



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

Bottom Line: A set of safety protocols developed during the COVID pandemic to ensure safe operations and were carried over into the start of the 2021 field sampling. **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 May 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 actual 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	10,800	14,000	24,600
Miles of Net Fished	6.1	8.0	14.0
Hoop Net Nights	0.0	0.0	0.0
Mini Fyke Net Nights	0.0	0.0	0.0
Electrofishing Runs	0	0	28
Electrofishing Time (hrs)	0.0	0.0	7.05
Dozer Trawl Runs	0	0	38
Dozer Trawl (hrs)	0.0	0.0	3.15
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Brandon Road Pool

Effort	2019	2020	2021
Yards of Net Fished	4,200	14,600	30,400
Miles of Net Fished	2.4	8.3	17.3
Hoop Net Nights	0.0	0.0	0.0
Mini Fyke Net Nights	0.0	0.0	0.0
Electrofishing Runs	0	0	38
Electrofishing Time (hrs)	0.0	0.0	9.5
Dozer Trawl Runs	0	0	30
Dozer Trawl (hrs)	0.0	0.0	2.53
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

Dresden Island Pool (Including Rock Run Rookery)

Effort	2019	2020	2021
Yards of Net Fished	28,700	32,800	69,700
Miles of Net Fished	16.3	18.6	39.6
Hoop Net Nights	0.0	0.0	0.0
Mini Fyke Net Nights	0.0	0.0	0.0
Pound net night	0	0	3
Electrofishing Runs	0	0	103
Electrofishing Time (hrs)	0.0	0.0	10.1
Dozer Trawl Runs	0	0	46
Dozer Trawl (hrs)	0.0	0.0	3.88
Bighead Carp	15	5	17
Grass Carp	2	1	3
Silver Carp	82	87	74
Total AC	99	93	94
Asian Carp (AC) from Rock Run Rookery	44	0	24
AC upstream I-55 (not in RR)	0	1*	4
AC downstream I-55	45	0	66
Tons of AC Harvested	0.6	0.7	0.7
AC/1000 yds of gill net	3.4	2.8	1.3

*indicates Grass Carp

Marseilles Pool

Effort	2019	2020	2021
Yards of Net Fished	114,600	58,650	29,850
Miles of Nets Fished	65.1	33.3	17.0
Pound Net nights	0	0	0
Hoop Net nights	0.0	0.0	0.0
Mini Fyke Net Nights	0.0	0.0	0.0
Electrofishing Runs	0	0	0
Electrofishing Time (hrs)	0.0	0.0	0.0
Bighead Carp	374	360	327
Grass Carp	37	1	15
Silver Carp	27,668	18,544	5,103
Total Asian Carp	28,079	18,905	5,445
Tons of AC Harvested	151.4	104.4	31.5
AC/1000 yds of gill net	241.5	322.3	182.4

Starved Rock Pool

Effort	2019	2020	2021
Yards of Net Fished	135,910	15,680	142,050
Miles of Nets Fished	77.2	8.9	80.7
Pound Net nights	0	0	0
Hoop Net nights	0.0	0.0	0.0
Mini Fyke Net Nights	0.0	0.0	0.0
Electrofishing Runs	0	0	1
Electrofishing Time (hrs)	0.0	0.0	1.1
Bighead Carp	306	6	428
Grass Carp	2152	116	547
Silver Carp	73,472	18,724	75,589
Total Asian Carp	75,930	18,846	76,564
Tons of AC Harvested	283.5	52.9	210.4
AC/1000 yds of gill net	558.7	1201.9	405.9

Contracted Fishing Below the Electric Dispersal Barrier

- Contract fishing took place in Lockport, Brandon, Dresden Island, Marseilles, and Starved Rock Pools of the Illinois River Waterway
- Contracted fishers set and pulled 53,200 yards of gill/trammel net
- 9,934 fish representing 14 species and 1 hybrid groups were captured during contracted commercial netting
- **374 Bighead Carp, 115 Grass Carp, and 8,407 Silver Carp were removed**
- **85,362 pounds of Asian Carp was removed**

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

Effort	2019	2020	2021
Number of Days Fished	54	23	44
Number of Net Crew Days	269	130	225
Yards of Net Fished	294,210	135,730	296,600
Miles of Nets Fished	167.2	77.1	168.5
Number of Pound Net	26	0	3
Number of Hoop Net	0.0	0	0.0
Number of Bighead Carp	695	371	772
Number of Grass Carp	2,191	118	565
Number of Silver Carp	101,222	37,355	80,692
Number of Asian Carp	104,108	37,844	82,029
Tons of AC Harvested	259.9	157.9	242.6
AC/1000 yds of gill net	692.4	278.8	213.1

Seasonal Intensive Monitoring

Seasonal Intensive Monitoring (SIM) took place the during weeks of June 8th and June 15th. Commercial netting and electrofishing occurred in 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 (Figure 1). Commercial seining occurred exclusively in Lake Calumet.

