

Monitoring and Response Workgroup (MRWG)
Monthly Activities
2021 October Summary

Bottom Line: A set of safety protocols developed during the COVID pandemic to ensure safe operations and were carried over into the 2021 field season. A large number of small (<6”) Grass Carp and Silver Carp have been collected in the Peoria Reach. **NO LIVE BIGHEAD CARP, BLACK CARP, GRASS CARP, or SILVER CARP were found or observed in any new locations immediately downstream or upstream of the Electric Dispersal Barrier.**

Overall Summary

Pool specific results through October 2021 from all effort within the Upper Illinois Waterway. The same time period in 2019 and 2020 for comparison. Additional effort may not be reported due to data processing and true effort and catch could be higher. Check 2021 interim summary, published at the end of the year, for complete results

Lockport Pool

Effort	2019	2020	2021
Yards of Net Fished	50,200	42,800	81,000
Miles of Net Fished	28.5	24.3	46.0
Hoop Net Nights	163.8	156.2	164.4
Mini Fyke Net Nights	22.2	20.8	22.9
Electrofishing Runs	69	77	98
Electrofishing Time (hrs)	17.3	19.3	24.55
Dozer Trawl Runs	0	0	96
Dozer Trawl (hrs)	0.0	0.0	8.05
Total Invasive Carp (IC)	0	0	0
Tons of IC Harvested	0	0	0

Brandon Road Pool

Effort	2019	2020	2021
Yards of Net Fished	44,600	47,400	87,200
Miles of Net Fished	25.3	26.9	49.5
Hoop Net Nights	156.9	160.4	162.4
Mini Fyke Net Nights	33.1	20.6	22.6
Electrofishing Runs	61	68	84
Electrofishing Time (hrs)	15.3	17.0	21.0
Dozer Trawl Runs	0.0	0.0	92
Dozer Trawl (hrs)	0	0	7.63
Total Invasive Carp (IC)	0	0	0
Tons of IC Harvested	0	0	0

Dresden Island Pool (Including Rock Run Rookery)

Effort	2019	2020	2021
Yards of Net Fished	146,850	101,200	181,100
Miles of Net Fished	83.4	57.5	102.9
Hoop Net Nights	96.2	162.4	162.5
Mini Fyke Net Nights	66.2	68.1	121.9
Pound net night	0	0	3
Electrofishing Runs	73	87	344
Electrofishing Time (hrs)	18.3	21.8	30.3
Dozer Trawl Runs	0	0	143.0
Dozer Trawl (hrs)	0.0	0.0	11.9
Bighead Carp	42	22	33
Grass Carp	8	3	5
Silver Carp	263	140	138
Total IC	313	165	176
Invasive Carp (IC) from Rock Run Rookery	46	21	28
IC upstream I-55 (not in RR)	8*	2*	6
IC downstream I-55	259	142	142
Tons of IC Harvested	2.6	1.2	1.3
IC/1000 yds of gill net	2.1	1.6	0.9

*indicates Grass Carp

Marseilles Pool

Effort	2019	2020	2021
Yards of Net Fished	189,810	185,470	170,750
Miles of Nets Fished	107.8	105.4	97.0
Pound Net nights	26	0	0
Hoop Net nights	153.6	157.9	168
Mini Fyke Net Nights	65.1	68.2	69.0
Electrofishing Runs	93	93	93
Electrofishing Time (hrs)	23.3	23.3	23.3
Bighead Carp	973	1,342	1,973
Grass Carp	43	31	45
Silver Carp	35,339	31,366	20,217
Total Invasive Carp	36,355	32,739	22,235
Tons of IC Harvested	201.9	174.7	135.6
IC/1000 yds of gill net	189.1	176.3	130.1

Starved Rock Pool

Effort	2019	2020	2021
Yards of Net Fished	332,495	218,980	235,650
Miles of Nets Fished	188.9	124.4	133.9
Pound Net nights	0	0	0
Hoop Net nights	158.1	168.7	168.0
Mini Fyke Net Nights	61.7	68.6	72.0
Electrofishing Runs	106	105	96
Electrofishing Time (hrs)	26.5	26.3	24.0
Dozer Trawl Runs			22
Dozer Trawl (hrs)			1.83
Bighead Carp	2,077	2,158	701
Grass Carp	2,595	795	682
Silver Carp	138,596	88,904	95,422
Total Invasive Carp	143,268	91,857	96,805
Tons of IC Harvested	468.8	267.3	266.4
IC/1000 yds of gill net	428.4	417.0	328.6

