

Internship funded by the  
Spalding Family

# URBAN AQUATIC ECOLOGY IN FT. COLLINS, COLORADO

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## PROJECT INTRODUCTION AND GOALS

This project focused on surveying urban aquatic waterbodies in the Fort Collins area to better understand the factors that affect the diversity of aquatic organisms in urban systems. The aquatic ecosystems being studied are small ponds embedded in a variety of different land uses.

This project intends to inform the conservation of these overlooked waterbodies by evaluating their biodiversity and the habitat variables associated with their biodiversity. Fifty ponds in Fort Collins were surveyed for habitat variables, such as hydrology, plant cover, substrate type, and human use. These ponds were also surveyed for aquatic macroinvertebrates, fish, amphibians, and reptiles. These surveys help to evaluate the balance between maintaining ecosystem services and providing suitable habitat for conservation.

The goals of this internship were to provide opportunities to develop field skills in aquatic ecology, develop relationships with mentors and external stakeholders that facilitate career growth, and develop skills in science communication. As a fisheries student interested in conservation, this internship gave me an opportunity to practice the skills and knowledge I am taught in my classes.

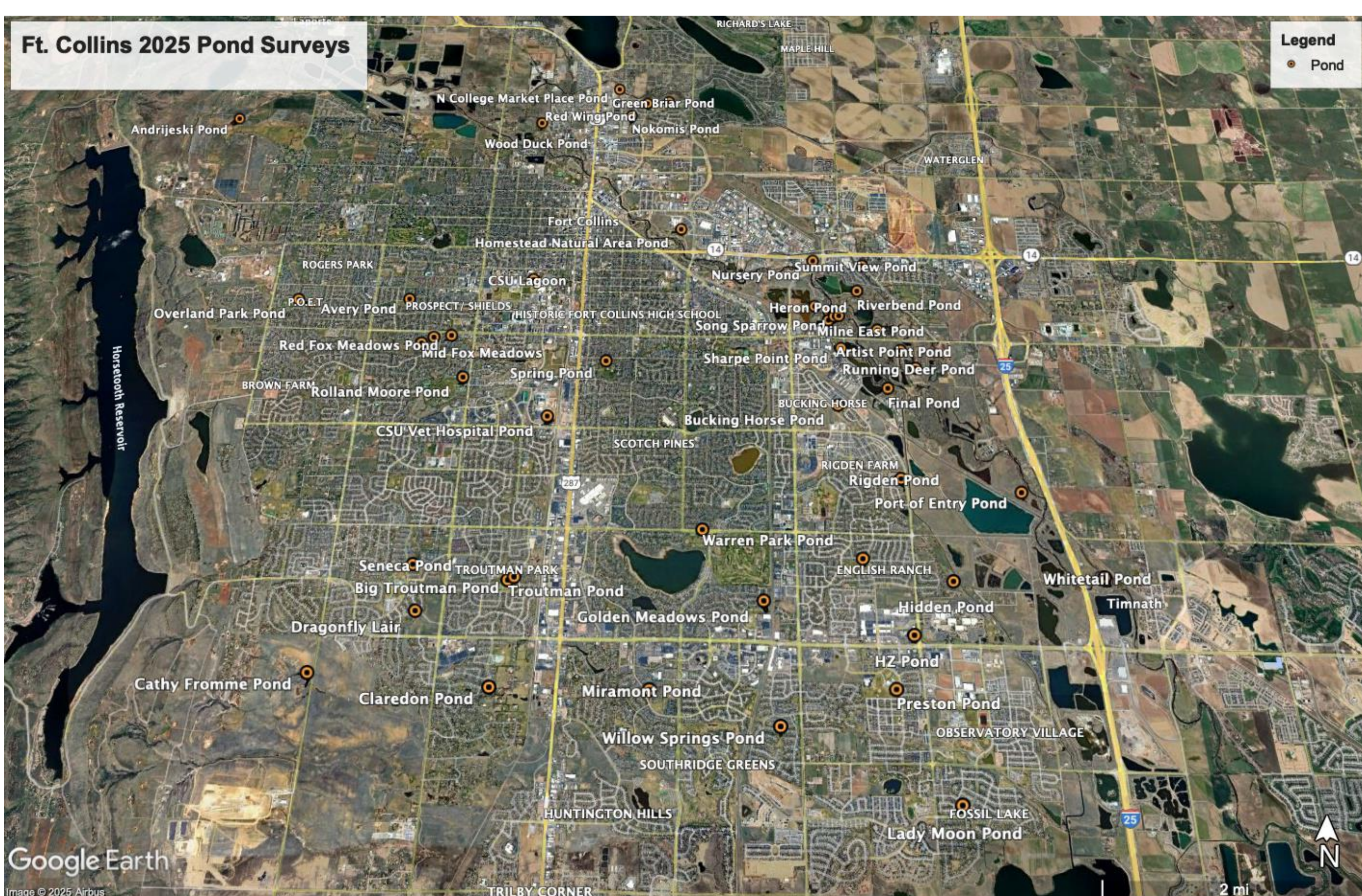


Figure 1. The distribution of urban ponds (orange dots) that we surveyed in Ft. Collins, Colorado. At each pond we collected data on ecological community structure and environmental variables.

