# MONITORING AND RESPONSE WORKGROUP (MRWG)

# MONTHLY ACTIVITY UPDATES

SEPTEMBER 2024

# MONITORING AND RESPONSE WORKGROUP (MRWG)

September 2024

## Overview

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. The table below summarizes pool-specific results during September 2024 from all effort within the Upper Illinois Waterway. Additional effort may not be reported due to data processing, and true effort and catch could be higher. For complete yearly results, refer to the 2023 Interim Summary Report.

| **Lockport** | **September 2024** |
|---|---|
| Yards of Net | 0 |
| Hoopnet Nights | 0 |
| MiniFyke Nights | 4 |
| Electrofishing Runs | 0 |
| Electrofishing Hours | 0 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |
| Pound Net Night | 0 |
| Bighead Carp | 0 |
| Grass Carp | 0 |
| Silver Carp | 0 |
| Invasive Carp Caught | 0 |
| IC/1000 yards | 0 |
| Invasive Carp Pounds | 0 |

| Brandon Road | September 2024 |
|---|---|
| Yards of Net | 0 |
| Hoopnet Nights | 0 |
| MiniFyke Nights | 8 |
| Electrofishing Runs | 0 |
| Electrofishing Hours | 0 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |
| Pound Net Night | 0 |
| Bighead Carp | 0 |
| Grass Carp | 0 |
| Silver Carp | 0 |
| Invasive Carp Caught | 0 |
| IC/1000 yards | 0 |
| Invasive Carp Pounds | 0 |

| Dresden Island | September 2024 |
|---|---|
| Yards of Net | 16,900 |
| Hoopnet Nights | 28 |
| MiniFyke Nights | 16 |
| Electrofishing Runs | 36 |
| Electrofishing Hours | 9 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |
| Pound Net Night | 0 |
| Bighead Carp | 2 |
| Grass Carp | 0 |
| Silver Carp | 29 |
| Invasive Carp Caught | 31 |
| Invasive Carp Dresden Above I55 | 0 |
| Invasive Carp Dresden Below I55 | 31 |
| Invasive Carp Rock Run | 0 |
| IC/1000 yards | 1.8 |

| Dresden Island | September 2024 |
|---|---|
| Invasive Carp Pounds | 0 |

| Marseilles | September 2024 |
|---|---|
| Yards of Net | 0 |
| Hoopnet Nights | 0 |
| MiniFyke Nights | 0 |
| Electrofishing Runs | 15 |
| Electrofishing Hours | 3.75 |
| Pound Net Night | 0 |
| Bighead Carp | 0 |
| Grass Carp | 0 |
| Silver Carp | 4 |
| Invasive Carp Caught | 0 |
| IC/1000 yards | 0 |
| Invasive Carp Pounds | 0 |

| Starved Rock | September 2024 |
|---|---|
| Yards of net | 31850 |
| Hoopnet Nights | 0 |
| MiniFyke Nights | 0 |
| Electrofishing Runs | 0 |
| Electrofishing Hours | 0 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |
| Pound Net Night | 0 |
| Bighead Carp | 13 |
| Grass Carp | 39 |
| Silver Carp | 6,451 |
| Invasive Carp Caught | 6,503 |
| IC/1000 yards | 204.5 |
| Invasive Carp Pounds | 42,236 |

# MULTIPLE AGENCY MONITORING OF THE ILLINOIS RIVER FOR DECISION MAKING

IL DNR

## Introduction

The leading edge for Bighead Carp and Silver Carp in 2024 was within the Dresden Island Reach, for Grass Carp the CAWS, and for Black Carp the Peoria Reach. Utilizing a standardized, multiple-gear approach has been critical in determining the geographic expanse of invasive carp and monitoring their relative abundance. there is value in monitoring reaches downstream of the EDBS (Lockport through Alton reaches) using a standardized, multiple-gear sampling approach. Doing so will allow for an accurate, comparable, and representative understanding of invasive carp distribution and abundance in the Illinois River between the EDBS and the Alton Reach.

## September 2024 Highlights

| **Lockport** | **IL DNR** |
|---|---|
| Hoopnet Nights | 0 |
| MiniFyke Nights | 4 |
| Electrofishing Runs | 0 |
| Electrofishing Hours | 0 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |

| **Brandon** | **IL DNR** |
|---|---|
| Hoopnet Nights | 0 |
| MiniFyke Nights | 8 |
| Electrofishing Runs | 0 |
| Electrofishing Hours | 0 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |

| **Dresden Island** | **IL DNR** |
|---|---|
| Hoopnet Nights | 28 |
| MiniFyke Nights | 16 |
| Electrofishing Runs | 36 |

| Dresden Island | IL DNR |
|---|---|
| Electrofishing Hours | 9 |
| Dozer Trawl Runs | 0 |
| Dozer Trawl Hours | 0 |
| Bighead Carp | 0 |
| Grass Carp | 0 |
| Silver Carp | 0 |
| Invasive Carp Caught | 0 |
| Invasive Carp Dresden Above I55 | 0 |
| Invasive Carp Dresden Below I55 | 0 |
| Invasive Carp Rock Run | 0 |

| Marseilles | IL DNR |
|---|---|
| Hoopnet Nights | 0 |
| MiniFyke Nights | 0 |
| Electrofishing Runs | 15 |
| Electrofishing Hours | 3.75 |
| Bighead Carp | 0 |
| Grass Carp | 0 |
| Silver Carp | 4 |
| Invasive Carp Caught | 0 |

