

# Using temperature and light sensors for evaluating patterns of restoration success in the French Creek watershed

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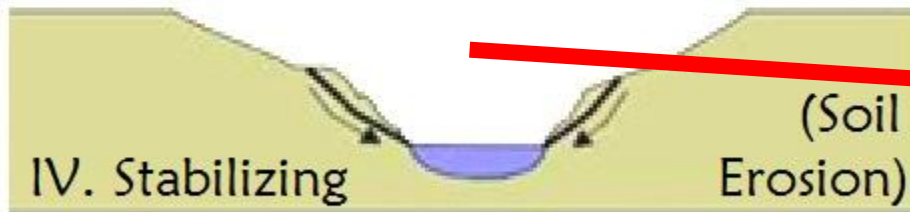
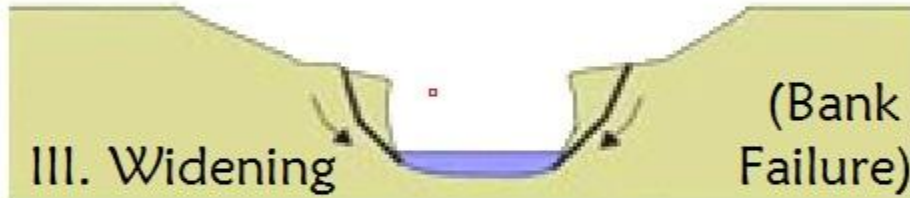
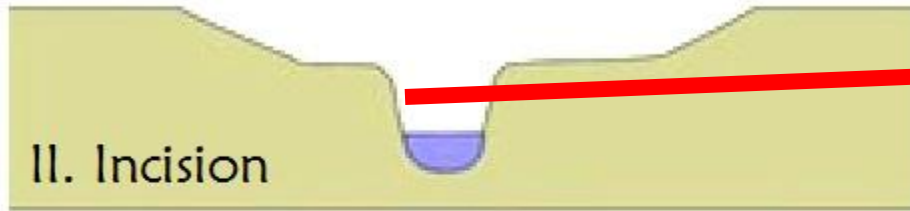
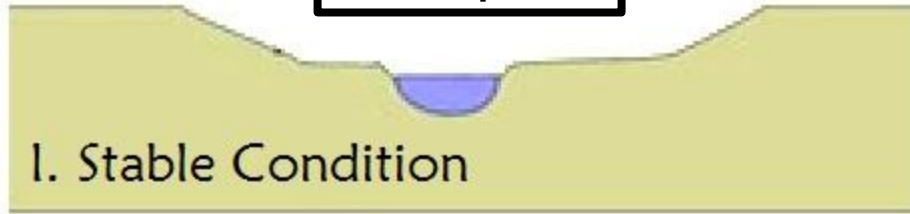
**WATERSHED**  
CONSERVATION RESEARCH CENTER  
ALLEGHENY COLLEGE



