

## 2018 May Summary

**Bottom Line:** Monitoring occurred in the CAWS and upper Illinois Waterway downstream of the Electric Dispersal Barrier in May. **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 completed 24 electrofishing runs at fixed and random sites (6 hours total) in the Dresden Island and Marseilles Pools in May.
- They collected 1,546 fish of 28 species.
- **No Asian carp were captured or observed in either 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 May.
- Crews collected 201 fish of 5 species during hoop net sampling and 738 fish of 25 species during mini fyke sampling.
- Twelve 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 35.1 miles of gill net at fixed and targeted sites in the Lockport, Brandon Rd and Dresden Island Pools (including Rock Run Rookery) in May.
- They collected 1,418 fish of 17 species and 1 hybrid.
- Twenty-five Bighead Carp were collected in Rock Run Rookery.
- Ninety-nine Bighead Carp and 320 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 May 2018, along with the same time period in 2016 and 2017 for comparison:

<b>Lockport</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
Yards of Net Fished	25,400	20,800	39,200
Miles of Net Fished	14.4	11.8	22.3
Hoop Net Nights	15.3	10.8	8.9
Mini Fyke Net Nights	7.4	7.1	4.9
Electrofishing Runs	36	44	27
Electrofishing Time (hrs)	9.0	11.0	6.8
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

<b>Brandon Rd</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
Yards of Net Fished	25,050	21,600	38,200
Miles of Net Fished	14.2	12.3	21.7
Hoop Net Nights	15.3	14.7	7.7
Mini Fyke Net Nights	7.4	8.8	2.8
Electrofishing Runs	32	48	24
Electrofishing Time (hrs)	8.0	12.0	6.0
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

<b>Dresden Island</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
Yards of Net Fished	18,950	23,500	68,700
Miles of Net Fished	10.8	13.4	39.0
Hoop Net Nights	14.1	86.6	7.5
Mini Fyke Net Nights	7.3	11.8	3.9
Electrofishing Runs	64	68	45
Electrofishing Time (hrs)	16.0	17.0	11.3
Asian Carp (AC) upstream I-55	8	13	0
AC downstream I-55	163	383	816
Total AC	171	396	816
Tons of AC Harvested	1.3	3.3	6.9
AC/1000 yds of gill net	8.8	16.6	11.9

<b>Rock Run Rookery</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Yards of Net Fished</b>	16,800	13,000	20,200
<b>Miles of Net Fished</b>	9.5	7.4	11.5
<b>Pound Net nights</b>	0	0	4
<b>Bighead Carp</b>	49	121	48
<b>Silver Carp</b>	24	21	50
<b>Total Asian Carp (AC)</b>	73	142	98
<b>Tons of AC Harvested</b>	1.1	2.3	1.3
<b>AC/1000 yds of gill net</b>	4.3	10.9	4.9

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

	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Number of Days Fished</b>	47	35	39
<b>Number of Net Crew Days</b>	242	210	169
<b>Yards of Net Fished</b>	217,450	198,030	133,300
<b>Miles of Nets Fished</b>	123.6	112.5	75.7
<b>Number of Pound Net nights</b>	67	74	21
<b>Number of Hoop Net nights</b>	768.8	705.3	1217.2
<b>Number of Bighead Carp</b>	4,333	1,367	1,195
<b>Number of Silver Carp</b>	56,321	66,917	49,183
<b>Number of Grass Carp</b>	337	576	506
<b>Number of Asian Carp (AC)</b>	60,991	68,860	50,884
<b>Tons of AC Harvested</b>	219.4	232.3	201.4
<b>AC/1000 yds of gill net</b>	226.2	280.3	343.8

