



Monitoring and Response Workgroup (MRWG)
Monthly Activities
2021 November 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. A large number of small (<6”) Grass Carp, and Silver Carp are being collected in the Peoria Reach on down. **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 November 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	52600	45000	83800
Miles of Net Fished	29.9	25.6	47.6
Hoop Net Nights	163.8	156.2	164.4
Mini Fyke Net Nights	22.2	20.8	22.9
Electrofishing Runs	69	77	102
Electrofishing Time (hrs)	17.3	19.3	25.55
Dozer Trawl Runs	0	0	96
Dozer Trawl (hrs)	0.0	0.0	8.05
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	47400	49800	90000
Miles of Net Fished	26.9	28.3	51.1
Hoop Net Nights	158.9	160.4	162.4
Mini Fyke Net Nights	33.1	20.6	22.6
Electrofishing Runs	61	69	101
Electrofishing Time (hrs)	15.3	17.3	25.25
Dozer Trawl Runs	0.0	0.0	104
Dozer Trawl (hrs)	0	0	8.63
Total Asian Carp (AC)	0	0	0
Tons of AC Harvested	0	0	0

*indicates Grass Carp

Dresden Island Pool (Including Rock Run Rookery)

Effort	2019	2020	2021
Yards of Net Fished	159250	103800	184300
Miles of Net Fished	90.5	59.0	104.7
Hoop Net Nights	96.2	162.4	162.5
Mini Fyke Net Nights	66.2	68.1	121.9
Electrofishing Runs	73	87	372
Electrofishing Time (hrs)	18.3	21.8	37.3
Pound net night	2	0	3
Dozer Trawl Runs	0	0	178.0
Dozer Trawl (hrs)	0.0	0.0	14.82
Bighead Carp	45	22	33
Grass Carp	8	3	5
Silver Carp	274	140	146
Total AC	327	165	184
Asian Carp (AC) from Rock Run Rookery Lake (RR)	49	21	28
AC upstream I-55 (not in RR)	8*	2*	6
AC downstream I-55	259	142	150
Tons of AC Harvested	2.6	1.2	1.3
AC/1000 yds of gill net	1.9	1.6	0.9

*indicates Grass Carp

Marseilles Pool

Effort	2019	2020	2021
Yards of Net Fished	209210	197470	203450
Miles of Nets Fished	118.9	112.2	115.6
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
Pound Net nights	26	0	0
Bighead Carp	1,237	1,349	1,995
Grass Carp	80	31	45
Silver Carp	39,041	33,487	26,951
Total Asian Carp	40,358	34,867	28,991
Tons of AC Harvested	226.7	174.7	160.8
AC/1000 yds of gill net	190.7	176.4	132.4

Starved Rock Pool

Effort	2019	2020	2021
Yards of Net Fished	354815	249580	280750
Miles of Nets Fished	201.6	141.8	159.5
Hoop Net nights	162.1	170.7	168.0
Mini Fyke Net Nights	61.7	71.4	72.0
Electrofishing Runs	106	108	96
Electrofishing Time (hrs)	26.5	27.0	24.0
Pound Net nights	1	0	0
Bighead Carp	2,135	2,221	736
Grass Carp	2,687	890	706
Silver Carp	144,387	115,909	116,480
Total Asian Carp	149,209	119,020	117,922
Tons of AC Harvested	512.9	267.3	317.2
AC/1000 yds of gill net	416.6	474.7	352.6

Contracted Fishing Below the Electric Dispersal Barrier

- Contracted fishing took place in Lockport, Brandon Road, and Dresden Island Pools of the Illinois River Waterway
- Contracted fishers set and pulled 85,400 yards of gill/trammel net
- 30,740 fish representing 18 species were captured during contracted commercial netting
- **58 Bighead Carp, 37 Grass Carp, and 25,919 Silver Carp were removed**
- **152,267 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 November 2021. For comparison purposes, data from the same time period in 2019 and 2020 are included.

Effort	2019	2020	2021
Number of Days Fished	140	99	110
Number of Net Crew Days	668	562	663
Yards of Net Fished	823,275	645,650	842,300
Miles of Nets Fished	467.8	366.8	478.6
Number of Pound Net Nights	28	0	3
Number of Hoop Net Nights	0.0	0	0.0
Number of Bighead Carp	3,412	3,592	2,764
Number of Grass Carp	2,751	898	756
Number of Silver Carp	182,637	148,987	141,164
Number of Carp	188,800	153,477	144,684
Tons of AC Harvested	742.3	532.2	479.3
AC/1000 yds of gill net	228.5	237.7	149.6

USACE

Traditional Monitoring – During the month of November, USACE biologists conducted eight fixed 15-minute electrofishing runs downstream of the barrier. Four sites were in Lockport Pool and four sites were in Brandon Road Pool. Within the Lockport Pool, 556 individuals were captured across 11 species. The five most abundant species captured were gizzard shad under 6 inches (43%), emerald shiner (34.2%), gizzard shad over 6 inches (17.8%), threadfin shad (2.3%), and golden shiner (0.9%). Within the Brandon Road Pool, 94 individuals were captured across eight species. The five most abundant species found were common carp (50%), emerald shiner (19.1%), smallmouth bass (14.9%), gizzard shad over 6 inches (5.3%), and a tie between brook silverside, largemouth bass, and channel catfish all at 3.2% of the catch. No invasive carp were captured or observed during the month of November.