Overall:

- **A total of 17,860 fish representing 49 species and 5 hybrid group were collected cumulatively with all gear types during the two-week SIM event**
- **No Bighead Carp or Silver Carp were observed or collected during the May SIM event.**

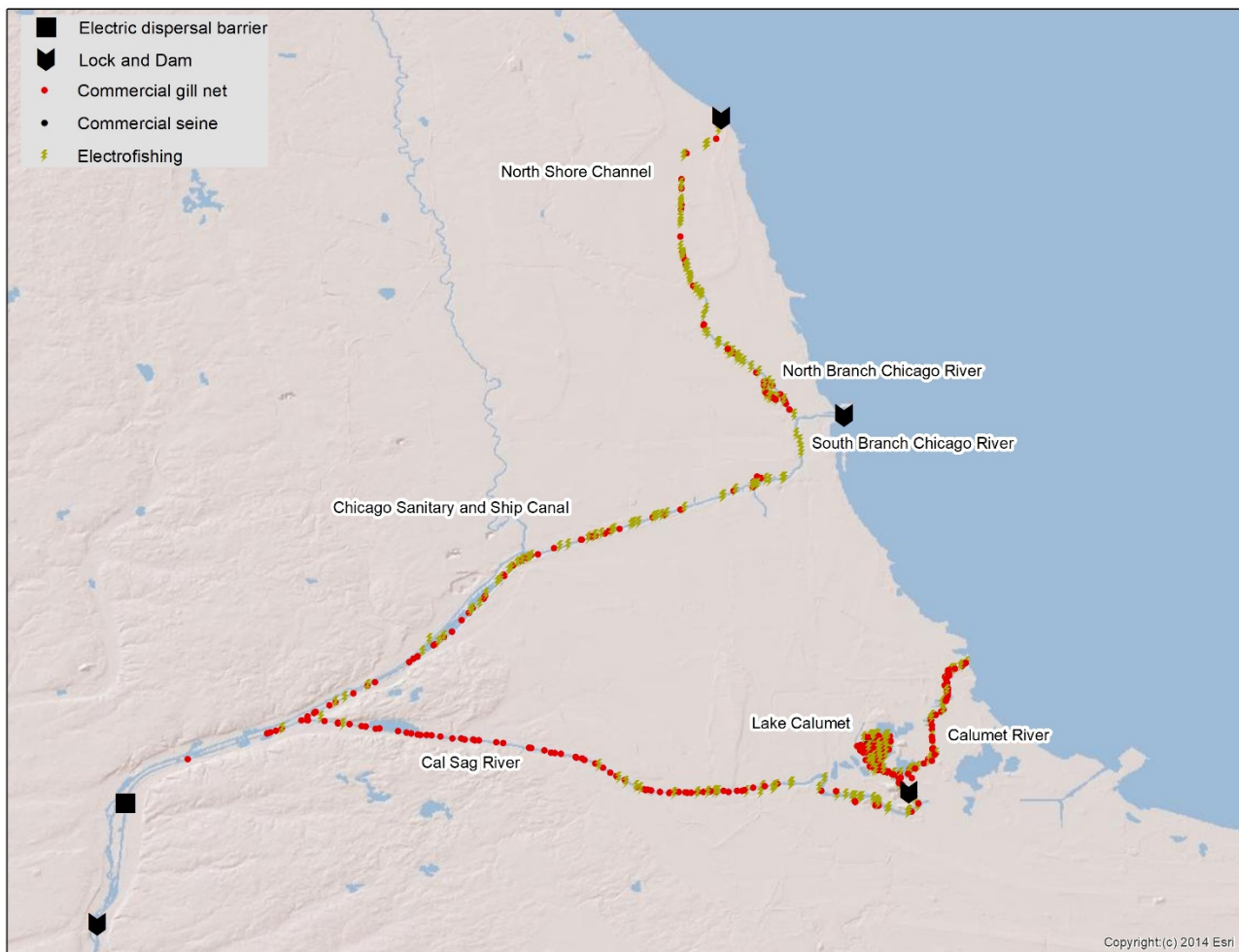


Figure 1. Sample locations throughout the Chicago Area Waterway during the Spring 2021 Seasonal Intensive Monitoring.