<b>Marseilles</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Yards of Net Fished</b>	173,150	136,130	83,750
<b>Miles of Nets Fished</b>	98.4	77.3	47.6
<b>Pound Net nights</b>	20	35	15
<b>Hoop Net nights</b>	100.6	36.7	232.0
<b>Mini Fyke Net Nights</b>	7.5	11.7	3.9
<b>Electrofishing Runs</b>	48	25	36
<b>Electrofishing Time (hrs)</b>	12.0	6.3	9.0
<b>Bighead Carp</b>	3,624	743	875
<b>Silver Carp</b>	33,029	22,593	23,522
<b>Grass Carp</b>	40	44	22
<b>Total Asian Carp</b>	36,693	23,380	24,419
<b>Tons of AC Harvested</b>	153.3	100.4	117.3
<b>AC/1000 yds of gill net</b>	169.7	162.3	276.0
<b>Starved Rock</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Yards of Net Fished</b>	44,300	61,900	49,550
<b>Miles of Nets Fished</b>	25.2	35.2	28.2
<b>Hoop Net nights</b>	683.1	684.1	992.7
<b>Bighead Carp</b>	709	624	320
<b>Silver Carp</b>	23,346	44,394	25,679
<b>Grass Carp</b>	308	537	486
<b>Total Asian Carp</b>	24,363	45,555	26,485
<b>Tons of AC Harvested</b>	66.4	132.1	84.1
<b>AC/1000 yds of gill net</b>	447.0	539.8	458.3

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

May hydroacoustic surveys were completed in Dresden Island and Marseilles pools from May 16 – 22. Data from these surveys are being analyzed. Acoustic telemetry stationary receivers in Alton and La Grange pools were downloaded (March 23 – 25) and data are currently being incorporated into the telemetry database. Temperature loggers in these same pools were also downloaded. The remainder of stationary receivers will be downloaded in June.

