

Commonwealth of Kentucky

Date: June 30, 2022

D-J Grant No. F-40, Segment 44

Period: 01 April 2021  
through  
31 March 2022

ANNUAL PERFORMANCE REPORT

for

*Statewide Fisheries Investigation Project*

Part III of IV

Subsection III: Fisheries Habitat Branch



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Department of Fish and Wildlife Resources

Fisheries Division



STATE: Kentucky

PROJECT NO.: F-40-44

GRANT TYPE: Research and Survey

GRANT TITLE: Statewide Fisheries Investigations

SUBSECTION 1 TITLE: Fisheries Habitat Program

PERIOD COVERED: 1 April 2021 – 31 March 2022

### 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 fourth and fifth phases of the Barren River Lake Largescale Fish Habitat Project were completed from May to July 2021 and October to December 2021, respectively. The phases included sites in the Beaver Creek and the Peninsula Marina portions of Barren River Lake. To date, the project has resulted in 1,131 individual habitat structures placed in 54 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. Staff spent 28 work days on phases 4 and 5 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, 2022 |
| Work Accomplished:         | March 31, 2022 |

#### 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 2021 – 31 March 2022, the Habitat Branch assisted the Southeastern, Northeastern, Central, Southwestern, Northwestern, and Western 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 3,713 structures for 84 habitat enhancement sites in 13 lakes.

The Christmas tree drop-off program resulted in 5,308 trees from 30 drop-off sites and store donations. Department staff picked up 821 trees that were donated from large retailers. 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 Bullock Pen Lake, Guist Creek Lake, Kincaid 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, 2022 |
| Work Accomplished:         | March 31, 2022 |

### 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 45.

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, 2022 |
| Work Accomplished:         | March 31, 2022 |

#### C. SIGNIFICANT DEVIATIONS

Final report was not completed in Segment 44.

#### D. REMARKS

None.

#### E. RECOMMENDATIONS

None.

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## Project I: Largescale Fish Habitat Projects

### **Barren River Lake Largescale Fish Habitat Project**

The fourth phase of the Barren River Lake Largescale Fish Habitat Project was completed from May to July 2021. This phase included sites in the Beaver Creek portion of Barren River Lake. Due to the Covid-19 pandemic, only small work crews from agency staff (KDFWR and the U.S. Army Corps of Engineers, “USACE”) were allowed to work on the project. Staff worked with the USACE for staging and deployment of the habitat material. Material for the fish habitat structures was stored at the beach area of the Beaver Creek Recreation Area. Nine habitat sites (1 Plastic tree, 1 Pennsylvania spider-hump, 2 MEGA stakebeds, and 5 pallet structure/brush piles) were built in Beaver Creek from the mouth of Skagg’s Creek upstream to the Hwy 252 bridge crossing. The Barren River Lake Fish Habitat Committee, a committee of KDFWR and USACE staff, anglers, angling organizations, and general public, guided the selection of habitat sites that included main lake points (4), main lake pockets (3), and channel ledges (2). Habitat sites ranged from 8 to 20 feet deep at summer pool with the majority of sites in the 15-foot depth range (Figure 1).

The fifth phase of the Barren River Lake Largescale Fish Habitat Project was completed from October to December 2021. This phase included sites in the lower portion of Barren River Lake near Peninsula Marina. Staff worked with the USACE and the Peninsula Marina staff 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. Staff took advantage of the winter pool levels and constructed 3 large habitat sites on exposed bed of the lake in the flat area adjacent to the Peninsula Marina parking lot. The three sites were constructed with a mixture of large cedar trees and pallet structures. All sites range from 12 to 17 feet of water at summer pool (Figure 2).

The sixth phase of the Barren River Lake Largescale Fish Habitat Project is planned for the summer 2022 and will include sites near Finney and Baileys Point. The habitat material for the project will be staged at the Peninsula Marina overflow storage area.

To date, the project has resulted in 1,131 individual habitat structures placed in 54 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 2021 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 two control sites where no habitat work had been constructed. Eight brush pile sites, five plastic sites, two rock sites, two MEGA stakebed sites, and two control sites were sampled in the fall with boat-mounted electrofishing for a total effort of 1.8 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 12 sites above the average of 882.1 fish/hr. A total of 1,493 fish of 6 species were collected from habitat sites made from natural materials. Crappie (527.5 fish/hr) were most abundant followed by bluegill (489.4 fish/hr) and largemouth bass (180.1 fish/hr). Crappie ranged from 3.0-13.0 inches with 48% being above quality size ( $\geq 8.0$ ). Bluegill ranged from 3.0 to 7.0 inches with 16% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 3.0 to 19.0 inches with 59% being above quality size ( $\geq 12.0$ ).

A total of 161 fish of 8 species were collected from plastic habitat sites. Crappie (246.4 fish/hr) were most abundant followed by bluegill (130.4 fish/hr) and largemouth bass (66.7 fish/hr). Crappie ranged from 6.0-11.0 inches with 61% being above quality size ( $\geq 8.0$ ). Bluegill ranged from 4.0 to 7.0 inches with 17% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 6.0 to 19.0 inches with 87% being above quality size ( $\geq 12.0$ ). A total of 34 fish of six species were collected from control sites. Crappie (77.3 fish/hr) were most abundant followed by bluegill (62.8 fish/hr) and hybrid striped bass (24.2 fish/hr). Crappie ranged from 7.0-10.0 inches with 81% being above quality size ( $\geq 8.0$ ). Bluegill ranged from 4.0 to 7.0 inches with 31% being above quality size ( $\geq 6.0$ ) (Table 2). Crappie had significantly higher catch rates on both natural and plastic material, as compared to control sites. Largemouth bass 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 15.0 inch or greater length group. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 3-4). Natural habitat sites had a 157% increase in fish abundance as compared to plastic sites and a 554% increase as compared to control sites. Plastic habitat sites had a 154% increase in fish abundance as compared to control sites (Figure 5). Largemouth bass catch rates were highest on rock structure types, while crappie catch rates were highest on brush pile and MEGA stake-bed sites (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).

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

| Phase                | Year | # of Sites | Cedar Trees | Christmas Trees | Pallet Structures<br>(3 Pallet Triangle) | MEGA Stakebed | PVC Trees | Rock Reef | Mossback and Pennsylvania |                        |                | Totals |
|----------------------|------|------------|-------------|-----------------|------------------------------------------|---------------|-----------|-----------|---------------------------|------------------------|----------------|--------|
|                      |      |            |             |                 |                                          |               |           |           | Fishiding Structures      | Spider Hump Structures | Bamboo Bundles |        |
| 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    | 2021 | 3          | 40          |                 | 45                                       |               |           |           |                           |                        |                | 85     |
| Totals               |      | 54         | 570         | 200             | 190                                      | 19            | 42        | 5         | 80                        | 20                     | 5              | 1131   |

Table 2. Length frequency and CPUE (fish/hr) of sportfish collected from Barren River Lake by habitat type in fall 2021.

| Habitat Type | Species             | Inch class |     |     |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |       | Total | CPUE | Std err |
|--------------|---------------------|------------|-----|-----|----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-------|-------|------|---------|
|              |                     | 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 | 39  |       |       |      |         |
| Natural      | Channel catfish     |            |     |     |    |     |     |    |    |    | 1  |    | 1  |    | 1  | 2  |    |    | 1  |    | 1  |    |    |    |    |    |    | 7   | 5.8   | 2.6   |      |         |
|              | White bass          |            |     |     |    |     |     |    |    | 1  |    | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    | 3   | 2.0   | 2.0   |      |         |
|              | Bluegill            | 20         | 224 | 262 | 88 | 8   |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 602 | 489.4 | 103.4 |      |         |
|              | Largemouth bass     | 24         | 12  | 11  | 15 | 10  | 5   | 4  | 2  | 4  | 7  | 14 | 23 | 26 | 28 | 17 | 10 | 2  |    |    |    |    |    |    |    |    |    | 214 | 180.1 | 34.4  |      |         |
|              | White crappie       |            |     |     | 1  | 10  | 52  | 44 | 30 | 9  | 2  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 149 | 136.1 | 44.1  |      |         |
|              | Black crappie       | 4          | 2   | 12  | 66 | 250 | 101 | 46 | 21 | 11 | 4  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 518 | 391.3 | 99.7  |      |         |
| Plastic      | Blue catfish        |            |     |     |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1  | 1   | 2.9   | 2.9   |      |         |
|              | Channel catfish     |            |     |     |    |     |     |    |    |    |    | 1  |    |    |    | 1  |    |    |    | 1  |    | 1  |    |    |    |    |    | 4   | 11.6  | 5.4   |      |         |
|              | White bass          |            |     |     |    |     |     |    |    |    |    | 1  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2   | 5.8   | 5.8   |      |         |
|              | Bluegill            |            | 15  | 22  | 8  |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 45  | 130.4 | 25.1  |      |         |
|              | Smallmouth bass     |            |     |     |    |     |     |    |    |    |    |    |    |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    | 1   | 2.9   | 2.9   |      |         |
|              | Largemouth bass     |            |     |     | 1  |     |     |    |    |    | 2  | 2  | 4  | 1  | 4  | 5  | 2  | 1  | 1  |    |    |    |    |    |    |    |    | 23  | 66.7  | 26.1  |      |         |
|              | White crappie       |            |     |     | 1  | 8   | 11  | 13 | 8  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 41  | 118.8 | 37.3  |      |         |
|              | Black crappie       |            |     |     | 3  | 21  | 11  | 4  | 2  | 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 44  | 127.5 | 45.4  |      |         |
| Control      | Channel catfish     |            |     |     |    |     |     |    |    |    |    |    |    |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    | 1   | 4.8   | 4.8   |      |         |
|              | Bluegill            |            | 3   | 6   | 3  | 1   |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 13  | 62.8  | 37.7  |      |         |
|              | Largemouth bass     |            |     |     |    |     |     |    |    |    |    |    | 2  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    | 3   | 14.5  | 14.5  |      |         |
|              | White crappie       |            |     |     |    |     | 1   | 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 4   | 19.3  | 12.7  |      |         |
|              | Black crappie       |            |     |     |    | 3   | 5   | 3  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 12  | 58.0  | 33.4  |      |         |
|              | Hybrid striped bass |            |     |     |    |     |     |    |    |    |    |    |    |    |    |    | 1  | 2  | 1  | 1  |    |    |    |    |    |    |    | 5   | 24.2  | 24.2  |      |         |

Table 3. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Barren River Lake in fall 2021.

| Habitat type | Length group (in) |            |             |             |           | Total        |
|--------------|-------------------|------------|-------------|-------------|-----------|--------------|
|              | < 8.0             | 8.0-11.9   | 12.0-14.9   | > 15.0      | > 20.0    |              |
| Natural      | 69.7 (34.2)       | 14.4 (4.0) | 34.2 (5.4)  | 61.8 (12.4) | 0.0 (0.0) | 180.1 (34.4) |
| Plastic      | 2.9 (2.9)         | 5.8 (5.8)  | 20.3 (13.4) | 37.7 (13.4) | 0.0 (0.0) | 66.7 (26.1)  |
| Control      | 0.0 (0.0)         | 0.0 (0.0)  | 9.7 (9.7)   | 4.8 (4.8)   | 0.0 (0.0) | 14.5 (14.5)  |

Table 4. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Barren River Lake in fall 2021.

| Habitat type | Length group (in) |             |           | Total         |
|--------------|-------------------|-------------|-----------|---------------|
|              | 3.0-5.9           | 6.0-7.9     | > 8.0     |               |
| Natural      | 409.8 (90.7)      | 79.6 (17.9) | 0.0 (0.0) | 489.4 (103.4) |
| Plastic      | 107.2 (19.7)      | 23.2 (9.8)  | 0.0 (0.0) | 130.4 (25.1)  |
| Control      | 43.5 (22.1)       | 19.3 (19.3) | 0.0 (0.0) | 62.8 (37.7)   |



Figure 1 (left photo). Spider-hump construction at Beaver Creek. Figure 2 (right photo). Brush pile material made of large cedar trees and wooden pallet structures at Peninsula Marina area, Phase 4 and 5.

