

# The Impacts of Small Dams on Salmon habitat Temperatures in the Westfield River

## Progress to date...

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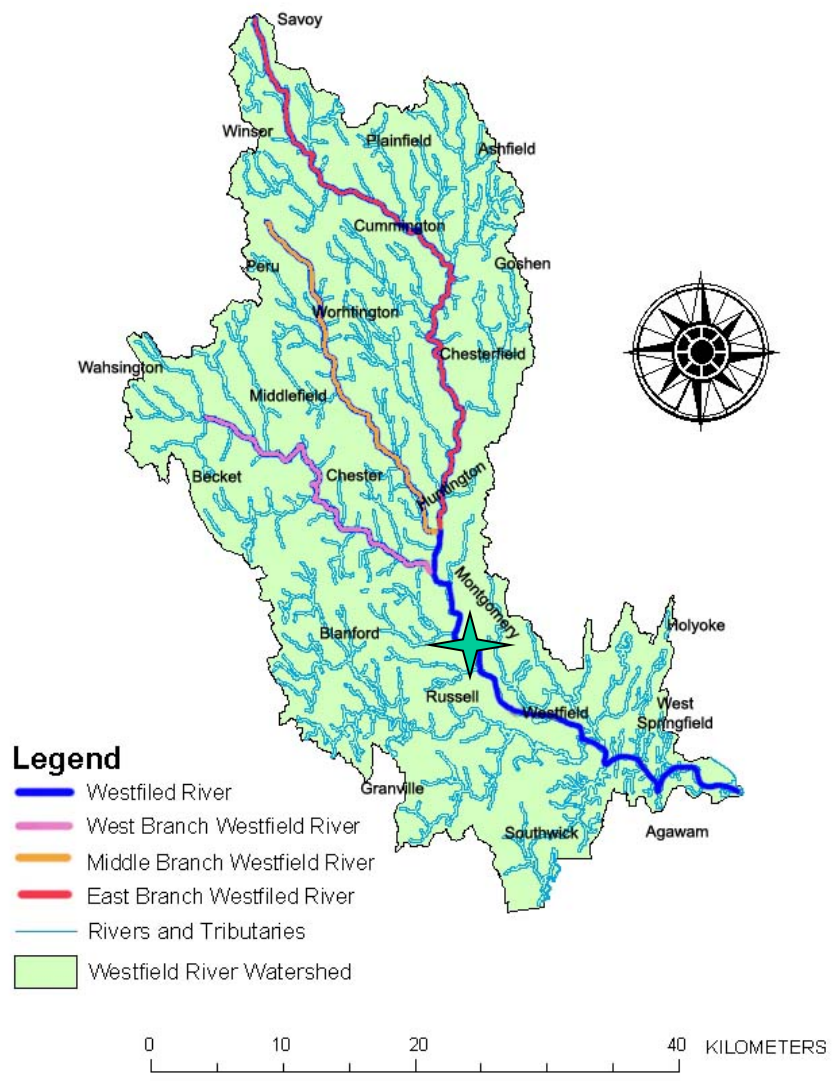


# Introduction

- Previous Research has shown that small impoundments cause increased heating and cooling
- The Westfield River Watershed is the Southernmost Limit of Atlantic Salmon Habitat (due to high temperatures?)
- My Question: Do these small dams decrease the suitable habitat by increasing the water temperature?

# Our Watershed is the southern most habitat for Atlantic Salmon

## The Westfield River Watershed



Data Source: MassGIS

# Salmon need Cold Water for a successful lifecycle

- Scientists report that salmon thrive in temperatures ranging from 0° C to ~15°C
- Westfield river values range from 0° C to ~28°C



# Background

- Volunteers stock millions of Salmon fry in the river yearly, and have a small return rate.
- Disappeared from this area in 1800s.
- First population Restoration occurred in the 1860s, and then again in 1967.
- Millions of smolt are stocked in the Westfield River, but only 7-12 adults return to spawn

# Hypothesis

- These dams increase the amount of heating in the river, decreasing the length of time the salmon have suitable temperature to thrive.