## Real-time USGS Acoustic Telemetry Receiver Summary

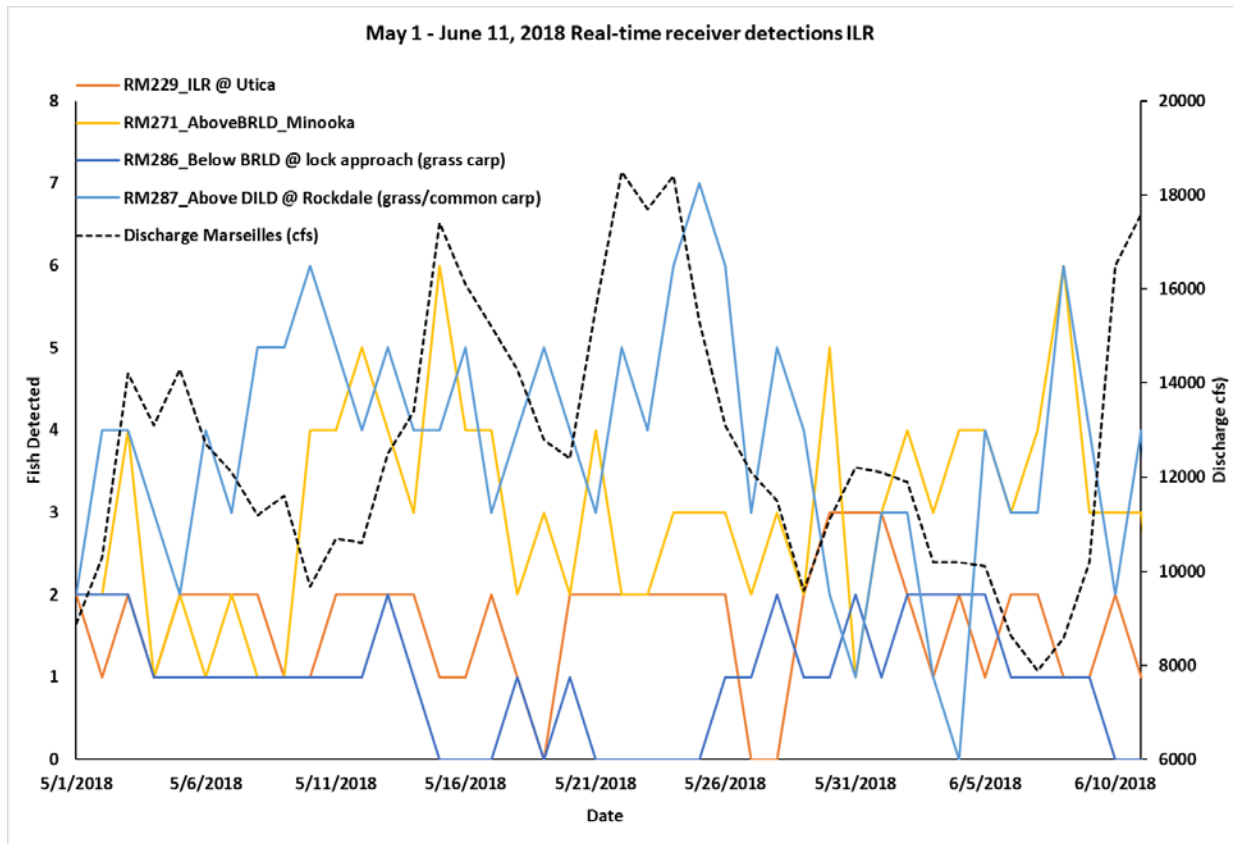


Figure 1. Fish detections for 1 May – 11 June at Utica, Minooka, and Rockdale receivers. All fish shown for Utica (RM 229; orange) are Silver or Bighead carp. Fish detected at Minooka (RM 271; yellow) include two grass carp. At RM286 and RM287 all fish are grass carp or common carp. Discharge for the Marseilles gaging station (USGS 05543500) is shown as a black dotted line.

Twenty-two Bighead or Silver Carp were detected on real-time receivers from 1 May – 11 June 2018. All Bighead or Silver Carp were detected at Utica (N = 7 Silver Carp) or at Minooka above Dresden Island Lock and Dam (N = 11 Bighead Carp, 1 Big/Silver hybrid, 3 Silver Carp). Additional common or grass carp were detected at the Rockdale receiver below Brandon Road Lock and Dam (N = 3 Grass Carp), at Rockdale above Brandon Road Lock and Dam (N = 9 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](mailto: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.**

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

Field crews sampled Starved Rock and Marseilles pools for small Silver and Bighead carps (TL <153mm) during May 2018. Boat electrofishing and mini-fyke nets were used in Starved Rock pool for a total of 13 Electrofishing runs (3.25 hours fishing time) and 19 mini-fyke net sets (19 net nights). This effort resulted in 786 fish representing 39 species captured using boat electrofishing and 2126 fish from 23 species captured using mini-fyke nets. In total, 75 Silver Carp and 1 Bighead Carp were captured. One juvenile Silver Carp (TL 222mm) was captured in Starved Rock on May 14 in a backwater/marina area at the lower end of the pool (41.35037, -88.82876). Another electrofishing run was conducted immediately after but no additional juveniles were captured here. In Marseilles pool, effort totaled 8 electrofishing runs (2 hours fishing time) and 13 mini-fyke sets (13 net nights). A sum of 351 fish representing 31 species were captured using electrofishing and 405 fish representing 16 species were captured using mini-fykes. A total of 13 adult Silver Carp were captured with no juveniles observed.

## **Habitat Use and Movement of Juvenile Silver Carp (Telemetry)**

Tagging efforts continued in the Peoria Pool for juvenile Silver Carp telemetry. Two weeks of effort were spent tagging fish. A total of 22 dozer trawl runs were conducted in the Peoria reach resulting in 753 total fish captured representing 20 species. Of the total fish captured, 516 were adult Silver Carp and 41 were juvenile Silver Carp (<400mm). Since smaller fish were desired for tagging, only 22 of these juveniles were used for telemetry (mean TL 288mm). Additional efforts for this project included: downloading and maintenance on stationary acoustic receivers, and 2 days spent active tracking.

## **Telemetry Monitoring**

USACE biologists downloaded 27 stationary receivers from the Lockport Pool at the confluence of the Cal-Sag Channel downstream to the Dresden Island Lock and Dam from 14-18 May 2018. These downloads covered a period between 12 March through 18 May 2018. No fish crossed the Electric Dispersal Barrier System (EDBS) or through the Brandon Road Lock and Dam. There were a total of 748,905 detections from live fishes. Three tagged fish detected near the EDBS were excluded from the analysis and assumed dead due to multiple months of no movement and consistent detection. Within the Brandon Road Pool, over 55% of detections occurred at the mouth of the upper Des Plaines River as it merges with the CSSC. This included multiple Common Carp and one Grass Carp. Asian carp within the Dresden Island Pool were most often detected at Harborside Marina and within the mouth of the Kankakee River. No Bighead or Silver Carp were detected within the approach channel to the Brandon Road Lock. There were numerous detections of Grass Carp within the approach channel but no fish entered the Brandon Road Lock chamber.