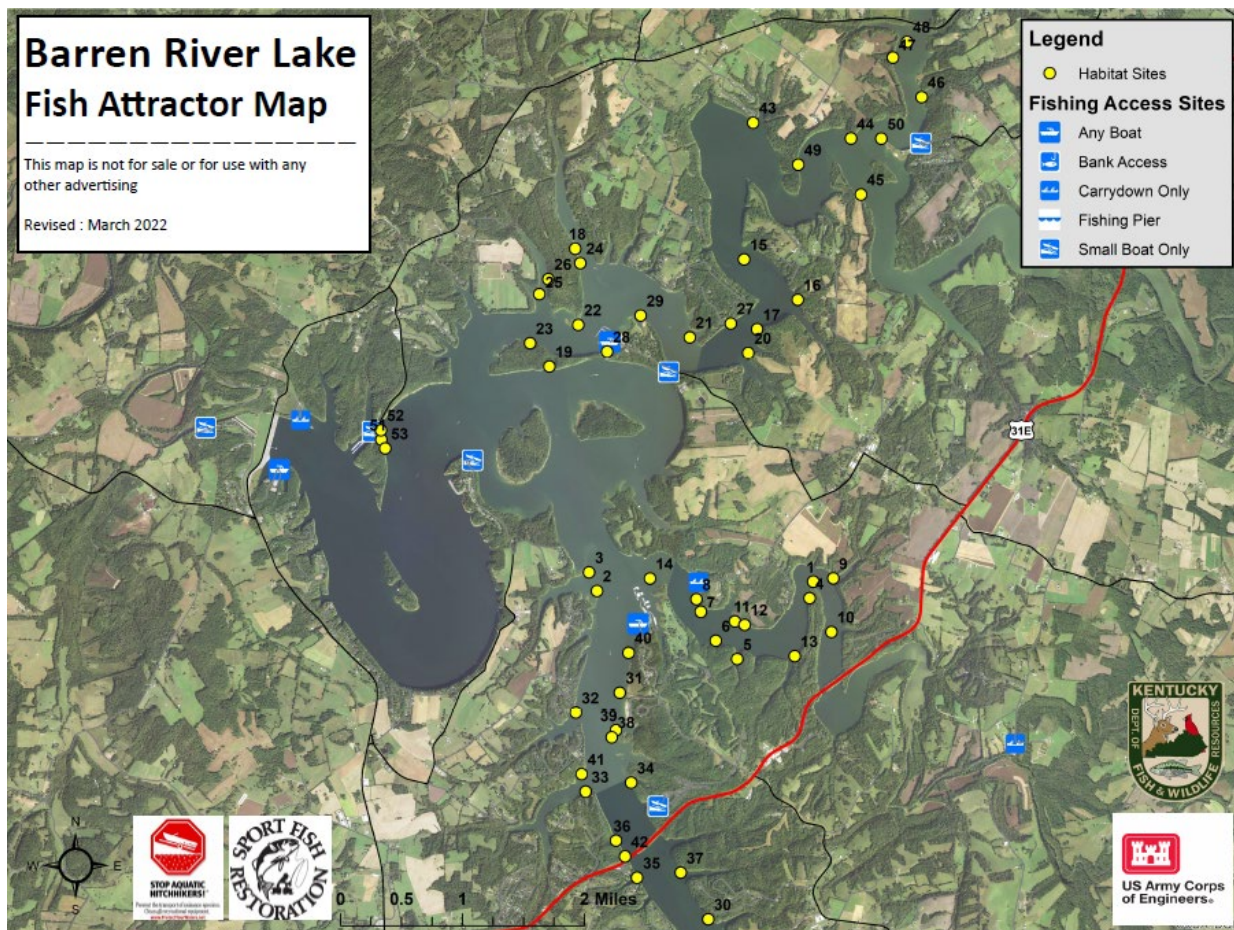


Figure 3. 2019-2020 Barren River Lake FHP habitat enhancement locations for Phases 1-3.

| Habitat Locations |                     |           |            |      |       |
|-------------------|---------------------|-----------|------------|------|-------|
| Site              | Type                | Latitude  | Longitude  | Date | Depth |
| 1                 | Mossback Structures | 36.87564  | -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  | -86.06145  | 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 | 36.90590  | -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               | 36.90715  | -86.05714  | 2020 | 15    |
| 28                | Brush               | 36.90386  | -86.07545  | 2020 | 18    |
| 29                | Rock                | 36.90819  | -86.07043  | 2020 | 10-14 |
| 30                | Brush               | 36.83555  | -86.06021  | 2021 | 15-20 |
| 31                | Brush               | 36.86341  | -86.07339  | 2021 | 10    |
| 32                | Brush               | 36.86101  | -86.07903  | 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  | -86.07307  | 2021 | 15-20 |
| 37                | Brush               | 36.84206  | -86.06420  | 2021 | 15-20 |
| 38                | MEGA Stakebed       | 36.85810  | -86.07455  | 2021 | 22    |
| 39                | Rock                | 36.85892  | -86.07394  | 2021 | 10-15 |
| 40                | MEGA Stakebed       | 36.86814  | -86.07211  | 2021 | 22    |
| 41                | Mossback Structures | 36.86370  | -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               | 36.919228 | -86.03944  | 2021 | 13    |
| 45                | Brush               | 36.912595 | -86.037933 | 2021 | 18    |
| 46                | Brush               | 36.93415  | -86.028979 | 2021 | 15    |
| 47                | Plastic Trees       | 36.938846 | -86.033276 | 2021 | 15    |
| 48                | Brush               | 36.940697 | -86.031185 | 2021 | 15    |
| 49                | MEGA Stakebed       | 36.926101 | -86.047224 | 2021 | 20    |
| 50                | Rock                | 36.929213 | -86.034937 | 2021 | 12    |
| 51                | Brush               | 36.893311 | -86.108833 | 2021 | 15    |
| 52                | Brush               | 36.89445  | -86.108872 | 2021 | 15    |
| 53                | Brush               | 36.89222  | -86.10835  | 2021 | 15    |

\*\* 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.

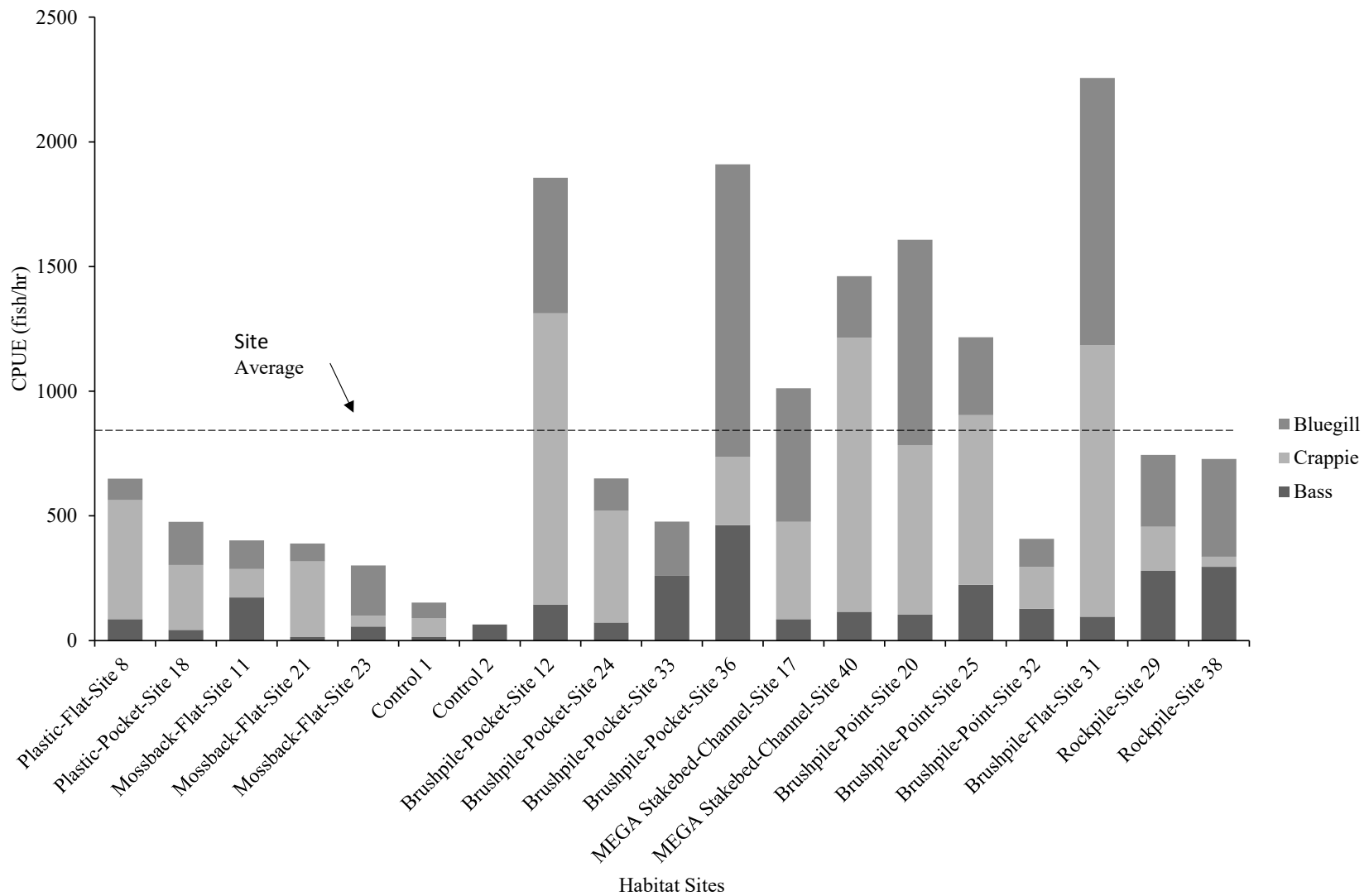


Figure 4. Electrofishing CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall 2021.

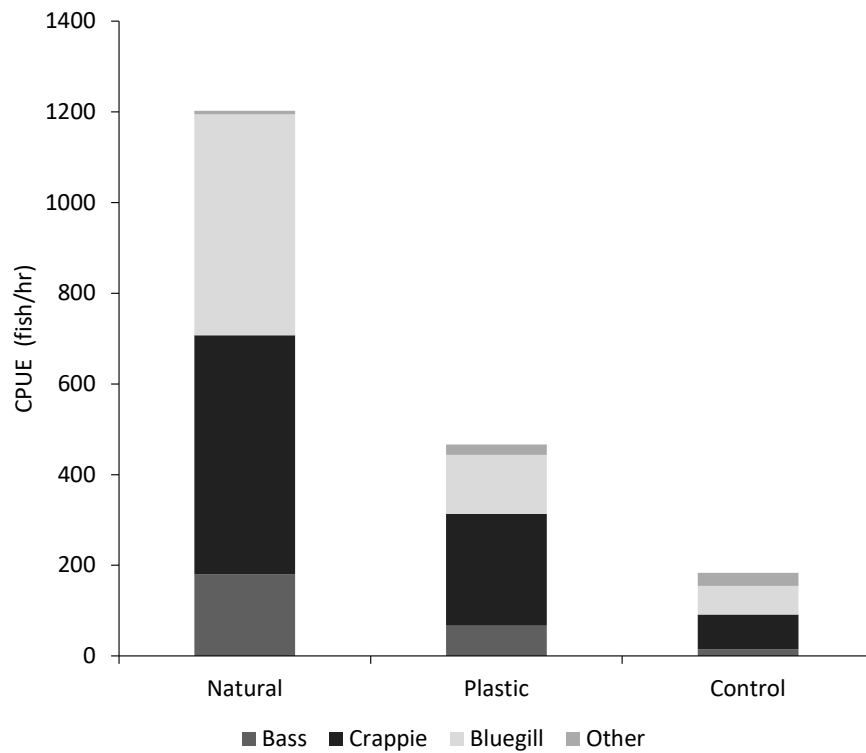


Figure 5. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall of 2021.