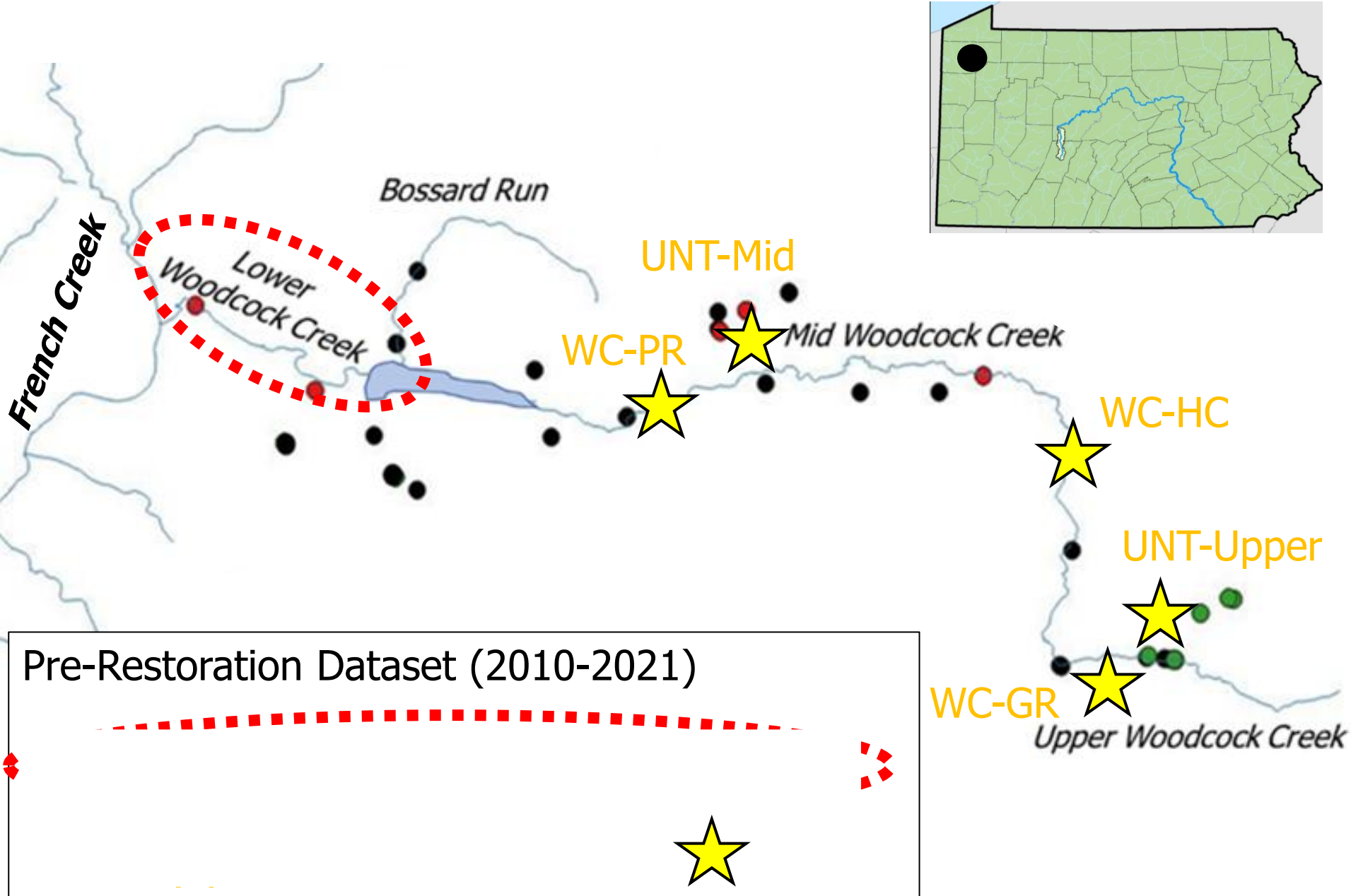
ALLEGHENY  
COLLEGE

# Streambank Stability and Erosion

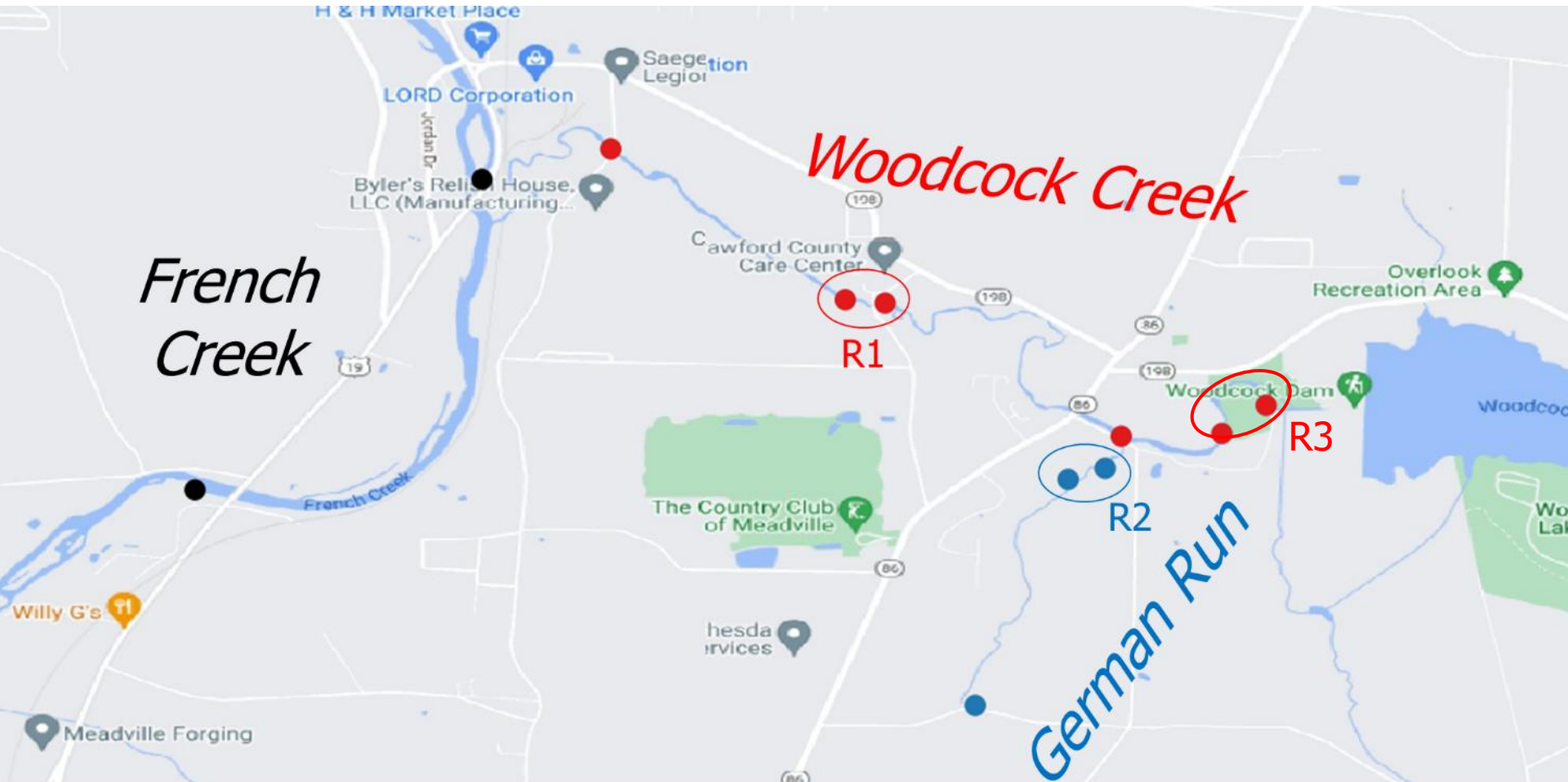
Floodplain



# Restoration Monitoring of the Woodcock Creek watershed



# Restoration Objectives – Treatment