the Lockport or Brandon Road Pools.**
- Two adult Bighead Carp were collected in Rock Run Rookery.
- One Bighead Carp and three Silver Carp (all adults) were collected in the Dresden Island Pool, downstream of the I-55 Bridge.
- Thirty-nine adult Silver Carp were collected in the Kankakee River.

*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 August 15th.
- Crews collected 16 fish of 5 species during hoop net sampling and 2,383 fish of 20 species during mini fyke sampling (81 of which were state threatened Banded Killifish).
- **No Bighead Carp or Silver Carp were reported captured or observed in any of the pools.**

On September 1st, 2016 a **DEAD** Silver Carp was found in Lockport pool just downstream of Cargill Boat Ramp. This is the second dead Silver Carp that has been found in Lockport pool this year by USACE biologists.



Dead Silver Carp located behind the sunken barges just downstream of the Cargill boat launch in the Lower Lockport Pool observed by Corps of Engineers biologists on 1 September 2016.

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

Barrier Defense specifically takes place in the Marseilles and Starved Rock Pools. 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>	48	64
<b>Number of Net Crew Days</b>	232	324
<b>Yards of Net Fished</b>	305,750	356,795
<b>Miles of Nets Fished</b>	173.7	202.7
<b>Number of Pound Net nights</b>	24	65
<b>Number of Hoop Net nights</b>	118	768.7
<b>Number of Bighead Carp</b>	6,421	7,011
<b>Number of Silver Carp</b>	71,822	86,712
<b>Number of Grass Carp</b>	544	456
<b>Number of Asian Carp</b>	78,787	94,179
<b>Tons of Bighead and Silver Carp Harvested</b>	271.3	341.07

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

These are the tagging results for August 2016. More detailed analysis will be conducted at the end of the 2016 field season:

Fish Tagged:

- Bigmouth Buffalo – 9
- Black Buffalo – 1
- Common Carp – 18
- Smallmouth Buffalo – 74

Total – 102 fish tagged

Recaptures:

- Rock Run Rookery – 1 Bigmouth Buffalo, 4 Smallmouth Buffalo
- Dresden Island Pool – 2 Smallmouth Buffalo

Total – 7 recaptures

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

Barge entrainment trials occurred the first two weeks of August at the Electric Dispersal Barrier. Data collections included quantification of fish entrainment within barge junction gaps using several barge configurations, observations of changes in the electrical field associated with barge passage, quantification of changes in flow dynamics within the channel associated with barge passage, and observations of the behavior of wild fish near the Electric Dispersal Barrier during barge passage.

During the third week of August, experimental trials were performed at the Brandon Road Lock that identified potential barge junction gap entrainment mitigation strategies. Trials subsequently quantified the effectiveness of barge operational protocols for the mitigation of barge junction gap entrainment.

Barge entrainment trials were also conducted within the Peoria reach of the Illinois River the last week of August. These trials focused on examining the potential for barge entrainment of juvenile Silver Carp.

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

Netting for adult Asian carp with supplemental capture techniques was not conducted during the month of August.

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

During the month of August six Grass Carp were captured, implanted with Vemco tags and released back into Dresden Island Pool for telemetry reasons. Most of these fish were collected in the spillway region below the Brandon Road Lock and Dam. Effort for the capture of these fish was 18.04 electrofishing hours. Two Grass Carp were collected for the purpose of ploidy, histology and age testing. One of these carp was collected in Marseilles Pool, while one was collected in Dresden Island Pool.

## **Telemetry Monitoring**

No telemetry work occurred within the month of August. A full network download will occur in September.

## **Barrier Maintenance & Fish Suppression**

The Electric Dispersal Barrier System continuously supplied power to the water during the month of August. While there were several power outages at individual barriers, at least one electrode array was in operation at all times. No fish suppression or clearing actions were taken. There were 4 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 all but one transfer event at Barrier IIB. During the single power transfer at Barrier IIB in which Barrier IIA was offline for annual maintenance, the Demonstration Barrier was operational. The Demonstration Barrier experienced several outages for repair work during August. The Demo Barrier was offline for less than an hour on 5 August and was powered down again from 9 to 17 August before all repairs were completed. The Demo Barrier was shut down again in support of safety testing from 17:00 on 25 August to 10:30 on 26 August. Barrier IIA experienced a loss of power to the water for approximately 4 hours on 7 August from 09:35 to 13:30. Barrier IIA was again shut down for annual maintenance and repair work from 18 to 31 August. Barrier IIB was operational throughout the month of August with the exception of the four power transfer events discussed earlier. A notification of the Barrier IIA outages was sent to the MRWG for consideration of a clearing event to take place in September.

