

2018 June Summary

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

Electrofishing:

- Crews from IDNR and USFWS completed 37 electrofishing runs at fixed and random sites (9.25 hours total) in the Dresden Island and Marseilles Pools in June.
- They collected 2,354 fish of 43 species.
- Thirty-seven adult Silver Carp were collected in the Marseilles Pool.
- 24 electrofishing runs were conducted by USACE in the lower Lockport and Brandon Rd pools. In lower Lockport there were 4 fixed and 8 random sites, in Brandon Rd there were 4 fixed and 8 random sites, no sites were sampled within the Dresden Island pool.
 - There was a total of 269 fish caught across 15 species. The top five species by number were Common Carp (37%), Emerald Shiner (25%), Smallmouth Bass (15%), Gizzard Shad greater than 6 inches (11%), and Bluegill (4%). No Asian Carp were observed.
- **No Asian carp were captured or observed in the Dresden Island Pool.**

Hoop and Mini Fyke Netting:

- Crews from IDNR set and pulled 16 hoop nets and 16 mini fykes from fixed sites in Lockport, Brandon Road, Dresden Island and Marseilles Pools in June.
- Crews collected 174 fish of 10 species during hoop net sampling and 1,306 fish of 24 species during mini fyke sampling.
- One Bighead Carp and 9 Silver Carp were collected during hoop net sampling in the Marseilles Pool.
- **No Bighead Carp or Silver Carp were reported captured or observed during hoop net sampling in the Lockport, Brandon Road or Dresden Island Pools.**
- **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 14.6 miles of gill net at fixed and targeted sites in the Lockport, Brandon Rd and Dresden Island Pools (including Rock Run Rookery) in June.
- They collected 303 fish of 11 species and 1 hybrid.
- Eight Bighead Carp were collected in Rock Run Rookery.
- One Bighead Carp and 2 Silver Carp were collected in the Dresden Island Pool, upstream of I-55 (one Silver Carp was collected in Mobil Bay; one Silver Carp and one Bighead Carp were collected between the chute to Rock Run Rookery and the casino).
- Six 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 2018, along with the same time period in 2016 and 2017 for comparison:

Lockport			
	2016	2017	2018
Yards of Net Fished	33,000	25,000	42,700
Miles of Net Fished	18.7	14.2	24.3
Hoop Net Nights	22.7	17.9	16.8
Mini Fyke Net Nights	11.0	10.2	9.0
Electrofishing Runs	59	56	27
Electrofishing Time (hrs)	14.8	14.0	6.8
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Brandon Rd			
	2016	2017	2018
Yards of Net Fished	32,850	27,600	43,000
Miles of Net Fished	32850.0	15.7	24.4
Hoop Net Nights	22.7	21.7	15.5
Mini Fyke Net Nights	11.1	11.9	6.8
Electrofishing Runs	56	59	24
Electrofishing Time (hrs)	14.0	14.8	6.0
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Dresden Island			
	2016	2017	2018
Yards of Net Fished	25,350	28,500	81,900
Miles of Net Fished	14.4	16.2	46.5
Hoop Net Nights	22.4	311.7	15.3
Mini Fyke Net Nights	11.9	15.4	7.9
Electrofishing Runs	96	103	81
Electrofishing Time (hrs)	24.0	25.8	20.3
Asian Carp (AC) upstream I-55	10	13	3
AC downstream I-55	173	449	822
Total AC	183	462	825
Tons of AC Harvested	1.4	3.8	7.0
AC/1000 yds of gill net	6.9	15.8	10.1

Rock Run Rookery			
	2016	2017	2018
Yards of Net Fished	19,650	14,850	24,400
Miles of Net Fished	11.2	8.4	13.9
Pound Net nights	0	0	4
Bighead Carp	90	137	56
Silver Carp	26	24	50
Total Asian Carp (AC)	116	161	106
Tons of AC Harvested	1.8	2.6	1.5
AC/1000 yds of gill net	5.9	10.8	4.3

Seasonal Intensive Monitoring

Seasonal Intensive Monitoring (SIM) took place above the electric dispersal barrier the weeks of June 4th and June 11th. Electrofishing and commercial netting occurred in the North Shore Channel, North and South Branches of the Chicago River, Chicago River, CSSC, Cal-Sag Channel, Little Calumet River, Calumet River and Lake Calumet. Trap nets and an 800-yard commercial seine were fished exclusively in Lake Calumet.

Electrofishing:

- Crews from IDNR, USACE and USFWS completed 241 electrofishing runs at fixed and random sites (60.25 hours total).
- Crews collected 13,758 fish of 53 species and 2 hybrid groups.

Commercial Seine:

- Contracted commercial fishers along with assisting IDNR biologists completed three 800-yard commercial seine hauls in Lake Calumet.
- Crews collected 3,110 fish of 10 species.