# BARRIER MAINTENANCE AND FISH SUPPRESSION

IL DNR, USACE

## Introduction

U.S. Army Corps of Engineers (USACE) operates three electric dispersal barriers (Barrier 1, Barrier IIA, and Barrier IIB) for aquatic invasive species in the Chicago Sanitary and Ship Canal (CSSC), collectively referred to as the EDBS. USACE has operated electric barriers in the CSSC since 2002. Over the years, several operational and procedural improvements have been implemented to improve the effectiveness and continuously deliver an uninterrupted flow of electricity to the water to deter fish.

## September 2024 Highlights

The barriers are currently operating at the following parameters (30 September 2024) but are subject to change:

Barrier I – 1D (Full water - 5 Hz, 4 ms, 100 V = ~1.0 V/in & benthic 5 Hz, 4 ms, 100V) Operational
1N- Out of Service- Blown power sensing relays and fuses. Repairs completed 2 October 2024.
1S- (34 Hz, 2.3 ms, 1200 V = 2.3 V/in) Operational
IIA – Narrow (34 Hz, 2.3 ms, 2000 V = 2.3 V/in) & Wide (34 Hz, 2.3 ms, 800 V= ~1.0 V/in) arrays Operational
IIB – Standby Mode

The unscheduled outages that occurred in September of 2024 are as follows:
9/4/2024 – B1D array –1 day, 4 hours, and 5 minutes– Loss of phase L3 on feeder J8772

9/24/2024 – B1D array – 1 day, 7 hours, 35 minutes – Loss of power to control cabinet

9/25/2024 – B1D array – 1 hour, 8 minutes – Loss of Utility power from feeder J8772

## Traditional Monitoring

During the month of September, USACE biologists conducted sixteen 15-minute electrofishing runs downstream of the barrier. Eight sites were in Lockport Pool and eight sites were in Brandon Road Pool. In Lockport Pool, a total of 632 individuals across 18 species were captured with the top five most abundant fish being Emerald Shiner, Gizzard Shad (<6 inches), Gizzard Shad (>6 inches), Bluntnose Minnow, and Largemouth Bass. In Brandon Road Pool, a total of 187 individuals across 24 species were captured with the five most abundant fish being Emerald Shiner, Gizzard Shad (>6 inches), Gizzard Shad (<6 inches), Smallmouth Bass, and White Sucker. No live or dead invasive carp was caught or observed during the month of September.

# USFWS ILLINOIS WATERWAY HYDROACOUSTICS

USFWS

## Introduction

The purpose of USFWS hydroacoustic monitoring in the upper Illinois Waterway (IWW) is to enhance invasive carp management by reporting spatial and temporal patterns of fish abundance. Hydroacoustic data aids operation, maintenance, and response at the electric dispersal barrier system (EDBS). Density and distribution data enhance targeted harvesting efforts throughout navigational pools. Consistent hydroacoustic data collection allows managers to annually assess the risk of further upstream spread of invasive carp. Hydroacoustic estimates of length and depth of targets, along with corresponding telemetric data, allow managers to make inferences about possible fish species identified as targets. Targets detected across replicate surveys may identify the same target. USFWS hydroacoustic barrier surveys are conducted monthly, and pool scans are conducted annually in the fall. Additional barrier and pool scans can be conducted upon request. Further details regarding the methods of data collection and use of hydroacoustic data can be provided upon request.

## September 2024 Highlights

The results of the mobile hydroacoustic fish surveys are presented below:

- USFWS completed a scan at the EDBS on September 3rd, 2024, identifying a total of 29 targets (7 targets within the EDBS and 22 targets immediately below the barrier, see Figure 1). An average of 9.7± 2.5 targets were detected during the three replicate surveys, see Figure 2. The mean target length was 14.6 inches ± 3.7 inches; three outliers were observed with lengths of 20.9, 25.2, and 26.5 inches (Figure 3).
- The USFWS completed three pool scans in the month of September.

  Dresden Island Pool: September 4th, 2024, a total of 382 large targets in 1,975,590 $m^3$ of water were detected (Figure 4). Mean target length was 17.9 ± 6.1 inches; 12 outliers were observed with lengths of 30.1, 31.4, 32.1, 33.6, 34.8, 35.9, 39.9, 40.6, 41.7, 45.6, 50.6, and 54.9 inches (Figure 3).

  Brandon Road Pool: September 10th, 2024, a total of 138 large targets in 933,377 $m^3$ of water were detected (Figure 5C). Mean target length was 19.5 ± 8.5 inches; eight outliers were observed with lengths of 36.0, 38.8, 43.0, 44.8, 50.5, 53.4, 54.5, and 56.0 inches (Figure 3).

