Commonwealth of Kentucky

Date: June 30, 2023

D-J Grant No. F-40, Segment 45

Period: 01 April 2022
through
31 March 2023

ANNUAL PERFORMANCE REPORT

for

*Statewide Fisheries Investigation Project*

Part III of IV

Subsection III: Fisheries Habitat Branch


Project Leader: *Mike Hardin,* Assistant Director

Co-Project Leader: *Joseph Zimmerman,* Statewide Fisheries Program Coordinator

Project Assistant: *Nick Keeton,* Fisheries Technician

**Department of Fish and Wildlife Resources**

**Fisheries Division**

STATE: Kentucky

PROJECT NO.: F-40-45

GRANT TYPE: Research and Survey

GRANT TITLE: Statewide Fisheries Investigations

SUBSECTION 1 TITLE: Fisheries Habitat Program

PERIOD COVERED: 1 April 2022 – 31 March 2023

RESEARCH AND SURVEY SECTION

Subsection III

Project 1: Largescale Fish Habitat Projects

*Project Objective*: To coordinate and develop largescale habitat projects that increase the volume of structural habitat for fisheries in Kentucky.

A. ACTIVITY

The sixth phase of the Barren River Lake Largescale Fish Habitat Project was completed from June to August and November 2022. This phase included sites in the Finney and Baileys Point portions of Barren River Lake. To date, the project has resulted in 1,296 individual habitat structures placed in 60 sites of Barren River Lake. Sites have been constructed with a variety of material types, including large cedar trees, rock, wooden pallet structures, pvc, and commercially made products. Sites range from 10 to 20 feet deep at summer pool and include main lake points, large flats, pockets, and channel ledges. The seventh phase of the Barren River Lake Largescale Fish Habitat Project was attempted in December 2022. Site conditions were not favorable for heavy machinery due to the heavy rains. This phase will be completed in the fall of 2023 at the winter pool level. Staff spent 22 work days on phases 6 and 7 for planning and coordination, habitat mapping, obtaining material, structure construction, habitat deployment, and staging area cleanup.

All activities were coordinated out of the headquarters office of the Kentucky Department of Fish and Wildlife Resources (KDFWR) located at #1 Sportsman's Lane, Frankfort, KY. 40601.

B. TARGET DATES FOR ACHIEVEMENT AND ACCOMPLISHMENTS

| | |
|---|---|
| Planned Achievements Date: | March 31, 2023 |
| Work Accomplished: | March 31, 2023 |

C. SIGNIFICANT DEVIATIONS
None.

D. REMARKS
None.

E. RECOMMENDATIONS
None.

Project 2: Aquatic Habitat Technical Guidance

*Project Objective*: To improve and create aquatic habitat projects that increase angler opportunities in lakes and streams in Kentucky.

A. ACTIVITY

During 1 April 2022 – 31 March 2023, the Habitat Branch assisted each of the seven Fisheries Districts with various phases of habitat project implementation. Project phases included planning and coordination, habitat mapping, obtaining material, habitat deployment, liming, and machinery delivery. Staff assisted with staging and deploying 4,331 structures for 117 habitat enhancement sites in 16 lakes.

The Christmas tree drop-off program resulted in 5,530 trees from 31 drop-off sites and store donations. Department staff picked up 349 trees that were donated from large retailers. Tree donations for 2022 were similar to 2021 but continue to be lower as compared to previous years. Advertising and marketing continued to raise public awareness of the program and increase public participation with tree donations. A list of the drop-off sites was advertised during December and January on the KDFWR webpage and social media outlets. The Information and Education Division staff created a Christmas tree recycling news release, social media post, and flyer to promote the program and increase awareness. The news release was picked up by several local news stations from Louisville, Lexington, and northern Kentucky.

Electrofishing surveys of habitat sites were conducted seasonally at Elmer Davis Lake, Lake Reba, and Taylorsville Lake. Data was analyzed to determine the fish usage of habitat sites, including species composition, catch rates, size structure, and seasonal habitat preference.

All activities were coordinated out of the headquarters office of the Kentucky Department of Fish and Wildlife Resources located at #1 Sportsman's Lane, Frankfort, KY. 40601. Actual projects occurred on a statewide basis.

B. TARGET DATES FOR ACHIEVEMENT AND ACCOMPLISHMENTS

| | |
|---|---|
| Planned Achievements Date: | March 31, 2023 |
| Work Accomplished: | March 31, 2023 |

C. SIGNIFICANT DEVIATIONS
None.

D. REMARKS
None.

E. RECOMMENDATIONS
None.

Project 3: Evaluation of a 36 Inch Minimum Length Limit on Muskellunge at Three Kentucky Reservoirs

*Project Objective*: To determine the response of the muskellunge population and fishery to the 36-inch minimum length limit and 1 fish creel limit at Buckhorn, Cave Run and Green River lakes.

A. ACTIVITY

In spring 2010, a new minimum length regulation was implemented for muskellunge at Cave Run, Green River and Buckhorn lakes while maintaining the daily bag limit at one fish per day. This regulation change was an increase in the minimum size limit at Cave Run and Green River lakes where the minimum size was formerly 30.0 inches. However, this was a decrease in size limit at Buckhorn Lake where the minimum length limit had been 40.0 inches since 2003. The expected result of the regulation change at Cave Run and Green River lakes is to increase the abundance of muskellunge below 36.0 inches and to increase the average length of all muskellunge in the population.

Muskellunge are stocked at 13 inches each fall at the approximate rate of 1 fish per 3 acres at the three reservoirs. Fish were marked with the same batch mark in the three study lakes each year. From 2010 through 2013, the following fin clips were used: left pectoral, right pelvic, and left pelvic, right pectoral, respectively. From 2014 to 2017, the following microwire tag locations were used: left cheek, dorsal fin, right cheek, and caudal peduncle, respectively. From 2018 to 2019, the batch mark sequence restarted with clips of the left pectoral fin and right pelvic fin respectively. The CPUE of muskellunge is only for fish actually collected, i.e., no observations are included.

The minimum length limit of muskellunge for Buckhorn Lake was changed from 36.0 to 40.0 inches on March 1, 2019. Due to this regulation change, Buckhorn Lake was removed from the research study.

Data analysis will conclude this year and a report will be completed in Segment 46.

All activities were coordinated out of the headquarters office of the Kentucky Department of Fish and Wildlife Resources located at #1 Sportsman's Lane, Frankfort, KY. 40601. Actual projects occurred on a statewide basis.

B. TARGET DATES FOR ACHIEVEMENT AND ACCOMPLISHMENTS

| | |
|---|---|
| Planned Achievements Date: | March 31, 2023 |
| Work Accomplished: | March 31, 2023 |

C. SIGNIFICANT DEVIATIONS
Final report was not completed in Segment 45.

D. REMARKS
None.

E. RECOMMENDATIONS
None.

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Project I: Largescale Fish Habitat Projects

## Barren River Lake Largescale Fish Habitat Project

The sixth phase of the Barren River Lake Largescale Fish Habitat Project was completed from June to August and November 2022. This phase included sites in the Finney and Baileys Point portions of Barren River Lake. Staff worked with the USACE and Peninsula Marina for staging and deployment of the habitat material. Material for the fish habitat structures was stored in overflow storage areas leased by the Peninsula Marina. Six habitat sites (1 Pennsylvania spider-hump and 5 pallet structure/brush piles) were built in the lower lake from the Peninsula unit upstream to Grass Island. The Barren River Lake Fish Habitat Committee (KDFWR, USACE staff, fishing clubs, anglers) guided the selection of habitat sites that included main lake points (1), main lake pockets (3), humps (1), and flats (1). Habitat sites ranged from 10 to 20 feet deep at summer pool with the majority of sites in the 15-foot depth range (Figure 1-2).

The seventh phase of the Barren River Lake Largescale Fish Habitat Project was attempted in December 2022. Site conditions were not favorable for heavy machinery due to the heavy rains. This phase will be completed in the fall of 2023 at the winter pool level. This phase will include sites in the upper portion of Barren River Lake near Canoe Creek and Dry Creek. Staff will work with the KDFWR Wildlife Division and the USACE for staging and deployment of the habitat material. Material for the fish habitat structures was stored on the lakeshore in the Dry Creek Unit of the Wildlife Management Area. Sites will be constructed on the lakebed at winter pool and will consist of large cedar trees, rock, and pallet structures.

To date, the project has resulted in 1,296 individual habitat structures placed in 60 sites of Barren River Lake (Table 1). The majority of sites were built with wooden pallet structures and large cedar trees. Other materials used included rock, pvc, and commercially made products. Sites have been updated on the department's "Lakes with Fish Attractors" webpage and a pdf map with habitat location information has been created to provide to anglers (Figure 3). In addition, GPX files of habitat site locations were made available for download from the KDFWR's, "Lakes with Fish Attractors" webpage.

Electrofishing of habitat sites was conducted at Barren River Lake in the fall 2022 in order to evaluate the effectiveness of various habitat structures. The majority of the habitat sites range from 15 to 20 feet deep and are too deep for effective electrofishing at summer pool elevation (552.0 feet). Sites were sampled during the fall drawdown at the 545.0 feet to 546.0 feet pool elevation. One 7.5-minute electrofishing sample was conducted at each habitat site and six control sites where no habitat work had been constructed. Twelve brush pile sites, seven plastic sites, three rock sites, two MEGA stakebed sites, and six control sites were sampled in the fall with boat-mounted electrofishing for a total effort of 2.75 hrs. The CPUE of sportfish collected at each site sampled is shown in Figure 4. Habitat sites built with natural material (brush piles, pallet structures, MEGA stakebeds, rock) had the highest total abundances of fish with 7 of 17 sites above the average of 1658.5 fish/hr. A total of 2,746 fish of 11 species were collected from habitat sites made from natural materials. Crappie (1068.8 fish/hr) were most abundant followed by bluegill (489.7 fish/hr) and largemouth bass (202.9 fish/hr). Crappie ranged from 3.0-14.0 inches with 74% being above quality size (≥8.0). Bluegill ranged from 3.0 to 9.0 inches with 23% being above quality size (≥6.0). Largemouth bass ranged from 3.0 to 22.0 inches with 52% being above quality size (≥12.0). A total of 176 fish of seven species were collected from plastic habitat sites. Crappie (228.6 fish/hr) were most abundant followed by bluegill (60.9 fish/hr) and largemouth bass (38.1 fish/hr). Crappie ranged from 6.0-12.0 inches with 83% being above quality size (≥8.0). Bluegill ranged from 3.0 to 7.0 inches with 68% being above quality size (≥6.0). Largemouth bass ranged from 8.0 to 21.0 inches with 85% being above quality size (≥12.0). A total of 74 fish of eight species were collected from control sites. Largemouth bass (53.3 fish/hr) were most abundant followed by bluegill (42.2 fish/hr) and crappie (42.2 fish/hr). Largemouth bass ranged from 3.0-11.0 inches with 0% being above quality size (≥12.0).

