

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

Progress to date...

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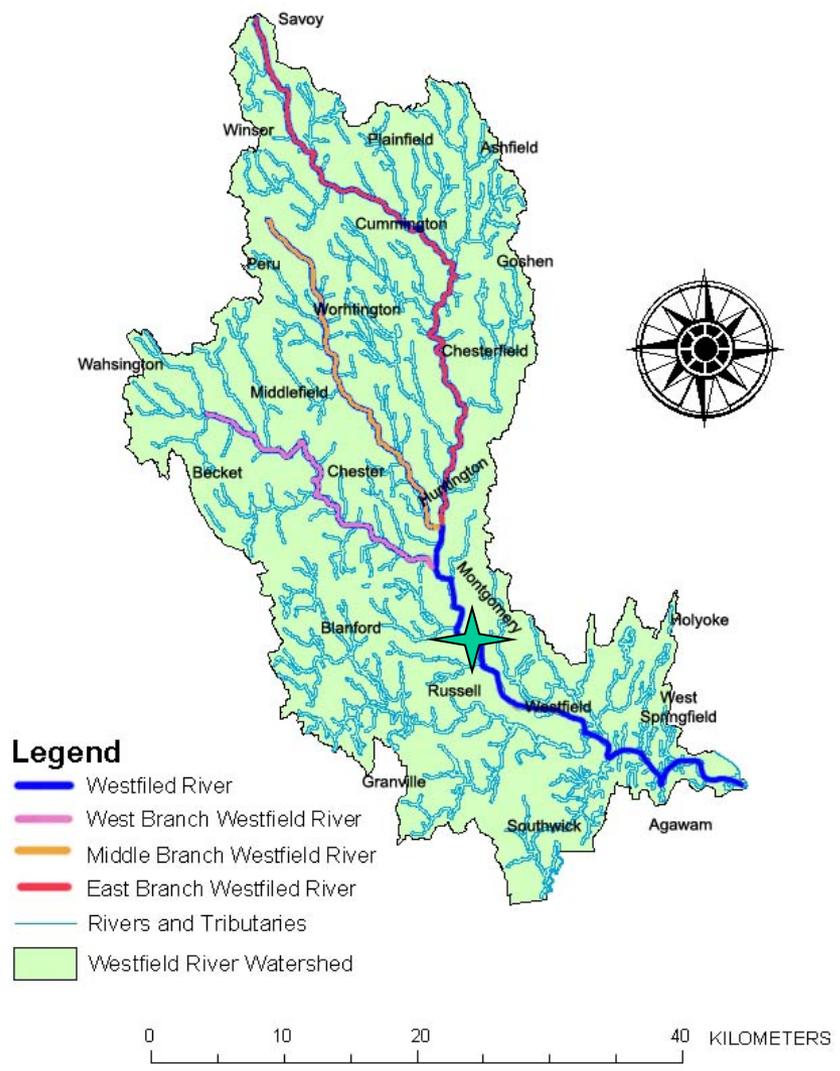


