

A Biological Assessment of the Fish Community at Earl and Hazel Jones Center for Conservation Burlington, Kentucky

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Introduction

The Boone County Conservation District (BCCDKY) promotes the protection and wise use of natural resources through education and conservation. At the Earl and Hazel Jones Center for Conservation (EHJCC), practices such as invasive species removal, native plant restoration, and riparian enhancement aim to improve ecosystem health. Fish are commonly used as indicators of stream health because they are easier to identify and capture, generally include a wide array of trophic levels, and can be easier to identify with the public (Karr 1981). To evaluate the fish community supported by these conservation practices, I conducted an assessment of the fish community along the approximately one-mile stretch of Gunpowder Creek flowing through the property. The property is in the Gunpowder Creek watershed in central Boone County, it covers about 58.3 square miles, where the headwater is more urban/ industrial, middle is suburban/ ag heavy, and rural downstream (BCCDKY). The main goal is to better understand the ecological community found on property, focusing on fish communities.



Figure 1. Site collection with SD1 & Boone County parks. Collection via electroshock.

Methods

Collection and site selection was based on standard regulations and definitions by the state of Kentucky with proper collection permits, net and trap sizes and labeling for minnow traps (Collection Methods KY). Sites were selected along the property for maximum collection sample diversity, based on the presence of both pool habitat, and riffle/ run habitat covering a large basis of the niches inhabited by our fish populations. Species were recorded with passive sampling methods, being minnow traps baited with bread and hot dogs, as well as visually via snorkeling or just witnessing the fish through the water. The active traps used were by electro shocking where fish were shocked and collected, and a seine net was waded across a pool to scoop up fish.

Results

Figure 2. A small largemouth bass (*Micropterus salmoides*) sampled. Represents *Micropterus* genus.



Figure 3. A Longear Sunfish (*Lepomis Magalotis*) sampled, represents *Lepomis* genus.



Figure 4. A Greenside Darter (*Etheostoma blennioides*) sampled, represents *Etheostoma* genus.



Figure 6. A Bluntnose Minnow (*Pimphales notatus*) sampled, represents *Pimphales* genus.



Figure 8. A Rock Bass (*Ambloplites rupestris*) sampled, represents *Ambloplites* genus.