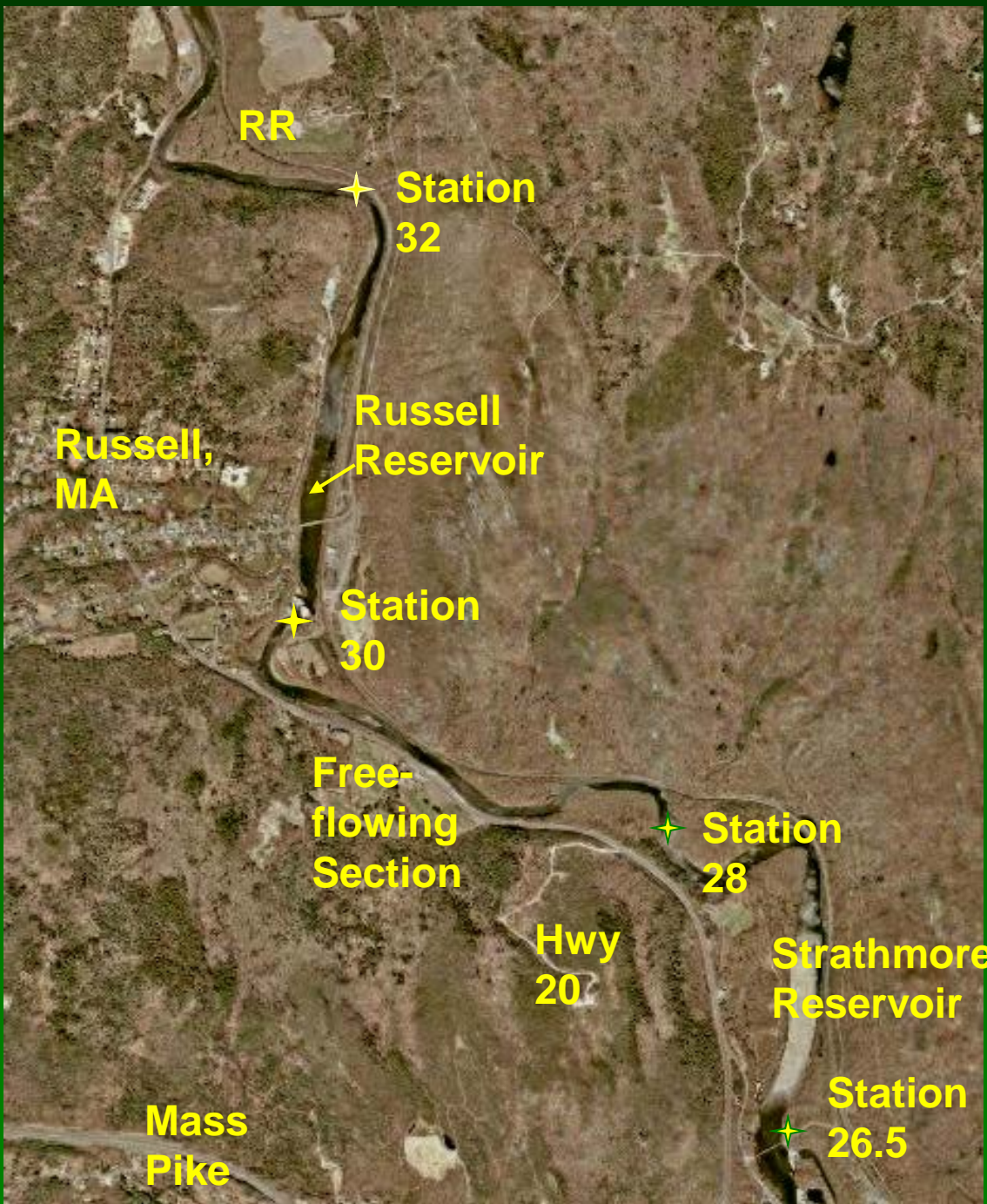
# Methods and Materials

- Deployed upstream and downstream of Reservoirs at 10 -60 minute intervals.
- Used Boxcar Software to gather the data from the HOBO Temperature Loggers.
- Uploaded data into SPSS file, a software system for data management and analysis used at Westfield State College.