Trap Nets:

- Crews from IDNR set four tandem trap nets in Lake Calumet, totaling 48 net nights of effort.
- Crews collected 762 fish of 19 species.

Commercial Netting:

- Contracted commercial fishers along with assisting IDNR biologists set 35.5 miles of gill net (308 sets) at fixed and random sites.
- Crews collected 610 fish of 17 species and 1 hybrid group.
- **A total of 18,240 fish representing 54 species and 2 hybrid groups were collected in all gear types combined during the two week SIM event.**
- **No Bighead Carp or Silver Carp were observed or collected during June SIM.**

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 2018, along with the same time period in 2016 and 2017 for comparison:

	2016	2017	2018
Number of Days Fished	47	44	44
Number of Net Crew Days	278	223	193
Yards of Net Fished	276,595	206,680	159,800
Miles of Nets Fished	157.2	117.4	90.8
Number of Pound Net nights	67	74	21
Number of Hoop Net nights	768.8	879.8	1217.2
Number of Bighead Carp	5,931	1,490	1,603
Number of Silver Carp	64,798	70,134	56,722
Number of Grass Carp	415	592	562
Number of Asian Carp (AC)	71,144	72,216	58,887
Tons of AC Harvested	256.6	249.1	223.8
AC/1000 yds of gill net	213.1	278.6	334.5

Marseilles			
	2016	2017	2018
Yards of Net Fished	208,475	141,530	95,200
Miles of Nets Fished	118.5	80.4	54.1
Pound Net nights	20	35	15
Hoop Net nights	108.1	71.9	239.9
Mini Fyke Net Nights	11.4	15.5	7.8
Electrofishing Runs	72	49	73
Electrofishing Time (hrs)	18.0	12.3	18.3
Bighead Carp	4,654	800	911
Silver Carp	36,235	22,856	23,999
Grass Carp	54	48	32
Total Asian Carp	40,943	23,704	24,942
Tons of AC Harvested	172.9	102.7	120.5
AC/1000 yds of gill net	160.5	157.4	247.6

Starved Rock			
	2016	2017	2018
Yards of Net Fished	68,120	65,150	64,600
Miles of Nets Fished	38.7	37.0	36.7
Hoop Net nights	683.1	831.2	992.7
Bighead Carp	1,277	690	693
Silver Carp	28,738	47,444	32,789
Grass Carp	373	553	538
Total Asian Carp	30,388	48,687	34,020
Tons of AC Harvested	84.4	147.1	103.7
AC/1000 yds of gill net	374.1	542.0	462.7

Barrier Defense Using Novel Gear

During June 19-20, 2018, staff from the USFWS Columbia collaborated with the Illinois Department of Natural Resources' barrier defense project to remove Asian carp from the Starved Rock Pool of the Illinois River using an electrified paupier. A total of 6,892 Silver Carp (approximately 37,217 lbs or 18.6 tons) were removed in 2.4 hours of electrotrawling (Table 1). The number of fish captured were counted during offloading and a 10% subsample were weighed and measured. Biomass (lbs) of Silver Carp was calculated using the average weight of those fish (5.4 lbs). The paupier captured Silver Carp at a rate of 2,872/electrotrawling hour. Total time spent on the water and crew size are used to assess efficiency. Bycatch (species other than Asian carp) was less than 3% and dominated by buffalo and carpsuckers. Moving forward, mass removal efforts with the paupier are planned for July, August, and September of 2018.

Table 1. Summary of USFWS effort with the paupier and fish capture information for barrier defense in Starved Rock Pool, June 19-20, 2018.

Number of Days on Water	2
Hours on Water	15.5
Crew Size (operating paupier and tender boat)	6
Electrotrawling Hours	2.4
Silver Carp Count	6,892
Bighead Carp Count	0
Grass Carp Count	8
Silver Carp Biomass (lbs)	37,217
CPUE (Silver Carp Biomass/Labor Hour)	400
CPUE (Silver Carp Biomass/Electrotrawling Hour)	15,507
CPUE (Silver Carp Count/Electrotrawling Hour)	2,872
Bycatch: # of fish NOT Asian carp	159
Bycatch: # of species NOT Asian carp	14

Distribution and Monitoring of Juvenile Asian carp

Field crews sampled Starved Rock, Peoria, and LaGrange pools for small Silver and Bighead carps (TL <153mm) during June 2018. Boat electrofishing was used in Starved Rock pool for a total of 8 electrofishing runs (2 hours fishing time). This effort resulted in 445 fish representing 30 species captured. In total, 86 Silver Carp and 0 Bighead Carp were captured. No Juvenile Silver or Bighead carp were captured in Starved Rock during the month of June.