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

Table 1. Barrier Defense Efforts the weeks of 5/2 and 5/16 with one paupier boat in the Starved Rock Pool fishing at 3 different locations (Fox River, Sheehan Island Side Channel, and Delbridge Island Side Channel).

<b>Number of Days Fished</b>	2
<b>Number of Crew Days</b>	2
<b>Fishing Time (hours)</b>	9
<b>Paupier Electroschocking Time (hours)</b>	0.76
<b>Person Fishing Hours (4 per crew)</b>	36
<b>Number of Bighead Carp</b>	0
<b>Number of Silver Carp</b>	1217
<b>Number of Grass Carp</b>	3
<b>Number of Asian Carp</b>	1220
<b>Est. Tons of Bighead and Silver Carp Harvested</b>	2.99
<b>CPUE (# of Asian Carp/day (5hours))</b>	610
<b>CPUE (# of Asian Carp/fishing hour)</b>	136
<b>CPUE (# of Asian Carp/electroschocking hour)</b>	1605
<b>CPUE (# of Asian Carp/person fishing hour)</b>	34

## **Larval Fish Monitoring**

INHS conducted ichthyoplankton sampling at 14 main channel and backwater sites located throughout the Illinois Waterway during the weeks of August 1, August 15, and August 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. Preliminary assessment of samples collected during the week of August 29 indicates the presence of large numbers of large-diameter eggs from sites in the Marseilles, Starved Rock, and Peoria Pools during this time. Sample processing is ongoing, and more detailed 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**

INHS conducted sampling with a modified push trawl in conjunction with Gear Evaluation sampling at four sites in the LaGrange Pool during the week of August 15. The trawl captured 506 total fish during these efforts, but only produced a single age-0 Silver Carp. Catches of all fish with the trawl were considerably higher at backwater sites (n = 502) than at main channel sites (n = 4). Further refinement and testing of this gear type will be conducted to evaluate its utility for sampling juvenile Asian carp in different habitats. During the month of August, INHS also coordinated with IDNR to plan future deployments of pound nets at the Hansen Material Service backwater near Morris. Updates on these efforts will be provided as they develop.

## **Evaluation of Gear Efficiency and Asian Carp Detectability**

INHS conducted sampling for juvenile Asian carp using several gear types (mini-fyke nets, beach seines, pulsed-DC electrofishing) at four sites in the LaGrange Pool during the week of August 15. A total of 7,437 fish were captured during these efforts, including 75 age-0 Silver Carp, 18 age-1 Silver Carp, and 4 age-0 Grass Carp. Mini-fyke nets captured the highest numbers of all fish (n = 4,066) and age-0 Silver Carp (n = 67). Pulsed-DC electrofishing was the only gear that captured age-1 Silver Carp. Age-0 Silver Carp were considerably smaller (range = 16 – 55 mm TL) than those captured during sampling in August of previous years, suggesting later hatch dates during 2016. Sampling was conducted concurrently with USFWS trawl comparisons at Lily Lake, Matanzas Lake, Spoon River, and Quiver Lake. USFWS trawling data will be compared to INHS juvenile gears set in the same locations.

## **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 1-August 2016 was completed this month and compared with the survey from June and April. Pool-wide numerical and biomass densities of Asian carp (Bighead and Silver Carp combined) in August were higher than densities in either April or June in 2016 (Figure 1). While both Bighead and Silver Carp densities increased from June to August, the increase in Asian carp was primarily driven by a large increase in Bighead Carp density. August Bighead Carp density was higher than in April and June, whereas August Silver Carp density was similar to April (Figure 1). We also observed spatial differences from June to August, where Asian carp densities in the Main channel and the Kankakee River increased in August (Figures 2-4). Mobil Bay backwater has had high Asian carp densities in June and August and the mouth of the Kankakee River has had high densities in April and August. Therefore, targeted sampling during contracted harvest should focus in the Mobil Bay backwater and at the mouth of the Kankakee River. In contrast, the Treats Island side-channel has had relatively high variability in densities and main channel densities have been consistently low compared to other sites.