Introduction

- 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

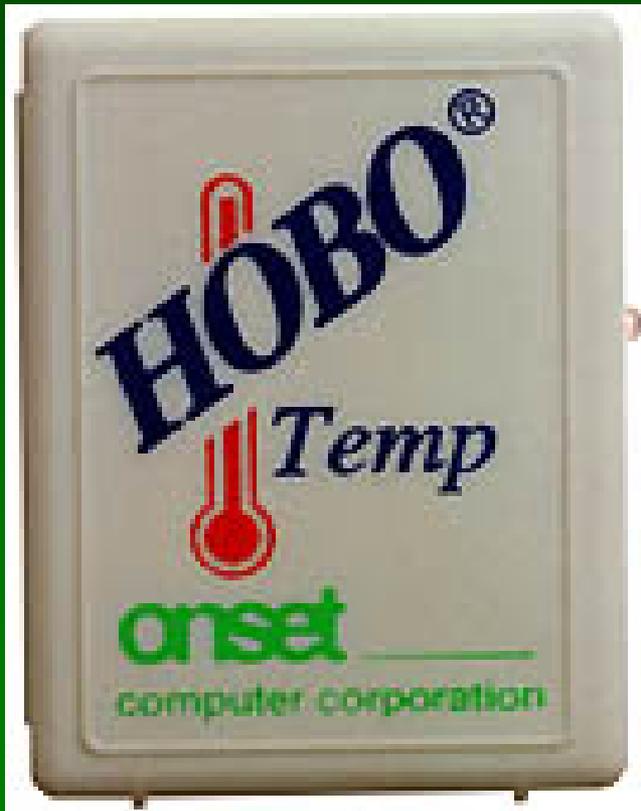
Hypothesis

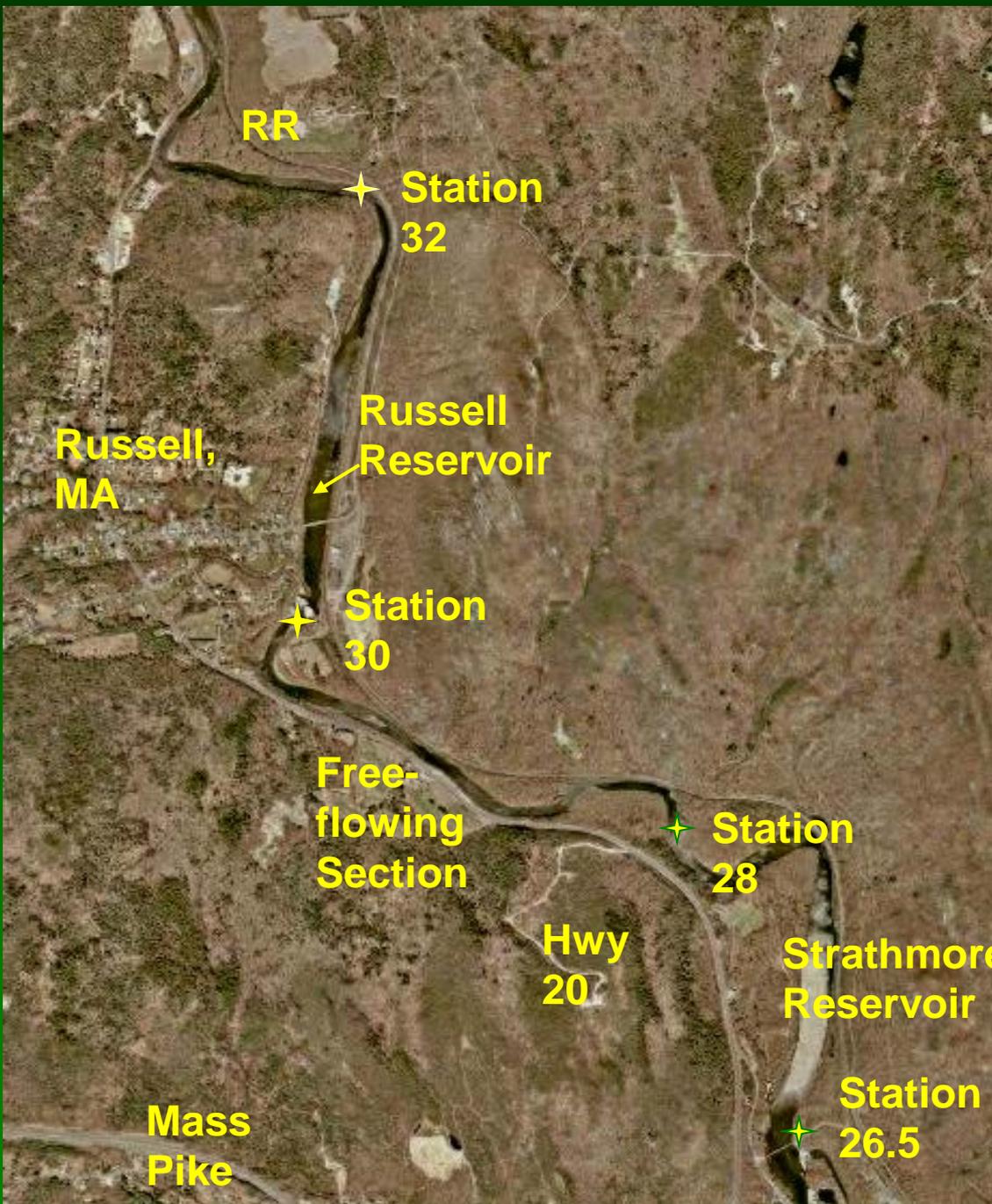
- These dams increase the amount of heating in the river, decreasing the length of time the salmon have suitable temperature to thrive.