Contracted Fishing Below the Electric Dispersal Barrier

- Contracted fishing took place in Lockport, Brandon Road, Dresden Island, and Marseilles Pools of the Illinois River Waterway in October
- Contracted fishers set and pulled 91,600 yards of gill/trammel net
- 4,809 fish representing 19 species were captured during contracted commercial netting
- 39 Bighead Carp, 9 Grass Carp, and 3,620 Silver Carp were removed
- 106,373 pounds of Bighead, Grass and Silver Carp were removed

Below is a summary of all Illinois Department of Natural Resources (IDNR) contracted fishing activities through October 2021. For comparison purposes, data from the same time period in 2019 and 2020 are included.

Effort	2019	2020	2021
Number of Days Fished	139	95	109
Number of Net Crew Days	609	509	582
Yards of Net Fished	763,955	595,850	755,700
Miles of Nets Fished	434.1	338.6	429.4
Number of Pound Net	28	0	3
Number of Hoop Net	0.0	0	0.0
Number of Bighead Carp	3,087	3,522	2,706
Number of Grass Carp	2,623	803	719
Number of Silver Carp	173,325	119,862	115,329
Number of Carp	179,035	124,187	118,754
Tons of IC Harvested	699.1	443.2	403.2
AC/1000 yds of gill net	233.8	208.4	132.1

Seasonal Intensive Monitoring

The Fall Seasonal Intensive Monitoring (SIM) event took place during the weeks of October 4th and October 11th. Contracted fishers, IDNR, Illinois Natural History Survey (INHS), United States Army Corps of Engineers (USACE), and United States Fish and Wildlife service (USFWS) collaboratively sampled the North Shore Channel, North and South Branches of the Chicago River, Chicago River, Chicago Sanitary and Ship Canal, Cal-Sag Channel, Little Calumet River, Calumet River, and Lake Calumet within the Chicago Area Waterway (Figure 1). Effort utilized gill nets and electrofishing (Figure 2).



Figure 1. Sample locations throughout the Chicago Area Waterway during the Fall 2021 Seasonal Intensive Monitoring.

Overall:

- 764 samples were collected with gill nets and electrofishing
- A total of 13,031 fish representing 44 species and 4 hybrid groups were cumulatively collected with all gear types during the two week event
- **No Bighead Carp or Silver Carp were observed or collected during the event**
 - One Grass Carp was captured in the Cal Sag River (41.6777 -87.79615)

Paired netting and electrofishing:

- Contract fishers and agency biologist completed 70 paired sets
 - 309 minutes of electrofishing and pulling 14,000 yards of gill net were executed
- Crews collected 212 fish representing 8 species

Commercial Netting:

- Contract fishers along with assisting IDNR biologists set 43 miles of gill net (382 sets)
- Crews collected 447 fish representing 10 species and 1 hybrid group

Electrofishing:

- USACE and USFWS completed 78 hours of electrofishing distributed across 312 transects
- Crews collected 12,584 fish representing 41 species and 3 hybrid groups



Figure 2. Contracted fisher setting a gill net during fall Seasonal Intensive Monitoring.

Unified Fishing Method (UFM) – Dresden Island Pool

During the week of October 18th, 2021, a Unified Fishing Method event was completed in Dresden Island Pool. IDNR, INHS, USFWS, and contracted fishing crews sampled the entire navigation pool from Brandon Road Lock and Dam tail waters to the approach channel downstream of the Dresden Island Lock and Dam. Sampling area also included Rock Run Rookery Lake and the downstream end of the Kankakee River. Crews used fish driving methods (e.g., electrofishing, revving motors), in conjunction with commercial netting to capture and remove Invasive Carp. Below is a summary of effort and catch during the UFM.

Commercial Netting:

- Contracted commercial fishers set 25 miles of gill/trammel net
- Crews collected 497 individual fish representing 15 species
- **One Silver Carp was collected upstream of I-55 (41.47431, -88.14646; excluding Rock Run Rookery)**
- **15 Bighead Carp, 2 Grass Carp, and 51 Silver Carp were collected below I-55**
- **No Bighead Carp or Grass Carp but 1 Silver Carp was collected in Rock Run Rookery**

Electrofishing:

- IDNR, INHS, and USFWS completed 6.5 hours of electrofishing while driving gill/trammel nets
- Crews collected 464 individual fish representing 21 species
- **0 Bighead Carp, 0 Grass Carp and 5 Silver Carp were netted during electrofishing**

Otoliths and fin clips of all captured Bighead Carp and all but one captured Silver Carp were collected by USFWS to assist the modeling workgroup and the Whitney Genetics Lab. Size structure was typical of individuals captured in Dresden Island previously (Figure 3).