A total of 14 mini-fyke sets (14 net nights) were conducted in the Peoria reach sampling for young of year (YoY) Silver Carp. This effort resulted in 1,027 fish collected representing 35 species. No Silver or Bighead carp were captured in the mini-fyke nets.

Non-electrified dozer trawl (4 runs, 10 minutes each) and mini-fyke nets (6 net nights) were used in the LaGrange Reach to sample for YoY Silver and Bighead carp. No YoY Silver or Bighead carp were captured using the dozer trawl or mini-fykes. Dozer trawl efforts resulted in 71 fish representing 10 species and mini-fyke efforts captured 241 fish representing 16 species.

Sampling for YoY/larval Silver and Bighead carp was also conducted using fine mesh (<1/16 inch) dip nets at easily accessible shoreline areas June 18th and 19th. Areas sampled in the Peoria Reach were Lacon Marina, Marshall SFWA Launch (Sparland), Chillicothe Boat Launch, Carl Spindler Marina (East Peoria), Coopers Park South (East Peoria). The Pekin Public Boat Launch in LaGrange pool was also sampled with this method. Large numbers (>20,000) YoY and Larval Silver Carp (verified using genetic testing) were captured at Carl Spindler Marina, Coopers Park South, and Pekin Public Boat Launch during this effort.

Habitat Use and Movement of Juvenile Silver Carp (Telemetry)

No tagging efforts were conducted during June due to crews primarily sampling for YoY/larval Silver and Bighead carp. Fish tagging and receiver maintenance is scheduled to take place again during July.