Reaches

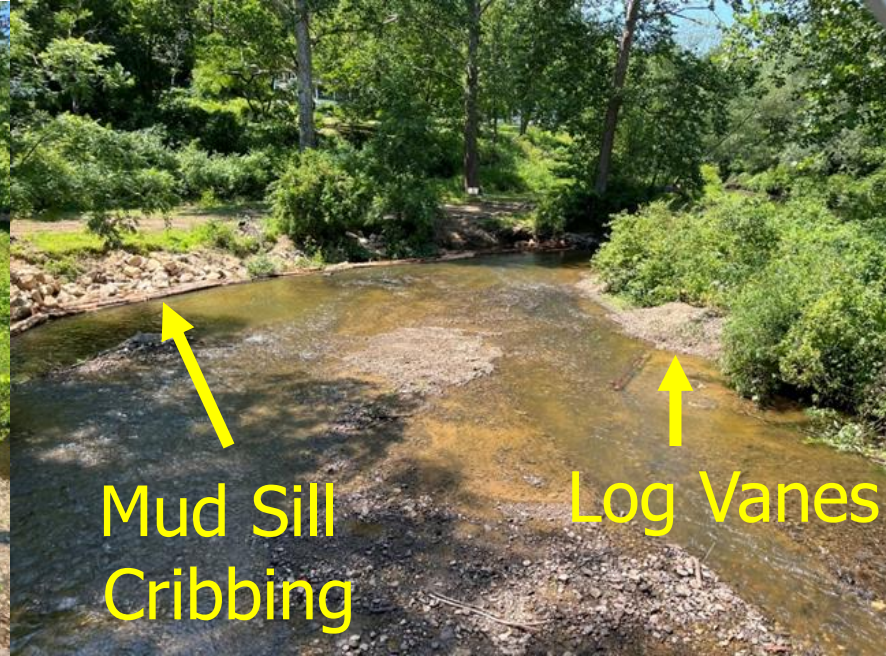


- Restoration sites will be warmer due to poor habitat quality
- Restoration sites will have higher total suspended solids (TSS)
- Restoration sites will have lower light levels from higher TSS