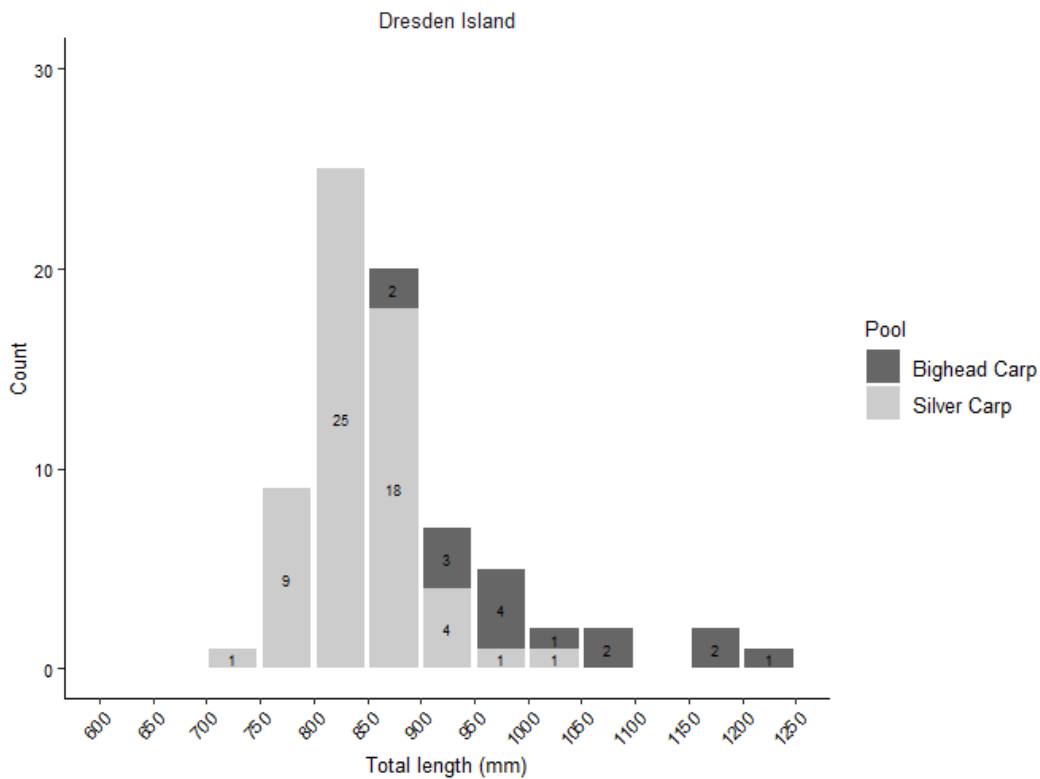


Figure 3. Length distribution across 50 mm length bins of Silver Carp and Bighead Carp captured during the Dresden UFM. (Data provided by USFWS)

Multiple Agency Monitoring

- Lockport, Brandon, Dresden, Marseilles, Starved Rock, and Peoria pools of the Illinois River Waterway were monitored by the IDNR, INHS, and USACE.
- All assigned samples were collaboratively collected within each pool by each gear type during each period (Table 1).
- 7,587 Bighead Carp, Grass Carp, and Silver Carp were detected (Table 2)
 - 6,697 small (≤ 6 inches)
 - 880 large (> 6 inches)
- Furthest upriver large Bighead Carp, Grass Carp, or Silver Carp were detected was in Rock Run Rookery
 - River mile 282 (41.46715, -88.16922)
- Furthest upriver small Bighead Carp, Grass Carp, or Silver Carp were detected was in Peoria Pool
 - River mile 210 (41.2924, -89.3435)
- Quantitative assessment of relative abundance trends, condition, and size structure since 2019 will occur

Table 1. Number of samples collected by gear type and pool during the second monitoring period.

