

Mississippi River Unit Newsletter

Spring 2026



Upcoming Activities:

- World Fish Migration day 5/23
- Alabama Shad M&E
- Blue Sucker M&E
- Going for 40!
Featured vid: [Upper Mississippi River Restoration \(UMRR\) Celebrates 35 Years of History and Partnership - YouTube](#)



Missouri/Mississippi Confluence

Alabama Shad



[Missouri State Archives - MDC William Pfleger Collection - Missouri Digital Heritage Hosted Collections](#)

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What's inside?

Invasive Carp Movement Joshua.Abner@mdc.mo.gov

- Mississippi River Unit has expanded upon previous telemetry efforts
- Coverage isn't limited to Missouri waters
- Carp telemetry project leverages other fish movement

Black River Survey David.Ostendorf@mdc.mo.gov

- One river...many habitats
- Fish and mussels: opportunistic sampling
- Insights for survey value and planning

Long Term Resource Monitoring-Fish Andrew.Glen@mdc.mo.gov

- Findings inform fisheries management
- Species of concern reported
- Successful sampling and QA/QC completed with USGS partners

Long Term Resource Monitoring-Macro's Kamryn.Wittkop@mdc.mo.gov

- Comparison gives insight into spatial or temporal change
- Benthic sled implemented for added sampling technique
- Better understanding of macroinvertebrate community

Lower Mississippi Fish-2025 Theodore.Goetz@mdc.mo.gov

- Continued response to invasive carp removal efforts
- LTRM methods implemented in Missouri River
- Building a more robust long-term dataset

Benthic Trawling Matthew.Miller@mdc.mo.gov

- Sampling informs benthic fish community
- Trawl effort captures over 700 age-0 sturgeon in 2025 season
- Top species, SOCC, and notable catch exceeds 40,000 fishes!

Invasive Carp Movement at a Glance

The Missouri Department of Conservation has become more heavily involved in the world of invasive carp in recent years, with projects related to population demographics, incentivized harvest and telemetry. More specifically, the Mississippi River Unit has expanded upon previous telemetry efforts significantly in order to understand invasive carp movement with the ultimate hope to aid in removal efforts.

640 bigheaded carps (i.e., Silver Carp and Bighead Carp) were implanted with acoustic transmitters between 2021 and 2024 across the Mississippi and Missouri Rivers and their tributaries. Breaking that number down by sub-basin, 183 acoustic transmitters went into the Upper Mississippi River (UMR) system, 137 went into the Lower Mississippi River (LMR) system, and 320 went into the Missouri River (MOR) system.

Looking at data through the end of calendar year 2025, 72% (461/640) of those fish have been detected somewhere at some point in time. More specifically, 79% (145/183) of UMR system fish were detected, 20% (27/137) of LMR system fish were detected, and 90% (289/320) of MOR system fish were detected. The lack of data from the LMR system can be attributed to the vast waters and lower level of coverage when compared to the UMR and MOR systems. Figure 1 shows unique locations of bigheaded carp detections across the Midwest; coverage isn't limited to Missouri waters thanks to our numerous state and federal partners.

A few interesting data facts include: the greatest distance traveled from tagging origin by a single bigheaded carp is 776.0 river miles from lower Pool 25 of the UMR to river mile 670.1 on the MOR; the greatest distance traveled in a calendar year by a single bigheaded carp is 1,106.9 river miles from Creve Coeur Creek to river mile 499.0 of the MOR to river mile 425.0 of the MOR to river mile 452.0 of the MOR to the UMR at Chester, IL; the greatest total distance traveled since transmitter implantation by a single bigheaded carp is 2,381.9 river miles from the Moreau River up and down the MOR numerous times; and since 2021, there have been over twenty-three million individual detections of bigheaded carps, while another two million detections have come from other species of tagged fish. Figure 2 shows some detection rate data across time and space.

There is no plan to implant more bigheaded carps with acoustic transmitters at this time since the focus should solely be on invasive carp removal. However, we do plan to maintain the telemetry array not only for the remainder of the acoustic transmitter life in invasive carp, but also for other ongoing telemetry projects such as the Shovelnose Sturgeon Population Assessment.