## **Barrier Maintenance & Fish Suppression**

Barrier IIA annual maintenance was completed on 2 May 2018. Barriers IIA and IIB operated continuously through the remainder of May on both wide and narrow arrays. The Demonstration Barrier was also operated continuously throughout the month of May. Risk of live Asian carp present upstream of the Brandon Road Lock and Dam remains low and no fish clearing actions in support of barrier maintenance were required.

## **USFWS Hydroacoustic Survey: Electric Dispersal Barrier System at Romeoville, IL Preliminary Results 5-30-2018 Survey**

**Purpose:** The USFWS conducted three replicate hydroacoustic surveys at the Electric Fish Dispersal Barrier System (EDBS) on 5-30-2018. The area approximately 1.3km below the barrier system and the area from the Barrier IIA narrow array upstream to the Barrier IIB narrow array (both arrays were active) were surveyed during this sampling event.

**Methods:** Survey gear consisted of a two 200 kHz Biosonics™ split beam hydroacoustic transducers which was mounted to a remote pan/tilt rotator and positional settings were automatically adjusted throughout each survey. During this survey the transducers were oriented in a configuration of  $-3.2^{\circ}$  and  $-9.6^{\circ}$  below the plane of the water surface. The side-scan sonar was not used as it is being repaired.

Three replicate transits were conducted during the survey. The scan was started at the northern end of the Hanson Material Services docking area which resulted in crews starting ~1.3km below the Barrier IIA high field array. Each replicate consisted of a northbound (upstream) transect along the west canal wall from a point ~1.3km downstream of the Barrier IIA high field array to a point just upstream of the Demonstration Barrier. After reaching the northernmost survey point the vessel transited southbound (downstream) along the east canal wall past the downstream margin of the Barrier IIA high field array.

The number, size, and location of fish within the survey area were quantified. All data were post processed and analyzed in Echoview® v. 8.0. Briefly, fish targets were identified using a single target detection algorithm (method 2) and a fish track detection algorithm; the fish track algorithm is necessary to reduce the potential of counting the same fish multiple times. The size of each fish target was estimated from a published relationship that relates calibrated mean target strength (TS) of the fish target to total length. The settings applied in Echoview® v. 8.0 were to only detect 12inch fish or larger. Fish location was estimated from the vessel GPS, range from transducer, and angular position that fish detections occurred. Fish density within the canal was estimated using the wedge volume sampled method whereby the number of targets

detected was divided by the total volume of water in a wedge encompassing the survey transect for each transducer. Additional details regarding analysis can be provided upon request.

**Preliminary Results 5-30-2018:** More fish were detected on Transducer 2 (surface transducer with an approximate pitch of around -3.2°) than Transducer 1 (the average pitch of transducer 1 was around -9.6°). All targets detected were larger than 12 inches based on the settings applied. Each individual section recorded different total number of fish target detections. Barrier West and Barrier East had the fewest amount of total fish detections across the survey (5) while Below Barrier West had the highest amount of detections at 12 fish targets. Below Barrier East had 10 fish target detections.

**Table 1.** Hydroacoustic fish observations made at the Electric Fish Dispersal Barrier on 5-30-2018. (a=Transducer 1, b= Transducer 2) All data is preliminary.

<b>Below Barrier West (0-1.3km)</b>			
Replicate	Total Fish Targets	Volume sampled (m <sup>3</sup> )	Density (Fish/1000 m <sup>3</sup> )
1a	2	49023.08303	4.08E-05
1b	6	130394.5214	4.60E-05
2a	1	45715.43994	2.19E-05
2b	0	127188.11	0
3a	1	44742.0898	2.24E-05
3b	2	133630.1672	1.50E-05
<b>Barrier West (IIA (active) &amp; IIB (active))</b>			
1a	1	16702.24451	5.99E-05
1b	0	39377.89028	0
2a	1	16447.91216	6.08E-05
2b	1	40908.62478	2.44E-05
3a	0	16586.58042	0
3b	2	41707.8797	4.80E-05
<b>Below Barrier East (0-1.3km)</b>			
1a	0	48890.81005	0
1b	7	109175.8911	6.41E-05
2a	0	43027.43238	0
2b	1	111227.682	8.99E-06
3a	0	43630.64985	0
3b	2	111400.7774	1.80E-05