Gear	Lockport	Brandon	Dresden	Marseilles	Starved	Peoria
Electrofishing	45	36	72	93	105	135
Large Hoop	42	42	42	42	42	42
Small Hoop	42	42	42	42	42	42
Fyke Net	0	0	15	15	15	30
Minnow Fyke	24	24	72	72	72	72

Table 2. Count of Bighead, Grass, and Silver Carp captured within the Illinois River Waterway during the multiple agency monitoring project in 2021 by pool and gear type. Small AC (<6") and Large AC (>6")

Pool	Gear	Small SVCP	Small BHCP	Small GSCP	Large SVCP	Large BHCP	Large GSCP
Lockport	Electrofishing	0	0	0	0	0	0
Lockport	Minnow Fyke	0	0	0	0	0	0
Lockport	Fyke net	—	—	—	—	—	—
Lockport	Hoop net	0	0	0	0	0	0
Brandon	Electrofishing	0	0	0	0	0	0
Brandon	Minnow Fyke	0	0	0	0	0	0
Brandon	Fyke net	—	—	—	—	—	—
Brandon	Hoop net	0	0	0	0	0	0
Dresden	Electrofishing	0	0	0	2	0	0
Dresden	Minnow Fyke	0	0	0	0	0	0
Dresden	Fyke net	0	0	0	0	0	0
Dresden	Hoop net	0	0	0	0	0	0
Marseilles	Electrofishing	0	0	0	24	0	1
Marseilles	Minnow Fyke	0	0	0	0	0	0
Marseilles	Fyke net	0	0	0	0	0	0
Marseilles	Hoop net	0	0	0	0	0	0
Starved Rock	Electrofishing	0	0	0	421	0	12
Starved Rock	Minnow Fyke	0	0	0	0	0	0
Starved Rock	Fyke net	—	—	—	—	—	—
Starved Rock	Hoop net	0	0	0	4	1	8
Peoria	Electrofishing	559	0	51	382	0	21
Peoria	Minnow Fyke	6017	0	70	1	0	0
Peoria	Fyke net	0	0	0	2	3	2
Peoria	Hoop net	0	0	0	1	0	5
Total		6576	0	121	837	4	49

USACE

Traditional Monitoring – During the month of October, USACE biologists conducted twenty 15-minute electrofishing runs downstream of the barrier. Six sites were in Lockport Pool and eleven sites were in Brandon Road Pool. Within the Lockport Pool, 300 individuals were captured across 11 species. The five most abundant species captured were gizzard shad over 6 inches (42.3%), emerald shiner (29.3%), gizzard shad under 6 inches (20.0%), bluntnose minnow (4.0%), and threadfin shad (1.00%). Within the Brandon Road Pool, 203 individuals were captured across 20 species. The five most abundant species found were smallmouth bass (38.4%), emerald shiner (22.2%), gizzard shad over 6 inches (13.3%), common carp (4.93%), and gizzard shad under 6 inches (4.43%). No invasive carp were captured or observed during the month of October.

Enhanced Contract Fishing

In September 2019, the Enhanced Contract Fishing Program was initiated in the Peoria Pool. The program offers Illinois-licensed commercial fishermen \$.10 per pound for invasive carp caught in the Peoria Pool and sold to fish processors or other buyers for at least \$.07 per pound. To date, 30 fishermen have entered into contracts to catch invasive carp from this pool. From inception through the remainder of calendar year 2019, 518,132 pounds of invasive carp were caught in the Peoria Pool, throughout the year 2020 a total of 2,882,725 pound were caught, and to date in 2021 an additional 2,687,228 pounds have been caught for a total of 6,088,085 pounds. Of these total catches, 6.30% are Bighead, 73.62% are Silver and 20.08% are Grass carp. **No Black carp have been reported.**

Table 3. Table of Enhanced Contract Fishing – Peoria Pool from inception, September 2019 through October 2021. **By receipt date, not catch date**

YEAR	Total Lbs.**	Bighead	Silver	Grass
2019 *	518,132	24,813	310,297	183,022
2020	2,882,725	176,195	1,978,501	728,029
2021 (Jan thru October)	2,687,228	169,296	1,978,407	539,525
GRAND TOTALS	6,088,085	370,304	4,267,205	1,450,576

* September 2019 program inception.

** No Black carp reported.

Monitoring of Invasive carp Reproductive Productivity

INHS completed ichthyoplankton sampling for 2021 during the week of October 4. Sampling was conducted at 7 main channel sites located from the Brandon Road to LaGrange navigation pools. A minimum of four larval fish samples were collected at each site. Additional samples were collected in Illinois River tributaries to evaluate the potential for invasive carp spawning in these rivers. Illinois Waterway water levels were low and stable during early October, and temperatures declined below the level thought to be conducive to invasive carp spawning by the middle of the month. Samples collected in October were not found to contain any invasive carp eggs or larvae.