Bluegill ranged from 3.0 to 6.0 inches with 21% being above quality size (≥6.0) (Table 2). Crappie had significantly higher catch rates on both natural and plastic material, as compared to control sites. Largemouth bass and bluegill had significantly higher catch rates on natural habitat sites as compared to both plastic and control sites. The majority of largemouth bass collected were in the 8.0-11.9 inch and greater than 15.0 length group. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 3-4). Natural habitat sites had a 437% increase in fish abundance as compared to plastic sites and a 1,027% increase as compared to control sites. Plastic habitat sites had a 110% increase in fish abundance as compared to control sites (Figure 5). Largemouth bass and crappie catch rates were highest on natural habitat types like brush piles, MEGA stakebeds, and rock, as compared to site built with synthetic materials (Figure 6).

The Barren River Lake Fish Habitat Committee was created at the start of the project in 2019 to guide project development and consists of members from the United States Army Corps of Engineers, Kentucky Department of Fish and Wildlife Resources, Barren River Fishing League, Barren River Outdoors, Josh Morris Fishing, Kentucky Bass Federation, Western Kentucky University Bass Fishing Team, Friends of Barren River Lake and Park, Kentucky Bass Federation, and local anglers. Committee meetings were cancelled during this fiscal year due to the global Covid pandemic. The Committee selected seven work areas and phases for the largescale habitat project. These areas include Peninsula/Baileys Point, Finney, Narrows, Barren River Lake State Park, lower Peter Creek, lower Skaggs Creek, and Beaver Creek (Figure 7). Lower Skaggs Creek was removed from the list in 2022 due to access issues. The new location will be Dry Creek and Canoe Creek in the Walnut area of Barren River Lake.

Table 1. Habitat material summary for the Barren River Lake Largescale Fish Habitat Project.

| Phase | Year | # of Sites | Cedar Trees | Christmas Trees | Pallet Structures (3 Pallet Triangle) | MEGA Stakebed | PVC Trees | Rock Reef | Mossback and Fishiding Structures | Pennsylvania Spider Hump Structures | Bamboo Bundles | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phase 1-Peters Creek | 2019 | 14 | 250 | 80 | 40 | | 25 | 1 | 30 | | | 426 |
| Phase 2-Narrows | 2020 | 15 | 107 | 70 | 35 | 5 | 5 | 2 | 20 | 7 | 5 | 256 |
| Phase 3-State Park | 2020 | 13 | 73 | 50 | 44 | 7 | | 1 | 30 | 4 | | 209 |
| Phase 4-Beaver Creek | 2021 | 9 | 100 | | 26 | 7 | 12 | 1 | | 9 | | 155 |
| Phase 5-Peninsula | 2022 | 3 | 40 | | 45 | | | | | | | 85 |
| Phase 6-Finney | 2022 | 6 | 110 | | 45 | | | | | 10 | | 165 |
| Totals | | 60 | 680 | 200 | 235 | 19 | 42 | 5 | 80 | 30 | 5 | 1296 |

Table 2. Length frequency and CPUE (fish/hr) of sportfish collected from Barren River Lake by habitat type in fall 2022.

| | | Inch class | | | | | | | | | | | | | | | | | | | | | | | | | | | Std | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Habitat Type | Species | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 33 | Total | CPUE | err |
| Natural | Channel catfish | | | | | | | | | | | 1 | 2 | 4 | 2 | 1 | 1 | | | | | 1 | | | | | | | 12 | 6.7 | 2.9 |
| | Flathead catfish | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 3 | 1.3 | 0.8 |
| | Yellow bass | | | | 4 | 3 | 9 | 1 | | | | | | | | | | | | | | | | | | | | | 17 | 12.8 | 6.1 |
| | Warmouth | | 1 | 4 | 1 | 4 | | | | | | | | | | | | | | | | | | | | | | | 10 | 4.9 | 2.9 |
| | Bluegill | 106 | 185 | 265 | 147 | 20 | | 1 | | | | | | | | | | | | | | | | | | | | | 724 | 489.7 | 121.0 |
| | Longear sunfish | 2 | 1 | 4 | | | | | | | | | | | | | | | | | | | | | | | | | 7 | 5.5 | 4.7 |
| | Spotted bass | | | | | 1 | 3 | 2 | | 1 | 2 | | 2 | | | 1 | | | | | | | | | | | | | 12 | 9.1 | 4.9 |
| | Largemouth bass | 1 | 4 | 3 | 3 | 11 | 30 | 49 | 33 | 25 | 21 | 28 | 11 | 12 | 32 | 33 | 14 | 10 | 7 | 3 | 1 | | | | | | | | 331 | 202.9 | 37.2 |
| | White crappie | 2 | 1 | 4 | 13 | 45 | 94 | 162 | 206 | 53 | 6 | | | | | | | | | | | | | | | | | | 586 | 393.4 | 113.5 |
| | Black crappie | 2 | 8 | 31 | 65 | 234 | 305 | 235 | 76 | 20 | | | 1 | | | | | | | | | | | | | | | | 977 | 675.4 | 195.1 |
| | Hybrid striped bass | 2 | | | 1 | | 2 | | 1 | 5 | 4 | 4 | 3 | | | 2 | 1 | 2 | 4 | 9 | 7 | 8 | 7 | 4 | 1 | | | 67 | 47.5 | 37.3 |
| Plastic | Channel catfish | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | | | | | 2 | 3.8 | 3.8 |
| | Bluegill | 1 | 9 | 13 | 8 | 1 | | | | | | | | | | | | | | | | | | | | | | | 32 | 60.9 | 30.1 |
| | Spotted bass | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | 1.9 | 1.9 |
| | Largemouth bass | | | | | | | 1 | | 2 | 3 | 1 | | | 4 | 4 | 2 | 2 | | 1 | | | | | | | | | 20 | 38.1 | 13.5 |
| | White crappie | | | | | 1 | 11 | 16 | 32 | 7 | 1 | | | | | | | | | | | | | | | | | | 68 | 129.5 | 37.7 |
| | Black crappie | | | | 2 | 18 | 15 | 11 | 5 | | 1 | | | | | | | | | | | | | | | | | | 52 | 99.1 | 18.6 |
| | Hybrid striped bass | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1.9 | 1.9 |
| Control | Blue catfish | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 2.2 | 2.2 |
| | Channel catfish | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | 1 | 2.2 | 2.2 |
| | Yellow bass | | | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | | | | | 3 | 6.7 | 2.9 |
| | Bluegill | 2 | 5 | 8 | 4 | | | | | | | | | | | | | | | | | | | | | | | | 19 | 42.2 | 10.6 |
| | Largemouth bass | 6 | 5 | 2 | 3 | 4 | 1 | 2 | | 1 | | | | | | | | | | | | | | | | | | | 24 | 53.3 | 26.0 |
| | White crappie | 1 | | | | | 1 | | 1 | 1 | | | | | | | | | | | | | | | | | | | 4 | 8.9 | 6.6 |
| | Black crappie | | | 1 | | 6 | 6 | 2 | | | | | | | | | | | | | | | | | | | | | 15 | 33.3 | 14.1 |
| | Hybrid striped bass | | 1 | 5 | | | | | | | | 1 | | | | | | | | | | | | | | | | | 7 | 15.6 | 13.1 |

Table 3. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Barren River Lake in fall 2022.

| | Length group (in) | | | | | |
|---|---|---|---|---|---|---|
| Habitat type | < 8.0 | 8.0-11.9 | 12.0-14.9 | > 15.0 | > 20.0 | Total |
| Natural | 31.0 (7.5) | 74.5 (25.5) | 31.0 (7.5) | 66.5 (14.5) | 2.8 (1.3) | 202.9 (37.2) |
| Plastic | 0.0 (0.0) | 11.4 (4.5) | 1.9 (1.9) | 24.7 (9.4) | 1.9 (1.9) | 38.1 (13.5) |
| Control | 44.4 (21.4) | 8.9 (6.6) | 0.0 (0.0) | 0.0 (0.0) | 0.0 (0.0) | 53.3 (26.0) |

Table 4. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Barren River Lake in fall 2022.

| | Length group (in) | | | |
|---|---|---|---|---|
| Habitat type | 3.0-5.9 | 6.0-7.9 | > 8.0 | Total |
| Natural | 379.6 (101.4) | 109.3 (25.1) | 0.8 (0.8) | 489.7 (121.0) |
| Plastic | 43.8 (27.1) | 17.1 (11.1) | 0.0 (0.0) | 60.9 (30.1) |
| Control | 33.3 (9.6) | 8.9 (6.6) | 0.0 (0.0) | 42.2 (10.6) |

Figure 1 (left photo). Spider-hump construction near Peninsula. Figure 2 (right photo). Brush pile material and wooden pallet structures staged for deployment at Peninsula Marina area, Phase 6.