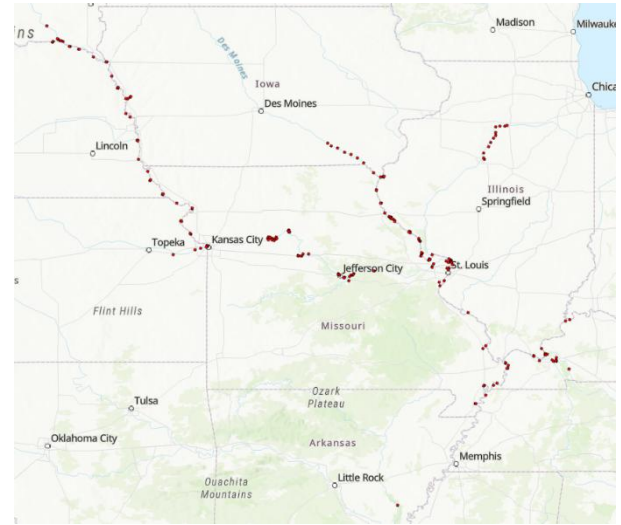


Figure 1. Map of all unique detection locations for bigheaded carps between 2021 and 2025.

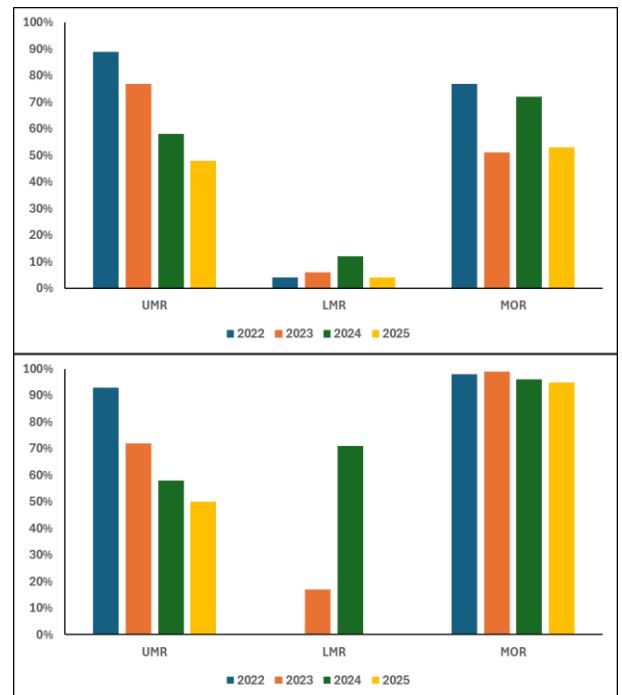


Figure 2. Top graph shows percentage of bigheaded carps detected. Bottom graph shows percentage of those detected fish that were only detected within the system they were tagged.

Distributional Survey of the Fishes in the Lower Black River

The lower Black River is approximately 86 river miles from Clearwater Dam to the Missouri/Arkansas state line. The lower Black River is unique in many ways but especially because it transitions from the Ozark Faunal region to the Lowland Faunal region. The habitat shift occurs below Poplar Bluff, MO.

Sampling for the lower Black River inventory occurred from September 16, 2024, through October 4, 2024. Standardized day electrofishing and benthic trawling was completed using a modified mid-sized river planning tool (Dunn and Paukert, 2020). We completed 64 electrofishing sites and 71 benthic trawl sites capturing 11,123 fish dispersed across 86 miles of the lower Black River.

Day electrofishing captured 104 fish species, and benthic trawling captured 63 fish species. Five fish species are state endangered (Crystal Darter, Harlequin Darter, Mountain Madtom, Pallid Shiner, and Sabine Shiner) and 9 more are MDC species of conservation concern (Lake Chubsucker, Bantam Sunfish, River Darter, Stargazing Darter, Scaly Sand Darter, Mississippi Silvery Minnow, Eastern Slim Minnow, Weed Shiner, and Western Sand Darter). Shoal Chub was collected in the Missouri portion of the lower Black River for the first time. This was an 80-mile range extension for the species in the basin. We also collected 21 species of mussel shells while we were surveying the river. The most significant find was state endangered Western Fanshell mussel shell and the collection of shells from 3 SOCC mussels (Bank Climber, Black Sandshell, and Wartyback). The Ozark Faunal region had the highest number of fish species (102) while the Lowland Faunal region had 75 species.