Real-time USGS Acoustic Telemetry Receiver Summary for June-July 2018

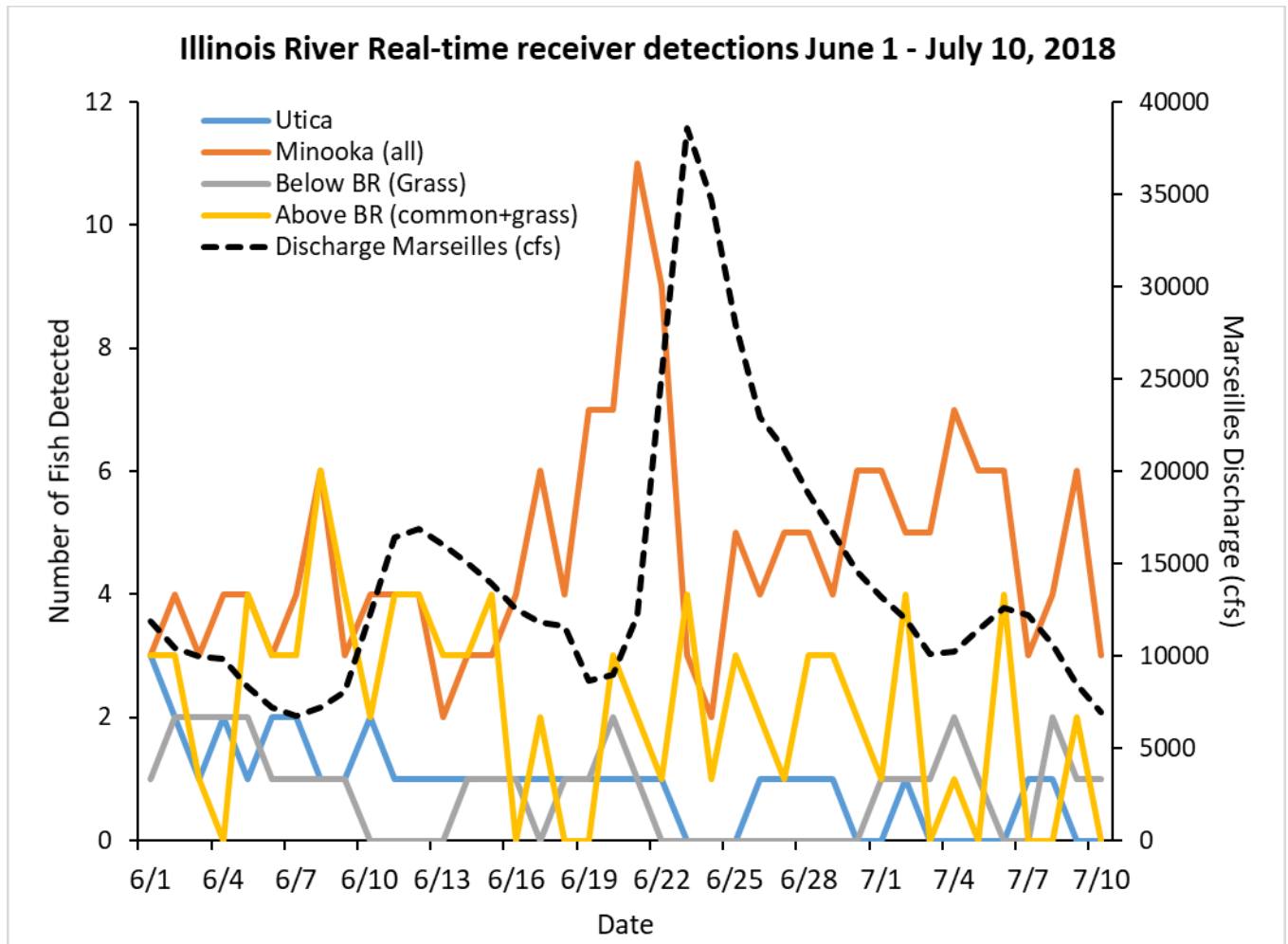


Figure 1. Fish detections for 1 June – 10 July at Utica, Minooka, and Rockdale (above Brandon Road and below Brandon Road) receivers. All fish shown for Utica (RM 229; blue) are silver carp. Fish detected at Minooka (RM 271; Orange) include bighead, silver and two grass carp. At Rockdale below Brandon Road (RM286; gray) and above Brandon Road (RM287; yellow) all fish are grass carp or common carp. Discharge for the Marseilles gaging station (USGS 05543500) is shown as a black dotted line.

Twenty-one Bighead or Silver Carp were detected on real-time receivers from 1 June – 10 July 2018. All Bighead or Silver Carp were detected at Utica (N = 4 Silver Carp) or at Minooka above Dresden Island Lock and Dam (N = 13 Bighead Carp, 5 Silver Carp). Additional common or grass carp were detected at the Rockdale receiver below Brandon Road Lock and Dam (N = 2 Grass Carp), at Rockdale above Brandon Road Lock and Dam (N = 8 Common Carp, 1 Grass Carp), and at Minooka (N = 2 Grass Carp). For additional details, please refer to the attached spreadsheet and graphs. For questions, please contact Marybeth Brey (mbrey@usgs.gov). **These data are**

preliminary or provisional and are subject to revision. They are being provided to meet the need for timely best science. The data have not received final approval by the U.S. Geological Survey (USGS) and are provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the data.

Ecosystem Response to Asian Carp Barrier Defense and Removal

INHS collected zooplankton and water chemistry samples at 15 main channel and backwater sites located in the Brandon Road, Dresden Island, Marseilles, Starved Rock, Peoria, LaGrange, and Alton Pools during the weeks of June 4 and June 18. The collected data will be compared to previous years' data from the same locations and will be used to assess changes in zooplankton densities and community composition in response to changing Asian carp densities.

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 every week in June. Four larval fish samples were collected at each site. Additional samples were collected in Illinois River tributaries to evaluate the potential for Asian carp spawning in these rivers. High densities of large-diameter eggs were observed at all sites from the Starved Rock pool to the upper LaGrange Pool during the week of June 25. Some Asian carp yolk-sac larvae were observed in samples from the Peoria Pool, and numerous late-stage Asian carp larvae (stages 44 [dorsal fin formation] and higher) were also observed at all sites in the LaGrange Pool. Processing and analysis of all samples is ongoing, and more detailed results will be reported once available. Ichthyoplankton sampling will continue on a biweekly basis from July through October.

Des Plaines River and Overflow Monitoring

Crews from FWS and SIU completed 9 EF runs (2.25 hours) and 900 yards of gill net on the Upper Des Plaines River near Lemont. No bighead or silver carp were captured or observed. Three grass carp were captured in gill nets.

Asian Carp Demographics

The USFWS – Columbia Fish and Wildlife Conservation Office is implementing a standardized protocol to address data gaps identified by the modelling workgroup using the Spatially Explicit Asian carp Population (SEAcARP) model. Data gaps include age and growth, particularly for small Silver Carp (<300mm) in the lower pools (i.e., Alton, LaGrange, and Peoria). Beginning the week of April 30, 2018, one electrified dozer trawl crew deployed each week in May through June to sample the Alton, LaGrange, Peoria, Starved Rock and Marseilles pools collecting 1,197 Silver Carp ranging from 299 to 872 mm in 250 five-minute trawls (Table 1). Age structures were also collected from five fish for every 50mm length group in each pool. These age structures were given to the USGS – Columbia Environmental Research Center (CERC) for use in a workshop developing methods and techniques for aging bigheaded carp. This workshop will inform future demographic data collection set to occur in fall 2018.

Table 1. Silver Carp captured by the USFWS - Columbia Fish and Wildlife Conservation Office from May – June 2018 during the Asian carp demographics study using the electrified dozer trawl.