PRE-

POST-

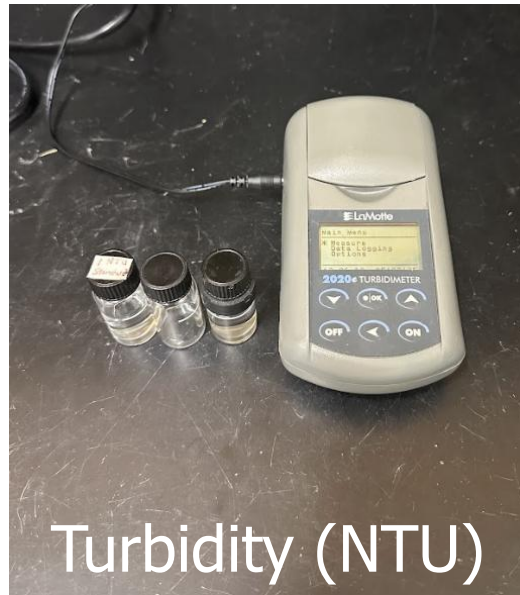
Woodcock Creek  
(R1)



UNT German  
(R2)



# Grab Sample Collections and Sensor Deployments



Turbidity (NTU)



TSS (mg/L)



15-minute intervals

- Summer
- Winter
- Spring

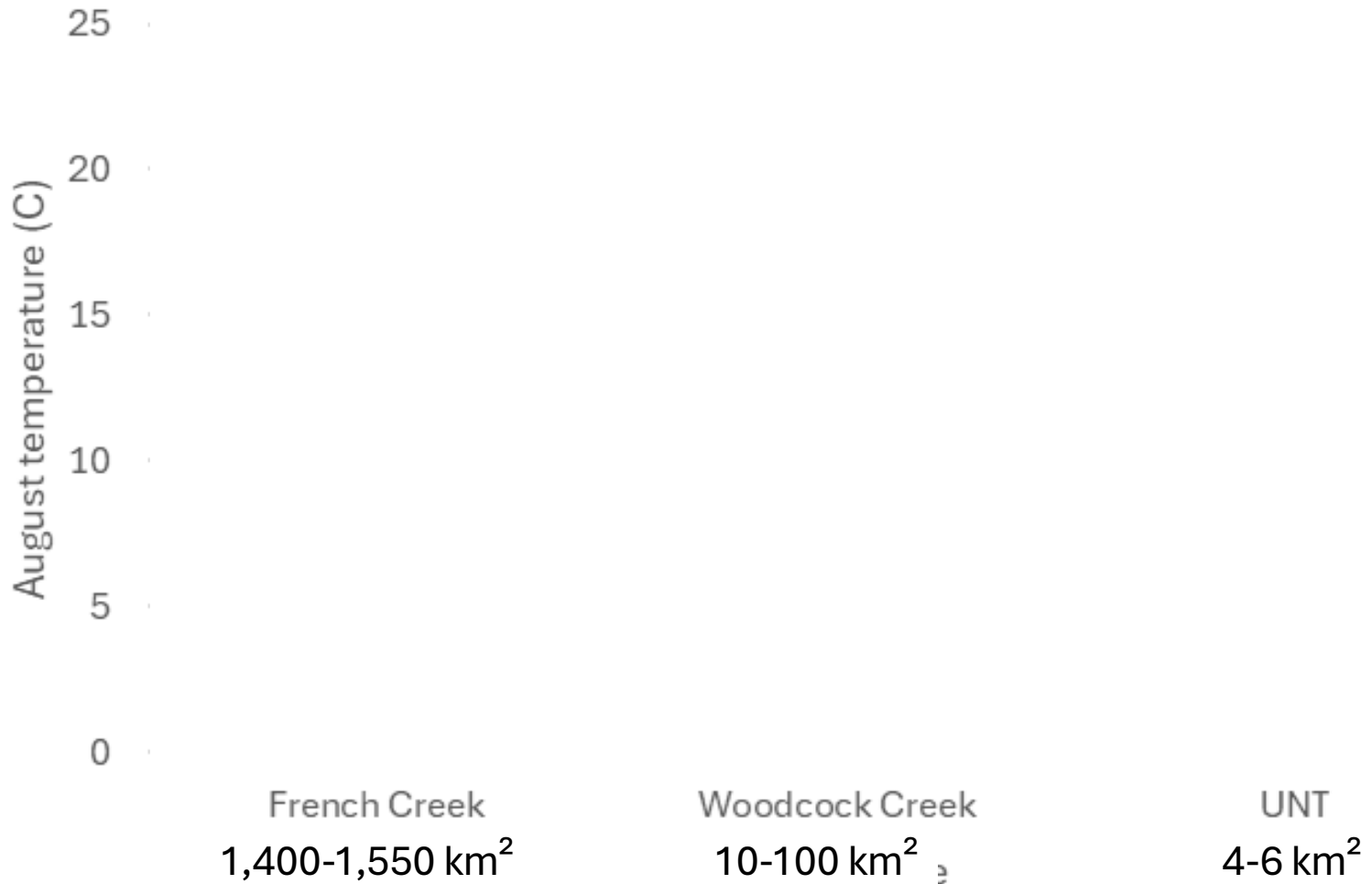
## Turbidity (NTU)