Zooplankton as Dynamic Assessment Targets for Invasive carp Removal

INHS completed zooplankton sampling for 2021 during the month of September. Activities conducted during October included processing of zooplankton and water chemistry samples. The collected data will be combined with historical and recent data on Illinois Waterway zooplankton communities to inform management agencies of the ecosystem responses to invasive carp removals and develop dynamic targets for diminishing the ecological impacts of invasive carps.

Monitoring Bigheaded Carp Movement and Density in the Illinois River

SIU conducted mobile hydroacoustic sampling throughout Starved Rock, Peoria, LaGrange, and Alton pools as part of long-term fall standardized sampling. Physical capture data were collected in Starved Rock, Marseilles, and Dresden Island pools to inform hydroacoustic data analysis. Acoustic telemetry tags (~40 transmitters) were also implanted into bigheaded carp in Alton Pool.

Hydroacoustic Fish Surveys at the Electric Fish Dispersal Barrier System, Romeoville, IL

The U.S. Fish and Wildlife Service conducted one mobile hydroacoustic fish survey this month at the Electric Dispersal Barrier System (EDBS) on October 18, 2021. The survey was conducted to monitor

for the presence and distribution of fishes greater than 12" (30.5 cm) total length in the vicinity of the EDBS to aide in assessing the risk of large fish—and potentially Bighead or Silver Carp—passing through the EDBS during barrier operational changes and/or maintenance. However, it is important to note that hydroacoustic technology does not distinguish or identify fish species, and therefore fish detected should not be assumed to be a particular species. Hydroacoustic surveys consisted of three replicate passes along an upstream and downstream transect with paired, side-facing 200-kHz transducers. Each replicate covered the area between Hanson Material Services Corporation (HMSC) docking slip, approximately 1.3 km below the Romeo Road Bridge, to the upstream side of the Demonstration Barrier (0.6 km above Romeo Road Bridge). For reporting purposes, Romeo Road Bridge is treated as the dividing line between the areas referred to as “within the EDBS” and “downstream of the EDBS”. Results are reported as a sum of all fish tracks detected across replicate surveys; therefore, some may represent the same fish.

Preliminary Results:

Oct 18, 2021: Zero large fish tracks ≥ -28.7 dB (12 inches TL) were detected within the EDBS. Two large fish tracks ≥ -28.7 dB were detected downstream of the EDBS, one approaching the EDBS detected during Replicate Survey #1 and one farther downstream near the HMSC docking slip detected during Replicate Survey #3. These results show lower abundance of large fish targets within and approaching the EDBS than previous barrier scans in August and September.

Hydroacoustic Fish Surveys of the upper Illinois Waterway: Dresden Island, Brandon Road, and Lockport Pools

The U.S. Fish and Wildlife Service conducted mobile hydroacoustic fish surveys in Brandon Road and Lockport pools from October 20-21, 2021. These pool surveys were designed to monitor for the abundance of large fishes—potentially Bighead or Silver Carp—with target strength (TS) greater than -28.7 dB (theoretical side-aspect TS of a 12" (30.5 cm) total length fish) within the upper Illinois Waterway. The hydroacoustic survey in Lockport Pool covered the area between the Hanson Material Services Corporation docking slip and Lockport Lock & Dam (6.5 km). The hydroacoustic survey in Brandon Road Pool covered the area between Lockport Lock & Dam and Brandon Road Lock & Dam (7.2 km). A hydroacoustic survey was not conducted by USFWS in Dresden Island Pool this month to avoid duplication of effort (Southern Illinois University completed hydroacoustic survey in October in Dresden). In all pools, surveys were conducted with paired 200-kHz, side-facing transducers and consisted of one continuous transect along each shoreline with the boat following the contour of the main channel edge and the transducers pointed outwards towards the main channel.

Preliminary Results:

Lockport Pool:

One (1) fish track corresponding to a fish > 12 " was detected in Lockport Pool in 1,312,472 m³ of water on October 20, 2021. Target strength (TS) of the fish track was -26.5 dB, and it was located within the downstream half of the pool (Figure 4A).

Brandon Road Pool:

Four (4) fish tracks corresponding to fish > 12 " were detected in Brandon Road Pool in 756,187 m³ of water on October 21, 2021. Mean TS of fish tracks was -25.6 dB (SE = 1.18). Three of the four fish tracks detected were located towards the downstream end of the pool (Figure 4B).