<b>Barrier East (IIA (active) &amp; IIB (active))</b>			
1a	0	17612.16493	0
1b	0	24652.42811	0
2a	0	15088.58818	0
2b	3	30832.3539	9.73E-05
3a	0	16363.79857	0
3b	2	24700.45558	8.10E-05

### **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 May 7 and May 21. 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 May. 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. Water temperatures at the majority of sites were above the threshold thought to be conducive to Asian carp spawning after the first week of May. However, no large-diameter eggs have thus far been observed from any samples collected through the end of May. Ichthyoplankton sampling will continue on a weekly basis through 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.

### **Collection of Asian Carp demographic data to inform SEAcARP Model**

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. Beginning the week of April 30, 2018, one electrified dozer trawl crew deployed each week in May to sample the Alton, LaGrange, Peoria, and Starved Rock pools collecting 1,104 Silver Carp ranging from 299 to 865 mm in 186 five-minute trawls (Table 1). Sampling will continue

in the Starved Rock and Marseilles Pools in June 2018. The USGS – Columbia Environmental Research Center (CERC) collected aging structures from Silver Carp captured during these efforts.

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

Pool	Total Samples (5 minute trawls)	Total Silver Carp	Size Range (mm)
Alton	50	160	401-810
LaGrange	50	418	366-865
Peoria	50	344	299-800
Starved Rock	36	182	523-753

### **Strategy for eDNA Sampling in the CAWS**

During the week of May 29, USFWS collected 310 eDNA samples above the electric dispersal barrier (see table for specific sample breakdown). All samples are being processed by the Whitney Genetics Laboratory and the results will become available later this summer.

<b>Target Area</b>	<b># Samples</b>
CSSC	24
S. Branch Chicago River	52
Chicago River	33
N. Branch Chicago River	38
Little Calumet River	87
Calumet River	28
Lake Calumet	48
<b>TOTAL</b>	<b>310</b>

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

The Illinois Department of Natural Resources Invasive Species Unit (ISU) is investigating a bait shop for selling a live injurious species to fisherman. Surreptitious contact has been made and the investigation on-going.

ISU was contacted by the curator of the Aurora Zoo regarding an individual trying to voluntarily relinquish a snakehead (injurious fish). The snakehead was eventually turned over to the zoo and the owner was interviewed about how she obtained the fish. ISU helped the Aurora Zoo get the appropriate injurious species permit for the snakehead.

ISU assisted a District 4 CPO with a random commercial inspection of a Chicago company purchasing Asian Carp to process into various pet treats to sell.

ISU participated in the May Environmental Crimes Task Force meeting in Chicago.

ISU investigated a complaint of a plant nursery in Kane County selling injurious plants. The complaint was unfounded.

ISU is investigating a Lake County plant nursery for selling plants not on the IDNR Approved Species List. While at the nursery, ISU discovered an aquatic plant that has a common name listed on the injurious species list, but the taxonomy for the plant is unknown to experts from the Illinois Natural History Survey. The investigation is on-going.

ISU assisted a District 4 CPO with an aquatic life dealer investigation. It was determined two out of state companies did not have the required aquatic life dealer's license or VHS import permits to legally sell aquatic life in Illinois.

ISU assisted a District 6 CPO with locating a subject who had been avoiding a random commercial inspection.

ISU gave a PowerPoint presentation to Office of Law Enforcement Command Staff pertaining to the following: A 2017 case overview; ISU's completed training; committee involvement; and case restitution history.

ISU is investigating an out of state fish transportation company after receiving a complaint from a District 14 CPO that the company had imported and stocked gizzard shad into various water bodies in Northern Illinois. The company has not purchased a non-resident aquatic life dealer's license since 2011, and there is no record of the company receiving the required VHS import permits. ISU obtained and served a Grand Jury subpoena to the business headquarters requesting businesses records related to the investigation. The investigation is on-going.

ISU is investigating how black carp raised in aquaculture facilities are being caught by commercial fisherman and later turned in to research facilities for a monetary reward.