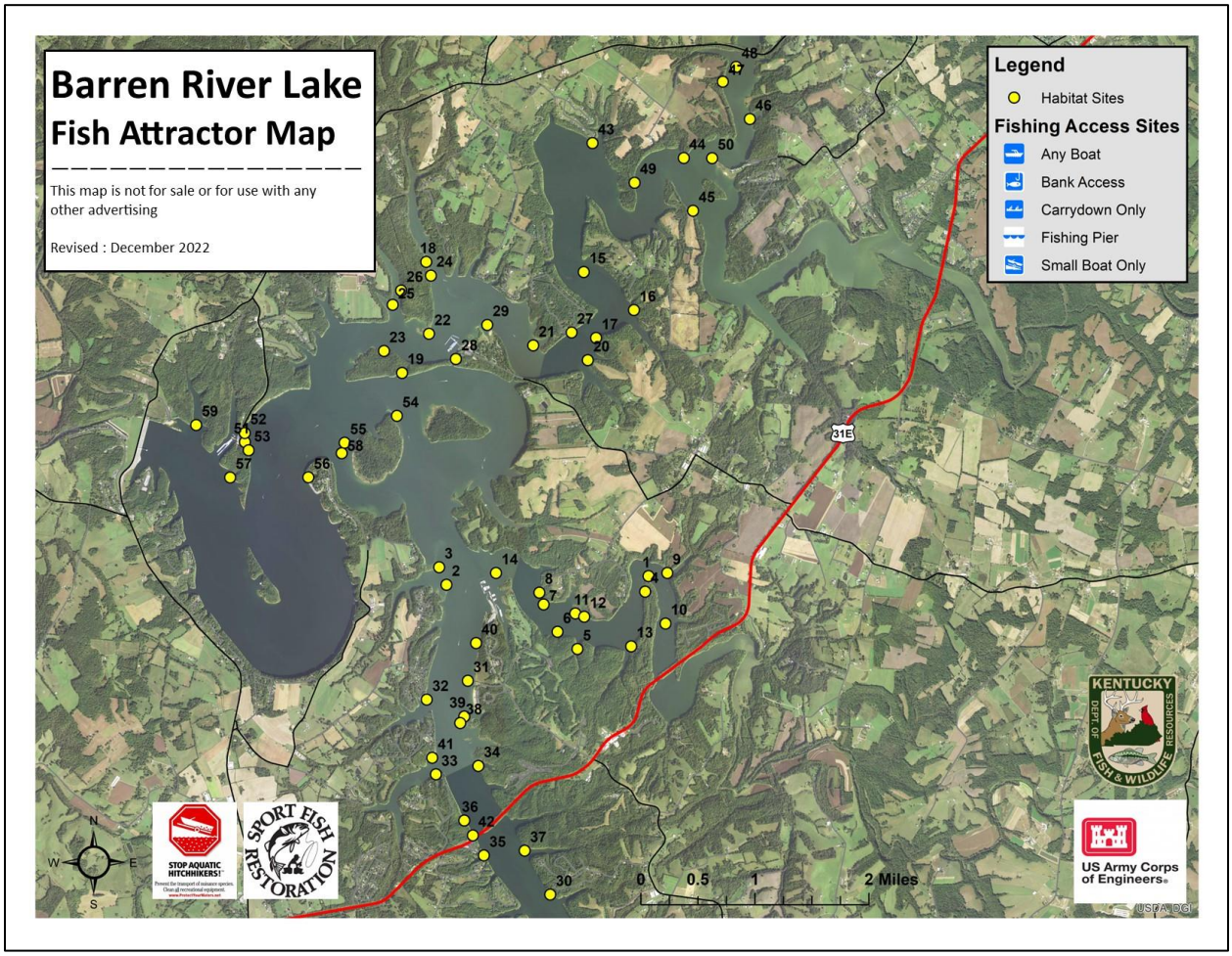


Figure 3. 2019-2020 Barren River Lake FHP habitat enhancement locations for Phases 1-3.

| Habitat Locations | | | | | |
|---|---|---|---|---|---|
| Site | Type | Latitude | Longitude | Date | Depth |
| 1 | Mossback Structures | 36.87664 | -86.04482 | 2019 | 10-15 |
| 2 | Mossback Structures | 36.87547 | -86.07682 | 2019 | 10-15 |
| 3 | Brush | 36.87767 | -86.07799 | 2019 | 10-18 |
| 4 | Brush | 36.87469 | -86.04536 | 2019 | 14 |
| 5 | Brush | 36.86744 | -86.05603 | 2019 | 18 |
| 6 | Brush | 36.86960 | -86.05921 | 2019 | 18 |
| 7 | Plastic Trees | 36.87304 | -86.06143 | 2019 | 18 |
| 8 | Plastic Trees | 36.87452 | -86.06209 | 2019 | 18 |
| 9 | Brush | 36.87704 | -86.04185 | 2019 | 16-18 |
| 10 | Plastic Trees | 36.87068 | -86.04211 | 2019 | 18 |
| 11 | Mossback Structures | 36.87191 | -86.05639 | 2019 | 9 |
| 12 | Brush | 36.87151 | -86.05497 | 2019 | 12-15 |
| 13 | Brush | 36.86780 | -86.04754 | 2019 | 15 |
| 14 | Rock | 36.87696 | -86.06897 | 2019 | 15 |
| 15 | Brush | 36.91486 | -86.05523 | 2020 | 17 |
| 16 | MEGA Stakebed | 36.91009 | -86.04726 | 2020 | 15 |
| 17 | MEGA Stakebed | 36.90658 | -86.05325 | 2020 | 20 |
| 18 | Plastic Trees | 36.91606 | -86.08021 | 2020 | 20 |
| 19 | Brush | 36.90209 | -86.08397 | 2020 | 15-18 |
| 20 | Brush | 36.90377 | -86.05456 | 2020 | 15-20 |
| 21 | Mossback Structures | 36.90560 | -86.06322 | 2020 | 19 |
| 22 | Brush | 36.90702 | -86.07974 | 2020 | 8 |
| 23 | Mossback Structures | 36.90484 | -86.08686 | 2020 | 22 |
| 24 | Brush | 36.91434 | -86.07946 | 2020 | 18-20 |
| 25 | Brush | 36.91066 | -86.08550 | 2020 | 17 |
| 26 | Brush | 36.91244 | -86.08417 | 2020 | 20 |
| 27 | Brush | 36.90725 | -86.05714 | 2020 | 15 |
| 28 | Brush | 36.90386 | -86.07546 | 2020 | 18 |
| 29 | Rock | 36.90819 | -86.07048 | 2020 | 10-14 |
| 30 | Brush | 36.83655 | -86.06021 | 2021 | 15-20 |
| 31 | Brush | 36.86341 | -86.07339 | 2021 | 10 |
| 32 | Brush | 36.86101 | -86.07988 | 2021 | 15 |
| 33 | Brush | 36.85163 | -86.07840 | 2021 | 15-20 |
| 34 | Brush | 36.85271 | -86.07168 | 2021 | 15-20 |
| 35 | Brush | 36.84145 | -86.07075 | 2021 | 15-20 |
| 36 | Brush | 36.84583 | -86.07387 | 2021 | 15-20 |
| 37 | Brush | 36.84206 | -86.06430 | 2021 | 15-20 |
| 38 | MEGA Stakebed | 36.85810 | -86.07456 | 2021 | 22 |
| 39 | Rock | 36.85892 | -86.07394 | 2021 | 10-15 |
| 40 | MEGA Stakebed | 36.86814 | -86.07211 | 2021 | 22 |
| 41 | Mossback Structures | 36.85370 | -86.07897 | 2021 | 13-15 |
| 42 | Mossback Structures | 36.84395 | -86.07252 | 2021 | 12-18 |
| 43 | Brush | 36.931059 | -86.05392 | 2021 | 18 |
| 44 | Brush | 36.929228 | -86.03944 | 2021 | 13 |
| 45 | Brush | 36.922595 | -86.037933 | 2021 | 18 |
| 46 | Brush | 36.93415 | -86.028979 | 2021 | 15 |
| 47 | Plastic Trees | 36.938846 | -86.033275 | 2021 | 15 |
| 48 | Brush | 36.940697 | -86.031185 | 2021 | 15 |
| 49 | MEGA Stakebed | 36.926101 | -86.047224 | 2021 | 20 |
| 50 | Rock | 36.929218 | -86.034937 | 2021 | 12 |
| 51 | Brush | 36.893311 | -86.108833 | 2021 | 15 |
| 52 | Brush | 36.89445 | -86.108872 | 2021 | 15 |
| 53 | Brush | 36.89222 | -86.10833 | 2021 | 15 |
| 54 | Brush | 36.896667 | -86.084771 | 2022 | 18 |
| 55 | Brush | 36.893269 | -86.093035 | 2022 | 18 |
| 56 | Brush | 36.888904 | -86.098757 | 2022 | 18 |
| 57 | Brush | 36.88886 | -86.111145 | 2022 | 18 |
| 58 | Brush | 36.89196 | -86.093496 | 2022 | 18 |
| 59 | Rock | 36.89543 | -86.11655 | 2022 | 10-18 |

** Depths are at summer pool levels

## Barren River Lake Fish Attractor Map

**How to Use This Map...**

This map is designed to help anglers find fish habitat sites. Each site will vary by habitat type and depth. Utilize the map to identify the general locations. GPS coordinates are provided to assist in finding the exact location of the site. The GPS coordinates provided are in "decimal degrees" format. Your GPS unit must be set to "decimal degrees" format for the provided coordinates to work. GPS coordinates can vary slightly depending on the model of GPS, satellite signal interference, and atmospheric conditions.

**About the Fish Habitat Program...**

Kentucky Department of Fish and Wildlife Resources, U.S. Army Corps of Engineers, and volunteer groups have collaborated to replenish fish habitat in Barren River Lake. The habitat sites on this map have been constructed of various materials including trees, wooden pallets, and pvc pipe. The habitat sites will increase cover and refuge for fish, in addition to increasing angler catch rates.

**How Can You Help...**

Give these habitat locations a try on your next fishing trip and let us know what you think. This information can be used to improve fish habitat work in the future.

**Contact Information:**

KDFWR: Eric Cummins, Southwestern Fisheries District, 270-746-7127
Joseph Zimmerman, Habitat Branch, 502-892-4473

USACE: Alicia Cannon, Barren River Lake, 270-646-2055


Brush loaded on barge


Mossback Structure


Plastic Tree


MEGA Stakebed


Rock Piles

Figure 3. continued.

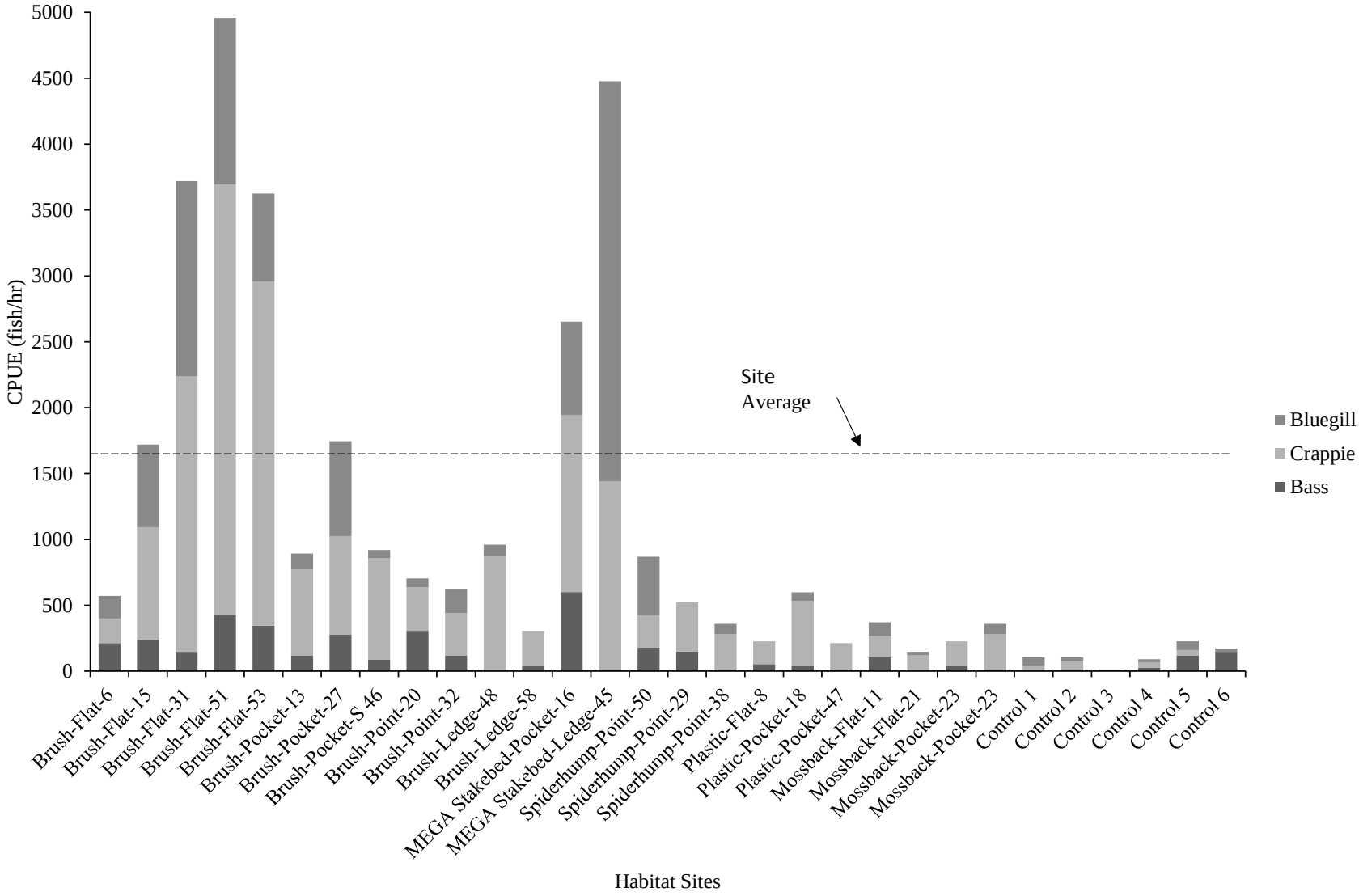


Figure 4. Electrofishing CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall 2022.