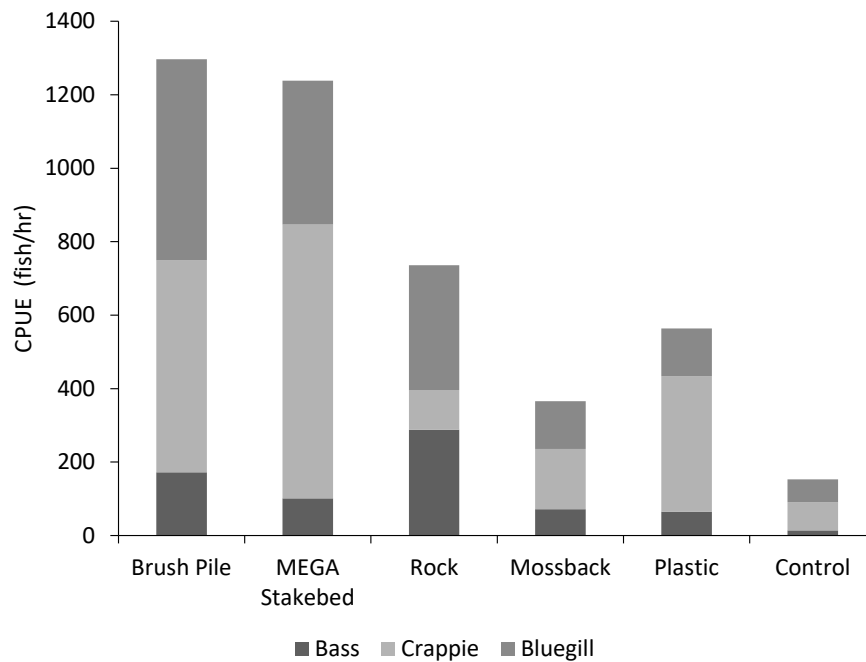


Figure 6. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Barren River Lake in fall of 2021.

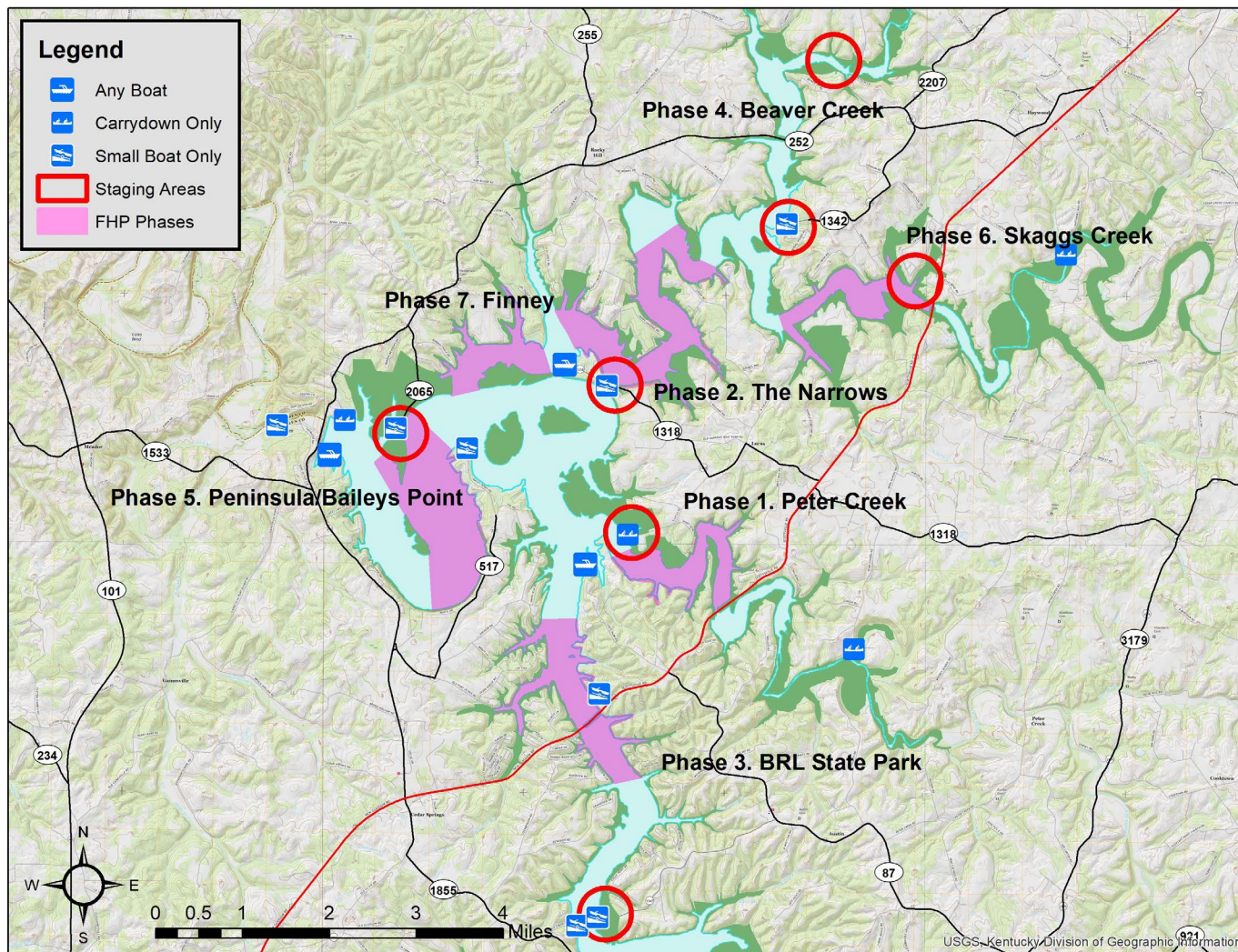


Figure 7. Phases for the Barren River Lake Largescale Fish Habitat Project

## Project II: Aquatic Habitat Technical Guidance

### FINDINGS

During 1 April 2021 – 31 March 2022, the Habitat Branch assisted the Southeastern, Northeastern, Central, Southwestern, Northwestern, and Western 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 3,713 structures for 84 habitat enhancement sites in 13 lakes (Table 1).

The Christmas tree drop-off program resulted in 5,308 trees from 30 drop-off sites and store donations. Department staff picked up 821 trees that were donated from large retailers (Table 2). Tree donations for 2021 decreased slightly as compared to 2019 and 2020 (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 Bullock Pen Lake, Guist Creek Lake, Kincaid 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.

#### **Bullock Pen Lake (Grant County)**

Ten brush pile sites and two control sites were sampled in spring, summer, and fall with boat-mounted electrofishing for a total effort of 2.75 hrs. Brush pile sites had a total of seven species (587.0 fish/hr) collected with bluegill (274.5 fish/hr), white crappie (132.0 fish/hr), and largemouth bass (98.0 fish/hr) being the most abundant. Bluegill ranged from 3.0-8.0 inches with 12% being above quality size ( $\geq 6.0$ ). White crappie ranged from 4.0-14.0 inches with 55% being above quality size ( $\geq 8.0$ ). Largemouth bass ranged from 3.0-22.0 inches with 41% being above quality size ( $\geq 12.0$ ). Control sites had a total of six species (104.0 fish/hr) collected with bluegill (68.0 fish/hr) and largemouth bass (17.3 fish/hr) being the most abundant. Largemouth bass ranged from 7.0-21.0 inches with 46% being above quality size ( $\geq 12.0$ ). Bluegill ranged from 3.0-6.0 inches with 53% being above quality size ( $\geq 6.0$ ) (Table 5). Bluegill, crappie, and largemouth bass had significantly higher catch rates at the habitat sites as compared to control sites (Figure 1). Largemouth bass collected were evenly spread across the various length groups. The majority of bluegill collected were in the 3.0 to 5.9 inch group (Tables 6-7). The largest seasonal difference in abundance was during the fall with a 713% increase in total catch rates of sportfish on habitat sites (Figure 2).

#### **Guist Creek Lake (Shelby County)**

Ten brush pile sites and two control sites were sampled in spring, summer, and fall with boat-mounted electrofishing for a total effort of 2.4 hrs. Brush pile sites had a total of six species (587.6 fish/hr) collected with bluegill (410.2 fish/hr), white crappie (95.6 fish/hr), and largemouth bass (58.3 fish/hr) being the most abundant. Bluegill ranged from 3.0-8.0 inches with 33% being above quality size ( $\geq 6.0$ ).

White crappie ranged from 4.0-11.0 inches with 41% being above quality size ( $\geq 8.0$ ). Largemouth bass ranged from 3.0-21.0 inches with 72% being above quality size ( $\geq 12.0$ ). Control sites had a total of six species (173.9 fish/hr) collected with bluegill (93.2 fish/hr) and largemouth bass (53.8 fish/hr) being the most abundant. Bluegill ranged from 3.0-7.0 inches with 24% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 3.0-17.0 inches with 50% being above quality size ( $\geq 12.0$ ) (Table 8). Bluegill and crappie had significantly higher catch rates at the habitat sites as compared to control sites (Figure 3). The majority of largemouth bass collected were in the 15.0 inch or greater length group. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 9-10). The largest seasonal difference in abundance was during the fall with a 590% increase in total catch rates of sportfish on habitat sites (Figure 4).

### **Kincaid Lake (Pendleton County)**

Six brush pile sites and two control sites were sampled in the fall with boat-mounted electrofishing for a total effort of 1.5 hrs. Brush pile sites had a total of six species (736.2 fish/hr) collected with bluegill (522.2 fish/hr), largemouth bass (146.5 fish/hr), and white crappie (56.8 fish/hr) being the most abundant. Bluegill ranged from 3.0-7.0 inches with 7% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 3.0-22.0 inches with 55% being above quality size ( $\geq 12.0$ ). White crappie ranged from 5.0-13.0 inches with 16% being above quality size ( $\geq 8.0$ ). Control sites had a total of seven species (186.0 fish/hr) collected with bluegill (94.2 fish/hr) and largemouth bass (60.4 fish/hr) being the most abundant. Bluegill ranged from 3.0-6.0 inches with 5% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 3.0-21.0 inches with 48% being above quality size ( $\geq 12.0$ ) (Table 11). Bluegill, white crappie, and largemouth bass had higher catch rates at the habitat sites as compared to control sites (Figure 5). The majority of largemouth bass collected were in the 15.0 inch or greater length group. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 12-13). The largest seasonal difference in abundance was during the fall with a 608% increase in total catch rates of sportfish on habitat sites (Figure 6).