Commercial Seine:

- Contracted commercial fishers along with assisting IDNR biologists completed four 800-yard commercial seine hauls (3,200 yards) in Lake Calumet
- Crews collected 3,490 fish representing 18 species
- One triploid grass carp Grass Carp (1,169 mm, 23,180 g) was captured in the commercial seine (41.681866, -87.592022)

Commercial Netting:

- Contracted commercial fishers along with assisting IDNR biologists set 36 miles of gill net (320 sets) at fixed and random sites
- Crews collected 874 fish representing 15 species and 1 hybrid group

Electrofishing:

- IDNR, USACE, USFWS biologists completed 69.75 hours (279 transects) of electrofishing at fixed and random sites
- Crews collected 13,496 individual fish representing 45 species and 3 hybrid groups

USACE Seasonal Intensive Monitoring (SIM) Event

During the month of May USACE participated in the SIM event of the Chicago Area Waterways (CAWs) above the electric dispersal barrier. During this event USACE conducted 15-minute electrofishing runs at 69 locations throughout the CAWs. There were 16 sites on Lake Calumet that resulted in a total catch of 359 individuals across 24 species. The five most abundant species captured were yellow perch (19.5%), bluegill (18.4%), largemouth bass (18.1%), pumpkinseed (12.8%), and rock bass (6.69%). There were five sites on the Little Calumet River that resulted in a total catch of 215 individuals across 19 species. The five most abundant species captured were gizzard shad under 6 inches (31.2%), gizzard shad over 6-inches (23.3%), common carp (13.5%), emerald shiner (8.84%), and largemouth bass (8.37%). Fourteen sites were sampled on the South Branch of the Chicago River between Western Avenue and Wolf Point that resulted in a total catch of 318 individuals across 15 species. The five most abundant species captured were bluntnose minnow (34.9%), common carp (22.6%), gizzard shad over 6 inches (9.12%), gizzard shad under 6 inches (8.81%), and largemouth bass (8.18%). Seven sites were sampled in the North Branch of the Chicago River between Wolf Point and the North Branch/North Shore Channel Confluence. The total individuals captured were 243 fish across 18 species. Bluegill, gizzard shad under 6 inches, common carp, gizzard shad over 6 inches, and largemouth bass which comprised of 21%, 18.5%, 14%, 13.2%, and 11.5% of the catch. A total of 182 individual across 18 species were captured from eight sites in the North Shore Channel from Wilmette to the confluence with the North Branch. The five most abundant species captured were white sucker (23.6%), largemouth bass (23.1%), bluntnose minnow (13.7%), common carp (9.34%), and bluegill (8.79%). Within the four sites sampled in the Calumet River, two small mouth bass were captured. Five sites were sampled in the Cal Sag, resulting in 104 individuals captured across 9 species. The five most abundant species were common carp (76%), channel catfish (5.77%), gizzard shad under 6 inches (4.81%), bluntnose minnow (2.88%), and green sunfish (2.88%). There were 10 sites sampled in the barriers to western that resulted in a total catch of 514 individuals across 14 species. The five most abundant species captured were bluntnose minnow (51.6%), gizzard shad under 6 inches (24.9%), common carp (7.59%), pumpkinseed (4.47%), and banded killifish (3.31%). No Asian carp species were observed by USACE during the SIM event.

Traditional Monitoring – During the month of May, USACE biologists conducted eight 15-minute electrofishing runs downstream of the barrier during the month of May. Four sites were in Lockport Pool and four sites were in Brandon Road Pool. Within the Lockport Pool, 16 individuals were captured across 4 species. The species were emerald shiner (50%), gizzard shad over 6 inches (25%), common carp (18.8%), and green sunfish (6.25%). Within the Brandon Road Pool, 30 individuals were captured across 8 species. The five most abundant species found were common carp (23.3%), emerald shiner (13.3%), gizzard shad under 6 inches (13.3%), white sucker (13.3%), and smallmouth bass (13.3%). No Asian Carp were captured or observed in either pool during the month of May.

Strategy for eDNA monitoring in the CAWS

During the week of May 10, USFWS collected 400 eDNA water samples (440 including field blanks) above the electric dispersal barrier (see specific sample breakdown below, Figure 2 and Figure 3). All samples are being processed by the Whitney Genetics Laboratory and the results will be posted at a later date.

Figure 2. Google Earth map of eDNA sample points in Lake Calumet.



Figure 3. Google Earth map of eDNA sample points in the Marina.