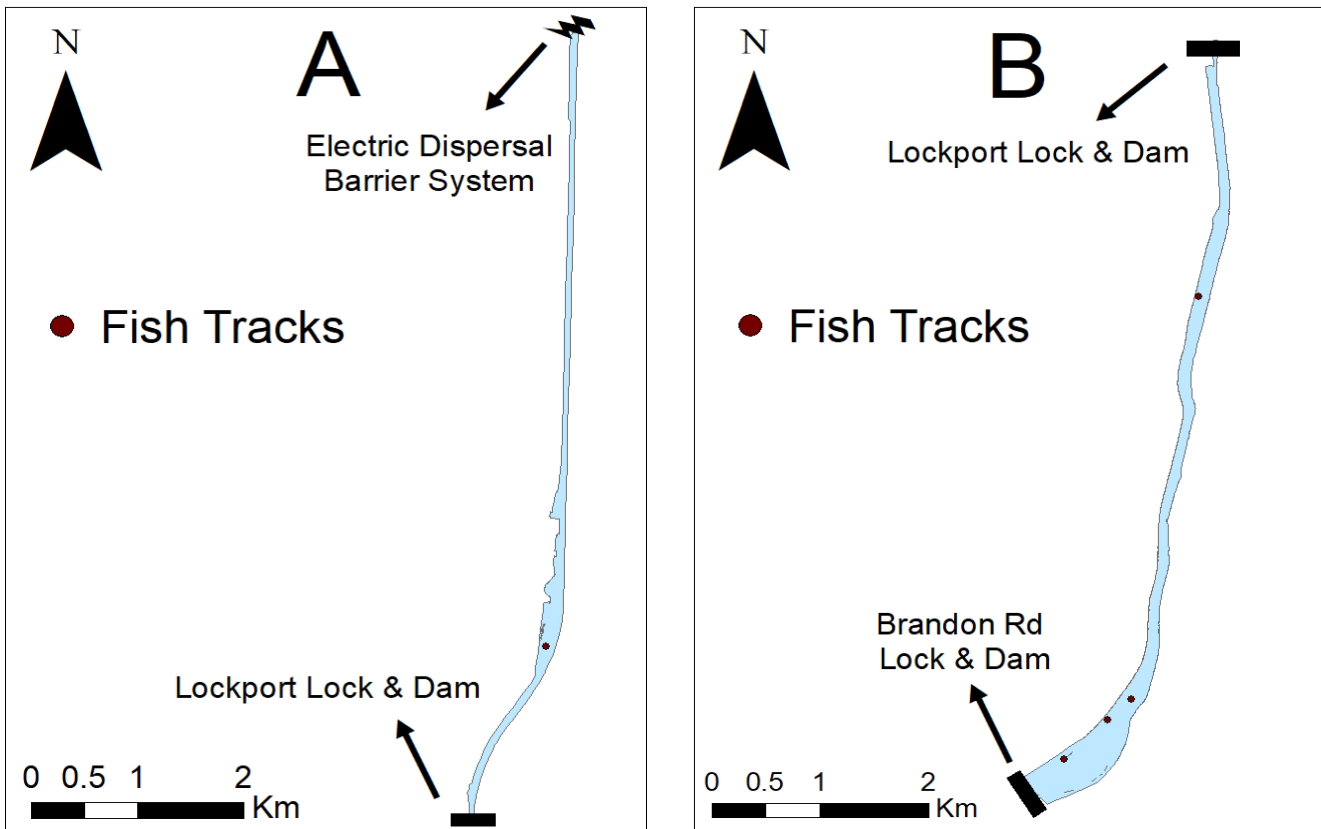


Figure 4: Locations of fish tracks detected from hydroacoustic surveys in Lockport (A) and Brandon Road (B) pools of the Upper Illinois Waterway during October 2021.