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

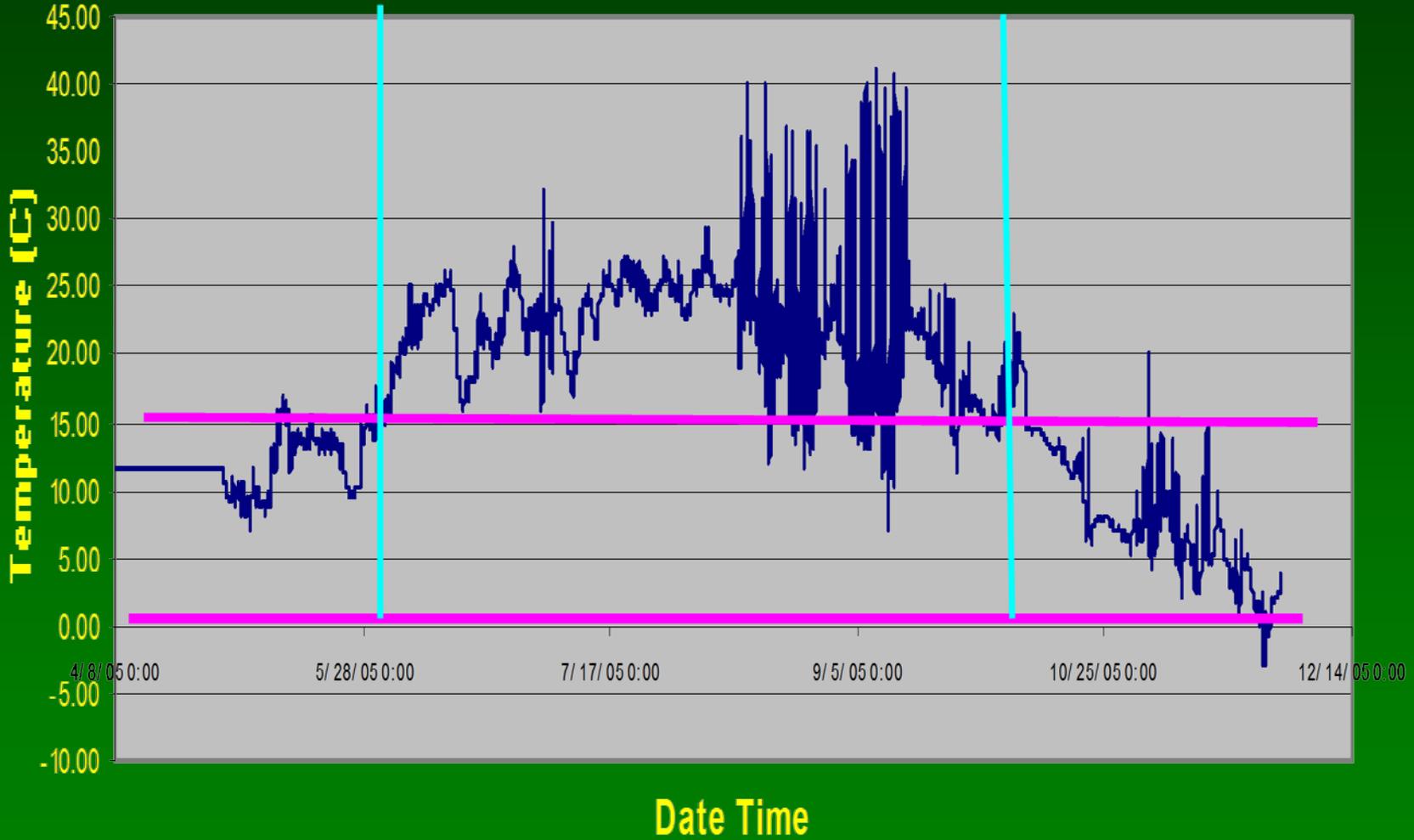




Satellite Image Showing Study Area. Note that both reservoirs are about the same size and have the same orientation to the sun and wind.



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?