  Lockport Pool: September 9th, 2024, a total of 74 large targets in 1,811,375 $m^3$ of water were detected (Figure 5B). Mean target length was 19.6 ± 8.7 inches; six outliers were observed with lengths of 32.5, 33.9, 40.7, 44.2, 47.5, and 49.5 inches (Figure 3).

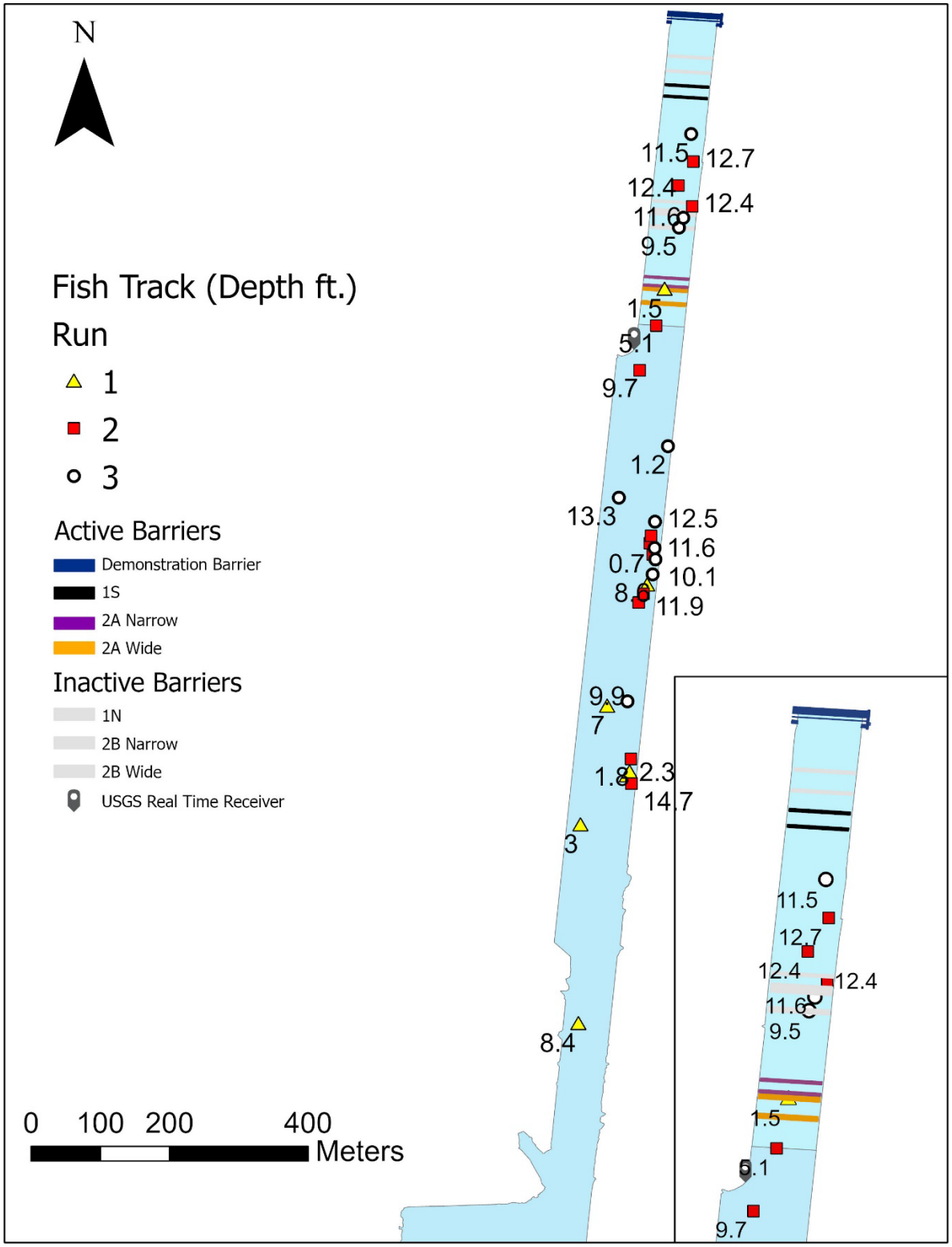


*Figure 1. Location of USGS real time receiver and targets ≥ 28.7 dB observed in the vicinity of the EDBS on September 3rd, 2024.*