Invasive Bigheaded Carp Early Detection Monitoring Surveys in the Upper Illinois Waterway: Lockport, Brandon Road, and Dresden Island Pools, and the Lower Kankakee River

U.S. Fish and Wildlife Service (USFWS) conducted fisheries surveys to find invasive carp (Bighead Carp, *Hypophthalmichthys nobilis*; Silver Carp, *H. molitrix*; Black Carp, *Mylopharyngodon piceus*; Grass Carp, *Ctenopharyngodon idella*) in novel areas of the upper Illinois Waterway (IWW) below the Romeoville, IL Electric Dispersal Barrier System (EDBS). The Lockport Pool surveys were completed on 29 October 2021 and covered the area between the EDBS and Lockport Lock and Dam; ~ 5 river miles. The Brandon Road Pool surveys were completed on 25 October 2021 and covered the area between Lockport Lock and Dam and Brandon Road Lock and Dam; ~ 4.25 river miles. EDM did not sample Dresden Island Pool nor the lower Kankakee River in October 2021 because USFWS allocated two three-person electrofishing crews for two weeks of Seasonal Intensive Monitoring and one three-person crew for two weeks of aging structure collection from Dresden Island Unified Method and Marseilles contracted commercial fishing. Where possible, EDM surveys consisted of traditional boat electrofishing, electrified dozer trawling, and mini-fyke net sets in a combination of main-channel border, side-channel, and backwater habitats. Electrofishing was performed in 15-minute sampling periods consisting of repeated passes perpendicular to and toward shore, with two crewmates collecting fishes with a handheld dip net. Dozer trawling was conducted in 5-minute sampling periods consisting of s-shaped passes parallel to shore, and with fishes collected by a net supported by a rigid frame at the boat's bow. Wisconsin-type mini-fyke nets with 24' leads and 1/8" mesh were staked against the shoreline, stretched perpendicular to shore, and fished overnight.

Highlighted Results:

- No small-bodied (< 153 mm total length; TL) invasive carp were captured by EDM in October 2021.
- No large-bodied (≥ 153 mm TL) invasive carp were captured by EDM in October 2021.

Table 4. Summary of USFWS invasive carp early detection monitoring preliminary results from October 2021. “Location” is the section of IWW sampled. “Electrofishing effort” reports completed hours of two-person traditional boat electrofishing and n_e is the number of surveys completed. “Dozer effort” reports completed hours of electrified dozer trawling and n_d is the number of surveys completed. “Mini-fyke effort” reports the number of overnight net sets completed and n_n is net nights. “Small carp captured” is the number of invasive carp with total length (TL) < 153 mm captured. “Large carp captured” reports the number of invasive carp with total length \geq 153 mm captured. “Total catch (N)” reports the total number (N) of individual fishes (all species) captured. “Species richness” reports the count of species captured. “Most abundant species” reports the common name of the fish species that was the largest proportion of total fish captured (N) and n_i is the number of individuals of that species captured.

Location	Electrofishing effort (h; n_e)	Dozer effort (h; n_d)	Mini-fyke effort (n_n)	Small carp captured	Large carp captured	Species richness	Total catch (N)	Most abundant species
Lockport	2.25h; $n_e=9$	0.75h; $n_d=9$	$n_n=0$	0	0	9	466	Gizzard shad, $n_i=231$
Brandon Road	2h; $n_e=8$	0.83h; $n_d=10$	$n_n=0$	0	0	14	1526	Threadfin shad, $n_i=851$
Dresden Island	0h; $n_e=0$	0h; $n_d=0$	$n_n=0$	0	0	0	0	NA
Kankakee	0h; $n_e=0$	0h; $n_d=0$	$n_n=0$	0	0	0	0	NA

Invasive Carp Demographics

In October 2021, the U.S. Fish and Wildlife Service – Columbia Fish and Wildlife Conservation Office continued the fourth year of a fisheries-independent, standardized protocol to collect Invasive carp biological data for purposes of monitoring and population assessment. Data collections include Silver Carp length and sex structure, maturity status, and relative abundance during spring and fall in six pools of the Illinois River: Alton, LaGrange, Peoria, Starved Rock, Marseilles, and Dresden Island. During the weeks of October 4th, 11th, and 18th, electrified dozer trawl crews deployed to the Alton, LaGrange, Peoria, and Starved Rock pools. A total of 1,079 Silver Carp were captured in in these four pools, and sizes ranged from 68mm-815mm in the pools sampled in October (Table 5). Sex and maturity were evaluated on all Silver Carp captured and lapilli otolith age structures were collected from 48 Silver Carp. Age and growth data are pending laboratory ageing.

Table 5. Sampling effort and preliminary results, October 2021.