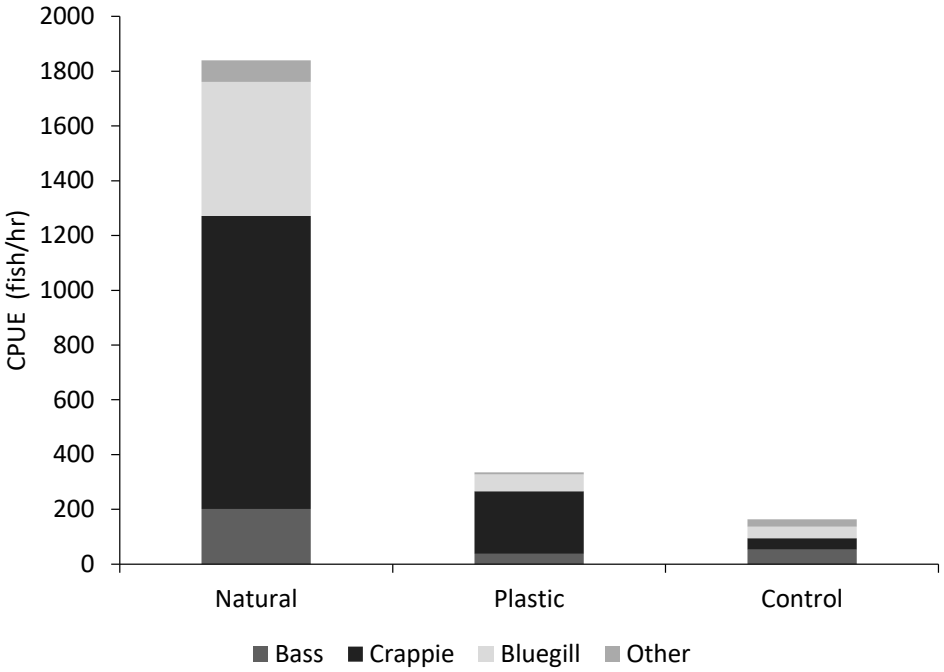


Figure 5. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall of 2022.

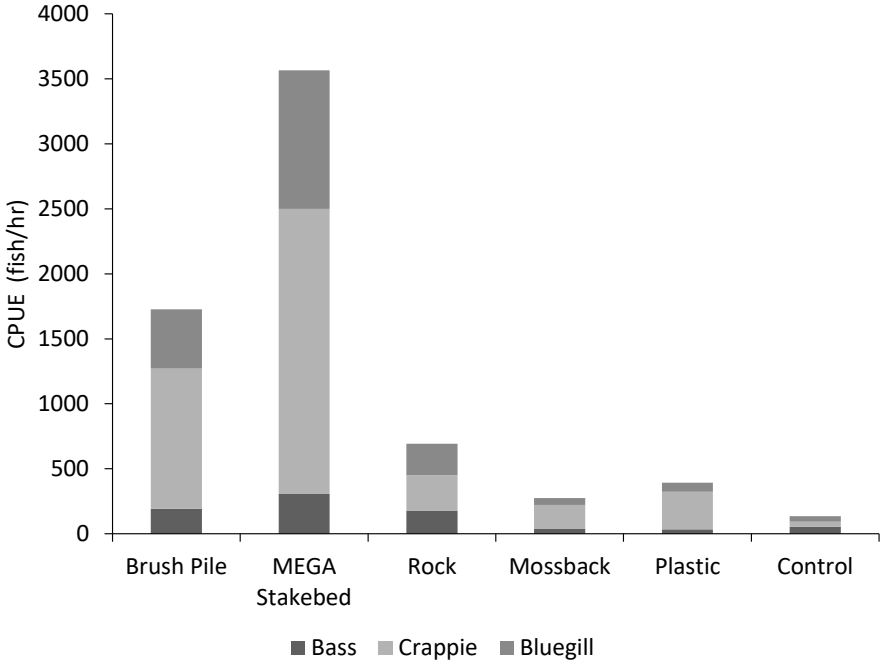


Figure 6. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall of 2021.

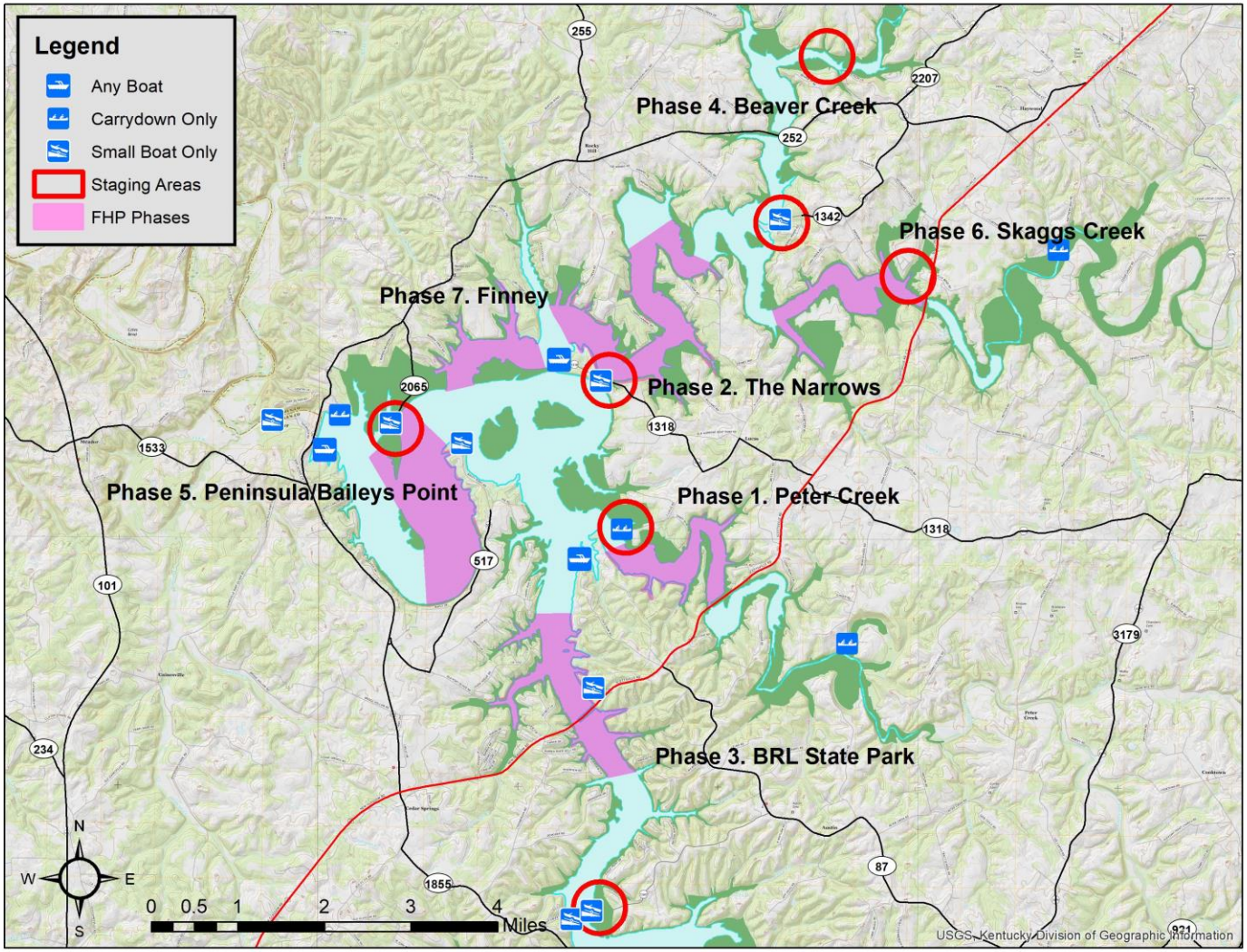


Figure 7. Phases for the Barren River Lake Largescale Fish Habitat Project

Project II: Aquatic Habitat Technical Guidance

FINDINGS

During 1 April 2022 – 31 March 2023, the Habitat Branch assisted each of the seven Fisheries Districts with various phases of habitat project implementation. Project phases included planning and coordination, habitat mapping, obtaining material, habitat deployment, liming, and machinery delivery. Staff assisted with staging and deploying 4,331 structures for 117 habitat enhancement sites in 16 lakes (Table 1). The majority of the work included building brush piles sites from various species of trees. Other project types included reefball deployment, bank stabilization, spawning boxes, and aquatic vegetation enhancement.

The Christmas tree drop-off program resulted in 5,530 trees from 31 drop-off sites and store donations. Department staff picked up 349 trees that were donated from large retailers (Table 2). Tree donations for 2022 were similar to 2021 but continue to be lower as compared to previous years (Table 3). Advertising and marketing continued to raise public awareness of the program and increase public participation with tree donations. A list of the drop-off sites was advertised during December and January on the KDFWR webpage and social media outlets. The Information and Education Division staff created a Christmas tree recycling news release, social media post, and flyer to promote the program and increase awareness. The news release was picked up by several local news stations from Louisville, Lexington, and northern Kentucky.

In order to evaluate the effectiveness of various habitat structures, electrofishing of habitat sites was conducted seasonally at Elmer Davis Lake, Lake Reba, and Taylorsville Lake. Lake sampling conditions for each survey are summarized in Table 4. Habitat sites had to be at the 8 foot depth contour or shallower for effective electrofishing. Individual habitat sites were sampled for 7.5 minutes seasonally, each spring (April-May), summer (June-July), and fall (September-October). For comparison to a control, 7.5 minute electrofishing runs were conducted in similar lake areas with no habitat enhancement. Samples were conducted to determine the fish usage of habitat sites, including species composition, catch rates, size structure, and seasonal habitat preference.