Pool	Total Samples (5 minute trawls)	Total Silver Carp	Size Range (mm)	CPUE (fish/5 min)	SE
Alton	50	161	401-810	3.15	0.57
LaGrange	50	415	366-865	8.59	0.98
Peoria	50	350	299-800	6.91	1.23
Starved Rock	50	243	523-753	4.81	0.82
Marseilles	50	31	538-872	0.60	0.17

Using Long-term Asian Carp Abundance and Movement Data to Reduce Uncertainty of Management Decisions

Analyses were completed for hydroacoustic surveys conducted before and after spring unified method harvest in the HMS East and West pits. Silver Carp and Bighead Carp densities decreased in both backwaters following unified methods, with largest density reductions for Silver Carp during both events (Figure 1).

Hydroacoustic surveys were conducted in March and late May in Dresden Island and Marseilles pools in 2018 to help inform removal efforts. Within each pool, Asian carp (Silver Carp and Bighead Carp) pool-wide densities were similar between March and May (Figure 2). Despite similar densities between months in Dresden Island, Asian carp were more broadly distributed throughout the main channel in May than in March (Figure 3). Asian carp densities in the Marseilles Pool main channel were more concentrated in the downstream stretch between the Marseilles Lock and Dam and Sugar Island side channel (Figure 4). Asian carp were distributed throughout the HMS East Pit, with highest concentrations near shore in the northeast bay and western half of the backwater. Densities were highest in the eastern half of the HMS West Pit along the southern and eastern shoreline (Figure 5).

All stationary telemetry receivers have been downloaded at least once in 2018. Data will now be evaluated for errors and added to the telemetry database.

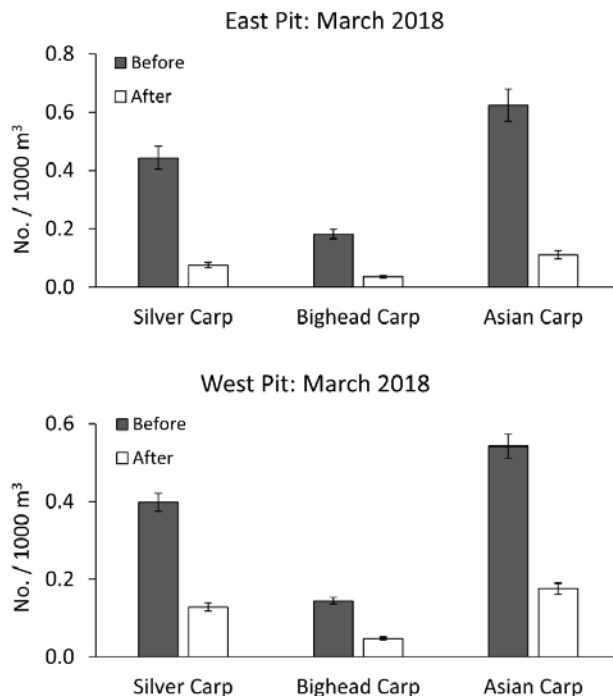


Figure 1. Mean (SE) densities from hydroacoustic surveys conducted before and after unified method harvest in the HMS East and West pit backwaters of the Marseilles Pool (Asian Carp: Silver Carp and Bighead Carp combined).

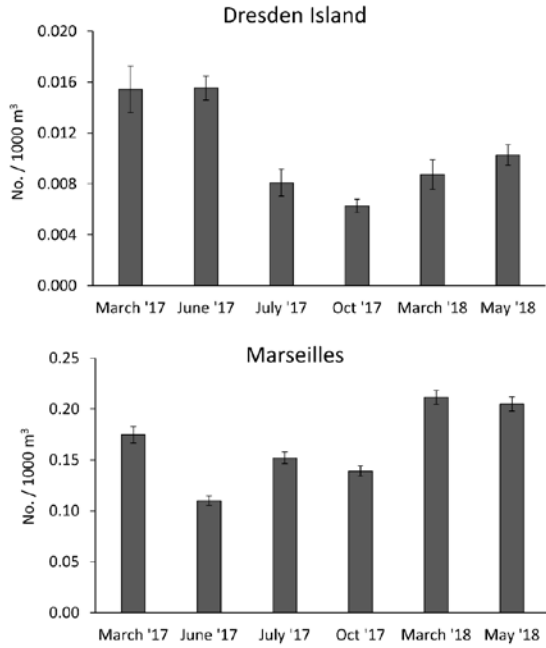


Figure 2. Mean (SE) Asian carp (Silver Carp and Bighead Carp combined) densities from hydroacoustic surveys conducted in Dresden Island and Marseilles pools during 2017 and 2018. May densities were similar to March densities for both pools in 2018. Note difference in y-axis scale between upper and lower figures.