# Temperature Logger Used



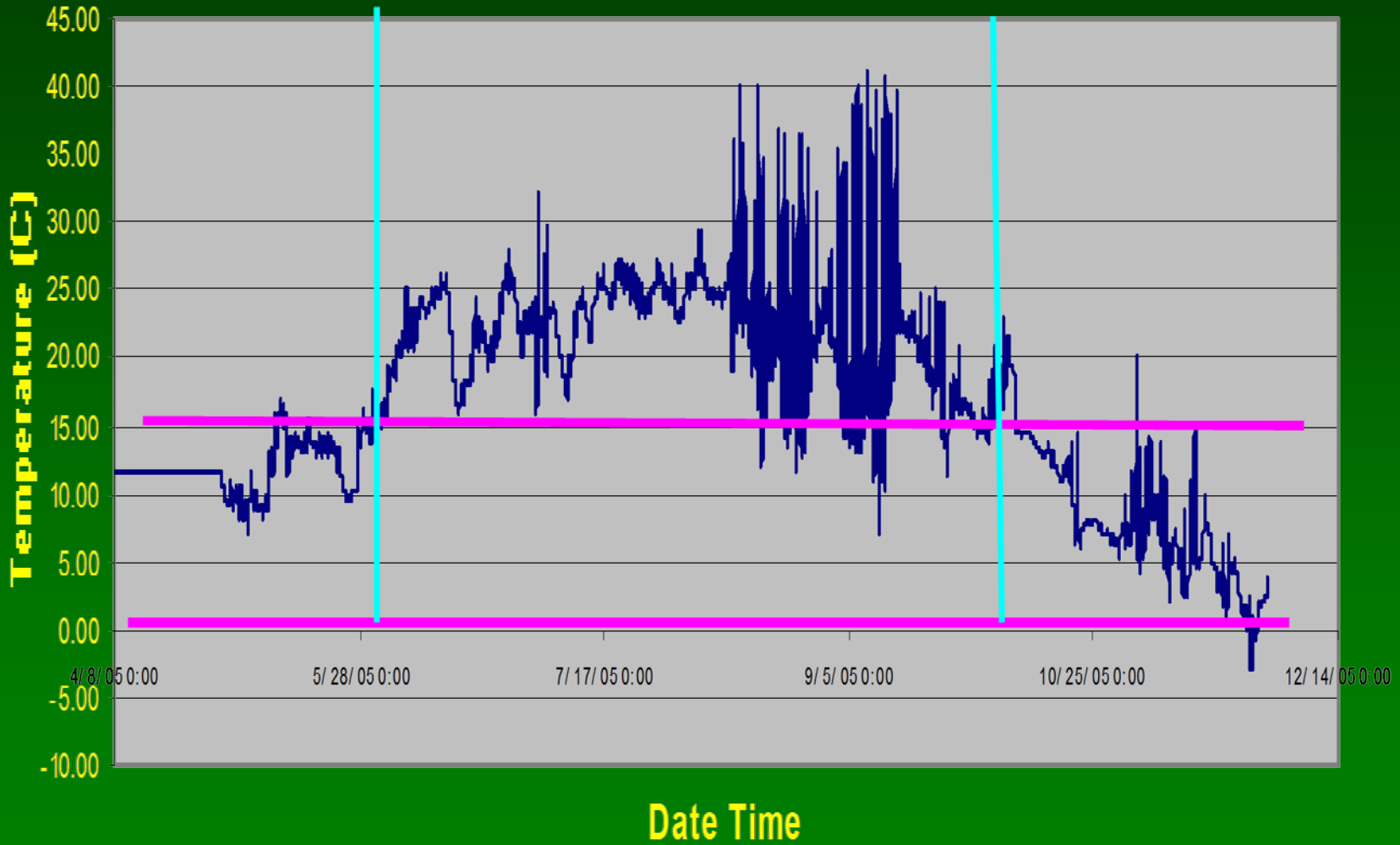




**Satellite Image Showing Study Area. Note that both reservoirs are about the same size and have the same orientation to the sun and wind.**



# Temperature Below Russell Dam 2005: Site 30



# What's next...

- Retrieve loggers, update database
- Analyze the data and report
- Also use data for the study of possible environmental impacts of the upcoming Russell Biomass Plant Project.

# Conclusion

- According to the data I've gathered so far, I've found that during the months of August through November that the temperature goes well beyond the recommended temperature range for salmon.

# Questions?