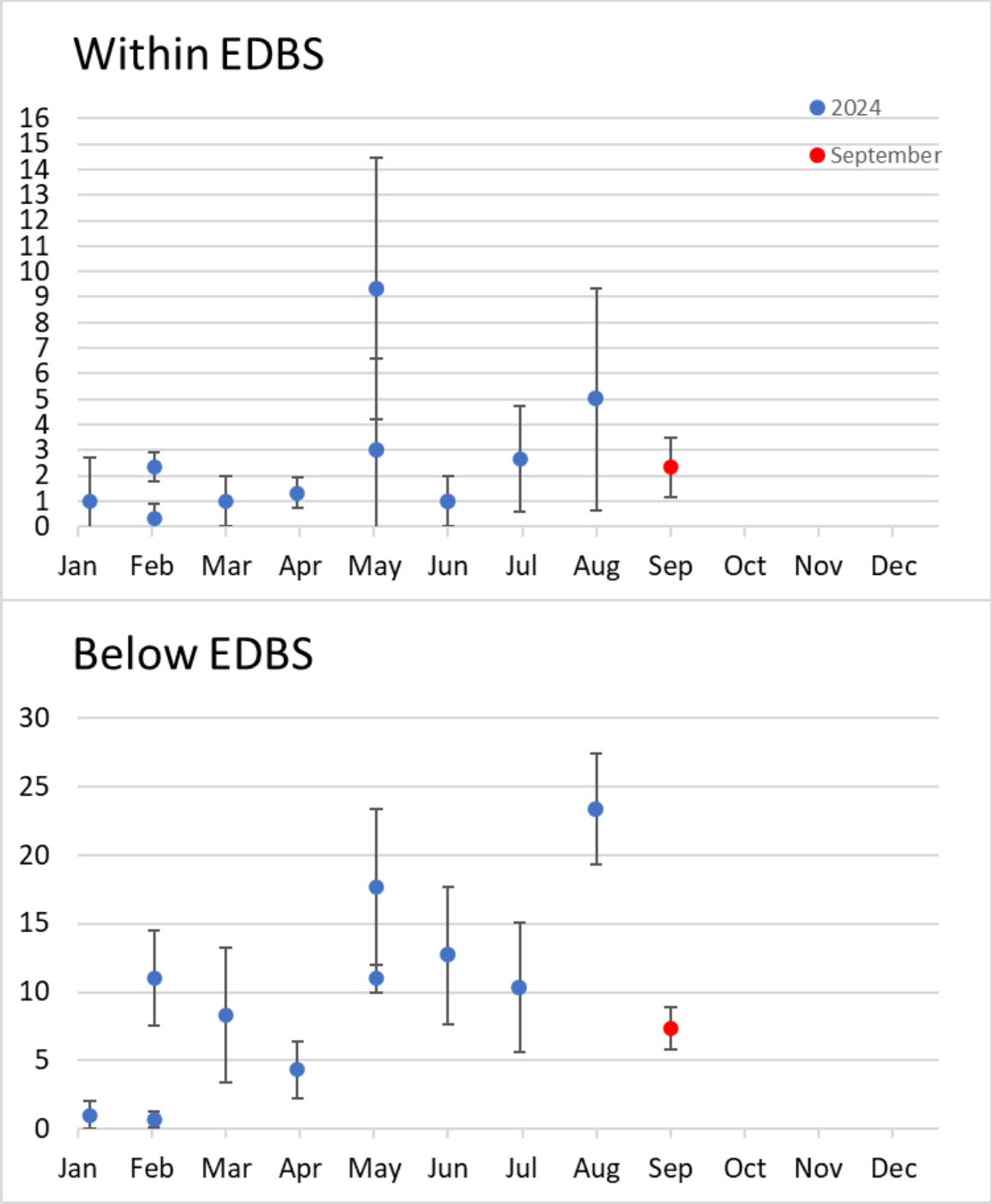


*Figure 2. Comparison of the mean and standard deviation for three replicate surveys from the current mobile surveys with previous surveys from 2024.*