Pool	Total Silver Carp Captured	Sample Size (# of 5 min trawls)	Mean CPUE (Silver Carp /5 min trawl)	Standard Error	Silver Carp Size Range (mm)
Alton	115	20	8.2771	0.872286	102-750
LaGrange	403	24	16.64876	2.707201	68-710
Peoria	388	21	14.20356	2.46789	110-815
Starved Rock	173	22	6.964257	0.932998	130-745

Des Plaines River and Overflow Monitoring

A crew from the Wilmington FWS office sampled the Des Plaines River upstream of the Illinois River confluence October 26-28, 2021. Sampling was conducted between East Romeo Road and IL Route 83. Effort included a total of 15 electrofishing runs (225 minutes electrofishing time) and 2 gill net sets (200 m). A total of 1111 fish were collected, representing 27 species and 3 hybrid groups. No Silver or Bighead carp were captured.

Barrier Operational and Maintenance Status

In the month of October, barrier IIB was off for cooling system upgrades and periodic outages were experienced at the other barriers, but at no time was there not at least one barrier providing power to the water.

When barriers were operational, they were operating at the following parameters
IIA – Narrow (34 Hz, 2.3 ms, 1800 V = 1.7 V/in) & wide (34 Hz, 2.3 ms, 800 V = ~1.0 V/in) arrays operational
IIB – Not operational, cooling system upgrade
Barrier 1 Demo (1D) – Full water (5 Hz, 4 ms, 400 V = 1.0 V/in) & benthic (5 Hz, 4 ms, 100V) operational
Barrier 1 North (1N) – Operational (34 Hz, 2.3 ms, 1700 V = 2.3 V/in)

October 1 – Barrier 1N experienced an outage between 09:03 and 09:11 and between 11:01 and 11:16. Barriers 1D and 2A were operational during both of these outages.

October 4 – Barrier 1N experienced an outage between 04:53 and 05:32 and a planned outage between 09:45 and 12:22 to conduct equipment testing. Six additional intermittent outages occurred between 18:15 and 22:58. These six outages lasted between one and seven minutes in duration. Barriers 1D and 2A were operational at the time of these outages.

October 5 – Barrier 1N experienced a series of outages between 10:08 and 10:11, between 11:42 and 11:44, between 14:45 and 14:47, between 22:41 and 22:43, and between 22:54 and 23:00. During these outages, barriers 1D and 2A were operational.

October 6 – Barrier 1N experienced a series of outages between 01:56 and 01:58, between 07:35 and 07:37, between 10:37 and 10:45, between 13:59 and 14:04, between 14:08 and 14:14, between 16:30 and 16:34, between 22:21 and 22:23, and between 22:40 and 22:50. During these outages, barriers 1D and 2A were operational.

October 7 – Barrier 1N experienced a series of outages between 06:44 and 06:46 and between 09:52 and 09:54. During these outages, barriers 1D and 2A were operational.

October 8 – Barrier 1N experienced two outages, one between 01:17 and 01:18 and the other between 09:03 and 09:05. During this outage, barriers 1D and 2A were operational.

October 11 – Barrier 1N experienced an and outage between 23:18 and 23:20. During this outage barriers 1D and 2A were operational.

October 13 – Barrier 1N had a scheduled shutdown to complete maintenance activities between 07:00 and 14: 32. During the outage, barriers 1D and 2A were operational.

October 14 – Barrier 1N experienced an outage between 04:42 and 04:44. During this outage barriers 1N and 2A were operational.

October 19 – Barrier 1N had experienced an outage between 00:38 and 00:47. Additionally, a scheduled shutdown to complete maintenance activities between 09:03 and 14:42. During the outage, barriers, 1D and 2A were operational.

October 21 – Barrier 1N had a scheduled shutdown to complete maintenance activities between 11:24 and 12:07. During the outage, barriers, 1D and 2A were operational.

Alternate Pathway Surveillance in Illinois - Law Enforcement

ISU interviewed fish farm owners in Alabama and Mississippi and confirmed that the approximately 2600 pounds of channel catfish were illegally imported and stocked into Illinois waters by an Indiana fish hauler were not tested for VHS disease. ISU identified the New York wholesale aquatic life dealer who had illegally sold and shipped live Asian swamp eels to an Illinois Chicago food market. ISU attended the Great Lakes Fishery Commission Law Enforcement Committee Fall meeting and gave a presentation summarizing the results of the crayfish outreach / enforcement initiative. ISU also

provided a presentation on life/cultural release investigations. ISU assisted Washington State Fish & Wildlife, Department of Fisheries and Oceans Canada, and the United States Fish and Wildlife Service with aquatic invasive species investigations.