Water Samples:



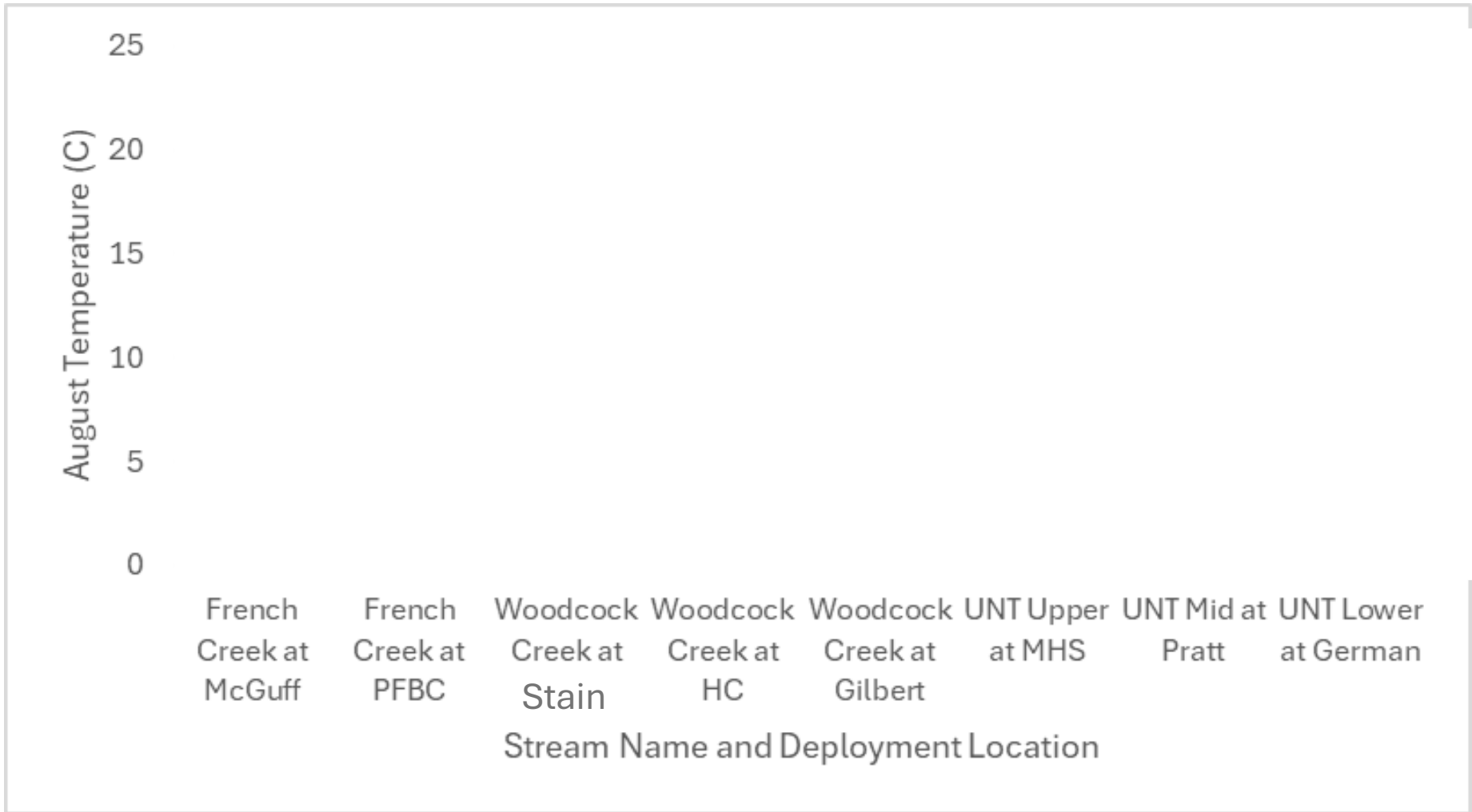
*Increasing Light (Lux)*

# Part I: Summer Temperature