### *Telemetry*

We did not visit any receivers during August; however, one receiver from Dark Chute (Alton pool, river mile 25) was removed by a commercial fisherman and returned to staff at Pere Marquette State Park. The receiver has since been returned to SIU and will be redeployed during our next receiver download trip. One Bighead Carp that migrated in 2016 from the Mississippi River to Starved Rock Lock and Dam (SRLD) was detected at this receiver on 8/10/16 as it migrated back downstream. A Paddlefish that made a similar journey from the Mississippi River to SRLD was detected at this receiver on 8/10/16. This receiver also detected the largest (132 cm) Bighead Carp we have tagged to date in the Peoria pool, presumably migrating downstream since being tagged at the mouth of the Vermilion River on 5/16/16.



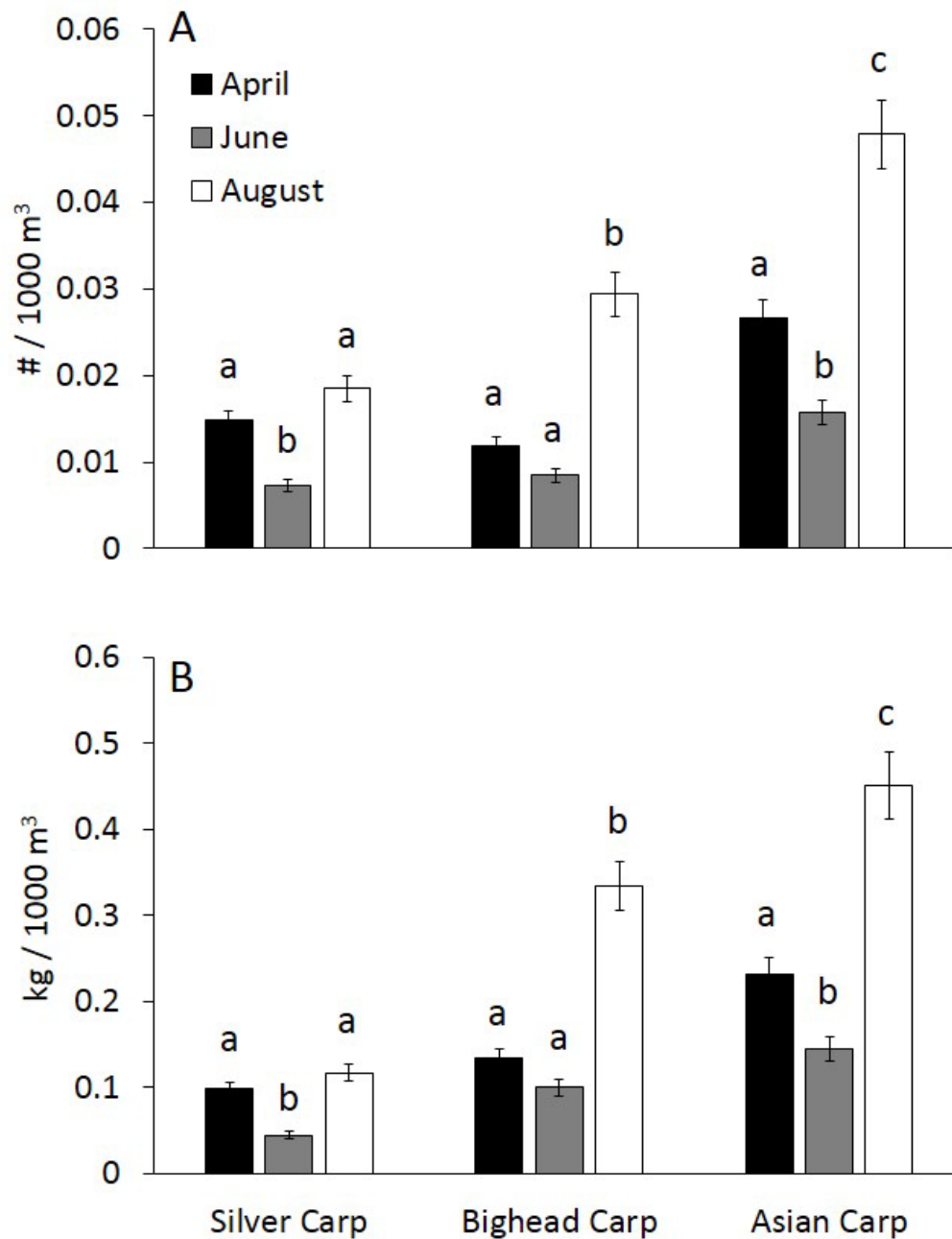


Figure 1. Mean (standard error) numerical (A) and biomass (B) densities of Silver Carp, Bighead Carp, and Asian Carp (Silver and Bighead Carp combined) in the Dresden Island pool during April, June, and August, 2016. Different letters denote significant density differences ( $\alpha = 0.05$ ) among months for a species.