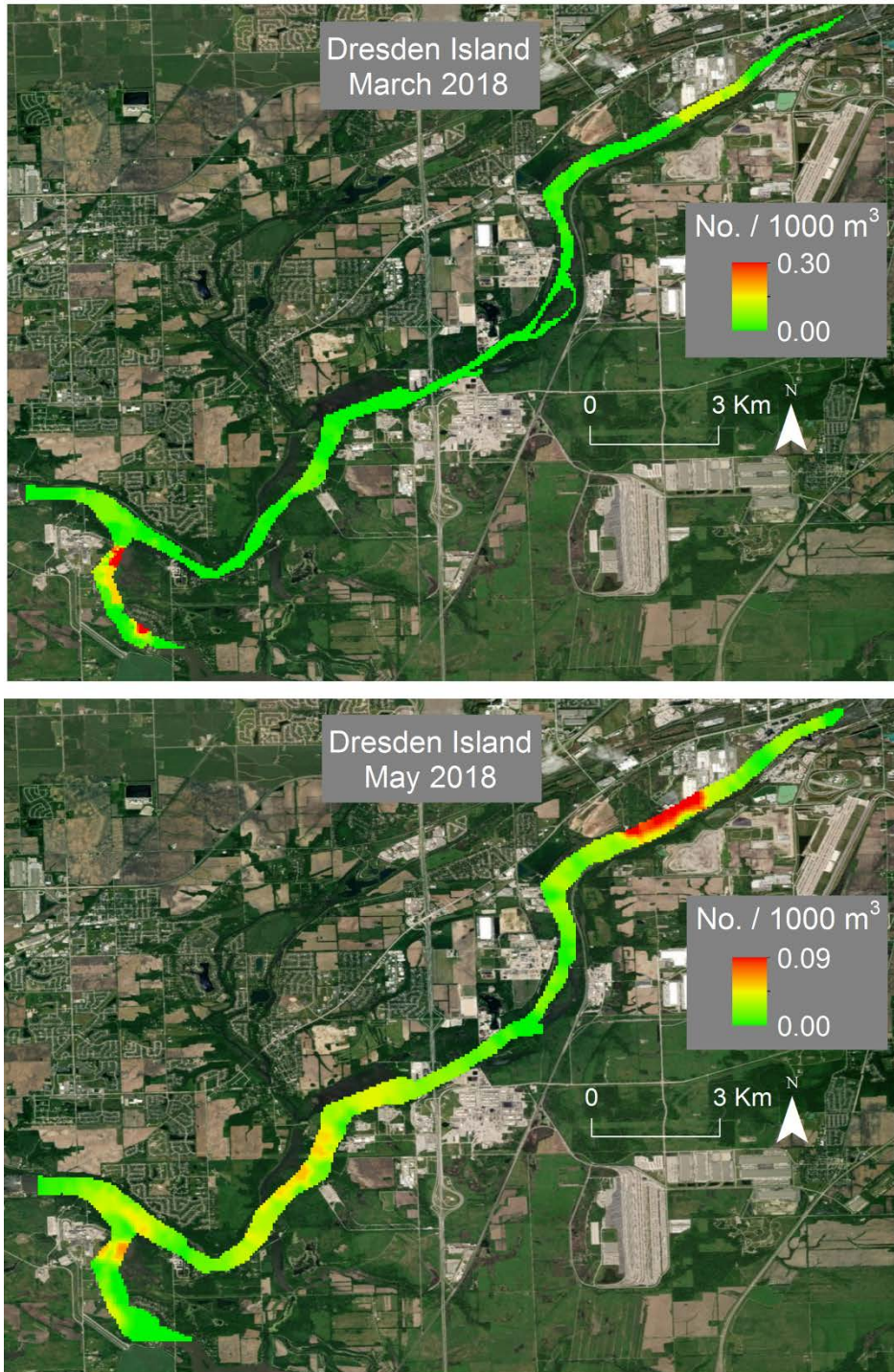


Figure 3. Asian carp (Silver Carp and Bighead Carp combined) density distributions from hydroacoustic surveys conducted in Dresden Island pool in March and May 2018. Note differences in scale between maps; pool-wide densities did not change between months.