### **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 1.7 hrs. Brush pile sites had a total of five species (111.7 fish/hr) collected with largemouth bass (74.6 fish/hr), bluegill (17.4 fish/hr), and black crappie (15.0 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-18.0 inches with 40% being above quality size ( $\geq 12.0$ ). Bluegill ranged from 4.0-7.0 inches with 73% being above quality size ( $\geq 6.0$ ). Black crappie ranged from 4.0-9.0 inches with 50% being above quality size ( $\geq 8.0$ ). Plastic sites had a total of seven species (129.0 fish/hr) collected with largemouth bass (72.9 fish/hr), bluegill (30.6 fish/hr), and black crappie (17.7 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-18.0 inches with 16% being above quality size ( $\geq 12.0$ ). Bluegill ranged from 4.0-7.0 inches with 37% being above quality size ( $\geq 6.0$ ). Black crappie ranged from 7.0-9.0 inches with 92% being above quality size ( $\geq 8.0$ ). Control sites had a total of five species (96.2 fish/hr) collected with largemouth bass (38.6 fish/hr) and bluegill (40.6 fish/hr) being the most abundant. Largemouth bass ranged from 3.0-12.0 inches with 6% being above quality size ( $\geq 12.0$ ). Bluegill ranged from 3.0-7.0 inches with 50% being above quality size ( $\geq 6.0$ ) (Table 14). Largemouth bass and crappie had higher catch rates at the natural and plastic habitat sites as compared to control sites. Control sites had higher catch rates of bluegill as compared to plastic and natural sites. Plastic and natural habitat sites had similar catch rates for all sportfish (Figure 7). 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 15-16). The largest seasonal difference in abundance between natural, plastic, and control sites was during the summer with a 212% increase in total sportfish catch rates on plastic from natural sites. During the fall, natural sites produced a 146% increase

in total sportfish catch rates from plastic sites (Figure 8). There was concern that the brush pile sites were too deep (9-12 feet) for effective electrofishing during the spring and summer. Cedar trees were added to the brush pile sites during the summer to increase the height of the habitat sites.

### **Taylorsville Lake (Spencer County)**

Three brush pile sites, two plastic sites, and two control sites were sampled across spring, summer, and fall with boat-mounted electrofishing for a total effort of 2.25 hrs. Brush pile sites had a total of eight species (606.9 fish/hr) collected with white crappie (411.4 fish/hr), bluegill (69.7 fish/hr), black crappie (61.7 fish/hr), and largemouth bass (48.0 fish/hr) being the most abundant. White crappie ranged from 5.0-12.0 inches with 62% being above quality size ( $\geq 8.0$ ). Bluegill ranged from 3.0-7.0 inches with 44% being above quality size ( $\geq 6.0$ ). Black crappie ranged from 6.0-12.0 inches with 85% being above quality size ( $\geq 8.0$ ). Largemouth bass ranged from 4.0 to 21.0 inches with 57% being above quality size ( $\geq 12.0$ ). Plastic sites had a total of seven species (252.1 fish/hr) collected with white crappie (140.0 fish/hr), largemouth bass (41.3 fish/hr), and bluegill (36.0 fish/hr) being the most abundant. White crappie ranged from 5.0-10.0 inches with 78% being above quality size ( $\geq 8.0$ ). Largemouth bass ranged from 8.0 to 19.0 inches with 58% being above quality size ( $\geq 12.0$ ). Bluegill ranged from 3.0-7.0 inches with 70% being above quality size ( $\geq 6.0$ ). Control sites had a total of six species (177.9 fish/hr) collected with white crappie (87.9 fish/hr), bluegill (48.8 fish/hr), and largemouth bass (29.4 fish/hr) being the most abundant. White crappie ranged from 6.0-12.0 inches with 45% being above quality size ( $\geq 8.0$ ). Bluegill ranged from 3.0-7.0 inches with 34% being above quality size ( $\geq 6.0$ ). Largemouth bass ranged from 5.0 to 15.0 inches with 66% being above quality size ( $\geq 12.0$ ) (Table 17). White and black crappie had significantly higher catch rates at the natural habitat sites as compared to the plastic and control sites (Figure 9). Largemouth bass and bluegill produced similar catch rates between all sites. The majority of largemouth bass collected were in the 12.0 to 14.9 inch group. Most bluegill collected were from the 3.0 to 5.9 inch group (Tables 18-19). The largest seasonal difference in abundance between natural, plastic, and control sites was during the fall with a 264% increase in total sportfish catch rates on natural from control sites, and a 254% increase in total sportfish catch rates on natural from plastic sites (Figure 10).

Table 1. Habitat Branch technical guidance projects for FY2021.

| Date           | Lake               | Material Amount | # of Sites | Material Type                         |
|----------------|--------------------|-----------------|------------|---------------------------------------|
| April 2021     | Cedar Creek Lake   | 120             | 2          | Christmas trees                       |
| May 2021       | Lake Reba          | 25              | 3          | Plastic trees                         |
| July 2021      | Kincaid Lake       | 11              | 3          | Pallet structures                     |
| August 2021    | Cave Run Lake      | 250             | 5          | Cedar trees (200), Plastic trees (50) |
| August 2021    | Beaver Lake        | 96              | 10         | Rock reefs (tons)                     |
| August 2021    | Taylorsville Lake  | 20              | 2          | Cedar trees                           |
| August 2021    | Lake Barkley       | 30              | 3          | Spawning barrels                      |
| September 2021 | Lake Reba          | 35              | 3          | Cedar trees                           |
| November 2021  | Nolin River Lake   | 45              | 10         | Rock (tons), Spider-hump structures   |
| January 2022   | Lake Barkley       | 129             | 6          | Hardwood trees                        |
| January 2022   | Marion County Lake | 180             | --         | Lime (tons)                           |
| January 2022   | Laurel River Lake  | 350             | 1          | Christmas trees                       |
| February 2022  | Green River Lake   | 25              | 6          | Rock (tons), Spider-hump structures   |
| February 2022  | Guist Creek Lake   | 140             | 1          | Christmas trees                       |
| March 2022     | Beaver Lake        | 80              | --         | Lime (tons)                           |
| March 2022     | Elmer Davis Lake   | 2077            | 23         | Christmas trees                       |
| March 2022     | Elmer Davis Lake   | 100             | 6          | Stakebeds                             |
| TOTAL          |                    | 3713            | 84         |                                       |

Table 2. Christmas tree drop-off locations for FY2021.

| Fisheries District    | County         | Location                                | Trees | Store Pickup |
|-----------------------|----------------|-----------------------------------------|-------|--------------|
| Western District      | Calloway       | Western District Fisheries Office       | 306   |              |
| Northwestern District | McLean         | Northwest District Fisheries Office     | 10    |              |
|                       | Breckinridge   | North Fork Boat Ramp Parking Lot        | 120   | 558          |
|                       | Edmonson       | Nolin Lake State Park                   | 0     |              |
| Southwestern District | Warren         | Southwest District Fisheries Office     |       |              |
|                       | Taylor         | Crazy Horse Archery and Tackle          | 700   |              |
|                       | Barren         | Barren River Lake Port Oliver Boat Ramp |       |              |
|                       | Warren         | Cabela's Outpost                        |       |              |
| Central District      | Franklin       | KDFWR Headquarters                      | 139   |              |
|                       | Franklin       | Forks of Elkhorn Hatchery               | 76    |              |
|                       | Shelby         | Guist Creek Lake Marina                 | 228   |              |
|                       | Jefferson      | McNeely Lake Boat Ramp                  | 722   |              |
|                       | Fayette        | Jacobson Park                           | 648   |              |
|                       | Anderson       | Ace Hardware                            | 58    |              |
|                       | Scott          | Lusby Lake/Scott County Park            | 54    |              |
|                       | Campbell       | Pendery Sports Park                     | 329   |              |
|                       | Boone          | Camp Ernst Lake-Boat Ramp Area          | 67    |              |
| Southeastern District | Laurel         | US Forest Service Office                | 14    |              |
|                       | Laurel         | London Region Recycling Center          | 3     | 263          |
|                       | Pulaski        | KDFWR Somerset Regional Office          | 51    |              |
|                       | Whitley/Laurel | Corbin City Garage                      | 64    |              |
| Northeastern District | Rowan          | Minor Clark Fish Hatchery               | 50    |              |
|                       | Carter         | Grayson Lake USACE Emergency Spillway   | 25    |              |
|                       | Madison        | Lake Reba Recreational Complex          | 300   |              |
| Eastern District      | Floyd          | Eastern District Fisheries Office       | 250   |              |
|                       | Lawrence       | Yatesville Lake Fishing Jetty           | 20    |              |
|                       | Harlan         | Martin's Fork Lake Boat Ramp            | 20    |              |
|                       | Pike           | Fishtrap Lake                           | 25    |              |
|                       | Perry          | Perry County Conservation District      | 8     |              |
|                       | Knott          | Carr Creek Lake Marina Parking Lot      | 200   |              |
|                       |                |                                         | 4487  | 821          |

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

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

Table 4. Summary of sampling conditions by waterbody, species sampled, and date for FY2021.

| Water body        | Species   | Date       | Time (24 hr) | Gear           | Weather        | Water temp | Water   | Secchi | Conditions    | Pertinent sampling comments            |
|-------------------|-----------|------------|--------------|----------------|----------------|------------|---------|--------|---------------|----------------------------------------|
| Kincaid Lake      | sportfish | 5/24/2021  | 1000         | electrofishing | cloudy/calm    | 76         | full    | 39     | good          | normal                                 |
| Kincaid Lake      | sportfish | 8/10/2021  | 1000         | electrofishing | overcast/calm  | 78         | full    | 40     | good          | normal                                 |
| Kincaid Lake      | sportfish | 10/26/2021 | 1030         | electrofishing | overcast/wind  | 62         | full    | 48     | good          | normal                                 |
| Taylorsville Lake | sportfish | 5/21/2021  | 1030         | electrofishing | sunny/calm     | 70         | 547.1   | 36     | good          | normal                                 |
| Taylorsville Lake | sportfish | 7/22/2021  | 1100         | electrofishing | sunny/breezy   | 83         | 547.2   | 16     | stained water | normal                                 |
| Taylorsville Lake | sportfish | 12/3/2021  | 1000         | electrofishing | sunny/calm     | 49         | 545.2   | 36     | good          | normal                                 |
| Lake Reba         | sportfish | 5/18/2021  | 1030         | electrofishing | overcast/calm  | 67         | full    | 49     | good          | brush sites were too deep for sampling |
| Lake Reba         | sportfish | 8/10/2021  | 1030         | electrofishing | sunny/breezy   | 76.4       | full    | 24     | good          | brush sites were too deep for sampling |
| Lake Reba         | sportfish | 10/21/2021 | 1000         | electrofishing | overcast/windy | 65         | full    | 60     | good          | normal                                 |
| Barren River Lake | sportfish | 11/5/2021  | 1000         | electrofishing | sunny/breezy   | 58         | 546.1   | 30     | good          | lake falling                           |
| Barren River Lake | sportfish | 11/8/2021  | 900          | electrofishing | sunny/calm     | 61         | 543.7   | 30     | good          | lake falling                           |
| Barren River Lake | sportfish | 11/15/2021 | 930          | electrofishing | sunny/breezy   | 50         | 537.5   | 22     | low water     | some sites too shallow                 |
| Bullock Pen Lake  | sportfish | 5/20/2021  | 1000         | electrofishing | sunny/calm     | 69         | down 2' | 40     | good          | normal                                 |
| Bullock Pen Lake  | sportfish | 10/20/2021 | 1100         | electrofishing | sunny/breezy   | 66         | full    | 24     | good          | normal                                 |
| Bullock Pen Lake  | sportfish | 7/19/2021  | 1100         | electrofishing | sunny/calm     | 79         | full    | 37     | good          | normal                                 |
| Guist Creek Lake  | sportfish | 5/7/2021   | 1030         | electrofishing | overcast/calm  | 66         | full    | 15     | stained water | normal                                 |
| Guist Creek Lake  | sportfish | 7/22/2021  | 1030         | electrofishing | sunny/calm     | 80         | full    | 27     | full          | normal                                 |
| Guist Creek Lake  | sportfish | 10/22/2021 | 1030         | electrofishing | cloudy/calm    | 64         | full    | 30     | full          | normal                                 |

Table 5. Length frequency and CPUE (fish/hr) of sportfish collected from Bullock Pen Lake by habitat type during 2021.