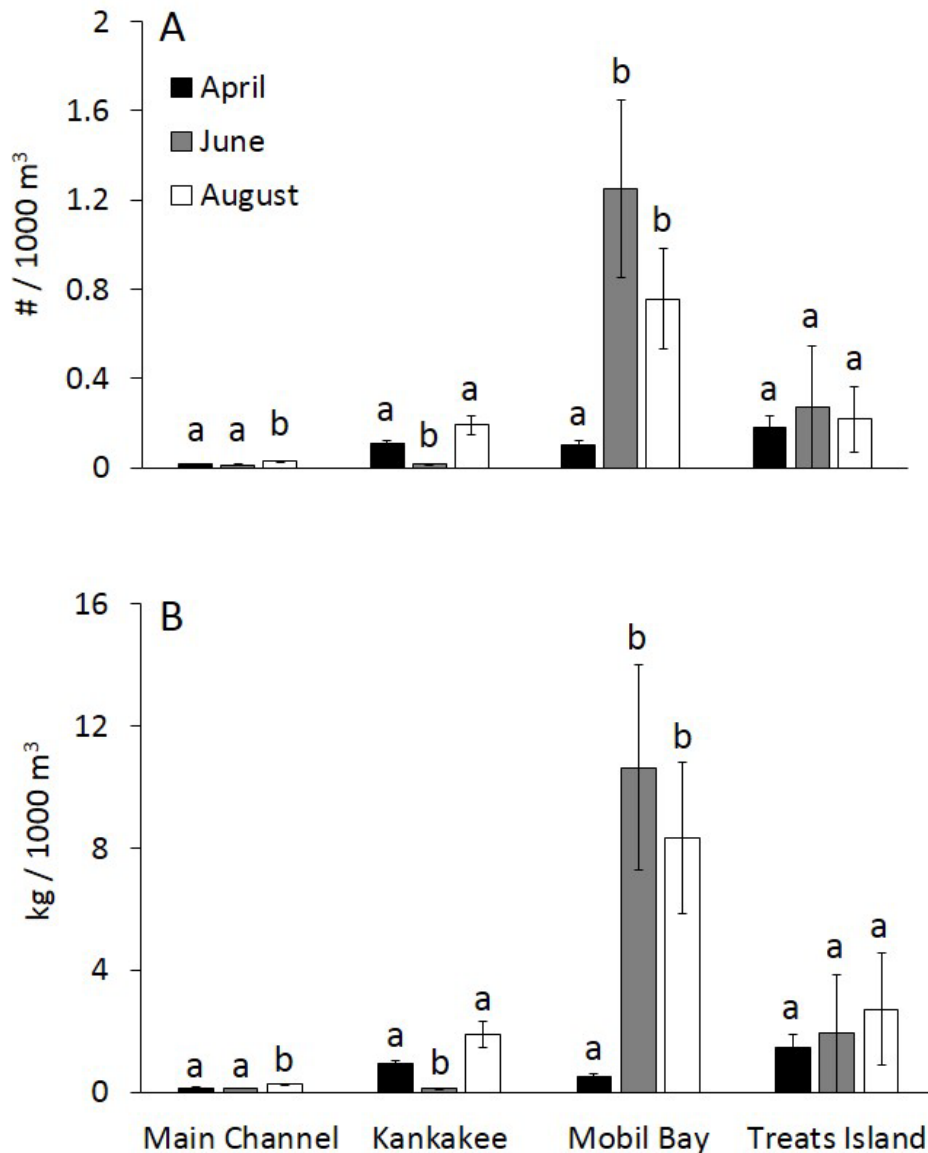


Figure 2. Mean (standard error) numerical (A) and biomass (B) densities of Asian carp (Silver and Bighead Carp combined) across habitats in the Dresden Island pool during April, June, and August, 2016. Sites included the entire main channel, one mile up the Kankakee River tributary, Mobil Bay backwater,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