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 2,865,906 pounds have been caught for a total of 6,266,762 pounds. Of these total catches, 5.98% are Bighead, 70.67% are Silver and 23.35% are Grass carp. **No Black carp have been reported.**

Table 1. Table of Enhanced Contract Fishing – Peoria Pool from inception, September 2019 through November 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 November)	2,865,906	173,465	2,138,384	554,057
GRAND TOTALS	6,266,762	374,472	4,428,856	1,463,434

* September 2019 program inception.

** No Black carp reported.

Monitoring Bigheaded Carp Movement and Density in the Illinois River

Stationary telemetry receivers were retrieved and downloaded in Alton, LaGrange, and Peoria pools. Data were processed for QA/QC. Acoustic telemetry tags (160) were also implanted into bigheaded carp in Alton (68), LaGrange (67), and Marseilles (25) pools.

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

The U.S. Fish and Wildlife Service conducted three mobile hydroacoustic fish surveys this month at the Electric Dispersal Barrier System (EDBS) on November 1, November 15, and November 30, 2021. The surveys were 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

- Nov 1, 2021: Two large fish tracks \geq -28.7 dB (12 inches TL) were detected within the EDBS on November 1, 2021, one just downstream of the start of Barrier IIA (but upstream of the Romeo Road Bridge) and one within Barrier IIA. Both fish tracks were detected in Replicate Survey #3. Six large fish tracks \geq -28.7 dB were detected downstream of the EDBS, one during Replicate Survey #1, three during Replicate Survey #2, and two during Replicate Survey #3.
- Nov 15, 2021: One large fish track \geq -28.7 dB was detected within the EDBS on November 15, 2021, between Barrier IIB and Barrier I. Notably, Barriers IIA and IIB were turned off at the time of this survey. Three large fish tracks \geq -28.7 dB were detected downstream of the EDBS, all during Replicate Survey #2.

Nov 30, 2021: Zero large fish tracks ≥ -28.7 dB were detected within the EDBS on November 30, 2021. Two large fish tracks ≥ -28.7 dB were detected downstream of the EDBS, both during Replicate Survey #1.

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 November 17-19, 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). Lastly, the hydroacoustic survey in Dresden Island Pool covered the area between Brandon Road Lock & Dam and Dresden Island Lock & Dam (23 km). 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:

Ten (10) fish tracks corresponding to a fish > 12 " was detected in Lockport Pool in 1,472,757 m³ of surveyed water on November 17, 2021. Mean target strength (TS) of fish tracks was -25.6 dB (SE = 0.86). Fish tracks were primarily located in the middle portion of the pool (Figure 1A).

Brandon Road Pool:

Sixteen (16) fish tracks corresponding to fish > 12 " were detected in Brandon Road Pool in 953,587 m³ of surveyed water on November 18, 2021. Mean TS of fish tracks was -27.3 dB (SE = 0.33). Most fish tracks were aggregated in the middle of the pool (Figure 1B).

Dresden Island Pool:

Forty-two (42) fish tracks corresponding to fish > 12 " were detected in Dresden Island Pool in 3,264,784 m³ surveyed of water on November 19, 2021. Mean TS of fish tracks was -25.8 dB (SE = 0.34). Fish tracks were generally interspersed throughout the pool (Figure 1C).