**Elmer Davis Lake (Owen County)**

6 brush pile sites, 1 plastic sites, and 6 control sites were sampled in spring, summer, and fall with boat-mounted electrofishing for a total effort of 3.25 hrs. Brush pile sites had a total of six species (769.4 fish/hr) collected with bluegill (296.4 fish/hr), largemouth bass (275.7 fish/hr), and warmouth (138.8 fish/hr) being the most abundant. Bluegill ranged from 3.0-9.0 inches with 62% being above quality size (≥6.0). Largemouth bass ranged from 3.0-20.0 inches with 23% being above quality size (≥12.0). Plastic sites had a total of five species (186.6 fish/hr) collected with largemouth bass (77.3 fish/hr), redear sunfish (64.0 fish/hr), and bluegill (37.3 fish/hr) being the most abundant. Largemouth bass ranged from 4.0-18.0 inches with 76% being above quality size (≥12.0). Redear sunfish ranged from 5.0-.0 inches with 92% being above quality size (≥6.0). Bluegill ranged from 3.0-8.0 inches with 50% being above quality size (≥6.0). Control sites had a total of five species (210.9 fish/hr) collected with largemouth bass (130.7 fish/hr) and bluegill (44.3 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-16.0 inches with 21% being above quality size (≥12.0). Bluegill ranged from 3.0-8.0 inches with 38% being above quality size (≥6.0) (Table 5). Largemouth bass and bluegill had significantly higher catch rates at the natural habitat sites as compared to plastic and control sites (Figure 1). The majority of largemouth bass collected were in the less than 8.0 and 8.0 to 11.9 inch length group. Most bluegill collected were from the greater than 6.0 to 7.9 inch group (Tables 6-7). The largest seasonal difference in abundance was during the fall with a 302% increase in total catch rates of sportfish on natural habitat sites as compared to the seasonal average (Figure 2).

**Taylorsville Lake (Spencer County)**

Four brush pile sites, three plastic sites, and three control sites were sampled across spring, summer, and fall with boat-mounted electrofishing for a total effort of 2.9 hrs. Brush pile sites had a total of nine species (606.4 fish/hr) collected with white crappie (388.4 fish/hr), bluegill (133.9 fish/hr), and largemouth bass (37.6 fish/hr) being the most abundant. White crappie ranged from 5.0-13.0 inches with 75% being above quality size (≥8.0). Bluegill ranged from 3.0-8.0 inches with 41% being above quality size (≥6.0). Largemouth bass ranged from 3.0 to 20.0 inches with 51% being above quality size (≥12.0). Plastic sites had a total of seven species (208.1 fish/hr) collected with white crappie (114.7 fish/hr), bluegill (40.0 fish/hr), and largemouth bass (35.0 fish/hr) being the most abundant. White crappie ranged from 7.0-12.0 inches with 96% being above quality size (≥8.0). Bluegill ranged from 5.0 to 7.0 inches with 80% being above quality size (≥6.0). Largemouth bass ranged from 3.0-22.0 inches with 63% being above quality size (≥12.0). Control sites had a total of nine species (185.8 fish/hr) collected with bluegill (74.1 fish/hr), largemouth bass (47.4 fish/hr), and flathead catfish (19.0 fish/hr) being the most abundant. Bluegill ranged from 3.0-7.0 inches with 44% being above quality size (≥6.0). Largemouth bass ranged from 4.0-16.0 inches with 39% being above quality size (≥12.0). Flathead catfish ranged from 5.0 to 18.0 inches with 0% being above quality size (≥20.0) (Table 8). Crappie had significantly higher catch rates at the natural habitat sites as compared to the plastic and control sites (Figure 3). Largemouth bass and bluegill produced similar catch rates between all sites. The majority of largemouth bass collected were in the 8.0 to 11.9 and 12.0 to 14.9 inch groups. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 9-10). The largest seasonal difference in abundance between natural, plastic, and control sites was during the fall with a 234% increase in total sportfish catch rates on natural habitat sites as compared to the seasonal average (Figure 4).

**Lake Reba (Madison County)**

Three brush pile sites, three plastic sites, and two control sites were sampled across spring, summer, and fall with boat-mounted electrofishing for a total effort of 1.875 hrs. Brush pile sites had a total of seven species (478.5 fish/hr) collected with black crappie (200.0 fish/hr), largemouth bass (134.8 fish/hr), and bluegill (120.0 fish/hr) being the most abundant. Black crappie ranged from 6.0-13.0 inches with 50% being above quality size (≥8.0). Largemouth bass ranged from 3.0-20.0 inches with 30% being above quality size (≥12.0). Bluegill ranged from 3.0-8.0 inches with 79% being above quality size (≥6.0). Plastic sites had a total of seven species (166.3 fish/hr) collected with largemouth bass (97.8 fish/hr), bluegill (28.2 fish/hr), and black crappie (26.7 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-17.0 inches with 9% being above quality size (≥12.0). Bluegill ranged from 3.0-7.0 inches with 21% being above quality size (≥6.0). Black crappie ranged from 3.0-11.0 inches with 16% being above quality size (≥8.0). Control sites had a total of five species (106.6 fish/hr) collected with largemouth bass (43.8 fish/hr) and bluegill (36.2 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-13.0 inches with 23% being above quality size (≥12.0). Bluegill ranged from 3.0-7.0 inches with 37% being above quality size (≥6.0) (Table 11). Largemouth bass, crappie, and bluegill had higher catch rates at the natural and plastic habitat sites as compared to control sites. Crappie and bluegill had significantly higher catch rates at the natural habitat sites as compared to the plastic and control sites (Figure 5). The majority of largemouth bass collected were in the less than 8.0 and 8.0 to 11.9 inch groups. Most bluegill collected were from the 6.0 to 7.9 inch group (Tables 12-13). The largest seasonal difference in abundance between natural, plastic, and control sites was during the fall with a 241% increase in total sportfish catch rates on natural habitat sites as compared to the seasonal average. (Figure 6).

Table 1. Habitat Branch technical guidance projects for FY2022.

| Date | Lake | Material Amount | # of Sites | Material Type |
|---|---|---|---|---|
| April 2022 | Beaver Lake | 80 | 1 | Christmas trees |
| May 2022 | Lake Cumberland-Camp Wallace | 70 | 3 | Pallet structures (20), Cedar trees (50) |
| May 2022 | Beaver Lake | 25 | 25 | Catfish spawning boxes |
| June 2022 | Taylorsville Lake | 23 | 1 | Plastic trees |
| July 2022 | Cave Run Lake | 60 | 5 | Plastic tree/Cedar tree hybrid structures |
| July 2022 | Benjy Kinman Lake | 90 | 6 | Water willow transplant clusters |
| July 2022 | Taylorsville Lake | 15 | 2 | Plastic trees (9), Porcupine cribs (3), Cedar trees (3) |
| August 2022 | Paintsville Lake | 156 | 5 | Cedar trees (95), Pallet structures (51), Shelbyville Cubes (10) |
| August 2022 | Clear Creek | 0 | 0 | Boat ramp and angler access maintenance |
| September 2022 | Nolin River Lake | 50 | 1 | Reefballs |
| October 2022 | McNeely Lake | 0 | 0 | Bank stabilization and angler access improvement project |
| October 2022 | Marion County Lake | 0 | 0 | Bank stabilization and angler access improvement project |
| December 2022 | Taylorsville Lake | 82 | 3 | Stake buckets |
| December 2022 | Shanty Hollow Lake | 0 | 0 | Bank stabilization and boat ramp maintenance |
| January 2023 | Guist Creek Lake | 389 | 14 | Christmas trees |
| February 2023 | Long Run Lake | 428 | 9 | Christmas trees |
| February 2023 | Beaver Lake | 2163 | 32 | Christmast trees (2123), Pallet structures (40) |
| February 2023 | Wilgreen Lake | 250 | 5 | Christmas trees |
| February 2023 | Lake Reba | 250 | 5 | Christmast trees |
| March 2022 | Taylorsville Lake | 100 | 0 | Tree cutting for future work |
| March 2022 | Green River Lake | 100 | 0 | Tree cutting for future work |
| | TOTAL | 4331 | 117 | |

Table 2. Christmas tree drop-off locations for FY2022.

| Fisheries District | County | Location | Trees | Store Pickup |
|---|---|---|---|---|
| Western District | Calloway | Western District Fisheries Office | 220 | |
| Northwestern District | McLean | Northwest District Fisheries Office | | |
| | Breckinridge | North Fork Boat Ramp Parking Lot | | |
| | Edmonson | Nolin Lake State Park | 372 | |
| Southwestern District | Warren | Southwest District Fisheries Office | | |
| | Taylor | Crazy Horse Archery and Tackle | | |
| | Barren | Barren River Lake Port Oliver Boat Ramp | | |
| | Warren | Cabela's Outpost | 315 | |
| Central District | Franklin | KDFWR Headquarters | 81 | |
| | Franklin | Forks of Elkhorn Hatchery | 75 | |
| | Shelby | Guist Creek Lake Marina | 45 | |
| | Jefferson | McNeely Lake Boat Ramp | 950 | |
| | Fayette | Jacobson Park | 1198 | |
| | Anderson | Ace Hardware | 60 | |
| | Scott | Lusby Lake/Scott County Park | 183 | |
| | Campbell | Pendery Sports Park | 231 | |
| | Boone | Camp Ernst Lake-Boat Ramp Area | 343 | |
| Southeastern District | Laurel | London Region Recycling Center | 13 | |
| | Pulaski | KDFWR Somerset Regional Office | 29 | 149 |
| | Whitley/Laurel | Corbin City Garage | 25 | |
| Northeastern District | Rowan | Minor Clark Fish Hatchery | 250 | |
| | Carter | Grayson Lake USACE Emergency Spillway Area | 50 | |
| | Madison | Lake Reba Recreational Complex | 600 | |
| Eastern District | Floyd | Eastern District Fisheries Office | 25 | |
| | Lawrence | Lawrence County Community Center | 65 | |
| | Harlan | Martin's Fork Lake Boat Ramp | 0 | |
| | Pike | Fishtrap Lake | 20 | |
| | Perry | Perry County Conservation District | 0 | |
| | Knott | Carr Creek Lake Marina Parking Lot | 25 | |
| | Johnson | Ferguson Excavating | 1 | |
| | Johnson | Ferguson Construction Site | 5 | 200 |
| | | | 5181 | 349 |

Table 3. Summary of Christmas tree donations by Fisheries District.

| District | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| Western District | 411 | 350 | 709 | 0 | 306 | 220 |
| Northwestern District | 30 | 60 | 110 | 650 | 688 | 372 |
| Southwestern District | 729 | 510 | 834 | 1000 | 700 | 315 |
| Central District | 1189 | 1507 | 4101 | 3314 | 2321 | 3166 |
| Southeastern District | 290 | 177 | 989 | 697 | 395 | 216 |
| Northeastern District | 80 | 375 | 690 | 650 | 375 | 900 |
| Eastern District | 330 | 150 | 750 | 495 | 523 | 341 |
| Total | 3059 | 3129 | 8183 | 6806 | 5308 | 5530 |

Table 4. Summary of sampling conditions by waterbody, species sampled, and date for FY2022.