Patterns by Location Type



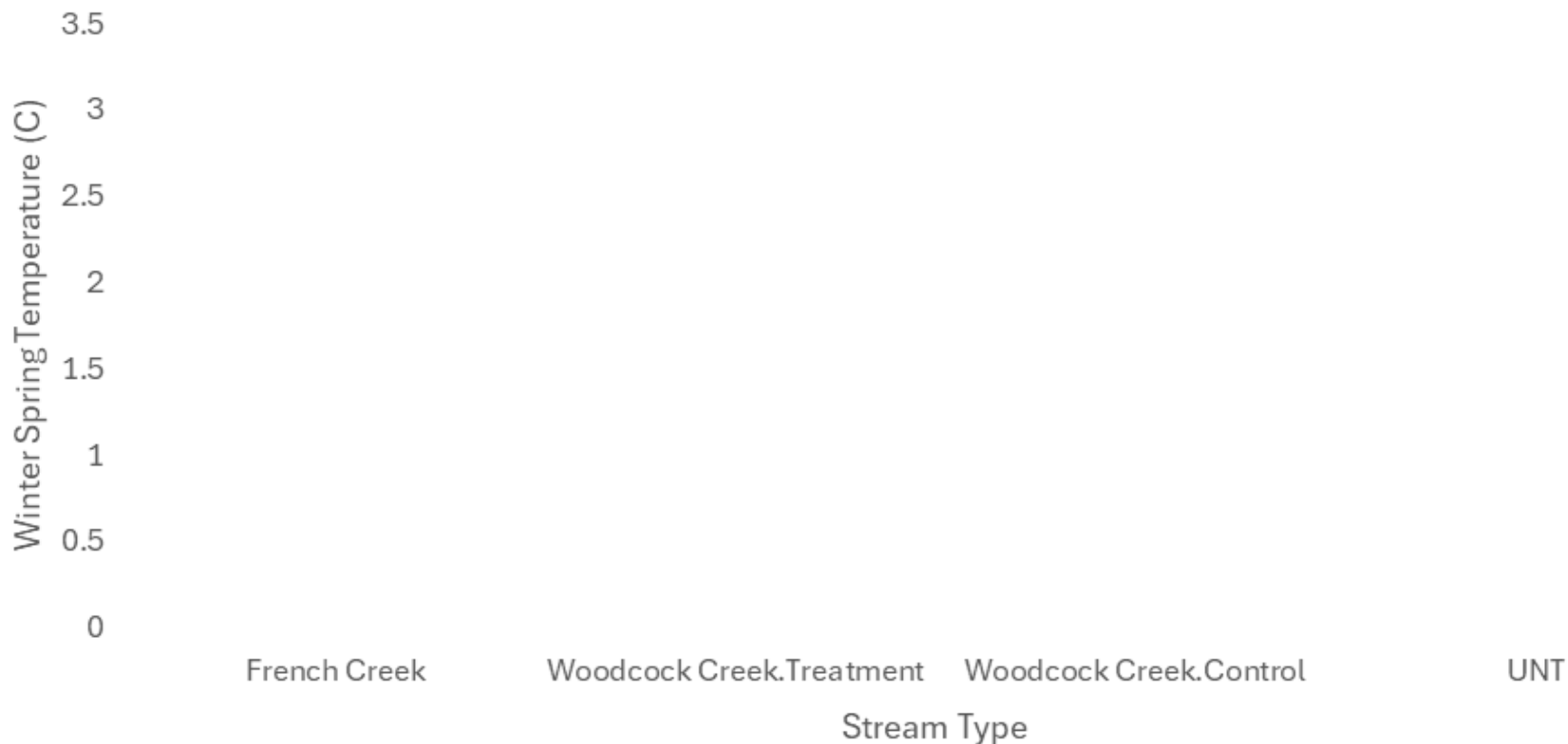
**Thermal Patterns = Longitudinal Stream Gradient**