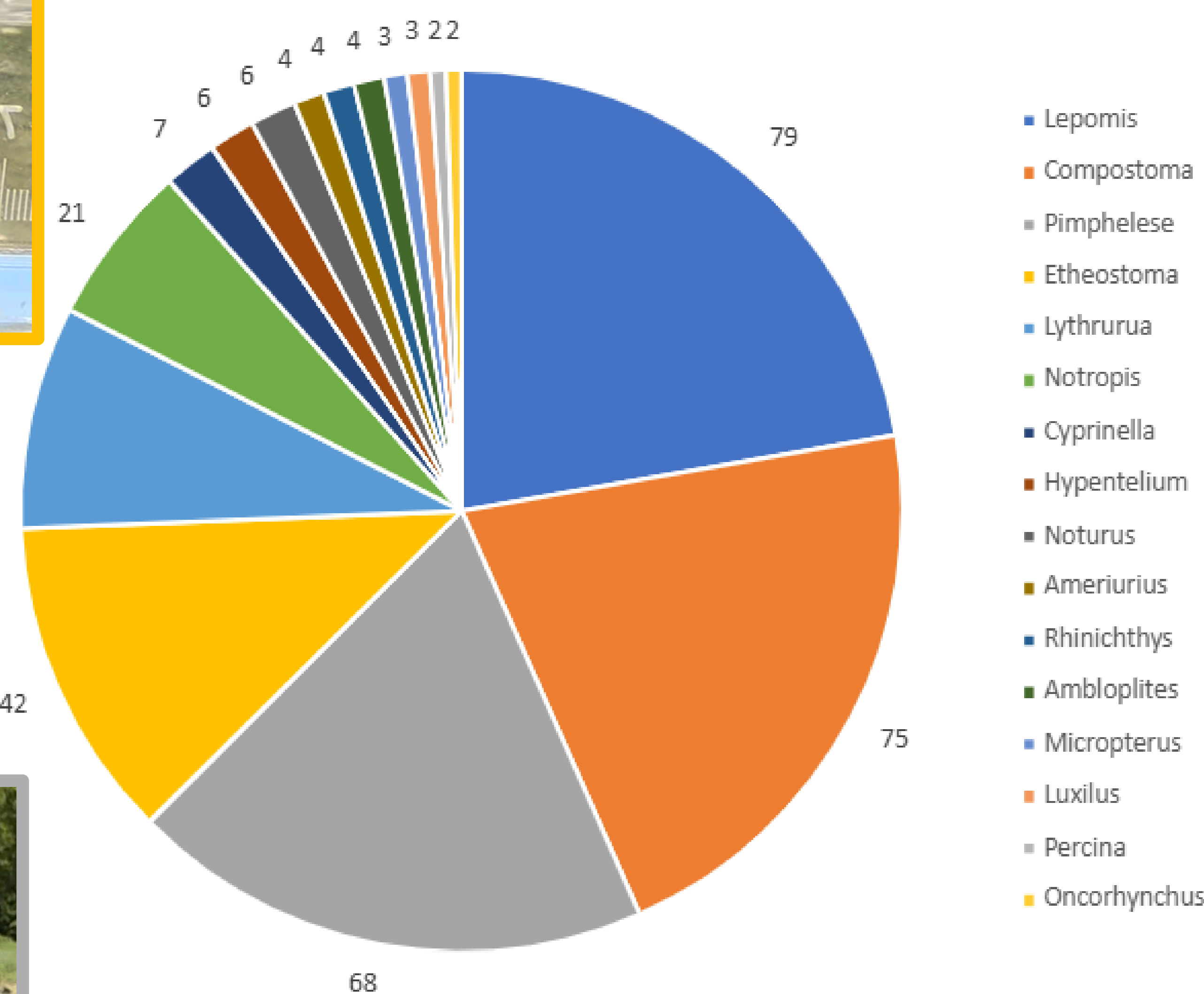


Figure 5. A chart of total fish sampled broken down by genus showing diversity and number sampled from each genus.



Figure 7. A Central Stoneroller (*Compostoma anomalum*) sampled, represents *Compostoma* genus.

Discussion

Over three sampling days, 349 individual fish representing 20 species were documented, indicating a relatively diverse and healthy fish community within Gunpowder Creek. The high abundance of Central Stonerollers (Figure 7), Bluntnose Minnows (Figure 6), and several shiner species suggests productive streams with abundant algal and invertebrate resources. The presence of benthic species such as Greenside Darters (Figure 4) indicates clean, rocky riffles with well-oxygenated water, while Longear Sunfish and Largemouth Bass (Figures 2 & 3) demonstrate the availability of deeper pools, woody cover, and a functioning predator-prey relationship. Together, these species represent multiple trophic levels, from algal grazers and insectivores to top predators, suggesting a balanced food web and a variety of available habitats. The observed diversity supports the idea that conservation practices at EHJCC, including riparian restoration and habitat protection, contribute to maintaining stream health. Limitations of this study include only three sampling events and limited seasonal coverage due to weather, summer camps, and other conservation activities. Additional sampling across seasons would provide a more comprehensive assessment of the fish community. Weather was the biggest issue as rain caused faster flowing, deeper water with lower visibility which made sampling both unsafe and unfeasible. In the future, I recommend sampling more frequently and from habitats up and downstream of the EHJCC for a more complete picture of stream health.