Table 1. Yearly summary of sampling conditions by waterbody, species sampled, and date.

| Water body | Species | Date | Time (24 hr) | Gear | Weather | Water temp (°F) | Water level | Secchi (in) | Conditions | Pertinent sampling comments |
|---|---|---|---|---|---|---|---|---|---|---|
| Elmer Davis Lake | sportfish | 5/18/2022 | 1000 | electrofishing | cloudy/calm | 73 | full | 48 | good | normal |
| Elmer Davis Lake | sportfish | 7/19/2022 | 1000 | electrofishing | sunny/calm | 79 | full | 40 | good | normal |
| Elmer Davis Lake | sportfish | 10/5/2022 | 1030 | electrofishing | sunny/calm | 68 | low 2 ft. | 36 | good | normal |
| Taylorsville Lake | sportfish | 5/16/2022 | 1100 | electrofishing | sunny/calm | 72 | 547.3 | 36 | good | normal |
| Taylorsville Lake | sportfish | 7/18/2022 | 1100 | electrofishing | overcast/calm | 81 | 546.3 | 30 | good | normal |
| Taylorsville Lake | sportfish | 11/10/2022 | 1030 | electrofishing | sunny/calm | 60 | 544.9 | 48 | low water | normal |
| Lake Reba | sportfish | 5/19/2022 | 1000 | electrofishing | sunny/calm | 74 | full | 36 | good | normal |
| Lake Reba | sportfish | 7/21/2022 | 1030 | electrofishing | sunny/breezy | 79 | full | 24 | good | normal |
| Lake Reba | sportfish | 10/20/2022 | 1000 | electrofishing | sunny/windy | 55 | full | 36 | good | normal |
| Barren River Lake | sportfish | 10/24/2022 | 1100 | electrofishing | sunny/breezy | 62 | 546.2 | 28 | good | lake falling |
| Barren River Lake | sportfish | 10/25/2022 | 1130 | electrofishing | overcast/windy | 60 | 545.5 | 34 | good | lake falling |
| Barren River Lake | sportfish | 10/26/2022 | 1100 | electrofishing | cloudy/windy | 63 | 544.7 | 30 | good | lake falling |
| Barren River Lake | sportfish | 11/1/2022 | 1130 | electrofishing | sunny/calm | 62 | 540.8 | 36 | good | lake falling |

Table 5. Length frequency and CPUE (fish/hr) of sportfish collected from Elmer Davis Lake by habitat type during 2022.

| Habitat Type | Species | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 26 | 30 | 55 | Total | CPUE | Std err |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Natural | Channel catfish | | | | | | | | | | | | | | | | 1 | | 3 | 1 | 1 | 1 | | | 7 | 3.8 | 1.7 |
| | Warmouth | 2 | 13 | 77 | 61 | 47 | 9 | | | | | | | | | | | | | | | | | | 209 | 138.8 | 54.0 |
| | Bluegill | 58 | 58 | 59 | 111 | 140 | 32 | 2 | | | | | | | | | | | | | | | | | 460 | 296.4 | 93.6 |
| | Redear Sunfish | | 1 | 3 | 7 | 14 | 10 | 3 | | | | | | | | | | | | | | | | | 38 | 21.6 | 8.5 |
| | Largemouth bass | 10 | 31 | 55 | 22 | 18 | 48 | 37 | 63 | 60 | 38 | 27 | 18 | 5 | 6 | 4 | 1 | 4 | 1 | | | | | | 448 | 275.7 | 45.0 |
| | Black crappie | 1 | 5 | 8 | 2 | 15 | 8 | 13 | 5 | 1 | | | | | | | | | | | | | | | 58 | 33.1 | 7.1 |
| Plastic | Warmouth | | | 1 | | | | | | | | | | | | | | | | | | | | | 1 | 2.7 | 2.7 |
| | Bluegill | 3 | 3 | 1 | 2 | 2 | 3 | | | | | | | | | | | | | | | | | | 14 | 37.3 | 11.6 |
| | Redear Sunfish | | | 1 | 5 | 10 | 7 | | 1 | | | | | | | | | | | | | | | | 24 | 64.0 | 40.0 |
| | Largemouth bass | | 2 | 5 | 1 | | 3 | 3 | 4 | 4 | 3 | 2 | | | | 1 | 1 | | | | | | | | 29 | 77.3 | 38.5 |
| | Black crappie | | | | 1 | | 1 | | | | | | | | | | | | | | | | | | 2 | 5.3 | 2.7 |
| Control | Warmouth | | 2 | | 1 | | 1 | | | | | | | | | | | | | | | | | | 4 | 4.1 | 1.8 |
| | Bluegill | 13 | 9 | 9 | 6 | 9 | 4 | | | | | | | | | | | | | | | | | | 50 | 44.3 | 7.9 |
| | Redear Sunfish | | 2 | 3 | 2 | 14 | 11 | 5 | | | | | | | | | | | | | | | | | 37 | 29.7 | 9.2 |
| | Largemouth bass | 11 | 18 | 7 | 12 | 6 | 17 | 9 | 14 | 16 | 13 | 12 | 2 | 1 | 1 | | | | | | | | | | 139 | 130.7 | 15.9 |
| | Black crappie | | | | | | | | 1 | 1 | | | | | | | | | | | | | | | 2 | 2.1 | 2.1 |

Table 6. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Elmer Davis Lake in fall 2022.

| | Length group (in) | | | | | |
|---|---|---|---|---|---|---|
| Habitat type | < 8.0 | 8.0-11.9 | 12.0-14.9 | > 15.0 | > 20.0 | Total |
| Natural | 80.8 (18.4) | 123.1 (20.5) | 49.7 (11.9) | 11.5 (2.9) | 0.4 (0.4) | 275.7 (45.0) |
| Plastic | 21.3 (7.1) | 37.33 (29.3) | 13.3 (9.6) | 5.3 (5.3) | 0.0 (0.0) | 77.3 (38.5) |
| Control | 50.5 (9.3) | 51.2 (7.3) | 23.4 (4.8) | 2.7 (1.5) | 1.0 (1.0) | 130.7 (15.9) |

Table 7. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Elmer Davis Lake in fall 2022.

| | Length group (in) | | | |
|---|---|---|---|---|
| Habitat type | 3.0-5.9 | 6.0-7.9 | > 8.0 | Total |
| Natural | 121.6 (45.8) | 171.9 (54.3) | 24.8 (9.4) | 296.4 (93.6) |
| Plastic | 18.7 (7.1) | 10.7 (7.1) | 8.0 (8.0) | 37.3 (11.6) |
| Control | 28.3 (5.7) | 12.5 (3.3) | 3.3 (2.1) | 44.3 (7.9) |

Table 8. Length frequency and CPUE (fish/hr) of sportfish collected from Taylorsville Lake by habitat type during 2022.

| Habitat Type | Species | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 25 | 26 | Total | CPUE | Std err |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Natural | Blue catfish | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | 1.2 | 1.2 |
| | Channel catfish | | | | | | | 1 | | 1 | | 1 | | | | | | | | | 1 | | | 4 | 3.4 | 1.8 |
| | Flathead catfish | | | | | | | | 1 | 1 | | 2 | 1 | | | | | | | | | | 1 | 6 | 6.3 | 2.6 |
| | Bluegill | 2 | 22 | 77 | 41 | 24 | 4 | | | | | | | | | | | | | | | | | 170 | 133.9 | 42.6 |
| | Largemouth bass | 3 | | | 3 | 5 | 5 | 2 | | 5 | 3 | 6 | 5 | 2 | 3 | 3 | 1 | | 1 | | | | | 47 | 37.6 | 7.1 |
| | White crappie | | | 16 | 28 | 89 | 121 | 118 | 108 | 29 | 12 | 1 | | | | | | | | | | | | 522 | 388.4 | 117.9 |
| | Black crappie | | | | 2 | 4 | 7 | 16 | 11 | 3 | | | | | | | | | | | | | | 43 | 32.7 | 9.8 |
| | Hybrid striped bass | | | | | | | | | | 1 | | 1 | | | | | | | | | | | 2 | 1.5 | 1.5 |
| | Saugeye | | | | | | | | | | | | | | | | | | 1 | 3 | | 2 | | 6 | 4.4 | 2.5 |
| Plastic | Channel catfish | | | | | | | | 1 | 1 | 1 | | | | | 1 | 2 | | | | | | | 6 | 6.7 | 1.6 |
| | Flathead catfish | | 1 | | | | | | | | 1 | | | | | | | | | | | | | 2 | 2.7 | 1.8 |
| | Bluegill | | | 8 | 21 | 11 | | | | | | | | | | | | | | | | | | 40 | 40.0 | 17.6 |
| | Largemouth bass | | 1 | 3 | 1 | 2 | 1 | | 4 | 1 | | 4 | 3 | 5 | 3 | 2 | 1 | 1 | 2 | | 1 | | | 35 | 35.0 | 11.3 |
| | White crappie | | | | | 5 | 19 | 32 | 32 | 19 | 5 | | | | | | | | | | | | | 112 | 114.7 | 57.7 |
| | Black crappie | | | | 1 | 1 | | | 1 | | | | | | | | | | | | | | | 3 | 4.3 | 3.3 |
| | Saugeye | | | | | | | | | | | | | | | 2 | | | 1 | | 1 | | | 4 | 4.7 | 1.9 |
| Control | Blue catfish | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | 0.9 | 0.9 |
| | Channel catfish | | | | | | | | 1 | | | 1 | | | | | | | | | | | | 2 | 2.4 | 1.6 |
| | Flathead catfish | | | 1 | 1 | 2 | 1 | 1 | 3 | 2 | 1 | 1 | | | | | 1 | | | | | | | 14 | 19.0 | 5.5 |
| | Bluegill | 1 | 14 | 14 | 18 | 5 | | | | | | | | | | | | | | | | | | 52 | 74.1 | 12.0 |
| | Largemouth bass | | 3 | 2 | 3 | 1 | 2 | 3 | 2 | 6 | 3 | 6 | 3 | | 2 | | | | | | | | | 36 | 47.4 | 11.6 |
| | White crappie | | | | 1 | 1 | 3 | 5 | 4 | | | | | | | | | | | | | | | 14 | 18.4 | 9.3 |
| | Black crappie | | | | 1 | 2 | | | | | | | | | | | | | | | | | | 3 | 4.4 | 4.4 |
| | Hybrid striped bass | | | | | | 1 | 1 | | 1 | 4 | 3 | | | | | | | | | | | | 10 | 14.8 | 14.8 |
| | Saugeye | | | | | | | | | | | | 1 | | | | 1 | | 1 | | | | | 3 | 4.4 | 3.1 |