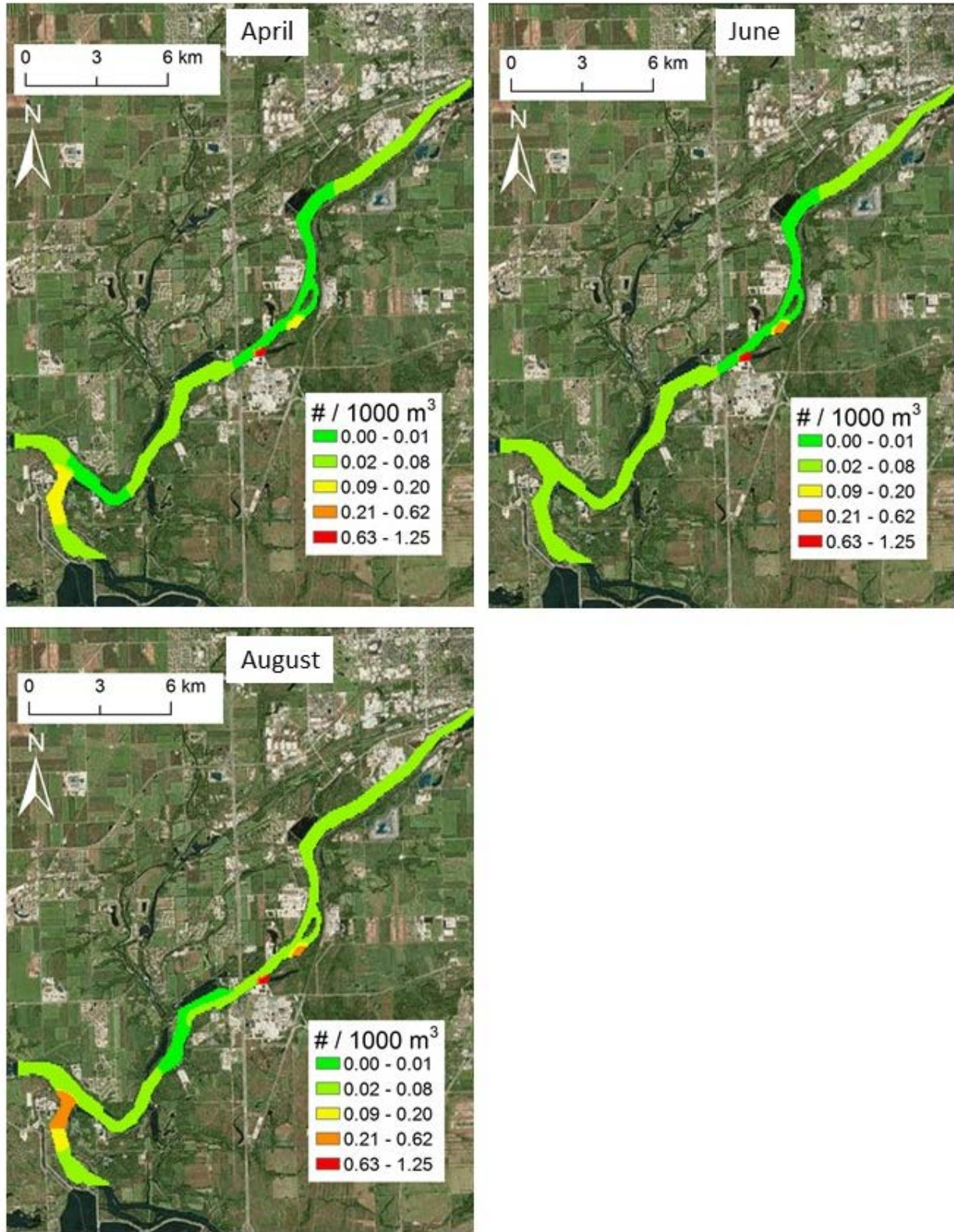


Figure 3. Asian carp (Silver and Bighead Carp combined) numerical density in Dresden Island Pool during April, June, and August, 2016.