# Part I: Summer Temperature Patterns by Sampling Location



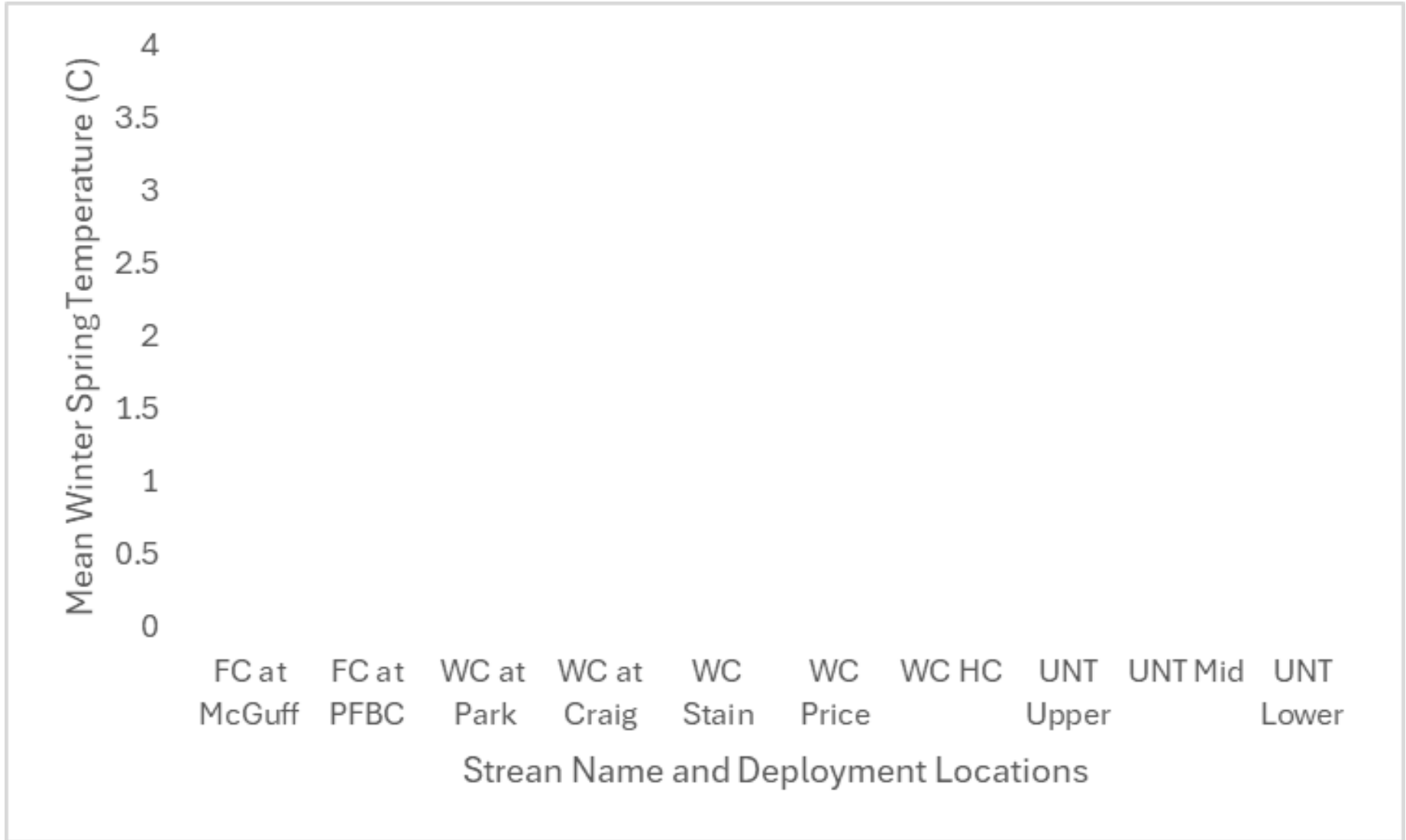
Temperature similar for Woodcock Restoration compared to controls  
Temperature higher for UNT Restoration compared to controls