Table 9. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Taylorsville Lake in fall 2022.

| | Length group (in) | | | | | |
|---|---|---|---|---|---|---|
| Habitat type | < 8.0 | 8.0-11.9 | 12.0-14.9 | > 15.0 | > 20.0 | Total |
| Natural | 9.0 (2.7) | 9.21 (3.7) | 11.6 (3.6) | 7.7 (2.6) | 0.7 (0.7) | 37.6 (7.1) |
| Plastic | 7.0 (3.8) | 10.0 (2.9) | 11.0 (5.6) | 7.0 (2.8) | 1.0 (1.0) | 35.0 (11.3) |
| Control | 11.6 (6.0) | 18.1 (4.9) | 14.8 (5.6) | 2.9 (2.0) | 0.0 (0.0) | 47.4 (11.6) |

Table 10. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Taylorsville Lake in fall 2022.

| | Length group (in) | | | |
|---|---|---|---|---|
| Habitat type | 3.0-5.9 | 6.0-7.9 | > 8.0 | Total |
| Natural | 111.0 (36.7) | 22.8 (9.9) | 0.0 (0.0) | 133.9 (42.6) |
| Plastic | 29.0 (12.2) | 11.0 (5.6) | 0.0 (0.0) | 40.0 (17.6) |
| Control | 40.6 (7.9) | 33.5 (14.0) | 0.0 (0.0) | 74.1 (12.0) |

Table 11. Length frequency and CPUE (fish/hr) of sportfish collected from Lake Reba by habitat type during 2022.

| | | Inch class | | | | | | | | | | | | | | | | | | | | | | | | Std |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Habitat Type | Species | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 20 | 21 | 26 | 27 | 28 | 29 | 32 | Total | CPUE | err |
| Natural | Flathead catfish | | | | | | | | | | 1 | | | | | | | 1 | | | | 2 | 1 | | 5 | 7.4 | 3.9 |
| | Warmouth | | 1 | 1 | 2 | 3 | | | | | | | | | | | | | | | | | | | 7 | 10.4 | 8.8 |
| | Bluegill | 1 | 6 | 10 | 17 | 41 | 6 | | | | | | | | | | | | | | | | | | 81 | 120.0 | 76.1 |
| | Redear sunfish | | | | | 2 | 1 | | | | | | | | | | | | | | | | | | 3 | 4.4 | 3.1 |
| | Largemouth bass | 8 | 23 | 5 | 5 | 2 | 8 | 3 | 5 | 5 | 7 | 5 | 3 | 3 | 4 | 1 | 3 | 1 | | | | | | | 91 | 134.8 | 31.9 |
| | White crappie | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | 1.5 | 1.5 |
| | Black crappie | | | | 22 | 46 | 40 | 7 | 17 | 2 | | 1 | | | | | | | | | | | | | 135 | 200.0 | 84.5 |
| Plastic | Flathead catfish | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | 2 | 1.9 | 1.9 |
| | Yellow bass | | | | | | | 1 | 1 | | | | | | | | | | | | | | | | 2 | 2.9 | 2.9 |
| | Warmouth | | 2 | | 1 | | | | | | | | | | | | | | | | | | | | 3 | 4.4 | 2.2 |
| | Bluegill | 8 | 3 | 4 | 3 | 1 | | | | | | | | | | | | | | | | | | | 19 | 28.2 | 12.1 |
| | Redear sunfish | | | 1 | | 2 | | | | | | | | | | | | | | | | | | | 3 | 4.4 | 3.1 |
| | Largemouth bass | 43 | 5 | 4 | 1 | 1 | 1 | 1 | 1 | 3 | | | 2 | 1 | 2 | 1 | | | | | | | | | 66 | 97.8 | 34.9 |
| | Black crappie | 1 | | 1 | 10 | 3 | | 1 | 2 | | | | | | | | | | | | | | | | 18 | 26.7 | 10.2 |
| Control | Warmouth | | 1 | 1 | | 1 | | 1 | | | | | | | | | | | | | | | | | 4 | 7.6 | 2.7 |
| | Bluegill | 3 | 4 | 5 | 2 | 5 | | | | | | | | | | | | | | | | | | | 19 | 36.2 | 17.1 |
| | Redear sunfish | | | 2 | | 2 | | | | | | | | | | | | | | | | | | | 4 | 7.6 | 5.7 |
| | Largemouth bass | 6 | 1 | 1 | 1 | 2 | 2 | 3 | 1 | 3 | 2 | 1 | | | | | | | | | | | | | 23 | 43.8 | 10.4 |
| | Black crappie | | | | | 2 | 1 | | 2 | 1 | | | | | | | | | | | | | | | 6 | 11.4 | 4.5 |

Table 12. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Lake Reba in fall 2022.

| | Length group (in) | | | | | |
|---|---|---|---|---|---|---|
| Habitat type | < 8.0 | 8.0-11.9 | 12.0-14.9 | > 15.0 | > 20.0 | Total |
| Natural | 68.0 (23.5) | 29.3 (8.2) | 14.7 (6.4) | 12.0 (5.1) | 0.0 (0.0) | 134.8 (31.9) |
| Plastic | 80.0 (35.9) | 8.9 (3.9) | 2.9 (1.9) | 5.9 (3.2) | 0.0 (0.0) | 97.8 (34.9) |
| Control | 20.9 (4.9) | 17.1 (4.8) | 5.7 (3.9) | 0.0 (0.0) | 0.0 (0.0) | 43.8 (10.4) |

Table 13. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Lake Reba in fall 2022.

| | Length group (in) | | | |
|---|---|---|---|---|
| Habitat type | 3.0-5.9 | 6.0-7.9 | > 8.0 | Total |
| Natural | 45.3 (22.8) | 62.7 (48.5) | 0.0 (0.0) | 120.0 (76.1) |
| Plastic | 22.2 (10.4) | 5.9 (3.2) | 0.0 (0.0) | 28.2 (12.1) |
| Control | 22.9 (9.5) | 13.3 (9.7) | 0.0 (0.0) | 36.2 (17.1) |

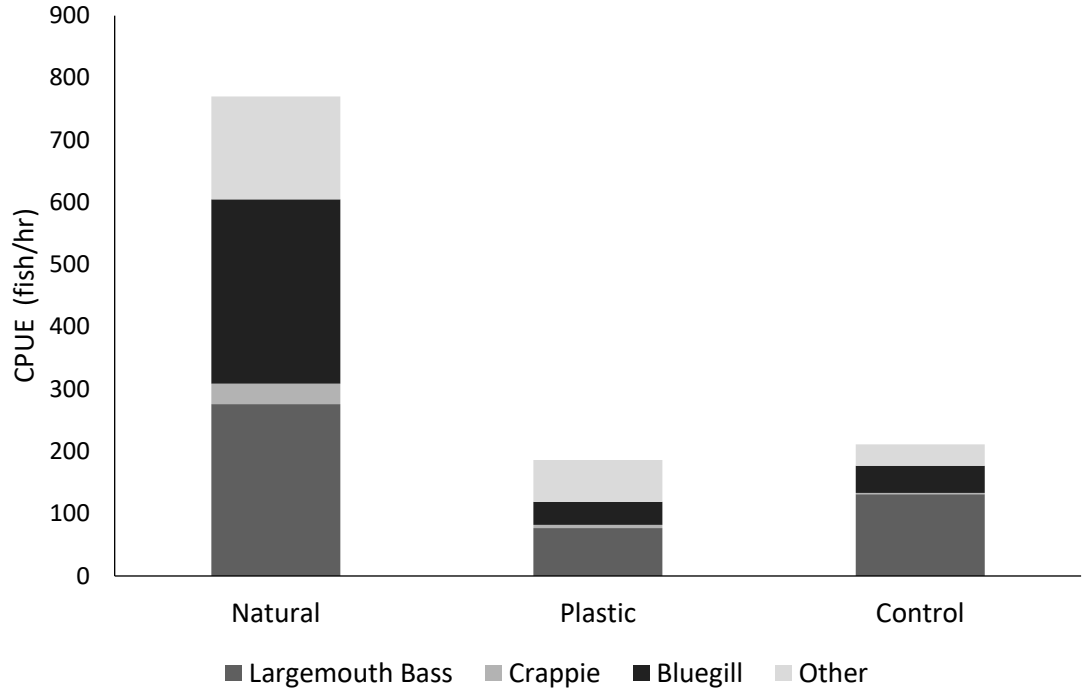


Figure 1. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Elmer Davis Lake in 2022.

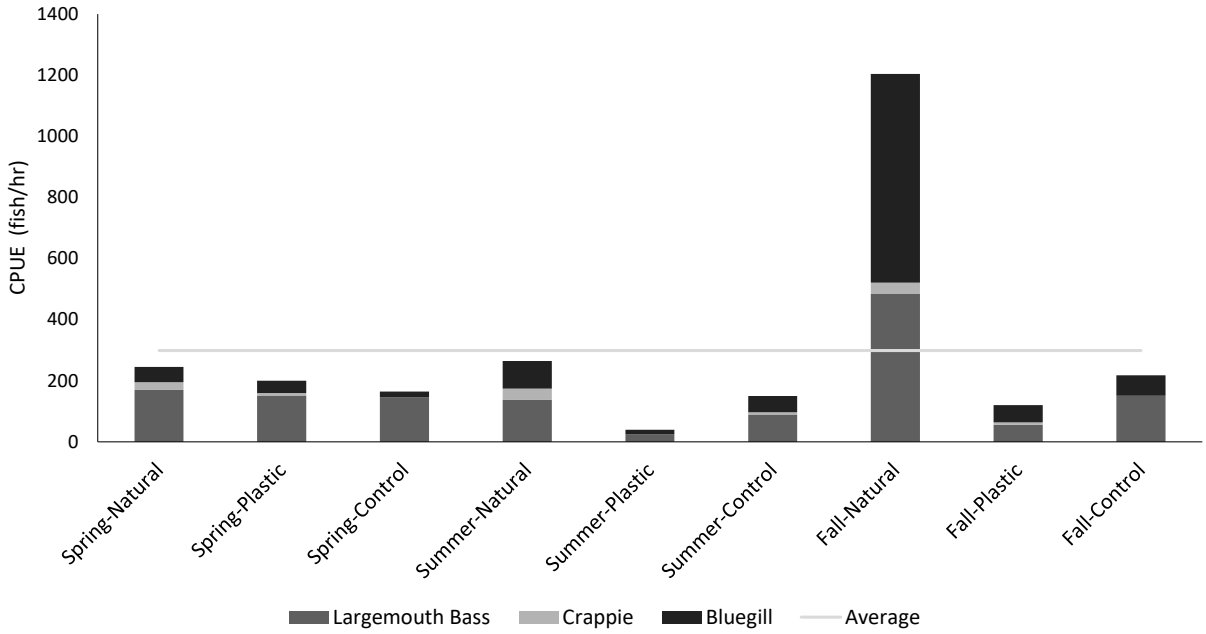


Figure 2. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Elmer Davis Lake in spring, summer, and fall of 2022.