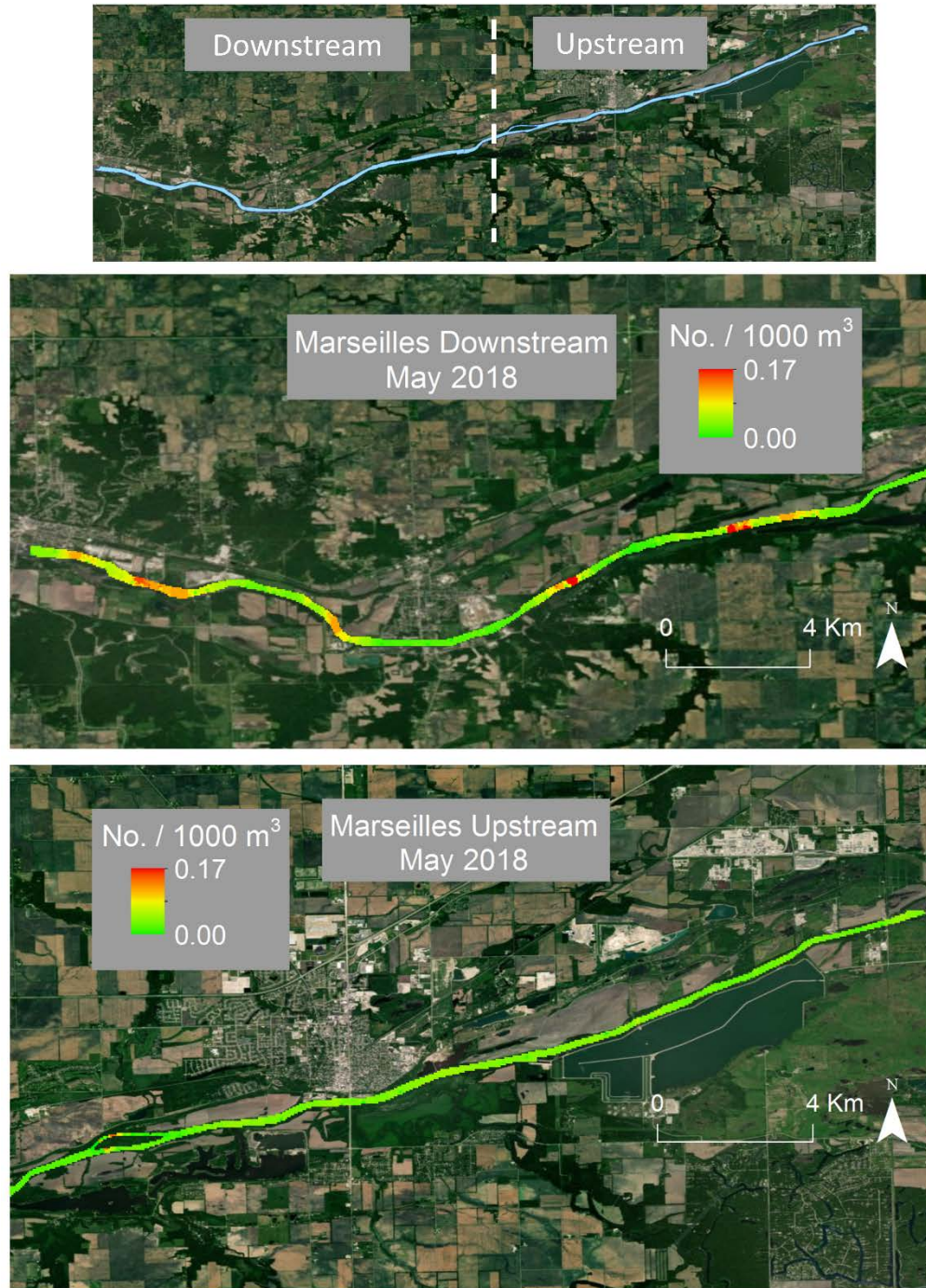


Figure 4. Asian carp (Silver Carp and Bighead Carp combined) density distributions from hydroacoustic surveys conducted in the main channel of Marseilles Pool in May 2018. Density heat maps are separated by the downstream (middle) and upstream (bottom) half of the main channel.