|              |                  |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |       |       |      |  |  |  |  | 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 | 27 | 28 | 31 | 33 | 35 | 37 | 39 | Total | CPUE  | err  |  |  |  |  |     |
| Natural      | Channel catfish  |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    | 1  |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    | 2     | 1.0   | 1.0  |  |  |  |  |     |
|              | Flathead catfish |    |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    | 1  |    |    |    | 1  | 1  | 1  | 1  | 1  | 2  | 1  | 1  | 1  | 1  | 12    | 6.0   | 1.2  |  |  |  |  |     |
|              | Bluegill         | 67 | 178 | 237 | 66 |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 549   | 274.5 | 69.0 |  |  |  |  |     |
|              | Redear sunfish   |    |     |     | 1  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2     | 1.0   | 1.0  |  |  |  |  |     |
|              | Largemouth bass  | 10 | 8   | 8   | 18 | 11 | 14 | 13 | 19 | 15 | 17 | 12 | 5  | 9  | 8  | 2  | 7  | 7  | 6  | 5  | 2  |    |    |    |    |    |    |    |    |    |    | 196   | 98.0  | 10.6 |  |  |  |  |     |
|              | White crappie    |    | 2   |     | 21 | 96 | 65 | 54 | 13 | 6  | 2  | 2  | 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 264   | 132.0 | 44.0 |  |  |  |  |     |
|              | Black crappie    |    |     | 13  | 15 | 59 | 37 | 18 | 5  | 1  |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 149   | 74.5  | 24.0 |  |  |  |  |     |
| Control      | Channel catfish  |    |     |     |    |    |    |    |    |    | 1  |    | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 3     | 4.0   | 1.7  |  |  |  |  |     |
|              | Bluegill         | 8  | 20  | 16  | 7  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 51    | 68.0  | 12.8 |  |  |  |  |     |
|              | Largemouth bass  |    |     |     |    | 1  | 2  | 2  | 2  |    | 3  |    |    |    |    | 1  |    |    |    | 2  |    |    |    |    |    |    |    |    |    |    |    | 13    | 17.3  | 2.4  |  |  |  |  |     |
|              | White crappie    |    |     |     | 1  | 2  | 5  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 8     | 10.7  | 7.0  |  |  |  |  |     |
|              | Black crappie    |    |     |     |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1     | 1.3   | 1.3  |  |  |  |  |     |
|              | Saugeye          |    |     |     |    |    |    |    |    |    |    |    |    |    |    | 1  |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    | 2     | 2.7   | 1.6  |  |  |  |  |     |

Table 6. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Bullock Pen Lake in fall 2021.

| Habitat type | < 8.0      | Length group (in) |            |            |           | Total       |
|--------------|------------|-------------------|------------|------------|-----------|-------------|
|              |            | 8.0-11.9          | 12.0-14.9  | > 15.0     | > 20.0    |             |
| Natural      | 27.5 (6.0) | 30.5 (5.8)        | 17.0 (3.3) | 23.0 (3.6) | 6.5 (1.1) | 98.0 (10.6) |
| Control      | 1.3 (1.3)  | 8.0 (2.1)         | 4.0 (4.0)  | 4.0 (1.8)  | 2.7 (1.7) | 17.3 (2.4)  |

Table 7. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Bullock Pen Lake in fall 2021.

| Habitat type | Length group (in) |            |           | Total        |
|--------------|-------------------|------------|-----------|--------------|
|              | 3.0-5.9           | 6.0-7.9    | > 8.0     |              |
| Natural      | 241.0 (62.1)      | 33.0 (9.3) | 0.5 (0.5) | 274.5 (69.0) |
| Control      | 58.7 (12.2)       | 9.3 (3.8)  | 0.0 (0.0) | 68.0 (12.8)  |

Table 8. Length frequency and CPUE (fish/hr) of sportfish collected from Guist Creek Lake by habitat type during 2021.

|              |                  |    |     |     |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |       |       |      |  | 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 | 29 | 30 | 31 | 34 | Total | CPUE  | err  |  |     |  |  |
| Natural      | Channel catfish  |    |     |     |     |    |    |    |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    | 1  | 1  |    |    | 1  | 1  |    |    |    | 5     | 2.7   | 1.6  |  |     |  |  |
|              | Flathead catfish |    |     | 1   |     | 1  |    |    |    |    | 1  |    |    |    |    | 1  |    |    |    | 1  |    | 2  |    | 2  | 1  | 3  | 1  | 1  | 3  | 1  | 1  | 20    | 10.7  | 2.9  |  |     |  |  |
|              | Bluegill         | 40 | 180 | 297 | 234 | 14 | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 767   | 410.2 | 61.4 |  |     |  |  |
|              | Largemouth bass  | 5  | 2   |     | 1   | 1  | 4  | 1  | 5  | 11 | 8  | 6  | 8  | 12 | 6  | 14 | 13 | 6  | 2  | 4  |    |    |    |    |    |    |    |    |    |    |    | 109   | 58.3  | 10.2 |  |     |  |  |
|              | White crappie    |    | 2   | 35  | 31  | 36 | 30 | 28 | 13 | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 176   | 95.6  | 27.6 |  |     |  |  |
|              | Black crappie    |    | 1   | 2   | 5   | 4  | 4  | 1  |    | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 19    | 10.1  | 3.0  |  |     |  |  |
| Control      | Channel catfish  |    |     |     |     |    | 1  |    |    |    | 1  |    |    |    |    |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    | 3     | 6.2   | 4.3  |  |     |  |  |
|              | Flathead catfish |    |     |     | 1   |    |    |    |    |    |    |    | 1  |    |    | 1  |    |    |    |    | 1  | 1  |    |    |    |    |    |    |    |    |    | 5     | 10.4  | 6.1  |  |     |  |  |
|              | Bluegill         | 3  | 10  | 21  | 10  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 45    | 93.2  | 27.5 |  |     |  |  |
|              | Largemouth bass  | 1  | 2   |     | 1   | 1  |    | 2  | 2  | 4  | 2  | 2  | 3  | 4  | 1  | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 26    | 53.8  | 12.5 |  |     |  |  |
|              | White crappie    |    |     |     |     | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 2     | 4.1   | 2.6  |  |     |  |  |
|              | Black crappie    |    |     |     |     |    | 1  | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 3     | 6.2   | 2.9  |  |     |  |  |

Table 9. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Guist Creek Lake in fall 2021.

| Habitat type | Length group (in) |            |            |            |           | Total       |
|--------------|-------------------|------------|------------|------------|-----------|-------------|
|              | < 8.0             | 8.0-11.9   | 12.0-14.9  | > 15.0     | > 20.0    |             |
| Natural      | 4.8 (2.8)         | 11.2 (2.6) | 11.7 (2.8) | 30.4 (6.1) | 3.2 (1.3) | 58.3 (10.2) |
| Control      | 10.4 (5.2)        | 16.5 (5.7) | 14.5 (4.5) | 12.4 (3.8) | 0.0 (0.0) | 53.8 (12.5) |

Table 10. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Guist Creek Lake in fall 2021.

| Habitat type | Length group (in) |              |           | Total        |
|--------------|-------------------|--------------|-----------|--------------|
|              | 3.0-5.9           | 6.0-7.9      | > 8.0     |              |
| Natural      | 276.2 (45.3)      | 133.1 (26.3) | 1.1 (0.7) | 410.2 (61.4) |
| Control      | 70.4 (19.4)       | 22.8 (13.7)  | 0.0 (0.0) | 93.2 (27.5)  |

Table 11. Length frequency and CPUE (fish/hr) of sportfish collected from Kincaid Lake by habitat type during 2021.

|              |                  | Number of fish caught in each of the 25 replicates (columns) by species (rows) in each of the two habitat types (rows) |     |     |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   |      |       | Total |  | 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 | 25 |   | CPUE | err   |       |  |     |
| Natural      | Channel catfish  |                                                                                                                        |     |     |    |   |   |    |    |    | 1  |    |    |    | 1  | 1  | 2  |    |    |    |    |    |    |   | 5    | 4.4   | 1.9   |  |     |
|              | Flathead catfish |                                                                                                                        |     |     |    |   |   |    |    |    |    |    |    | 1  |    |    |    |    |    | 1  |    | 1  | 1  |   | 4    | 3.6   | 2.7   |  |     |
|              | Bluegill         | 131                                                                                                                    | 217 | 201 | 38 | 1 |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   | 588  | 522.2 | 133.2 |  |     |
|              | Largemouth bass  | 12                                                                                                                     | 3   | 7   | 10 | 6 | 6 | 10 | 6  | 15 | 11 | 4  | 8  | 12 | 13 | 9  | 3  | 10 | 10 | 9  | 1  |    |    |   | 165  | 146.5 | 9.8   |  |     |
|              | White crappie    |                                                                                                                        |     | 9   | 36 | 9 | 1 | 3  |    | 4  | 1  | 1  |    |    |    |    |    |    |    |    |    |    |    |   | 64   | 56.8  | 23.4  |  |     |
|              | Black crappie    |                                                                                                                        |     |     |    | 1 | 2 |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   | 3    | 2.7   | 1.8   |  |     |
| Control      | Channel catfish  |                                                                                                                        |     |     |    |   |   |    |    |    |    |    | 1  |    | 1  |    |    | 1  |    | 1  |    |    |    |   | 4    | 9.7   | 4.8   |  |     |
|              | Flathead catfish |                                                                                                                        |     |     |    |   |   |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |   | 1    | 2.4   | 2.4   |  |     |
|              | Bluegill         | 10                                                                                                                     | 18  | 9   | 2  |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   | 39   | 94.2  | 26.6  |  |     |
|              | Redear sunfish   |                                                                                                                        |     |     |    | 1 |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   | 1    | 2.4   | 2.4   |  |     |
|              | Largemouth bass  | 3                                                                                                                      | 1   | 1   | 1  | 3 | 3 | 1  |    |    | 5  | 1  | 1  | 1  |    |    | 1  | 1  |    |    | 2  |    |    |   | 25   | 60.4  | 13.1  |  |     |
|              | White crappie    |                                                                                                                        |     |     | 4  | 2 |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |   | 6    | 14.5  | 6.4   |  |     |
|              | Black crappie    |                                                                                                                        |     |     | 1  |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1 | 2.4  | 2.4   |       |  |     |

Table 12. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Kincaid Lake in fall 2021.

| Habitat type | Length group (in) |            |            |             |            | Total       |
|--------------|-------------------|------------|------------|-------------|------------|-------------|
|              | < 8.0             | 8.0-11.9   | 12.0-14.9  | > 15.0      | > 20.0     |             |
| Natural      | 33.8 (12.7)       | 32.8 (4.5) | 20.4 (5.4) | 59.5 (11.5) | 17.8 (5.9) | 146.5 (9.8) |
| Control      | 21.8 (6.2)        | 9.6 (4.8)  | 16.9 (4.4) | 12.1 (5.8)  | 4.8 (3.1)  | 60.4 (13.1) |

Table 13. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Kincaid Lake in fall 2021.

| Habitat type | Length group (in) |             |           |               |
|--------------|-------------------|-------------|-----------|---------------|
|              | 3.0-5.9           | 6.0-7.9     | > 8.0     | Total         |
| Natural      | 488.0 (122.4)     | 34.2 (14.2) | 0.0 (0.0) | 522.2 (133.2) |
| Control      | 89.4 (24.1)       | 4.8 (3.1)   | 0.0 (0.0) | 94.2 (26.6)   |

Table 14. Length frequency and CPUE (fish/hr) of sportfish collected from Lake Reba by habitat type during 2021.