Sampling in September worked well for several reasons, including an increased possibility of detecting species through sampling young of year. Late September allowed for growth in many YOY fishes making them easier to identify to species. While fall has advantages we do recognize that spring is likely to increase other species' detection because of migration patterns during reproduction (e.g., Paddlefish). We also recognized that capture of all fish species from the basin would be improbable. There are many species that do not occur in the main channel of the lower Black River and are present only in tributaries and associated wetlands of the Black River basin. There are also species that are probably extirpated below Clearwater Dam because of its construction (e.g., long-term flow plan impacts).

This survey reiterates the importance of assessing the status of fish communities and other aquatic organisms in appropriate temporal and spatial scales. These efforts provide managers the guidance in identifying future protection, mitigation, and restoration efforts of rivers not only in the Black River but also statewide.

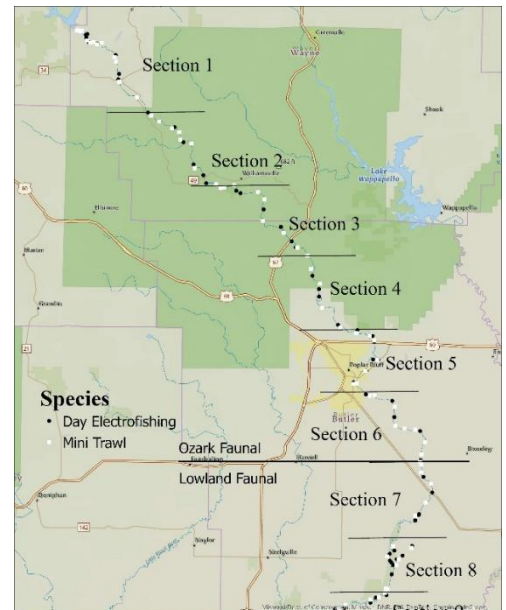


Figure 1. Locations of samples by gear type in the lower Black River: September 2024.

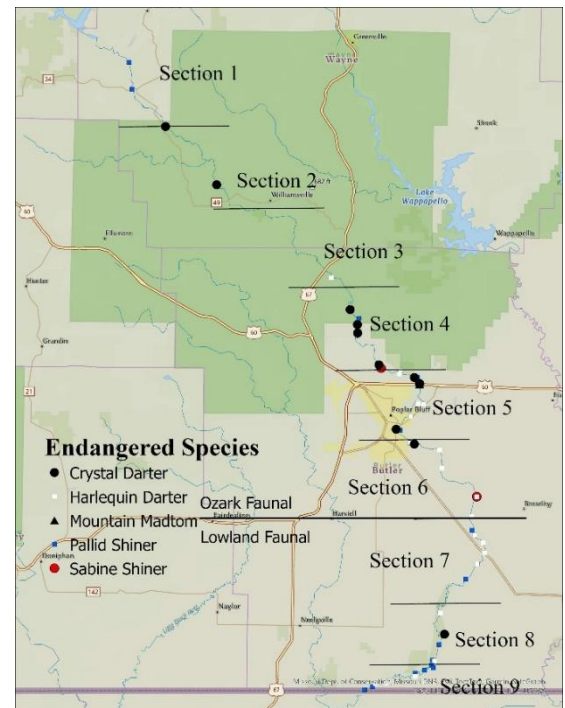


Figure 2. Locations for the 5 state endangered fish species in the lower Black River during September 2024.