## Part II: Winter-Spring Temperature Patterns by Location Type



Thermal patterns = Temperatures warmer below the reservoir

## Part II: Winter-Spring Temperature Patterns by Sampling Location



Thermal patterns = Same as before

# Part III: Winter-Spring TSS (mg/L) by Location and Type



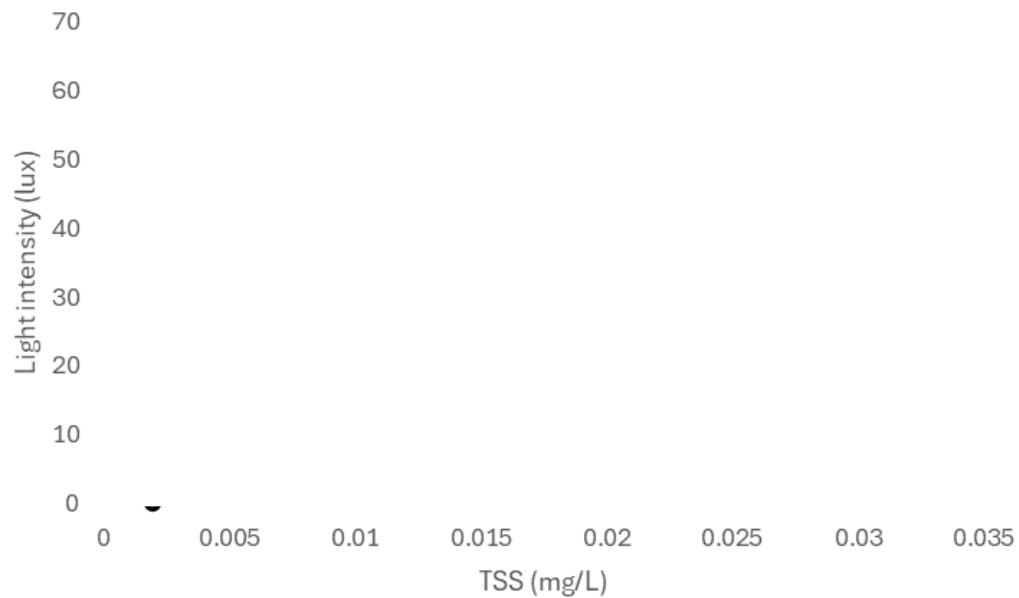
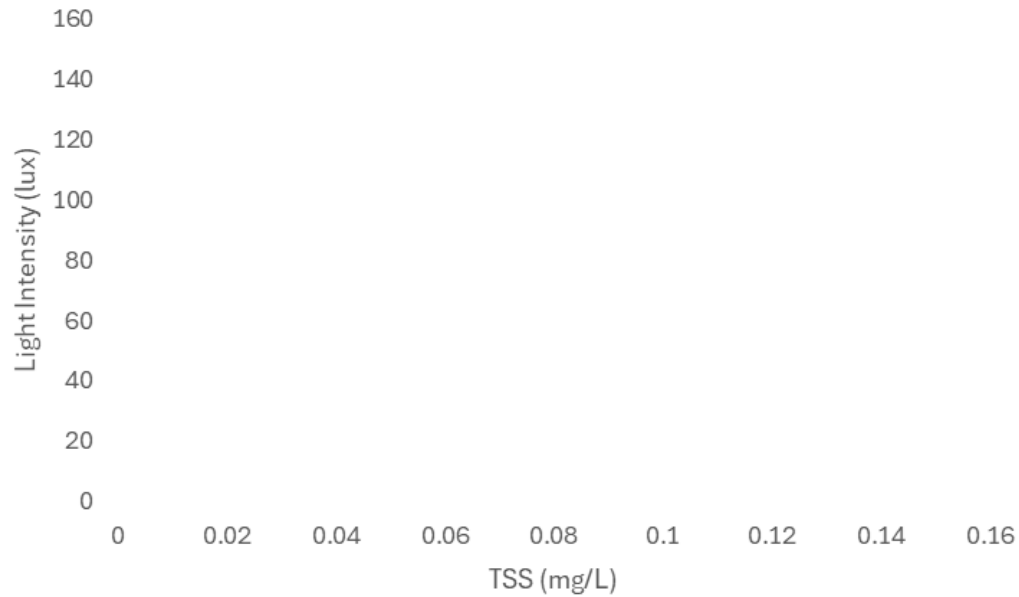
Ostrofsky et al. 2018 = UNT High Flow TSS  
Agricultural (70 mg/L) vs. Forest (27.5 mg/L)

## Part IV: Winter-Spring Light (lux) by Location and Type



- No support for our hypotheses
- Problems = Casings, Obstructions, Canopy Exposure

# Part V: Correlations for TSS and Light (Site-specific trends)



# Long-Term Monitoring Plans



## Next Restoration Plan:

- Sediment capture methods for UNT upstream of R2
- “Chop-and-drop” method



## Two Bridge Replacements on French Creek

- 2025-2027 near two monitoring locations
- Concerns about impacts to Hellbender populations