| Habitat Type | Species          | Inch class |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    |      |      | Total | CPUE | Std<br>err |
|--------------|------------------|------------|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|--|----|------|------|-------|------|------------|
|              |                  | 3          | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 24 | 25 | 26 | 27 |  |  |  |    |      |      |       |      |            |
| Natural      | Warmouth         |            |   |   |   | 1 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    | 1    | 1.6  | 1.6   |      |            |
|              | Bluegill         |            | 1 | 2 | 5 | 3 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    | 11   | 17.4 | 11.0  |      |            |
|              | Largemouth bass  | 4          | 3 | 3 | 2 | 1 | 2 | 2 | 4  | 8  | 8  | 1  | 3  | 3  | 1  | 2  | 1  |    |    |    |    |  |  |  |    | 48   | 74.6 | 20.9  |      |            |
|              | White crappie    |            |   |   |   |   |   | 1 | 1  |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    | 2    | 3.2  | 2.1   |      |            |
|              | Black crappie    |            | 1 | 1 | 1 | 2 | 3 | 2 |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  |    | 10   | 15.0 | 9.4   |      |            |
| Plastic      | Channel catfish  |            |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    | 1  |    |    |    |  |  |  |    | 1    | 1.6  | 1.6   |      |            |
|              | Flathead catfish |            |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    | 1  | 1  |  |  |  | 2  | 3.2  | 3.2  |       |      |            |
|              | Bluegill         | 2          | 1 | 9 | 6 | 1 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 19 | 30.6 | 17.5 |       |      |            |
|              | Redear sunfish   |            |   |   | 1 |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 1  | 1.3  | 1.3  |       |      |            |
|              | Largemouth bass  | 5          | 5 | 4 | 8 | 2 | 5 | 7 | 3  | 2  | 1  | 1  | 1  | 3  |    |    | 2  |    |    |    |    |  |  |  | 49 | 72.9 | 17.1 |       |      |            |
|              | White crappie    |            |   |   |   |   | 1 |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 1  | 1.6  | 1.6  |       |      |            |
|              | Black crappie    |            |   |   |   | 1 | 4 | 4 | 3  |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 12 | 17.7 | 7.7  |       |      |            |
| Control      | Channel catfish  |            |   |   |   |   |   |   |    |    | 1  |    | 1  |    |    |    |    |    |    |    |    |  |  |  | 2  | 4.8  | 4.8  |       |      |            |
|              | Bluegill         | 3          | 4 | 2 | 5 | 4 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 18 | 40.6 | 14.3 |       |      |            |
|              | Redear sunfish   |            |   | 1 |   | 2 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 3  | 7.2  | 4.9  |       |      |            |
|              | Largemouth bass  | 1          | 4 | 4 | 1 |   | 2 | 3 | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |  |  |  | 17 | 38.6 | 10.6 |       |      |            |
|              | Black crappie    |            |   |   |   |   |   |   | 2  |    |    |    |    |    |    |    |    |    |    |    |    |  |  |  | 2  | 4.8  | 3.0  |       |      |            |

Table 15. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Lake Reba in fall 2021.

| Habitat type | Length group (in) |             |             |            |           | Total       |
|--------------|-------------------|-------------|-------------|------------|-----------|-------------|
|              | < 8.0             | 8.0-11.9    | 12.0-14.9   | > 15.0     | > 20.0    |             |
| Natural      | 19.9 (4.1)        | 25.2 (11.1) | 18.8 (10.8) | 10.7 (6.3) | 0.0 (0.0) | 74.6 (20.9) |
| Plastic      | 36.2 (10.7)       | 24.1 (12.7) | 4.5 (3.3)   | 8.1 (4.9)  | 0.0 (0.0) | 72.9 (17.1) |
| Control      | 22.9 (8.1)        | 13.3 (4.9)  | 2.4 (2.4)   | 0.0 (0.0)  | 0.0 (0.0) | 38.6 (10.6) |

Table 16. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Lake Reba in fall 2021.

| Habitat type | Length group (in) |             |           | Total       |
|--------------|-------------------|-------------|-----------|-------------|
|              | 3.0-5.9           | 6.0-7.9     | > 8.0     |             |
| Natural      | 4.8 (3.4)         | 12.6 (7.8)  | 0.0 (0.0) | 17.4 (11.0) |
| Plastic      | 19.3 (11.6)       | 11.3 (6.3)  | 0.0 (0.0) | 30.6 (17.5) |
| Control      | 19.3 (12.7)       | 21.3 (11.1) | 0.0 (0.0) | 40.6 (14.3) |

Table 17. Length frequency and CPUE (fish/hr) of sportfish collected from Taylorsville Lake by habitat type during 2021.

| Habitat Type     | Species             |                  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  |     |       | Total | CPUE | Std |
|------------------|---------------------|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|--|-----|-------|-------|------|-----|
|                  |                     | 3                | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 25 | err |  |     |       |       |      |     |
| Natural          | Channel catfish     |                  |    |    |    |    |    | 1  |    |    |    | 2  |    |    |    |    |    |    |    |    |    |    |     |  | 3   | 3.4   | 2.3   |      |     |
|                  | Flathead catfish    |                  |    |    | 1  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    | 1  |    |     |  | 3   | 3.4   | 2.3   |      |     |
|                  | Bluegill            | 6                | 15 | 13 | 23 | 4  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 61  | 69.7  | 15.6  |      |     |
|                  | Largemouth bass     | 1                | 3  |    | 4  | 2  | 2  |    | 6  | 6  | 11 | 3  | 1  |    |    | 2  |    |    |    | 1  |    |    |     |  | 42  | 48.0  | 11.1  |      |     |
|                  | White crappie       |                  |    | 14 | 49 | 74 | 80 | 72 | 57 | 10 | 4  |    |    |    |    |    |    |    |    |    |    |    |     |  | 360 | 411.4 | 148.4 |      |     |
|                  | Black crappie       |                  |    |    | 1  | 7  | 18 | 20 | 4  | 4  |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 54  | 61.7  | 20.3  |      |     |
|                  | Hybrid striped bass |                  |    |    |    |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |     |  | 1   | 1.1   | 1.1   |      |     |
|                  | Saugeye             |                  |    |    |    |    |    |    |    |    |    |    |    | 1  | 2  | 1  |    |    |    | 1  | 2  |    |     |  | 7   | 8.0   | 5.7   |      |     |
|                  | Plastic             | Channel catfish  |    |    |    |    |    |    |    |    |    |    | 2  |    |    |    |    |    |    |    |    |    |     |  |     | 2     | 2.7   | 1.6  |     |
| Flathead catfish |                     |                  |    |    |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 1   | 1.3   | 1.3   |      |     |
| Bluegill         |                     | 2                |    | 6  | 16 | 3  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 27  | 36.0  | 15.1  |      |     |
| Largemouth bass  |                     |                  |    |    |    |    | 3  | 2  | 1  | 2  | 5  | 7  | 6  | 3  |    | 1  |    |    |    | 1  |    |    |     |  | 31  | 41.3  | 8.1   |      |     |
| White crappie    |                     |                  |    | 1  | 7  | 15 | 26 | 33 | 14 | 9  |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 105 | 140.0 | 38.0  |      |     |
| Black crappie    |                     |                  |    |    | 1  | 3  | 8  | 7  | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 21  | 28.0  | 17.3  |      |     |
| Saugeye          |                     |                  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1  |    | 1  |    |     |  | 2   | 2.7   | 1.6   |      |     |
| Control          |                     | Flathead catfish |    | 1  |    | 1  |    |    |    | 1  |    |    |    |    |    |    |    |    |    |    |    |    |     |  |     | 3     | 4.0   | 1.7  |     |
|                  | Bluegill            | 4                | 13 | 6  | 10 | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 35  | 48.8  | 14.0  |      |     |
|                  | Largemouth bass     |                  |    | 2  | 1  |    |    | 1  | 1  | 1  | 1  | 7  | 3  | 1  |    |    |    |    |    |    |    |    |     |  | 18  | 29.4  | 4.2   |      |     |
|                  | White crappie       |                  |    |    | 11 | 13 | 7  | 9  | 3  |    | 1  |    |    |    |    |    |    |    |    |    |    |    |     |  | 44  | 87.9  | 58.7  |      |     |
|                  | Black crappie       |                  |    |    |    | 2  | 2  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |  | 4   | 5.3   | 3.9   |      |     |
|                  | Saugeye             |                  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | 1   |  | 1   | 2.4   | 2.4   |      |     |

Table 18. Electrofishing CPUE (fish/hr) for each length group of largemouth bass by habitat type collected from Taylorsville Lake in fall 2021.

| Habitat type | Length group (in) |            |            |           |           | Total       |
|--------------|-------------------|------------|------------|-----------|-----------|-------------|
|              | < 8.0             | 8.0-11.9   | 12.0-14.9  | > 15.0    | > 20.0    |             |
| Natural      | 9.1 (4.4)         | 11.4 (2.9) | 22.9 (7.1) | 4.6 (2.9) | 1.1 (1.1) | 48.0 (11.1) |
| Plastic      | 0.0 (0.0)         | 10.6 (5.3) | 24.0 (4.6) | 6.7 (2.4) | 1.3 (1.3) | 41.3 (8.1)  |
| Control      | 5.1 (3.2)         | 5.1 (2.5)  | 17.9 (3.0) | 1.3 (1.3) | 0.0 (0.0) | 29.4 (4.2)  |

Table 19. Electrofishing CPUE (fish/hr) for each length group of bluegill by habitat type collected from Taylorsville Lake in fall 2021.

| Habitat type | Length group (in) |             |           | Total       |
|--------------|-------------------|-------------|-----------|-------------|
|              | 3.0-5.9           | 6.0-7.9     | > 8.0     |             |
| Natural      | 38.8 (13.9)       | 30.9 (3.7)  | 0.0 (0.0) | 69.7 (15.6) |
| Plastic      | 10.7 (4.4)        | 25.3 (11.8) | 0.0 (0.0) | 36.0 (15.1) |
| Control      | 32.8 (8.4)        | 16.0 (9.0)  | 0.0 (0.0) | 48.8 (14.0) |

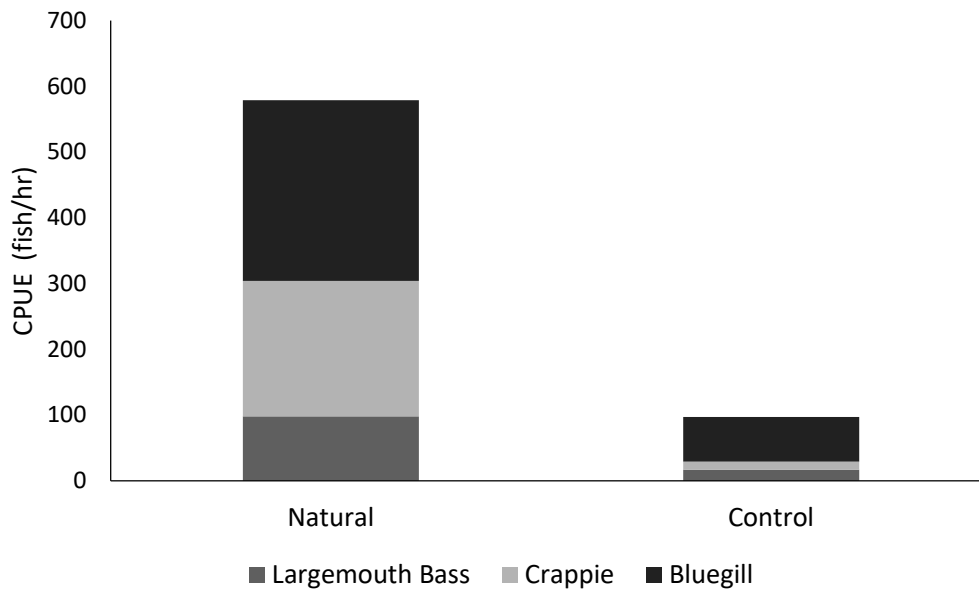


Figure 1. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Bullock Pen Lake in 2021.