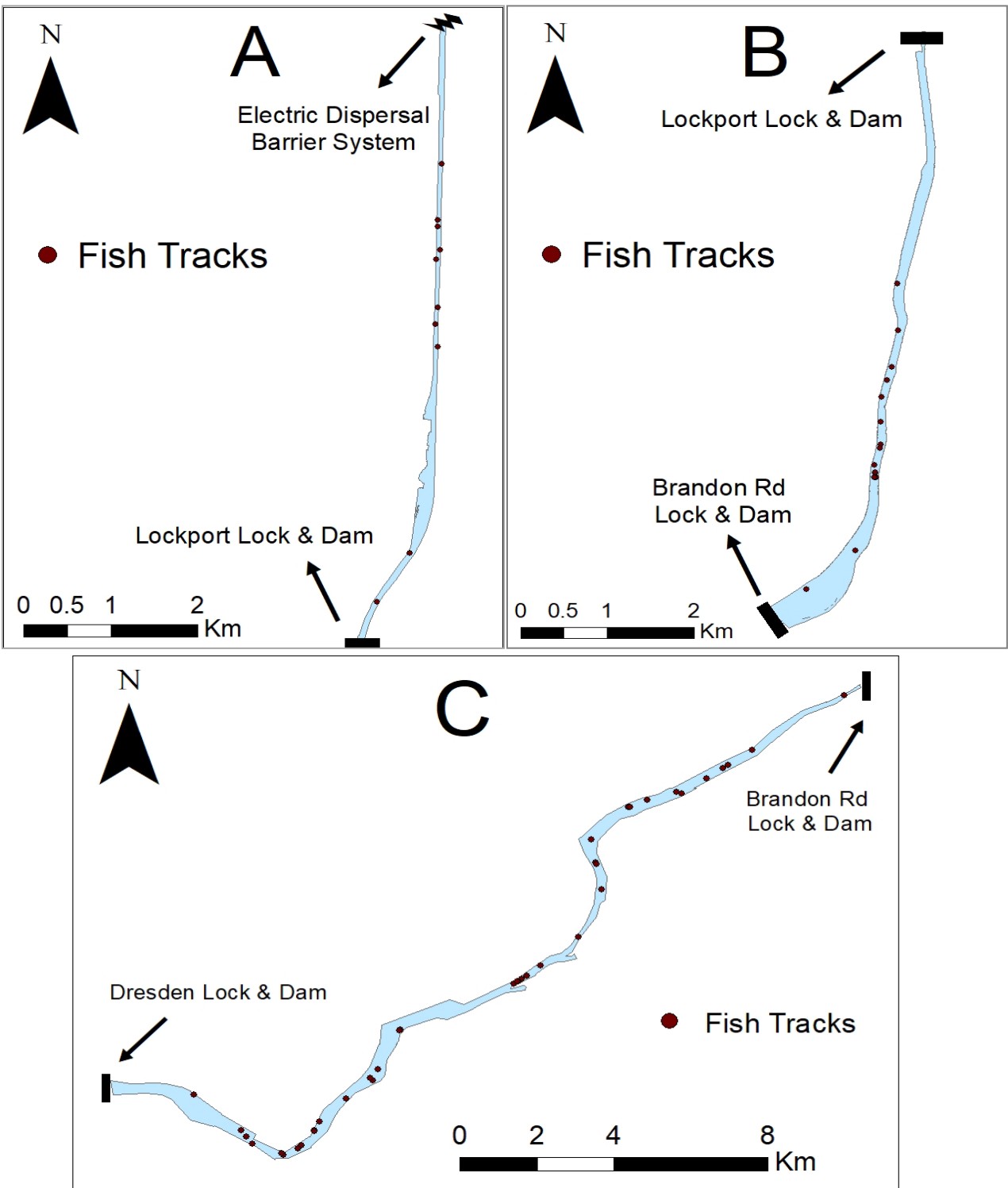


Figure 1: Locations of fish tracks detected from hydroacoustic surveys in Lockport (A), Brandon Road (B), and Dresden Island (C) pools of the Upper Illinois Waterway during November 2021.

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 sampling to detect 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 18 November 2021 and covered the area between the EDBS and Lockport Lock and Dam; ~ 5 river miles. The Brandon Road Pool surveys were completed on 19 November 2021 and covered the area between Lockport Lock and Dam and Brandon Road Lock and Dam; ~ 4.25 river miles. The Dresden Island Pool surveys were completed on 24 November 2021 and covered the area between Brandon Road Lock and Dam and Dresden Island Lock and Dam; ~ 13.5 river miles. The lower Kankakee River surveys were completed on 12 November 2021 and covered the area between the first railway bridge above Kankakee Conservation Area Boat Launch and the Kankakee's confluence with the Illinois Waterway; ~ 4.25 river miles. Where possible, early detection monitoring (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 LTRM-style 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 November 2021.
- No large-bodied (\geq 153 mm TL) invasive carp were captured outside their known range by EDM in November 2021.

Table 2. Summary of USFWS invasive carp early detection monitoring preliminary results from November 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)	Minifyke 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	11	1067	Gizzard shad, $n_i=948$
Brandon Road	5.25h; $n_e=21$	1.83h; $n_d=22$	$n_n=0$	0	0	24	578	Gizzard shad, $n_i=184$
Dresden Island	7h; $n_e=28$	2.92h; $n_d=35$	$n_n=23$	0	0	42	6198	Bluegill, $n_i=2240$
Kankakee	7.5h; $n_e=30$	2.58h; $n_d=30$	$n_n=20$	0	8 Silver Carp with total lengths Boat electrofishing: 803 mm, 890 mm Dozer trawl: 843 mm, 837 mm, 840 mm, 755 mm, 852 mm, 855 mm	57	7193	Emerald shiner, $n_i=2434$

Invasive Carp Demographics

In November 2021, the U.S. Fish and Wildlife Service – Columbia Fish and Wildlife Conservation Office finished 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 week of November 2nd, electrified dozer trawl crews deployed to the Alton pool. A total of 28 Silver Carp were captured in the Alton pool, and sizes ranged from 65mm-655mm (Table 3). Sex and maturity were evaluated on all Silver Carp captured.