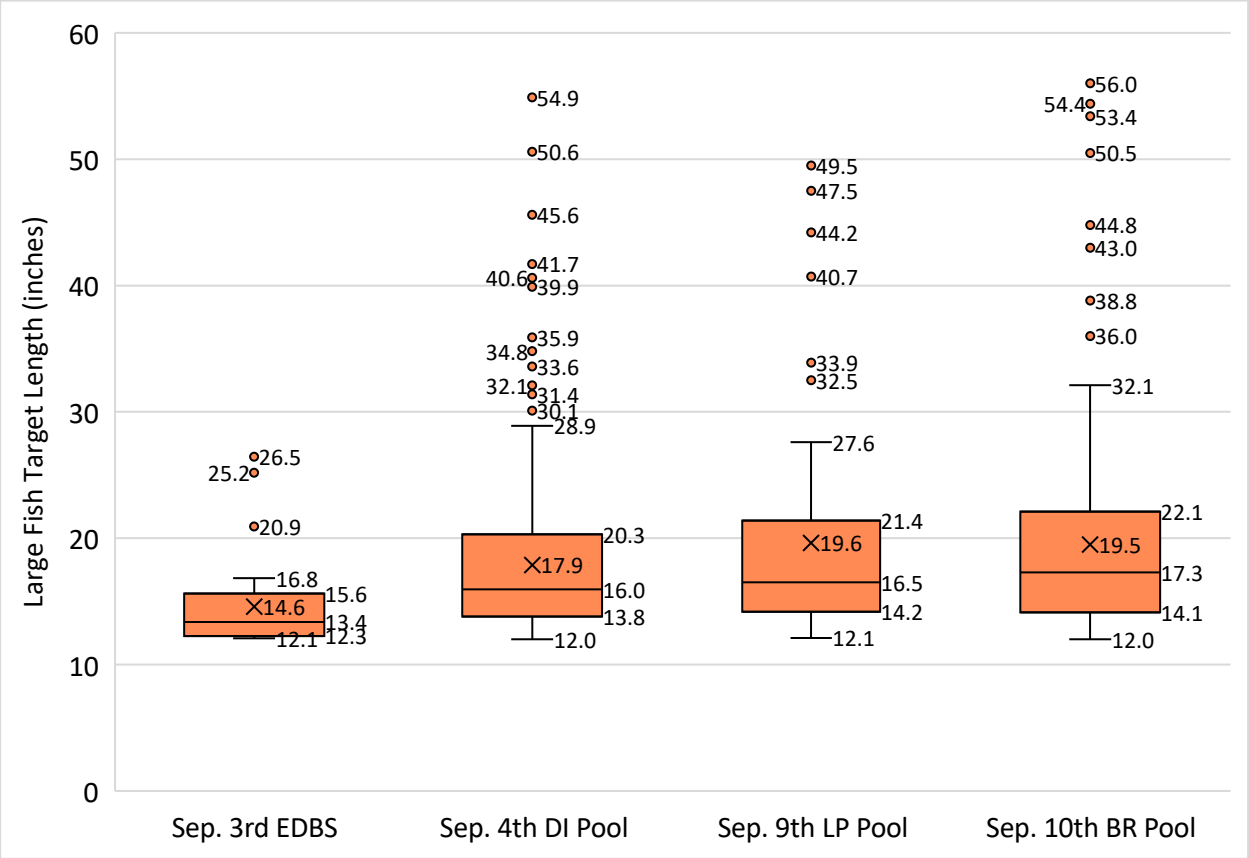


*Figure 3. Box-and-whisker plots of all targets ≥12 inches detected during the EDBS scan and the Dresden Island, Lockport, and Brandon Road Pool scans in September 2024. Outliers and their values are denoted by a point above the box-and-whisker plot.*