## METHODS

Each of the fifty ponds in Fort Collins were visited twice to be surveyed. For both visits water quality data such as dissolved oxygen, pH, secchi disk depth, and water quality samples were taken. Hydrology and human use observations were also taken.

On the first visit aquatic macroinvertebrate samples were taken using dip nets. These samples were processed at the Preston Lab at CSU to identify the aquatic macroinvertebrates present. Seines were performed to evaluate the fish community. Visual encounter surveys were conducted to evaluate the herpetological community.

For the second visit minnow traps were set to evaluate the fish community that could not be captured in the seines. Seines were redone on this visit to increase the detection rate of fish species. This project worked with many different stakeholders, including private landowners, the city of Fort Collins, and Fort Collins Natural Areas. Some ponds were in HOAs, while others were in public parks or natural areas.

### Ratio of Native to Non-Native Fish in Fort Collins Ponds

■ Native fish ■ Non-Native Fish

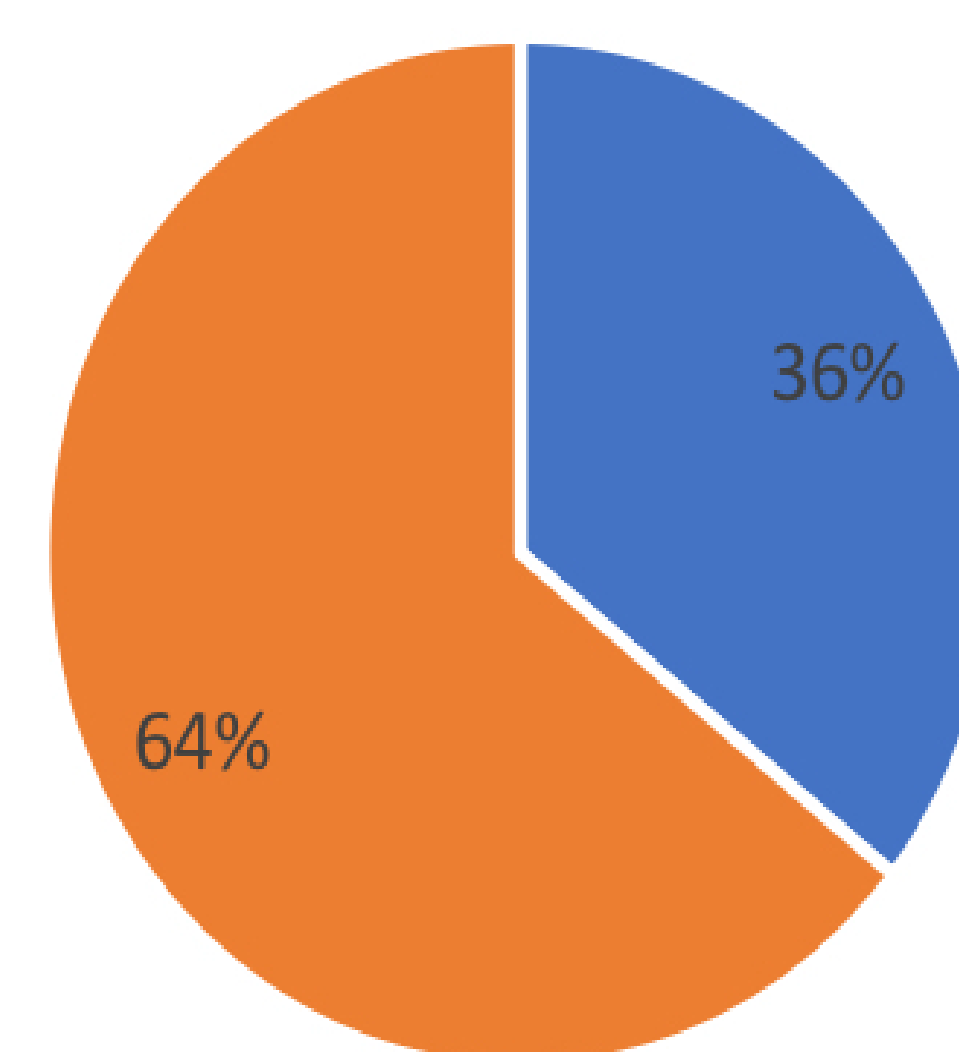


Figure 2. The ratio of native fish to non-native fish on the species list created after the first visit to Fort Collins ponds. These fish species were found via seining and visual encounter surveys.

## NEXT STEPS

The next steps in this project will be to sort through the aquatic macroinvertebrate samples and analyze the data that was collected on both visits. This information can be used to improve the conservation of urban aquatic water bodies in Fort Collins.



Figure 3. Fish that were observed in pond surveys, including fathead minnow, plains topminnow, green sunfish, and green sunfish hybrid (from top left to bottom right). Moira, Marissa, and Grace taking data at Riverbend Ponds Natural Area.

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