Long Term Resource Monitoring-Fish

The Mississippi River Science Unit conducts annual community fish monitoring on river miles 30-80 of the Mississippi River near Cape Girardeau as part of the Upper Mississippi River Restoration (UMRR) Program's Long Term Resource Monitoring (LTRM) element. This monitoring has occurred in Missouri since 1991 and follows the same protocol as five other field stations located on the Upper Mississippi River and Illinois River. The LTRM element is the research and monitoring component of the UMRR, and combines environmental monitoring, research, systemic data acquisition, and modeling in an effort to provide a solid scientific foundation upon which management actions and environmental policy on the Upper Mississippi River system can be based on. The fishes of the Upper Mississippi River system have recreational and commercial value, conservation potential, and can be used to assess the ecological integrity of the aquatic ecosystem. The objective of the standardized monitoring is to quantify the status and trends of fish populations and communities and identify relations with various other ecological attributes. The findings can be used to address fisheries management concerns.

Long term resource monitoring fish component sampling occurs annually from June 15th to October 31st and is broken up into three six-week time periods. Sampling occurs at a variety of habitat types including unstructured main channel, main channel wing dam, unstructured side channel, and two tributaries. Gears utilized include daytime electrofishing, large and small hoop nets, fyke nets, and mini fyke nets. A total of 12,277 fish were recorded for the 2024 LTRM fish component season and included a total of 62 unique species. Side channel sites accounted for 42% of all captures and encompassed 82% of all species recorded. Two tributaries (Big Muddy River and Castor River Diversion Channel) are included in the LTRM fish sampling as fixed sites and are sampled with all methods during each time period. These tributary sites made up 12% of total captures during the 2024 season, however 62% of all species found were represented in these two sites. A Warmouth was captured in the Castor River Diversion Channel and was not collected on the main channel or in any side channels. Four species of conservation concern were encountered during LTRM fish component sampling including Ohio Shrimp, American Eel, Mississippi Silvery Minnow, and Skipjack Herring.



Figure 1. Tyler Bening with Bowfin during sampling.

During the previous 5 years of sampling, the average number of captures was 28,203 individuals. The 2024 season was an outlier with less than half of those captures. Specifically, Channel Shiners, Emerald Shiners, and Freshwater Drum saw low capture rates in 2024 samples when looking at the five-year averages. Notably, invasive Silver Carp numbers were higher than the five-year average and the highest recorded catch for the season. Previous years have seen little to no spawning; however spawning was evidenced by young of year captures in mini fykes at the end of period 1 and early in period 2. Total non-native carp (Bighead Carp, Silver Carp, Grass Carp, and Common Carp) biomass, measured during electrofishing runs, accounted for 29% of the total biomass during the 2024 season. We have successfully completed sampling for the 2025 LTRM fish component season and have completed QA/QC procedures with USGS.



Figure 2. Extracted fish otolith (inner ear stone) for ageing.

LTRM Macroinvertebrate sampling

The Long Term Resource Monitoring program (LTRM) through the Upper Mississippi Restoration Program has been collecting comprehensive data from the Upper Mississippi River (UMR) Open River reach since 1991. This data collection includes components of water quality, fish, and macroinvertebrates. Macroinvertebrate collection was halted after 2004 and recently resumed as a trial in 2023 with the intention of providing new data for comparison with historic data. These comparisons would ideally give insight into any spatial or temporal changes that could have been occurring within UMR macroinvertebrate communities.

Macroinvertebrates were collected from May to June of 2023, 2024, and 2025. Sample sites were stratified based on habitat type and selected based on comparability to historic sites. Across all LTRM reaches of the UMR, a Ponar Grab sampler was used to collect substrate samples and any existing macroinvertebrates within it from the river-bottom. Greater depth, water velocity, and abundance of large substrates like gravel in the Open River reach (River Miles 80-30) make sampling methods designed for the pooled reaches less effective. Because of this the Open River methods were adjusted slightly for best collection potential. To supplement, a 'Benthic Sled', a metal-framed sled that is pulled along the bottom substrate by boat, was implemented in the Open River in 2025. Small teeth at the mouth rake substrate into a collection bag of fine mesh. Substrate collected from the Sled was measured to be equal to a standard Ponar sample volume. Each sample collected was rinsed lightly over a small mesh sluice box to clear any fine sediments or obscuring materials. Once rinsed thoroughly any observed specimen was preserved in formalin, and any remaining substrate in the sluice was preserved in a separate container. All containers were barcoded to their corresponding site and sent off for lab identification.