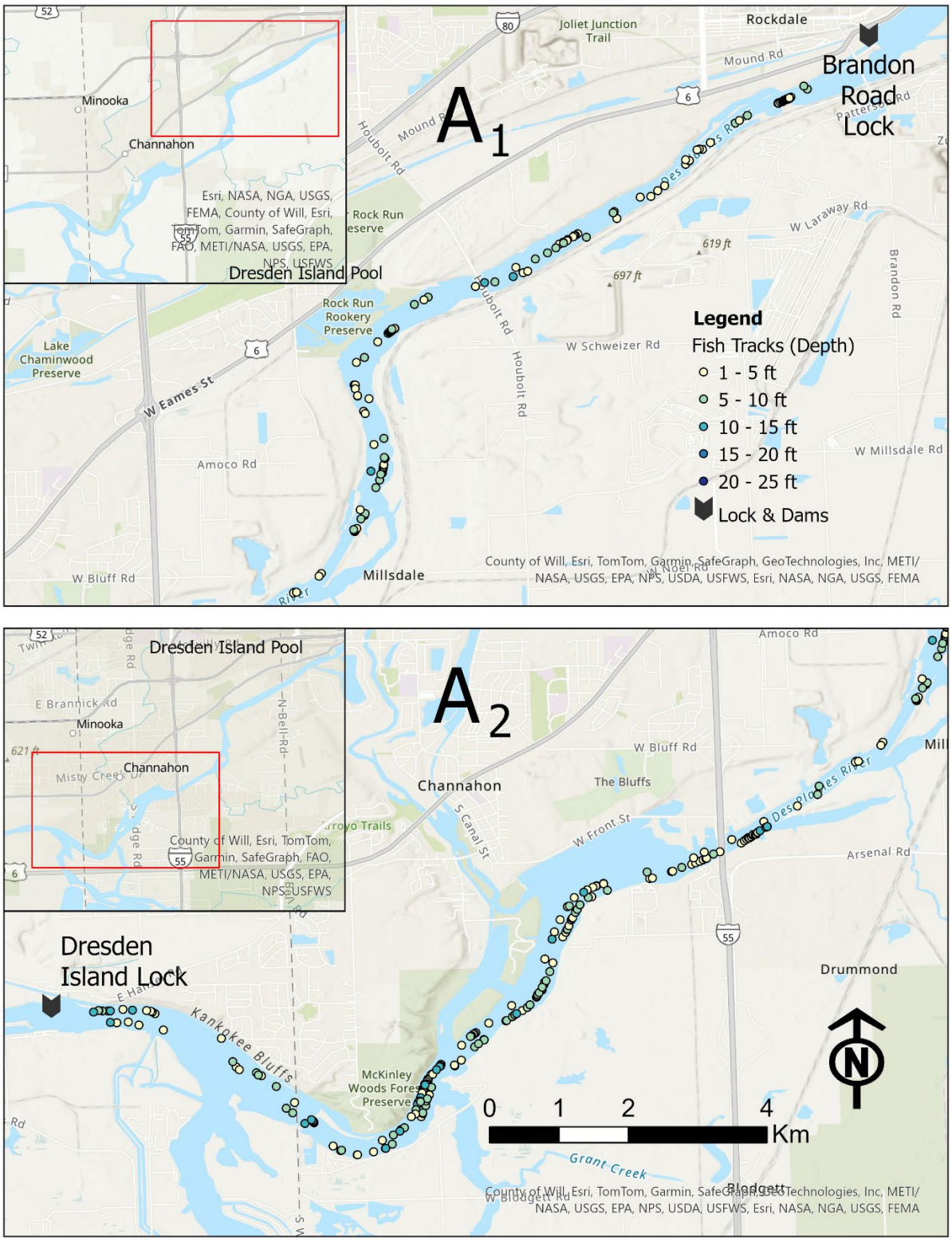


*Figure 4. Location of large targets detected from hydroacoustic survey in Dresden Island Pool of the Upper Illinois Waterway on September 4th, 2024. Dresden Island Pool is split into two sections: north of Treats Island (A1) and south of Treats Island (A2) to better show targets.*

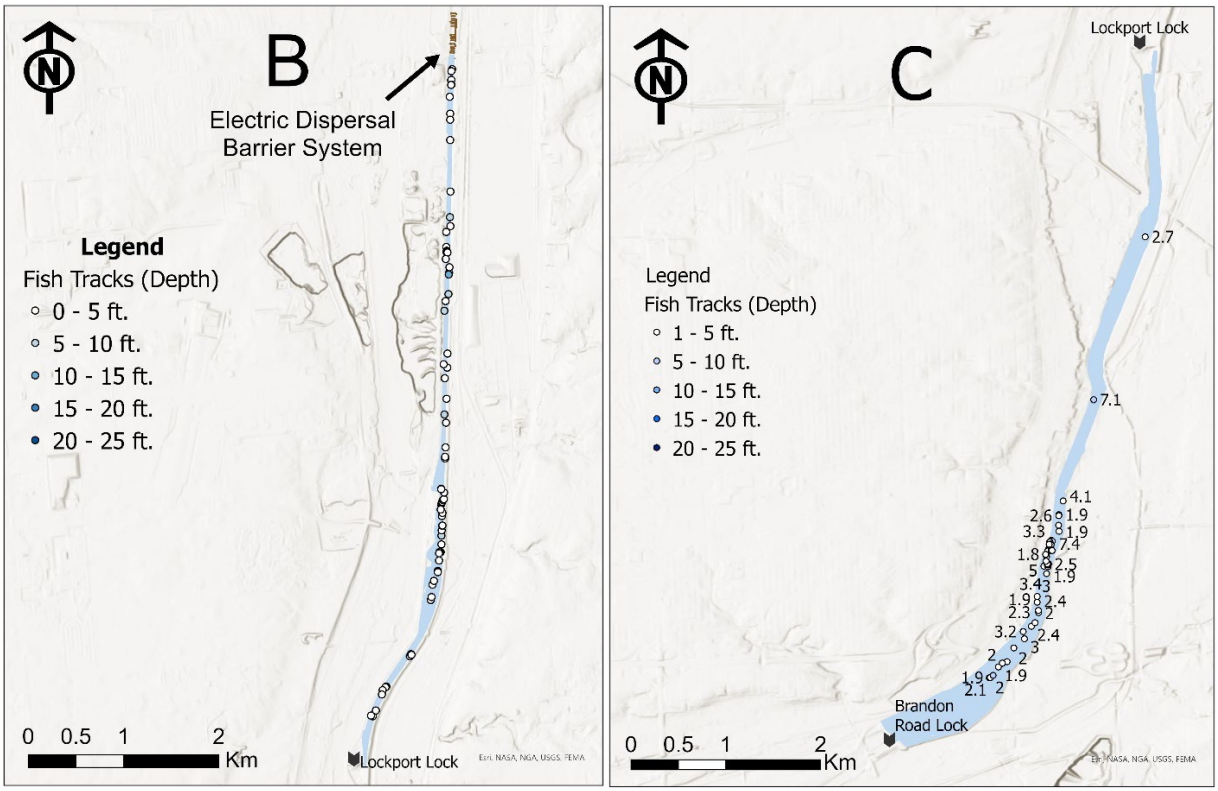


*Figure 5: Locations and depth of large targets detected from hydroacoustic surveys in Lockport (B) and Brandon Road (C) pools of the Upper Illinois Waterway during September 2024.*