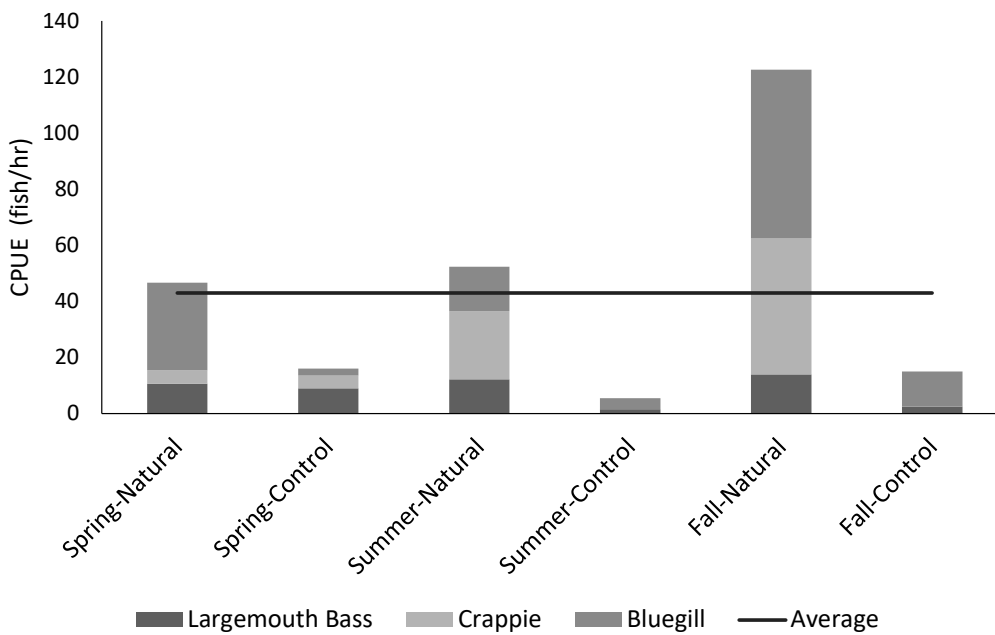


Figure 2. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Bullock Pen Lake in spring, summer, and fall of 2021.

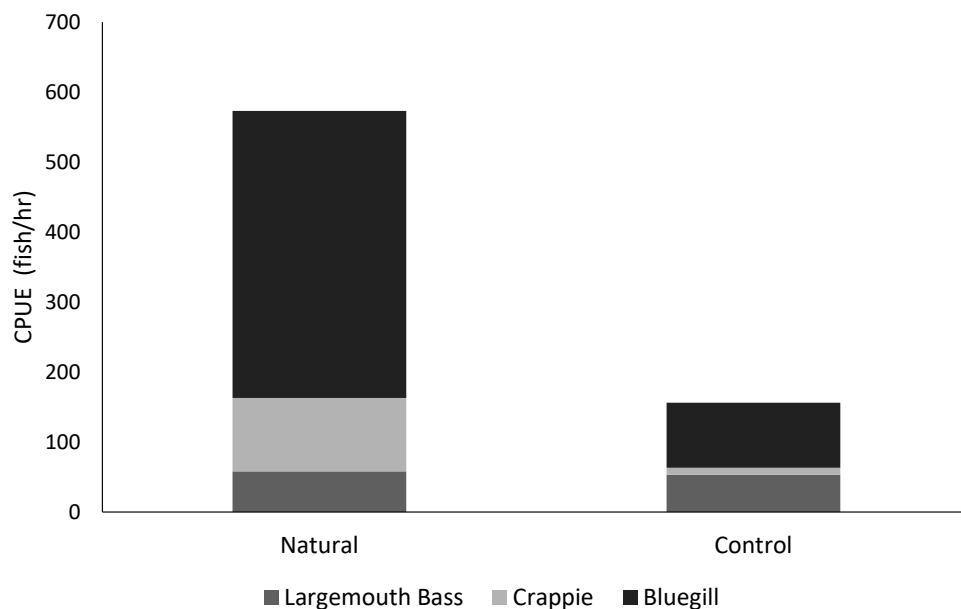


Figure 3. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Guist Creek Lake in 2021.

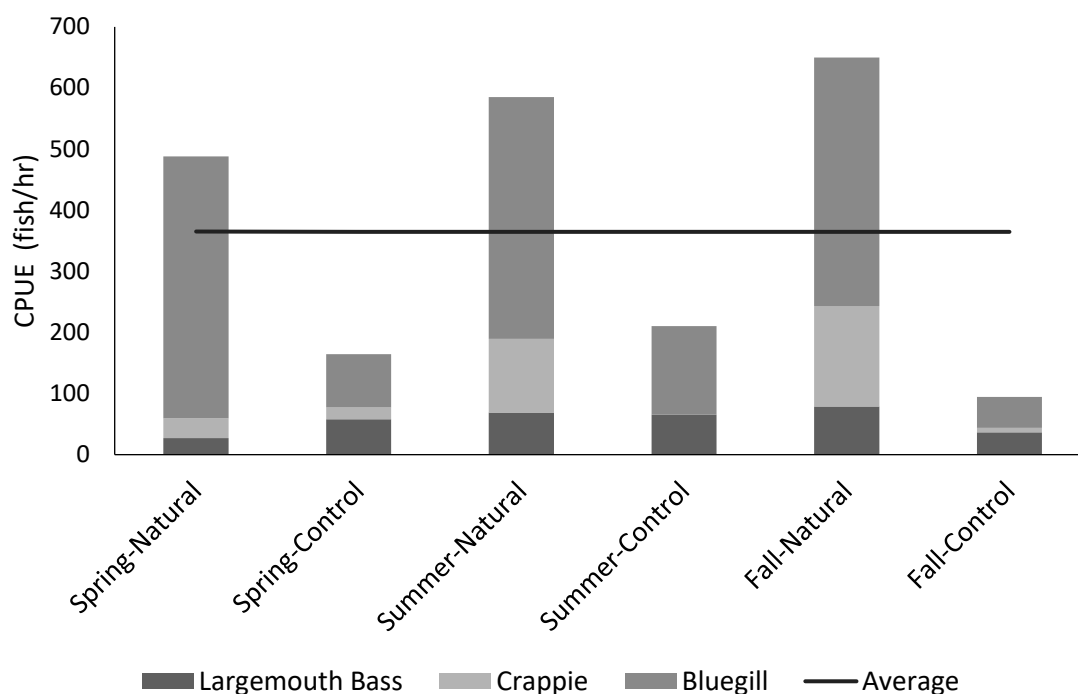


Figure 4. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Guist Creek Lake in spring, summer, and fall of 2021.

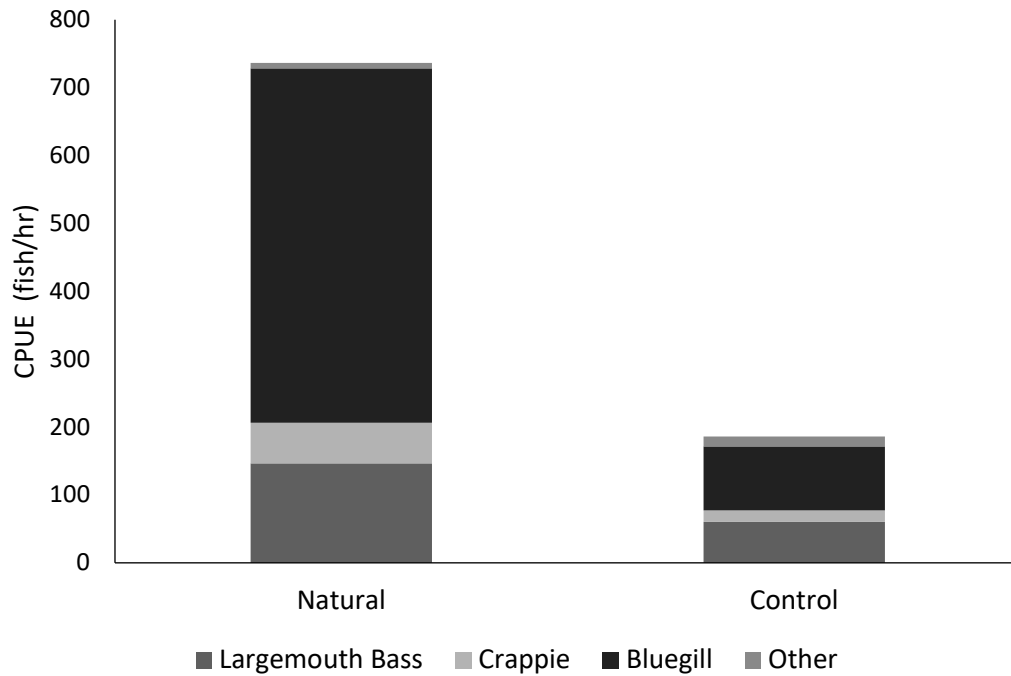


Figure 5. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Kincaid Lake in 2021.

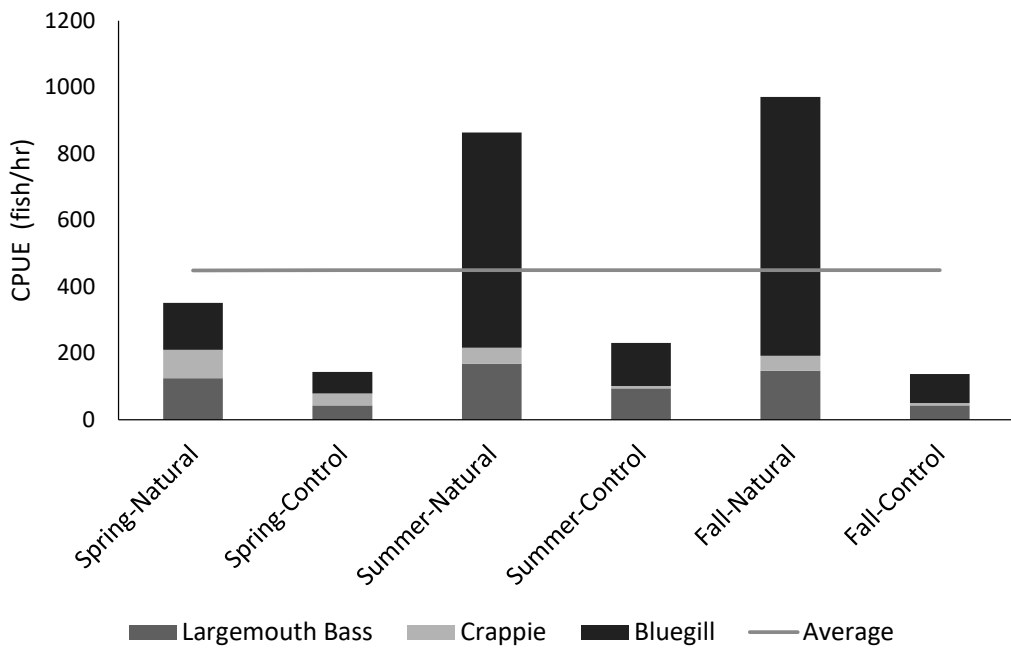


Figure 6. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Kincaid Lake in spring, summer, and fall of 2021.