In the Open River, between 108 and 119 Ponar sites were completed each year, and 52 Sled sites were completed in 2025. Each year ~45% of samples were main channel sites, and the other ~55% were side channel sites. The Sled sampled 63% side channel sites and 37% main channel. A total of 3,368 macroinvertebrates of 13 Orders were collected using the Ponar across all years. In 2025 alone, a total of 5,712 individuals of 18 Orders were collected from Sled sites.

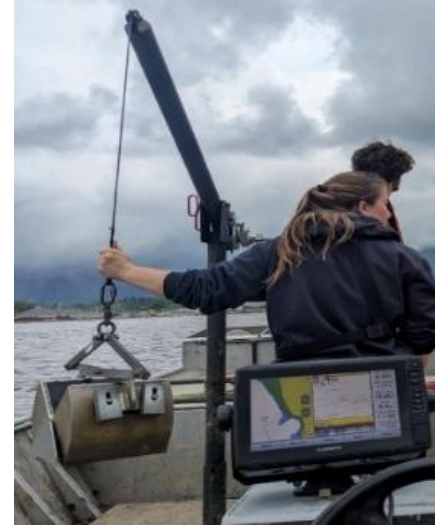
Comparing side channel to main channel sites, the Ponar samples consistently yielded more individuals from the main channel. The Sled collected over half its total individuals from the side channel. Diversity between sites with the Ponar was relatively consistent, while the Sled collected significantly more diversity overall than the Ponar.

Year	Gear	Individuals Collected		Orders Collected	
		Main Channel	Side Channel	Main Channel	Side Channel
2023	Ponar	393	196	9	6
2024	Ponar	270	224	10	8
2025	Ponar	1864	417	7	8
	Sled	1103	4609	12	16

Table 1. Comparison of collections for each year, method, and habitat.

Use of the benthic sled sampling appears to be advantageous where Ponar alone might be difficult to achieve. While causing some compromise of standardization, the two techniques enables us to gain a better understanding of the macroinvertebrate community.

A Mayfly nymph collected from muddy substrate in the Open River reach.



The Ponar (Top) and the Benthic Sled (Bottom) in use on the Open River



Fish Assemblage Monitoring in the Lower Mississippi River-2025

The Lower Mississippi River (LMR) is a wide and free-flowing reach of the Mississippi River which begins at the confluence of the Ohio and Mississippi Rivers in Cairo, IL. From 2022 through 2025, yearly electrofishing sampling efforts by the Mississippi River Unit near New Madrid, MO, have aimed to monitor fish assemblages and determine the response to invasive carp removal efforts.

Fish assemblage monitoring in the LMR was conducted at a total of 80 randomly selected sites, including 15 sites in 2022, 10 sites in 2023, 24 sites in 2024, and 31 sites in 2025. Sampling was conducted to collect baseline data, in turn investigating any potential effects of invasive carp removals on native fish. Sampling was standardized using the electrofishing protocol of the Long-Term Resource Monitoring (LTRM) sampling effort on the Upper Mississippi River (Ratcliff et al., 2014). All fish captured were identified and measured, with fish captured during specific time periods (e.g., period 3) being weighed before being released. Water quality and habitat data were collected and recorded at each site, including Secchi disk measurement, dissolved oxygen, water conductivity, water temperature, water depth, and substrate type.



Figure 3. Fish assemblage sampling site locations on the Lower Mississippi River from 2022-2025.

Across the four sampling years, a total of 8,051 fish were captured, comprising 58 fish species (Table 1) from a total of 80 sites (Figure 1). There was a total of 25 Silver Carp collected, including 12 fish in 2025. Overall LMR sampling efforts have also led to the encounter of three Missouri Species of Conservation Concern, including Skipjack Herring (39), River Darter (2), and American Eel (1). Only Skipjack Herring (14) was encountered during 2025 sampling. Efforts in 2025 had a catch per hour of 404.0, less than 2024 (452.3), but greater than both 2023 (308.0) and 2022 (387.5).

One major addition in 2025 was a pilot sampling effort on the Missouri river (MOR) near Pelican Island Natural Area to expand this monitoring in other areas of carp harvest.