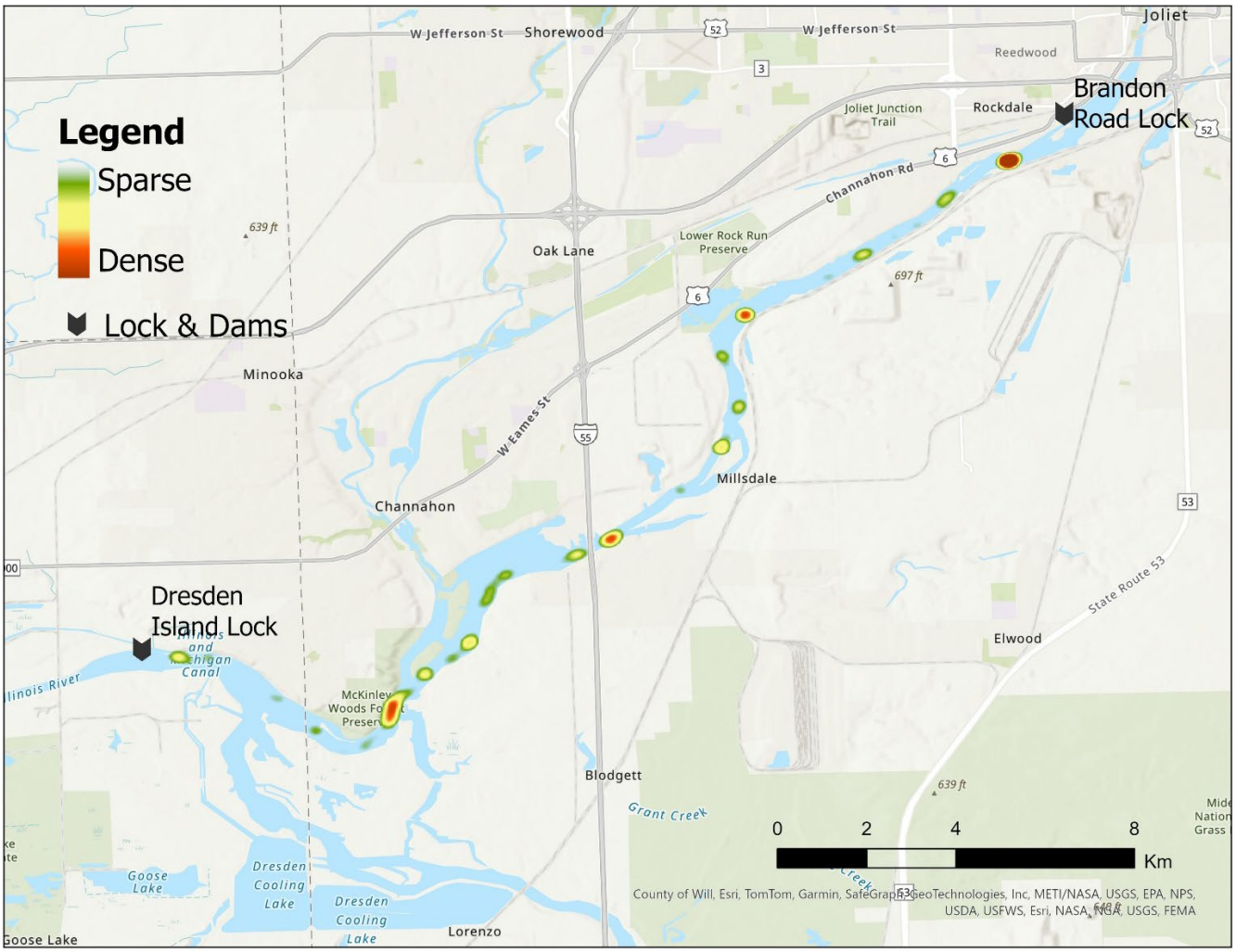


*Figure 6. Heatmap sent to IDNR for aid in invasive carp removal based on large targets detected in Dresden Island Pool on September 4th, 2024.*

# EARLY DETECTION OF INVASIVE CARP IN THE UPPER ILLINOIS WATERWAY

USFWS Wilmington

## Introduction

The purpose of US Fish & Wildlife Service (USFWS) Wilmington Substation early detection monitoring (EDM) is to detect juvenile and adult invasive carp (Bighead, Silver, Black, and Grass Carp) at the invasion front. A combination of traditional boat electrofishing, electrified dozer trawling, mini-fyke netting, and gill netting are used in main-channel border, side-channel, and backwater habitats in the Marseilles, Dresden Island, Brandon Road, and Lockport pools of the upper Illinois Waterway (IWW), and in the lower Kankakee River. Rarefaction analysis is performed annually to ensure an extremely high probability that sampling efforts are detecting any changes in invasive carp population status. The application of fishing gears across pools and habitats, utilizing fixed and random sites, is assessed annually based on the results of this analysis. The USFWS Great Lakes EDM Program is an adaptive management tool focused on invasive species detection.

## September 2024 Highlights

- No invasive carps were captured or observed outside of their known range in September.
- Sixty-five Silver Carp (584 mm – 940 mm total length [TL]) were removed from the Marseilles Pool.
- Two Silver carp (586- and 894-mm TL) were removed from Dresden Island Pool, and one Silver Carp (864 mm TL) was removed from the lower Kankakee River during September 2024.
- No small-bodied (< 153 mm TL) invasive carp were captured by EDM in September 2024.
- EDM dozer trawl effort was not completed in Dresden Island Pool due to station resources dedicated to MAM dozer trawl sampling in September.

Table one summarizes USFWS invasive carp EDM for each pool monitored in September 2024.