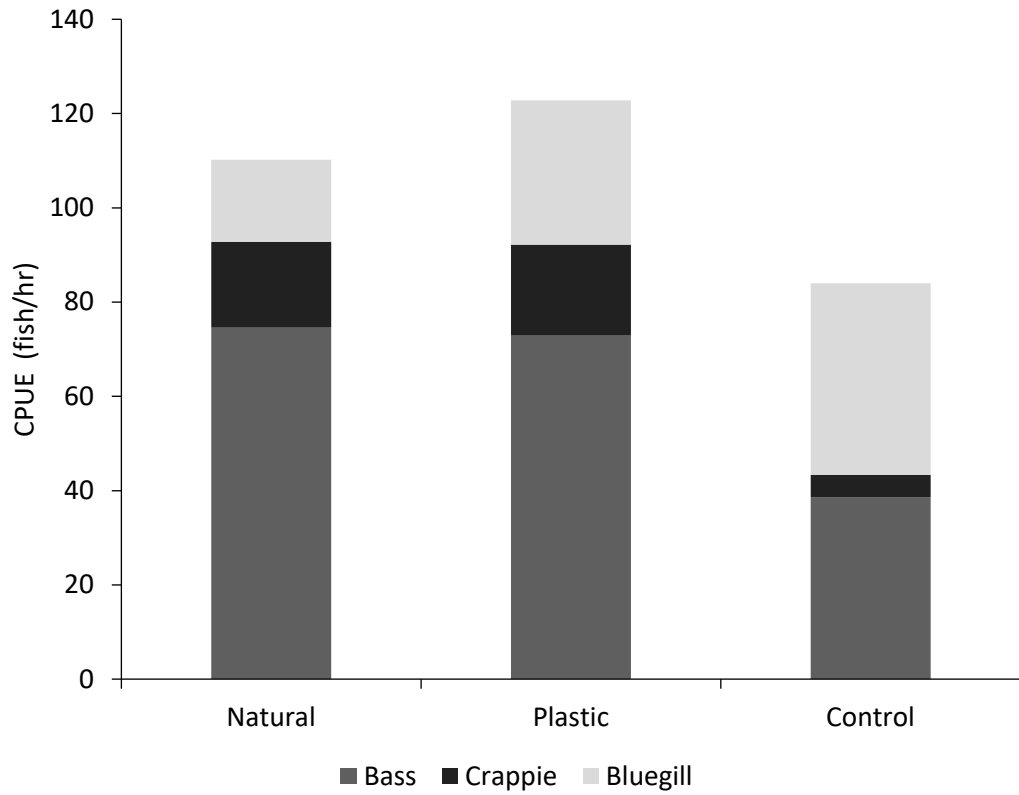


Figure 7. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Lake Reba in 2021.

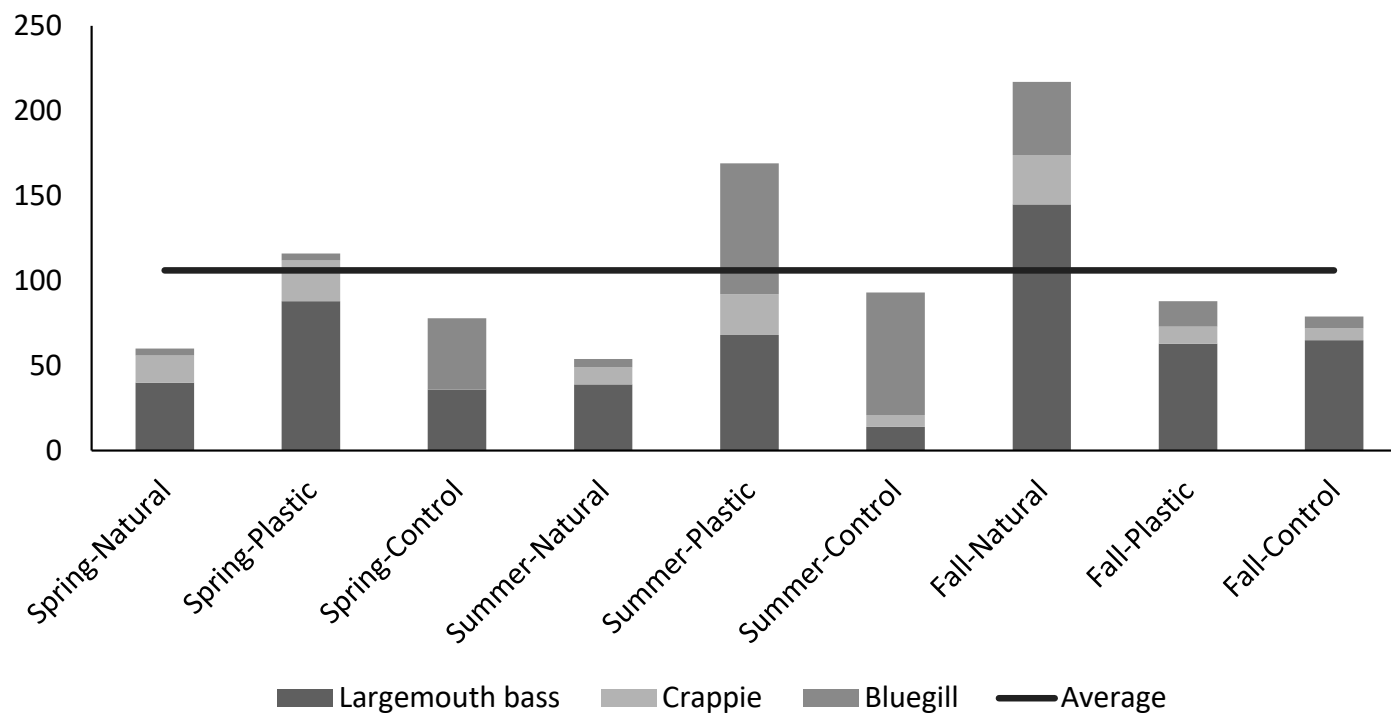


Figure 8. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Lake Reba in spring, summer, and fall of 2021.

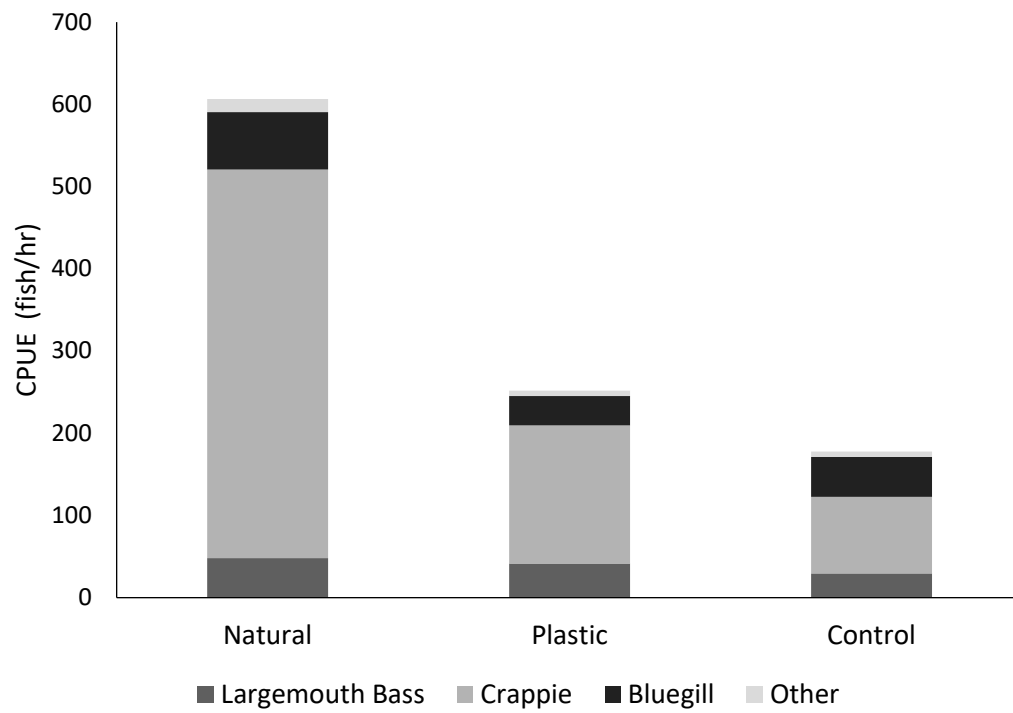


Figure 9. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Taylorsville Lake in 202

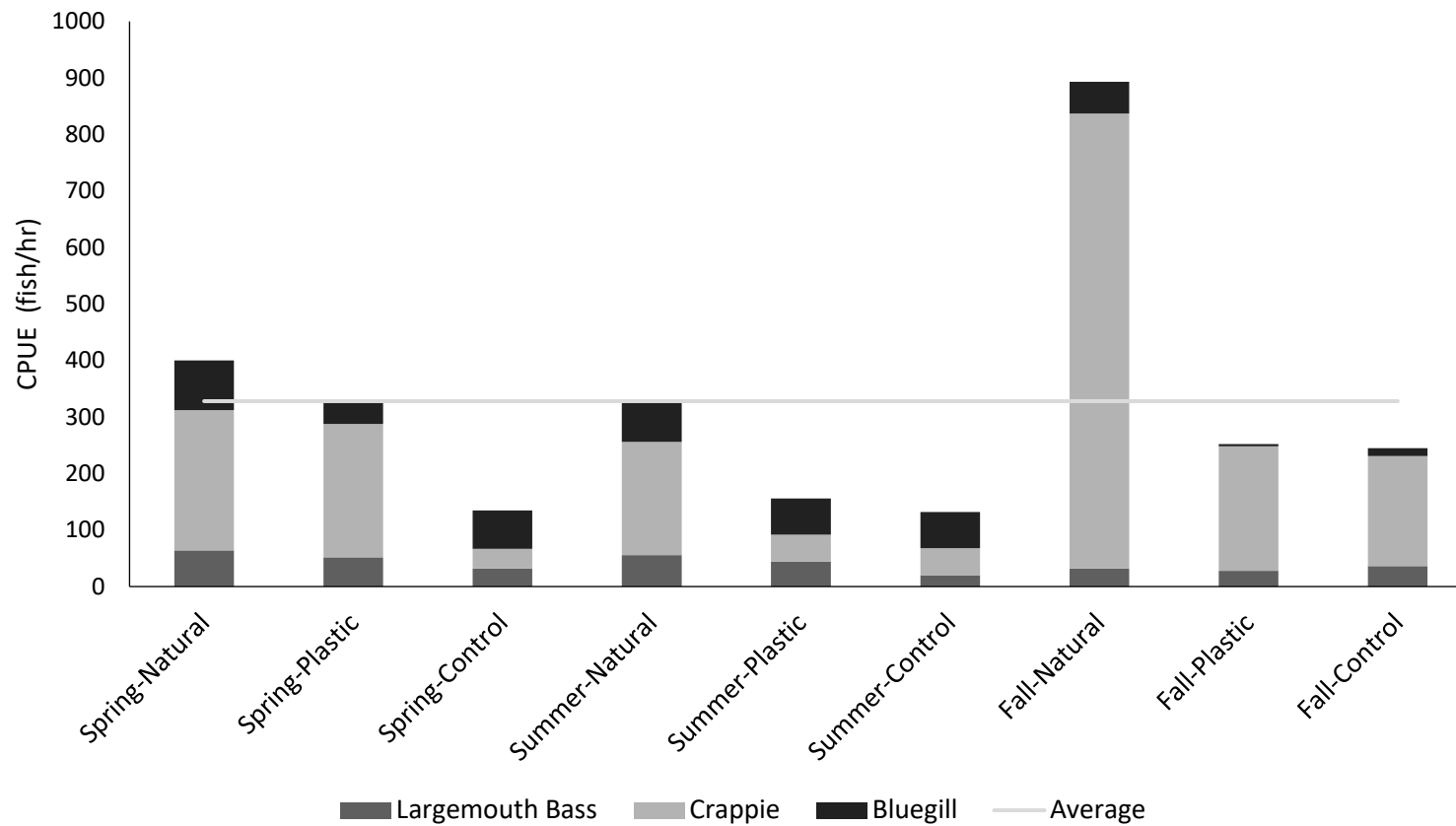


Figure 10. Electrofishing mean CPUE (fish/hr) of sportfish collected by habitat type from Taylorsville Lake in spring, summer, and fall of 2021