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 Asian 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 Asian carp from this pool. From inception through the remainder of calendar year 2019, 518,132 pounds of Asian 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 1,602,292 pounds have been caught for a total of 5,003,148 pounds. Of these total catches, 5.72% are Bighead, 69.57% are Silver and 24.71% are Grass carp. **No Black carp have been reported.**

Figure 4. Table of Enhanced Contract Fishing – Peoria Pool from inception, September 2019 through May 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 May)	1,602,292	85,202	1,191,961	325,129
GRAND TOTALS	5,003,148	286,209	3,480,759	1,236,180

* September 2019 program inception.

** No Black carp reported.

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

U.S. Fish and Wildlife Service (USFWS) conducted invasive bigheaded carp (Bighead Carp, *Hypophthalmichthys nobilis*; Silver Carp, *H. molitrix*) early detection monitoring (EDM) surveys in Lockport Pool, Brandon Road Pool, Dresden Island Pool, and the lower Kankakee River during May 2021. These surveys were designed to monitor for the presence of invasive bigheaded carp in novel areas of the upper Illinois Waterway below the Electric Dispersal Barrier System (EDBS). The Lockport Pool survey was completed on 13 May 2021 and covered the area between the EDBS and Lockport Lock and Dam; a distance of about 5 river miles. The Brandon Road Pool survey was completed on 4 May 2021 and covered the area between Lockport Lock and Dam and Brandon Road Lock and Dam; a distance of about 4.25 river miles. The Dresden Island Pool survey was completed on 5 May 2021 and covered the area between Brandon Road Lock and Dam and Dresden Island Lock and Dam; a distance of about 13.5 river miles. The Kankakee River survey was completed on 11 May 2021 and covered the area between the Kankakee Conservation Area Boat Launch and the Kankakee's confluence with the Illinois Waterway; a distance of about 4.25 river miles. Where possible, EDM surveys consisted of traditional boat electrofishing and electrified dozer trawling in a combination of main-channel, side-channel, and backwater habitats. Electrofishing was performed in 15-minute sampling periods consisting of repeated passes perpendicular to and toward shore, with one crewmate collecting fish with a handheld dip net. Dozer trawling was conducted in 5-minute sampling periods consisting of s-shaped passes parallel to shore, and with fish collected by a net supported by a rigid frame at the boat's bow.

Highlighted results:

- No small-bodied (< 350 mm total length; TL) bigheaded carp were captured by USFWS in May 2021.
- No large-bodied (\geq 350 mm TL) bigheaded carp were captured outside their known range by USFWS in May 2021.

Table 1. Summary of USFWS invasive bigheaded carp early detection monitoring preliminary results from May 2021. Location is the section of river sampled. Electrofishing effort reports completed hours of two-person traditional boat electrofishing and n is the number of surveys completed. Dozer effort reports completed hours of electrified dozer trawling and n is the number of surveys completed. Small carp captured is the number of bigheaded carp with total length (TL) < 350 mm captured. Large carp captured is the number of bigheaded carp with total length \geq 350 mm captured. Total fish captured is the total number (N) of fish (all species) captured. Species richness is the count of species captured. Most abundant species is the common name of the fish species that was the largest proportion of total fish captured and n is the number of individuals of that species caught.

Location	Electrofishing Effort (h; n)	Dozer Effort (h; n)	Small carp captured	Large carp captured	Total fish captured (N)	Species richness	Most abundant species
Lockport	2.25 (n = 9)	0.75 (n = 9)	0	0	37	11	Round goby (n = 8)
Brandon Road	4.75 (n = 19)	1.23 (n = 15)	0	0	149	11	Emerald shiner (n = 100)
Dresden Island	2.00 (n = 8)	1.58 (n = 19)	0	0	295	26	Common carp (n = 87)
Kankakee	2.5 (n = 10)	0.84 (n = 10)	0	1 (Silver carp, 847 mm, TL)	525	36	Channel shiner (n = 88)

Invasive Carp Demographics

In May 2021, the U.S. Fish and Wildlife Service – Columbia Fish and Wildlife Conservation Office began the fourth year of a fisheries-independent, standardized protocol to update parameter estimates and address data gaps associated with the Spatially Explicit Asian carp Population (SEACarP) model. 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 May 17th, and 24th, electrified dozer trawl crews deployed to the LaGrange, and Peoria pools. A total of 821 Silver Carp were captured in in these two pools, and sizes ranged from 115mm-847mm in the two pools sampled in May (Table 2). Sex and maturity were evaluated on all Silver Carp captured and data is pending.

Table 2. Sampling effort and preliminary results, May 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)
LaGrange	506	50	10.17	1.84	425-847
Peoria	315	50	6.27	2.79	115-770

Telemetry Support for the Spatially Explicit Asian Carp Population Model (SEACarP)

Stationary acoustic telemetry receivers were retrieved and downloaded from Alton, LaGrange, and Peoria pools to complete spring downloading of SIU's Illinois River receiver array. Asian carp detections were screened for QA/QC and submitted to USGS for inclusion in the FishTracks database.