## Table 1. Summary of USFWS EDM effort during September 2024.

| - | Marseilles | Dresden Island | Kankakee | Brandon Road | Lockport |
|---|---|---|---|---|---|
| Electrofishing Effort (hours) | 4.25 | 4.25 | 3.75 | 2.75 | 2.25 |
| Electrofishing Sites | 17 | 17 | 15 | 10 | 9 |
| Dozer Trawl Effort (hours) | 1.67 | 0 | 0.17 | 0 | 0 |
| Dozer Trawl Sites | 20 | 0 | 2 | 0 | 0 |
| Mini-fyke Effort (net nights) | 18.53 | 19.32 | 13.88 | 0 | 0 |
| Gill Net Effort (yards) | 0 | 0 | 0 | 2000 | 1600 |
| Gill Net Sites | 0 | 0 | 0 | 10 | 8 |
| Small Carp Captured | 0 | 0 | 0 | 0 | 0 |
| Large Carp Captured | 65 | 5 | 1 | 0 | 0 |
| Species Richness | 45 | 46 | 40 | 22 | 13 |
| Total Catch | 7,134 | 1,801 | 1,006 | 126 | 389 |
| Most Abundant Species | Gizzard Shad | Gizzard Shad | Gizzard Shad | Gizzard Shad | Emerald Shiner |

# MONITORING INVASIVE CARP REPRODUCTION IN THE ILLINOIS WATERWAY

INHS

## Introduction

This project monitors for invasive carp reproduction in the IWW and major tributaries (Kankakee, Fox, Vermilion, Mackinaw, Spoon, and Sangamon rivers). Ichthyoplankton sampling will be conducted to assess the extent, timing, and magnitude of invasive carp reproduction in the IWW, monitor for Black Carp reproduction, and quantify relationships between invasive carp adult abundance, reproductive output, and recruitment. Samples will be collected from late April through October, with more frequent sampling effort during periods when temperature and flow conditions are considered optimal for invasive carp spawning.

## September 2024 Highlights

Monitoring for invasive carp reproduction was conducted during the weeks of September 2, September 16, and September 30. Ichthyoplankton monitoring from previous years indicates that the likelihood of invasive carp spawning diminishes considerably after mid-July, so routine sampling is usually conducted bi-weekly after the second week of July, unless hydrologic conditions or real-time telemetry information suggests the potential for invasive carp spawning is high. Illinois River water temperatures were consistently greater than 20°C and water levels were very low and stable throughout the month of September. INHS collected ichthyoplankton samples at sites from the Brandon Road to LaGrange Pools during this time. The Kankakee and Fox rivers were sampled in September, but water levels in other Illinois River tributaries were too low to allow for boat access. No clear evidence of invasive carp reproduction was observed during September. No evidence of invasive carp reproduction has been observed upstream of the Marseilles Pool thus far in 2024. Full processing of ichthyoplankton samples and identification of fish larvae is ongoing. Any additional identification of invasive carp eggs or larvae, particularly from samples collected upstream of the Starved Rock Lock and Dam, will be reported as soon as this information is available.

# ALTERNATE PATHWAY SURVEILLANCE IN ILLINOIS – LAW ENFORCEMENT

IL DNR

## Introduction

This project provides enforcement of laws enacted to prevent the expansion and/or introduction of AIS within the waters of the State of Illinois and jurisdictions throughout the Great Lakes basin. The IL DNR Invasive Species Unit (ISU) specializes in more closely regulating water-related industries that are likely to be a source of future introductions or expansion of AIS into state waters. Industries include sport and commercial fishing, aquaculture, fish transportation, bait, pet, aquarium, fish stocking, and live food markets.

## September 2024 Highlights

ISU attended the Great Lakes Fishery Commission Law Enforcement Committee meeting in Sault Ste. Marie, Ontario and provided an update on the Committee's "Least wanted" aquatic invasive species enforcement project. The multi-phase project is intended to identify distributors of aquatic invasive species within the Great Lakes basin and stop their illegal activities through enforcement actions.

# INVASIVE CARP POPULATION MODELING TO SUPPORT AN ADAPTIVE MANAGEMENT FRAMEWORK

USGS, USFWS

## Introduction

This project will develop objective, data-driven models to inform decisions concerning invasive carp control efforts in the Illinois River. This project supports ongoing modeling efforts to provide recommendations about the magnitude and spatial allocation of fishing effort and deterrent barriers to reduce the risk of Silver Carp and Bighead Carp introduction and establishment in the Great Lakes.

## September 2024 Highlights

The group involved with developing harvest and deterrent scenarios for the expanded SIECarP model met in mid-September to discuss the results of the scenarios that had been run and next steps in the modeling and writing process. The modeling work group has also reached out to the MRWG co-chairs to set up a meeting to discuss the results of these modeling efforts and to solicit feedback.

The modeling work group has also started the data management for using the length-based Bayesian method to estimate fishing mortality in the upper Illinois River.

Members of the modeling work group were also involved in a recent publication examining the spatial variation in detection probability of invasive carps using eDNA.

## Reference

Peterman, L., Tuttle-Lau, M., DeHaan, P. W., Coulter, D. P., Spear, S. F., & Erickson, R. A. (2024). Implications of spatial variation of eDNA detections across an invasion gradient for invasive species monitoring programs. *Journal of Fish and Wildlife Management*. https://doi.org/10.3996/JFWM-23-038.