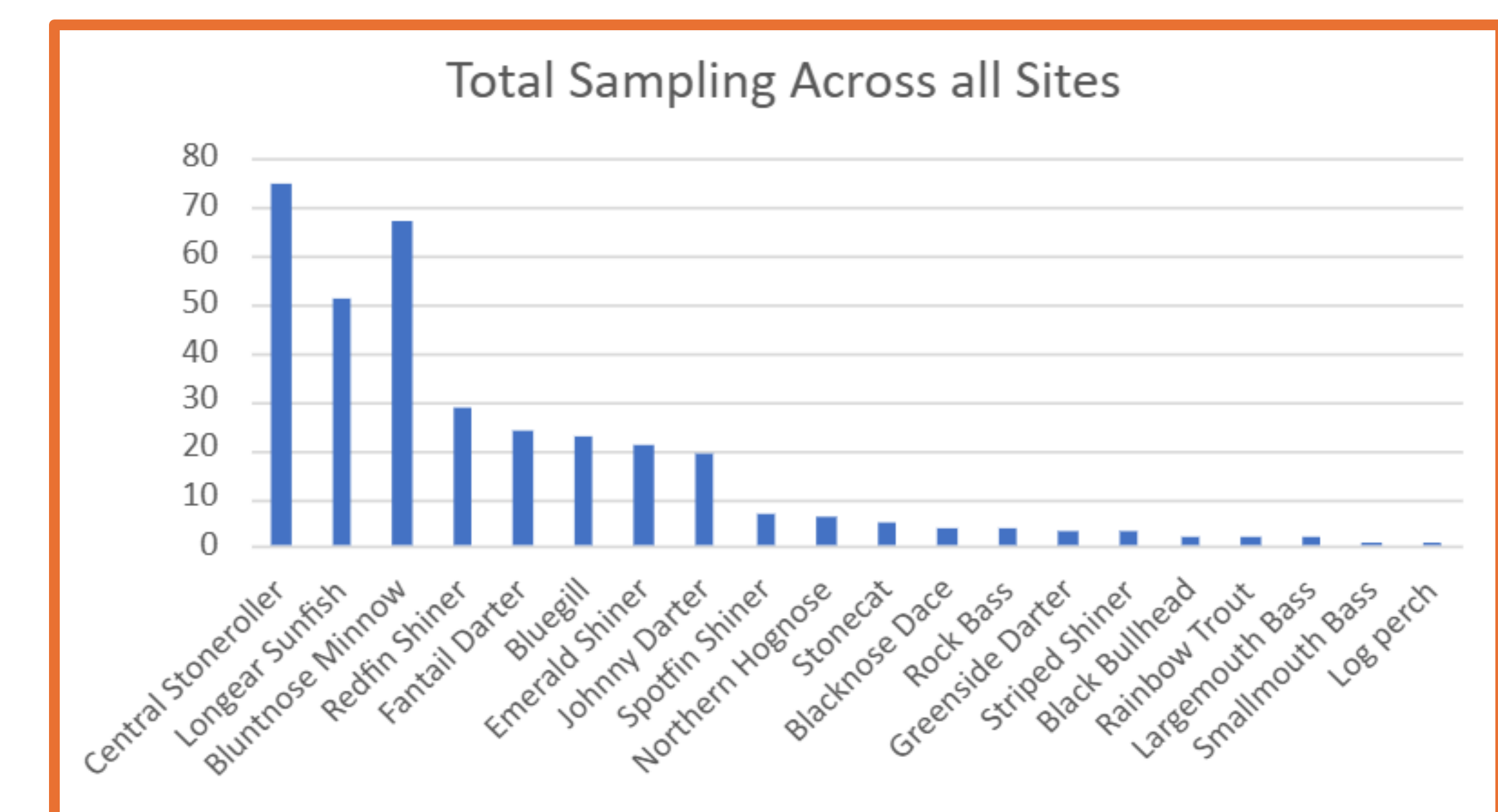


Figure 9. Graph showing total capture by species across all sites and sampling methods

References

Assessment of Biotic Integrity Using Fish Communities." *Fisheries*, vol. 6, no. 6, 1981, pp. 21–27. Taylor & Francis, [https://doi.org/10.1577/1548-8446\(1981\)006%3C0021:AOBIUF%3E2.0.CO;2](https://doi.org/10.1577/1548-8446(1981)006%3C0021:AOBIUF%3E2.0.CO;2).

Boone County Conservation District. <https://bccdky.org/>. Accessed 27 July 2026.

Collection Methods for Fish in Wadeable Streams. Version 3.0, Kentucky Energy and Environment Cabinet, Jan. 2022, <https://eec.ky.gov/Environmental-Protection/Water/QA/BioLabSOPs/Collection%20Methods%20for%20Fish%20in%20Wadeable%20Streams.pdf>

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