Telemetry

United States Army Corps of Engineers (USACE)

USACE biologists captured 19 Common Carp, tagged them, and released them within the Lockport Pool. An additional 21 were captured from, tagged, and released within the Brandon Road Pool. The network of telemetry receivers was also downloaded in the month of May. Post download analysis of the 28 receivers in the network indicated that one fish transited from Brandon Road Pool to Lockport Pool. Another fish moved from Lockport to Brandon back to Lockport over approximately a 24-hour period between March 31 and April 1. A third fish moved from Brandon Road Pool to Dresden Island Pool. All here of these fish were Common Carp. The next download of the full receiver network will be in July.

Monitoring of Asian carp reproductive productivity

Illinois Natural History Survey (INHS) collected ichthyoplankton samples at 7 main channel sites located from the Brandon Road to LaGrange navigation pools during every week of May. 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 Asian carp spawning in these rivers. Main channel samples from the Brandon Road to Peoria pools were screened for the presence of species-specific DNA derived from eggs or larvae using quantitative PCR (qPCR) methodology.

Water temperatures in the Illinois River were above 17° C during the first week of May, but water levels were stable or declining during this time. A cold front during the second week of May resulted in significant precipitation and a rapid increase in river stage height, but also a sharp decline in water temperatures. Water temperatures again climbed above the threshold thought to be conducive to Asian carp spawning during the third week of May. River flows were stable or declining in and upstream of the Peoria Pool, but continued to increase in the LaGrange Pool during this time. No large-diameter eggs were observed in any samples prior to or during this week, and qPCR screening did not suggest the presence of Bighead Carp or Silver Carp eggs or larvae from any samples up to this time. However, one replicate sample from Spring Valley (Peoria Pool) on May 18 did contain a sufficient quantity of Black Carp DNA to warrant closer examination of all eggs from this sample. Because of the small size of the eggs in the sample and lack of positive detections in any of the other replicates from that site and date, this result is currently considered an unverified detection pending direct confirmation of the species identity of the eggs in this sample. Following further analyses of these eggs, updated information on this sample will be provided. Despite declining river stage height during the last week in May, low densities of likely Asian carp eggs were observed in the LaGrange Pool, as well as in LaGrange Pool tributaries. Full processing of all ichthyoplankton samples and identification of larval fish and eggs is ongoing. Occurrences of Asian carp eggs or larvae, particularly upstream of Starved Rock L&D, will be reported as soon as this information is available.

Zooplankton as dynamic assessment targets for Asian carp removal

INHS collected zooplankton and water chemistry samples at 11 main channel and backwater sites located in the Brandon Road to LaGrange navigation pools during the weeks of May 3 and May 17.

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 Asian carp removals and develop dynamic targets for diminishing the ecological impacts of Asian carp.

Barrier Operational and Maintenance Status

In the month of May, barrier IIB was off for cooling system upgrades and periodic outages were experienced at the barriers, but a 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 (ID) – 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)

May 11 – Barrier 1D and IIA had loss of utility power for approximately 1 hour. IIA successfully transferred to generator power and experienced no loss of power to the water. 1D was not able to maintain power in the water for 16 minutes during the switch between utility and generator power sources until a manual reset was performed. Barrier 1N was run continually at during this time.

May 11-13 – Barrier 1N off periodically for testing

May 15 – Barrier 1D and 1N both faulted and lost power to the water. Barrier 1D was off from 11:38 pm on May 15th and was powered back up at approximately 7:03 am on May 16th resulting in an outage of approximately 7 hrs and 25 mins. Barrier 1N faulted at approximately 2:33 am on May 15th and reenergized at approximately 6:44 on May 15th resulting in an outage of approximately 4 hrs and 11 mins. IIA was operating normally at this time.

May 18 – Barrier 1N had experienced a fault and was off until approximately 10am of the 24th. 1D and IIA were operational at this time.

May 27 – Barrier 1N had a three-hour outage to address the cooling system leak that caused the May 18th outage. 1D and IIA were operational at this time.

Alternate Pathway Surveillance in Illinois - Law Enforcement

Two fishermen were cited for possessing live rusty crayfish, an Illinois injurious species, while fishing with them as bait. ISU initiated investigations to determine the source of the crayfish but based upon information gathered so far, it is believed they were wild caught by the fishermen and not purchased from a bait shop.

ISU gave a presentation on the development and benefits of Illinois' invasive species unit at the Great Lakes Panel on Aquatic Nuisance Species Organisms in Trade virtual sessions.