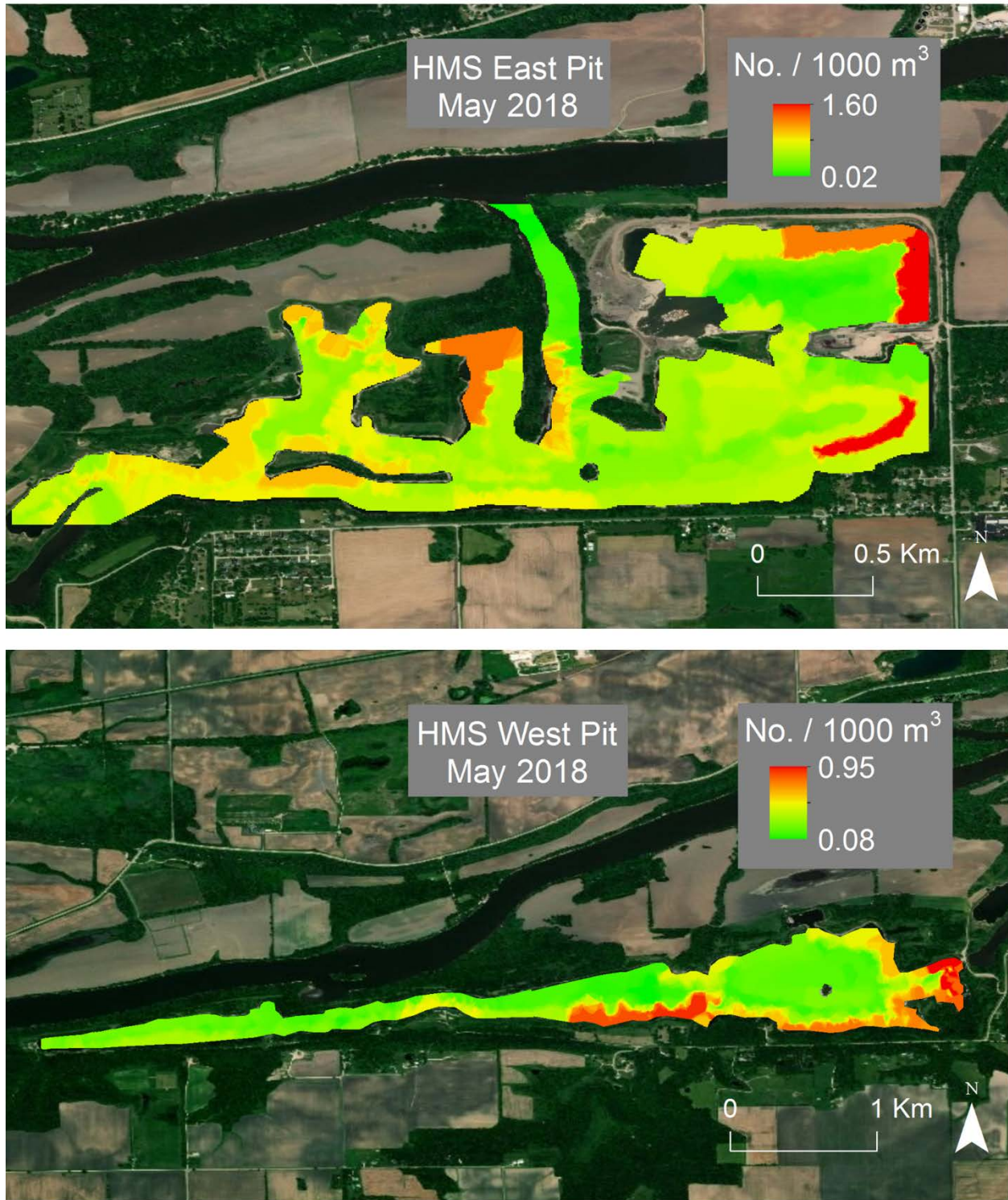


Figure 5. Asian carp (Silver Carp and Bighead Carp combined) density distributions from hydroacoustic surveys conducted in the HMS East and West pit backwaters of Marseilles Pool in May 2018. Note differences in scale between maps.

Telemetry

No action taken in June on Telemetry. This is a bi-monthly program with additional activities performed on an as needed basis.

Fish Suppression for Barrier Maintenance

Barrier IIB experienced an issue with a cooling pump at Pulser 1 on 23 June 2018 and immediately transferred operation of the narrow array to Pulser 2 resulting in a minor loss to power in the water (< 30 sec). Barrier IIB was powered down intermittently 28-29 June for repairs and was returned to operation at approximately 20:00 on 29 June. Barrier IIA and the Demonstration Barrier were fully operational throughout the month of June. There were no outages resulting in the need for fish suppression activities at the Barriers within the month of June. Operational settings for each active barrier were as follows:

Demonstration – Full water (5 Hz, 4 ms, 400 V) & benthic (5 Hz, 4 ms, 100V)
Barrier IIA – Narrow (34 Hz, 2.3 ms, 2000 V) & wide (34 Hz, 2.3 ms, 800 V)
Barrier IIB – Narrow (34 Hz, 2.3 ms, 2000 V) & wide (34 Hz, 2.3 ms, 800 V)

Alternate Pathway Surveillance in Illinois - Law Enforcement

Invasive Species Unit (ISU) identified 3 companies advertising live tilapia for sale on the Internet. These companies ship their products directly to customers through delivery services such as FedEx or UPS, and were willing to ship to Illinois. Violation notices were sent to each company's headquarters, and ISU will continue to conduct follow-up investigative work. ISU examined the increased requests for bait dealer's in the Chicago area wanting permits to sell live rusty crayfish and the possible illegal supply of rusty crayfish in that area. ISU is investigating a Tennessee fish hauling company for VHS import permit and aquatic life dealer's license violations. ISU responded to a complaint of a fish processing facility for open dumping a burning. ISU assisted Region 3 CPOs with a complaint of the illegal stocking of crappie from LaSalle Lake into private waters. ISU attended the Aquatic Resources Task Force meeting in Evansville, IN and gave a presentation about the Invasive Species Unit at the Great Lakes Aquatic Nuisance Species Panel meeting in Chicago.