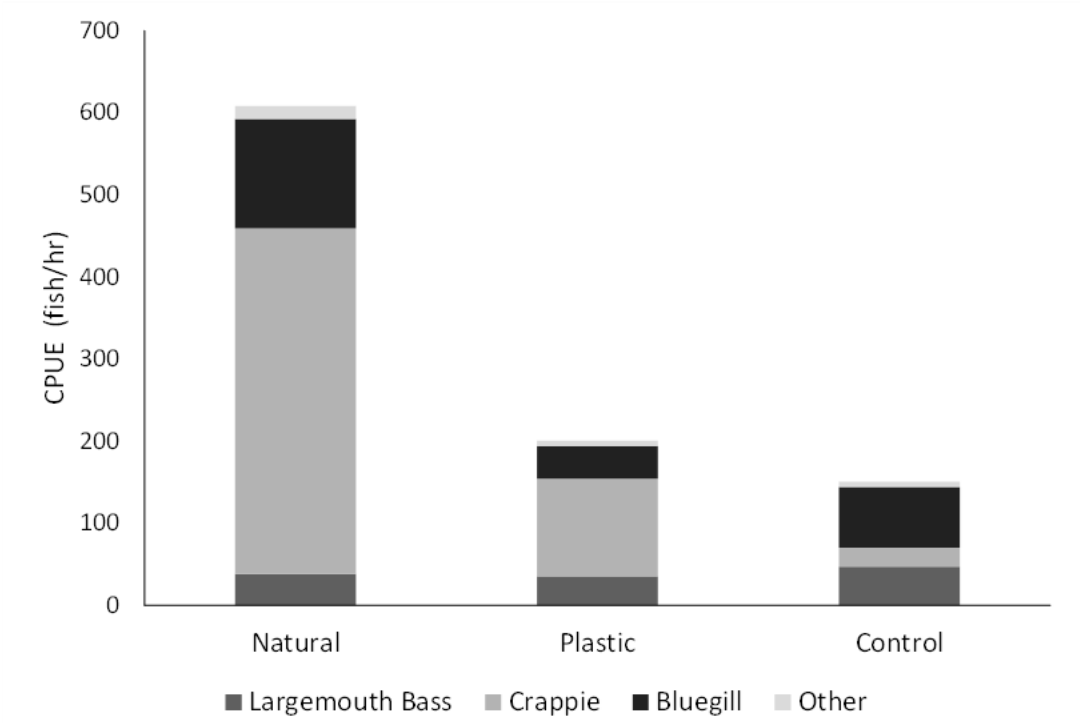


Figure 3. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Taylorsville Lake in 2022.

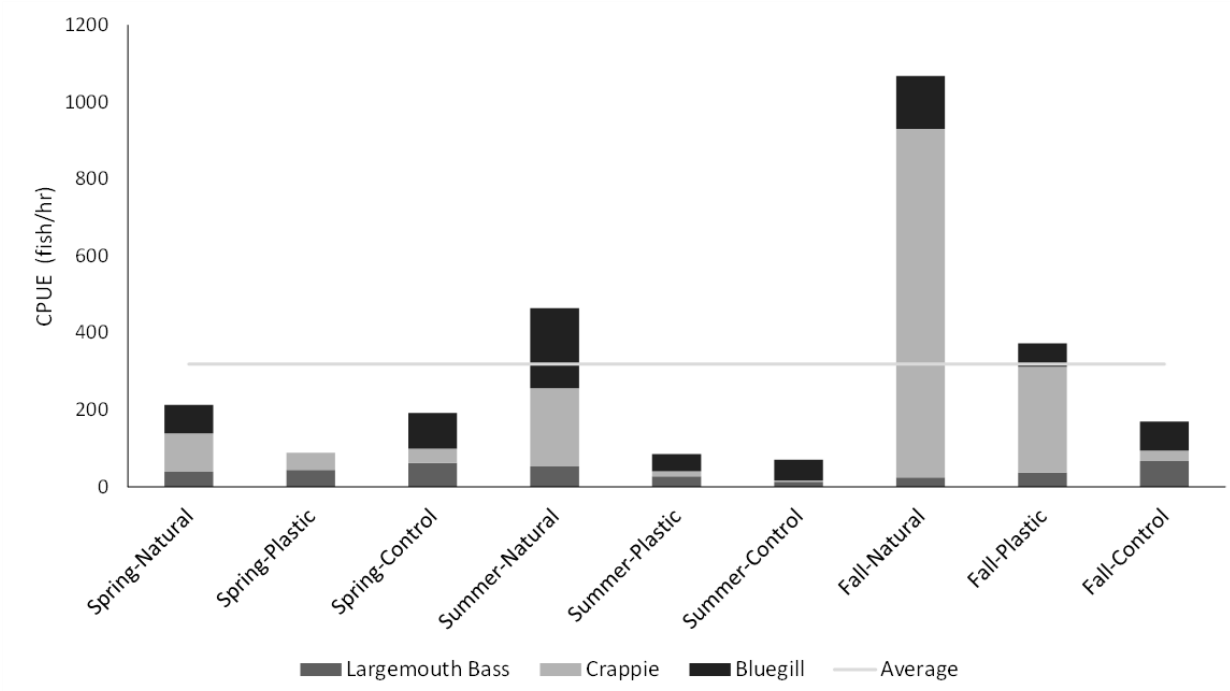


Figure 4. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Taylorsville Lake in spring, summer, and fall of 2022.

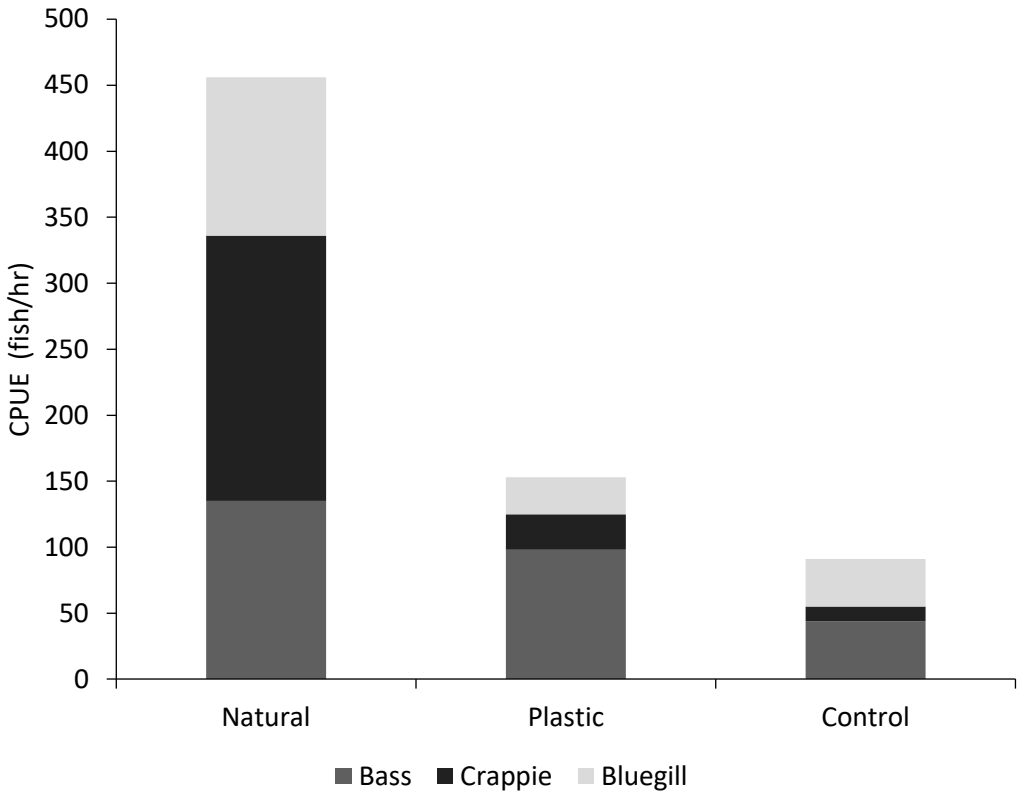


Figure 5. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Lake Reba in 2022.

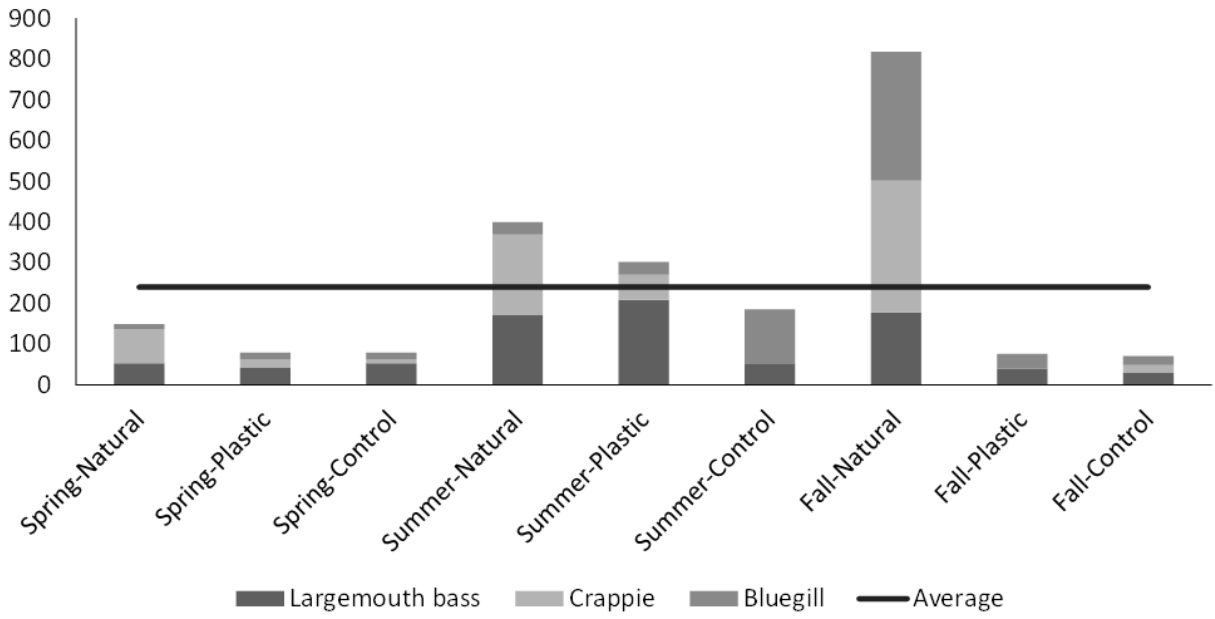


Figure 6. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Lake Reba in spring, summer, and fall of 2022.