Continued and expanded efforts will help to build a more robust long-term dataset, which can be used to better quantify any impacts of invasive carp removal on these highly dynamic large river systems.

Common Name	Fish Count	Common Name	Fish Count
Emerald Shiner	3076	Bigmouth Buffalo	7
Gizzard Shad	1847	Silver Chub	6
Threadfin Shad	585	Warmouth	1
River Shiner	390	White Crappie	1
Channel Shiner	383	Brook Silverside	3
Freshwater Drum	315	Mooneye	3
Shortnose Gar	147	Shoal Chub	3
Smallmouth Buffalo	116	Spotted Gar	3
Blacktail Shiner	108	Freckled Madtom	2
Bullhead Minnow	92	Largemouth Bass	2
Common Carp	88	River Darter	2
Flathead Catfish	88	Silverband Shiner	2
Longnose Gar	85	Sauger	2
White Bass	71	Yellow Bass	2
Channel Catfish	65	American Eel	1
Red Shiner	64	Black Crappie	1
Spotted Bass	62	Bluntnose Minnow	1
Bluegill	56	Dusky Darter	1
Longear Sunfish	54	Grass Carp	1
River Carpsucker	46	Inland Silverside	1
Orange-Spotted Sunfish	44	Mosquitofish	1
Skipjack Herring	39	Striped x White Bass	1
Blue Catfish	37	Striped Bass	1
Black Buffalo	32	Spotfin Shiner	1
Green Sunfish	32	Shorthead Redhorse	1
Silver Carp	25	Stonecat	1
Goldeye	17	Glass Shrimp	5
Blue Sucker	15	Ohio Shrimp	5
Smallmouth Bass	11		
Logperch	10	Total Fish	8051

Table 1. Number of fish species caught in the Lower Mississippi River during all sampling periods, 2022-2025.

Benthic Trawling

The Mississippi River Unit conducts benthic fish sampling annually for the Pallid Sturgeon Population Assessment Program (PSPAP) and for a Middle Mississippi River habitat improvement project. The primary goal of the PSPAP project trawling is to collect larval sturgeon specimens for genetic analysis. Genetic results are then used to determine Pallid Sturgeon reproductive contribution. The primary goal of trawling for the habitat improvement project is to provide pre and post habitat improvement data on the benthic fish community, with a focus on larval sturgeon. All trawl surveys conducted for projects in 2025 used the OT04 benthic otter trawl net (16ft wide, with 4mm mesh).



Age-0 unidentified sturgeon caught in the Mississippi River

In 2025 PSPAP trawling was completed between May 20th and July 11th. PSPAP trawling consisted of 252 trawl runs yielding 580 age-0 sturgeon. The larval sturgeon collected were preserved in ethanol and sent off for genetic testing. Genetic testing results are pending.

Benthic trawling for the Middle Mississippi River habitat improvement project began in 2023 and has continued through 2025, still being in the pre improvement portion. This project has 2 focal areas where sampling occurs, Mosenthein Island (river mile 189) and Rockwood Island (river mile 103). Each year sampling takes place in two separate events, once in summer and once in fall. In 2025 the Mosenthein focal area yielded 4 age-0 sturgeon from 46 trawls, and the Rockwood area yielded 117 age-0 sturgeon from 25 trawls.

During 2025 the Mississippi River Unit conducted a total of 323 trawl runs. The 323 trawl runs yielded 40,426 fishes representing over 50 species of fish, including 5 listed as Species of Conservation Concern (SOCC) (Table 1). Sampling for both projects is expected to continue in 2026.

Top Species		SOCC		Notable	
Species	Count	Species	Count	Species	Count
Freshwater Drum	28,475	Crystal Darter	16	Unidentified Sturgeon	701
Shoal Chub	3,812	Sturgeon Chub	14	Paddlefish	195
Channel Catfish	2,981	Skipjack Herring	23	Sauger	81
Channel Shinner	1,650	River Darter	2	Round Goby	15
Unidentified Sturgeon	701	Western Sand Darter	3	Banded Sculpin	2

Table 1. Total captures from benthic trawling surveys in 2025 (323 trawls), including top species present, SOCC fishes, and Notable catches.

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Questions/Thoughts/Collaboration?

