Flowing Forward: Evaluating Farmington’s Fish Populations for Informed Land and Water Use

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Project Motivation & Goals

Speciﬁc objectives (recording the presence and abundance of species in an area) in vital ecosystems, such as coldwater streams (Fig. 1), is critically important for municipalities and town leaders to make well-informed land and water use decisions because:

- Certain species can serve as bioindicators of ecosystem health; and
- Relative measures of diversity can help prioritize areas in most need of management.

This project involved evaluating the ecological status of several streams and rivers within Farmington and reporting my results to the town in order to aid my community’s conservation decision making. Updating their fisheries data will ensure that the town has a comprehensive understanding of Farmington’s local aquatic environments, and how the choices they make can impact these valuable rivers and streams.

The main objectives of this project were:

- Collect accurate and updated fish population data for three different streams and rivers in Farmington.
- Assess the health of these waterways using a variety of factors.
- Educate my community about the impacts and importance of the conservation of these rivers and streams and their aquatic inhabitants.
- Provide data to Farmington ofﬁcials to aid in decision-making.

Methods

Research and Data Collection:
1. Determined which streams to sample by conducting background research on existing data and local waterways.
2. Sampled 3 streams (Roaring Brook, Unionville Brook, and Scott Swamp Brook) using electrofishing in early November 2022 (Fig. 2).
3. Synthesized and evaluated data to determine implications.

Findings:
1. Reached out to multiple Farmington town committees to ﬁnd the best ﬁt for who to share data with.
2. Organized data to include the most relevant points.
3. Presented data and answered questions during Farmington Conservation and Inland Wetlands Commission public meeting on March 1st.

Study Outcomes

- Species richness: number of different species
- Origin: native vs. non-native
- Habitat: stream ﬂow and tolerance level

Summary of Observations:
- Population Density: None of the densities are above 1 ﬁsh per meter (Fig. 3A)
- Origin: Majority native species in all brooks (Fig. 3B)
- Habitat: Majority ﬂuvial specialists (need ﬂowing water) (Fig. 3C) and mostly intermediate tolerance level species (Fig. 3D).
- Past versus Current: Data: Minor differences in density percentages which show that the systems are stable (Fig. 3E).

Implications for Farmington and Beyond:
- Up-to-date and accurate ﬁsh population data and an overall health assessment is necessary to make informed decisions regarding local land and water use and guide the conservation and protection of these important natural resources.
- Healthy waterways and fish populations are indicators of a healthy environment.
- A healthy environment is important for both human and wildlife populations as it provides essential ecosystem services such as food, habitat, flood control, erosion prevention, aesthetics, and regulating water quality.

Community Partnership

I was connected with my community partner, Mike Beauchene, the supervising fisheries biologist at the CT Department of Energy Environmental Protection.

- Mike provided expertise on what factors to look for when choosing what streams to sample.
- While electrofishing, Mike thoroughly explained characteristics about the different types of species.
- He also provided great tips for presenting my data to the town.

The data collected is necessary to make informed decisions for land and water use in Farmington, particularly as it relates to the conservation of the town’s many streams. I presented the ﬁndings above to Farmington Conservation and Inland Wetlands Commission. They responded with interest and got engaged in discussing the future of the project and ensuring its successful completion.

Future Actions:
- Implement and enforce regulations that limit the amount of pollution and development that can occur in or near waterways.
- Promote the use of green infrastructure practices that can help reduce the amount of pollutants improving water quality and habitat conditions for fish and other aquatic species.
- Invest in ongoing monitoring and assessment of these water bodies to track changes and help identify any issues or concerns early on.
- Educate people about the importance of local water bodies and the impacts of individual actions on water quality and conditions.
- Encourage residents to adopt practices that protect and conserve these important resources.

Acknowledgements

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I want to thank my friends and family who supported me throughout the entire process and gave their help whenever I needed it. Once again, thank you to everyone who has contributed to this project in any way. Your support and guidance have been essential to its success, and I could not have done it without you all.

Conclusion and Next Steps

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- Mike also provided great tips for presenting my data.

Fig. 1 (Top) Map of coldwater habitats in Connecticut with circle showing survey location. https://portal.ct.gov/DEEP. (Bottom) Two-lined salamander found while surveying.

Fig. 2 (Left) Map of Farmington depicting our sampling sites. (Right) Mike and I electrofishing in Unionville Brook.

Fig. 3 (Top) Map of coldwater habitats in Connecticut with circle showing survey location. https://portal.ct.gov/DEEP. (Bottom) Mike and I electrofishing in Unionville Brook.

Fig. 4 (Left) Map of Farmington depicting our sampling sites. (Right) Mike and I electrofishing in Unionville Brook.

Fig. 5 Graphs A-D above display different fish characteristics from each brook sampled.

Tenant: Inland Wetlands Commission

Participating: Mike Beauchene, Himani Kumar, Ilana Goldner, Leah Gichuru, Laura Cisneros, Nicole Freidenfelds

Inward Wetlands Commission

Participating: Mike Beauchene, Himani Kumar, Ilana Goldner, Leah Gichuru, Laura Cisneros, Nicole Freidenfelds

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