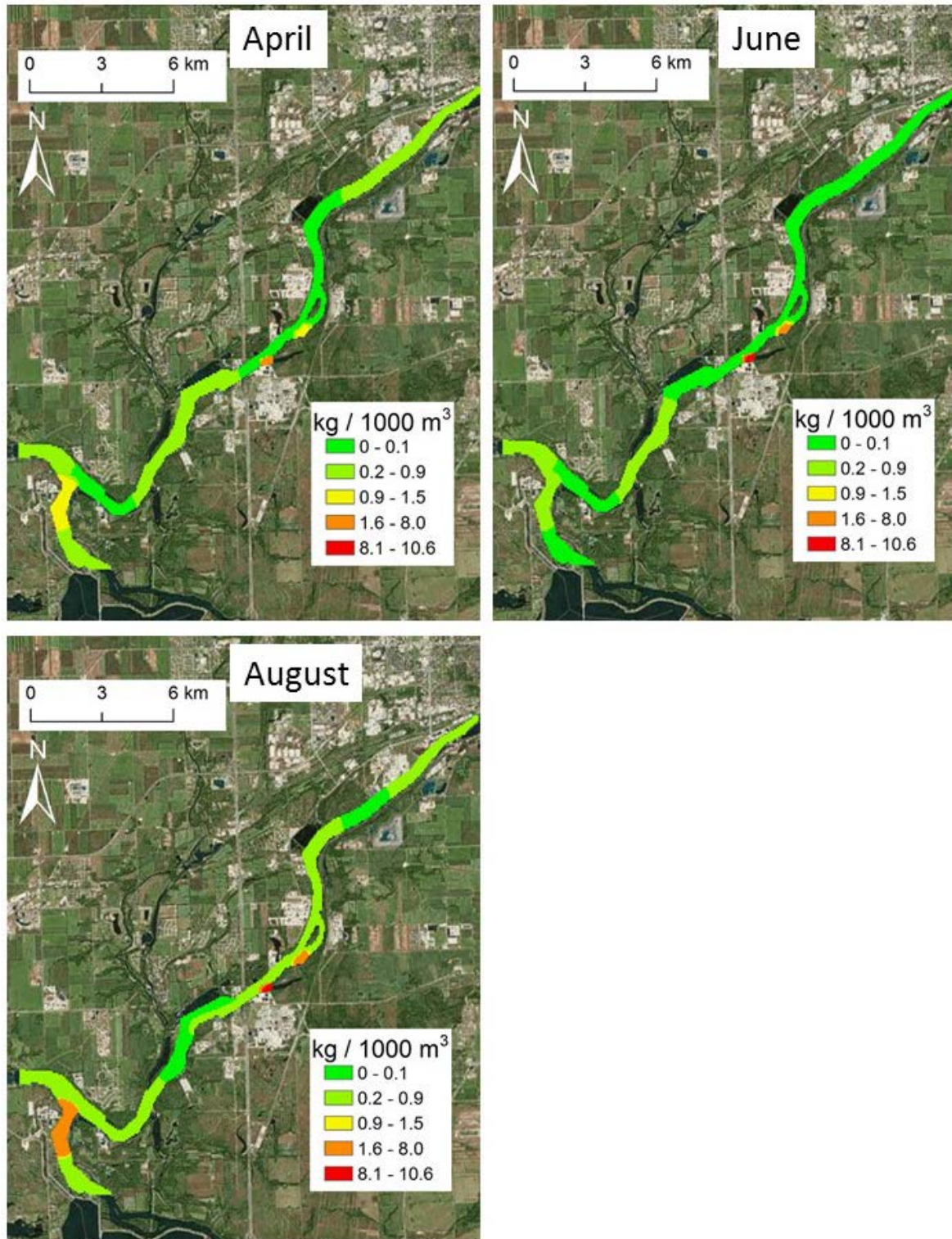


Figure 4. Asian carp (Silver and Bighead Carp combined) biomass density in Dresden Island Pool during April, June, and August, 2016.

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

The Invasive Species Unit (ISU) traveled to Missouri and interviewed the owner of a fish company who illegally transported 1600 pounds of channel catfish from Arkansas to Springfield, IL without the required VHS import permit. The owner admitted the fish were imported illegally and also provided information on an Illinois aquatic life dealer who illegally imported 1500 crappie from Missouri to Illinois in April of 2016. ISU is conducting ongoing investigations into both companies.

ISU conducted a random commercial inspection on an aquaculture facility in Crestwood, IL. The facility was raising Tilapia for research purposes and in compliance with all the regulations. The inspection of records revealed the original supplier of Tilapia to the facility is currently raising Tilapia and other species without the required aquaculture permit.

ISU assisted the Indiana Department of Environmental Management with identifying and interviewing subjects in Illinois regarding falsified inspection reports for cathodic protection testing that was done in Indiana.