Table 3. Sampling effort and preliminary results, November 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	28	7	8.2771	0.872286	65-655

Telemetry

USACE

In the month of November USACE biologists conducted downloads of all receivers within the telemetry network between the CSSC/Cal Sag Channel confluence and the Dresden Island Lock and Dam. USACE also winterized the network by removing several receivers from the system and leaving eight select receivers up and downstream of the electric dispersal barrier system, the Lockport Lock, and Brandon Road Lock and upstream of the Dresden Island Lock. There were three fish that were observed to transition between the navigation pools between the end of September and November. One fish transited multiple times between the Brandon Rd and Lockport pools between September 27th and October 21. This fish started in Brandon Road, moved to Lockport, and back to Brandon Road during this time. Two other fish transited between Brandon Rd and Dresden Island pools, one on October 28th and a second on November 1st. All three of these fish are common carp. USACE observed no Asian Carp movement outside of their known

population front when a preliminary check of the data was completed. A full analysis of the telemetry data between November 2020 and November 2021 is currently underway and will be included in the 2021 Interim Summary Report to be released in 2022.

Telemetry Support for the Spatially Explicit Invasive Carp Population Model (SEICarP)

During November 2021, a Wilmington Fish and Wildlife Service crew conducted a total of two days of effort for the SEICarP telemetry project. Efforts focused on maintaining and downloading data from stationary telemetry equipment. All receivers were recovered, downloaded, and redeployed in the same locations.

Table 4. Detections of fish at each receiver location in the Peoria Pool. Receiver = serial number, Station name = combination of river mile (RM) and geographic/visual location information, # Fish = number of unique tagged individuals, # Detections = number of recorded detections by a receiver.

Receiver	Station Name	# Fish	# Detections
VR2W-129785	RM166.6 Peoria Lake Narrows	3	85
VR2W-129781	RM182.4 US Chilli Bridge_Peninsula	0	0
VR2W-129779	RM188.1 DS Lacon_MC Sawyer Slough	12	25687
VR2W-129787	RM194.8 US Upper Henry Island	8	11802
VR2W-137063	RM202.7 Lower Twin Sisters Island	2	745
VR2W-137065	RM216 US of Clark Island	2	1493
Totals		26	39812

Barrier Operational and Maintenance Status

In the month of November, 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 (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)

November 1 – Barrier 1N underwent a scheduled shutdown between 0700 and 1400. Barriers 2A and 1D were operational at this time.

November 15 – 19 – Barrier 2A underwent a scheduled shutdown starting at 0715 on the 15th and continuing through 1700 on the 19th. During this time Barrier 1D was operating under normal conditions. Barrier 1N was also operating under normal condition except on November 17 between 1300 and 1445 where it was turned down to ~1.4 V/in at the surface and between 1445 and 1545 where it was turned down to ~1.2 V/in at the surface. This was done to accommodate electrical field testing within the barrier array. At 1545 Barrier 1N was returned to normal operating conditions.

Alternate Pathway Surveillance in Illinois - Law Enforcement

ISU identified and cited the individuals responsible for releasing \$4,458.12 of live frogs, Asian swamp eels, American eels, goldfish, and soft-shelled turtles into the Chicago river in July of 2021. District 4 Conservation Officers obtained videotaped footage of the release and were ultimately

able to identify the vehicle used to transport the individuals and aquatic life. Garbage left on the riverbank helped identify the Asian market where the aquatic life was purchased. The store manager provided a copy of the purchase receipt which listed all the species purchased and contained enough information to ultimately identify one of the four individuals involved. ISU and a District 4 CPO interviewed one of the suspects in Chicago's Chinatown who stated she was the manager of a Buddhist shrine. She explained the release was part of a life or merit release ceremony. The manager said people come to the shrine from all over the country and donate money which eventually is used to purchase and release aquatic life into the waterways approximately 4-5 times per year. ISU provided the shrine manager relevant IDNR regulations and emphasized the potential damage caused by such activities. The shrine manager was open to alternative options and willing to spread the word to others within her religious community. ISU relayed information gathered during the investigation to appropriate AIS outreach personnel. Fortunately, none of the aquatic life released was identified as Asian carps. The market where the aquatic life was purchased was cited for operating without a non-resident aquatic life dealer's license and possession of non-approved species.