



Water Quality Comparison within Decker Island, a newly restored Tidal Marsh, and the Surrounding Channels

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Introduction

- Decker Island is a 140-acre tidal marsh restored in September 2018 as part of the Fish Restoration Project
- Restoration's main objective is to provide long term benefits for native fish
- Study's goal: Assess potential benefits that the newly restored tidal marsh has for Delta Smelt, Chinook Salmon, and Longfin Smelt in the local area

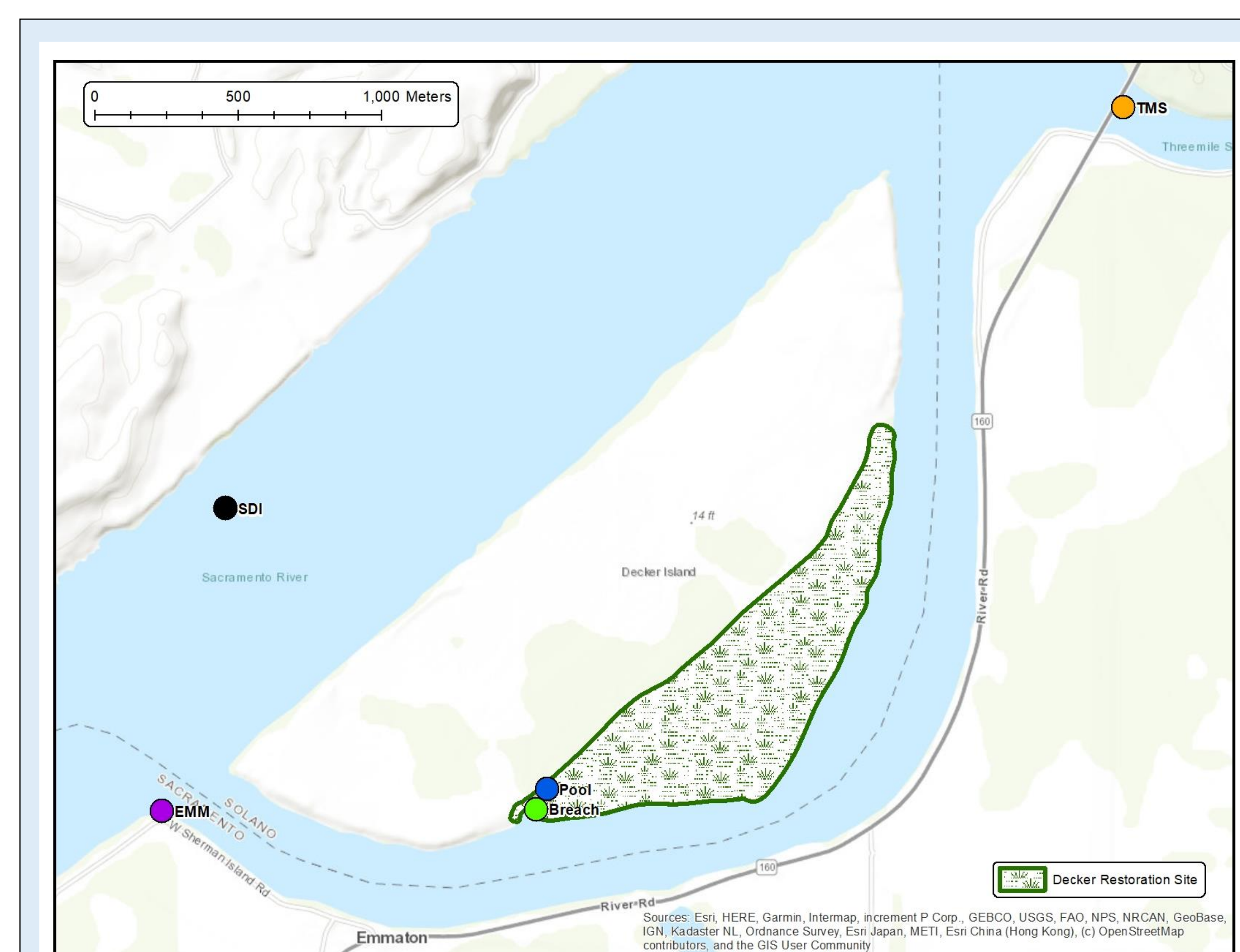


Figure1: A map of Decker sondes sites and the surround long term stations

Methods

- Installed two YSI Exo2 Sondes within Decker Island:
 - Inside ~ 5 meters from Breach (**Breach**) – May
 - Inner pool ~ 85 meters from breach (**Pool**) – June
- Exos collected data in 15-minute intervals
- Compared to long term stations:
 - Sacramento River channel outside of Decker (**SDI**)
 - Off Emmaton (**EMM**)
 - Entrance of Three Mile Slough (**TMS**)
- Analyzed conductivity, temperature, and turbidity using program R and the ggplot2 package

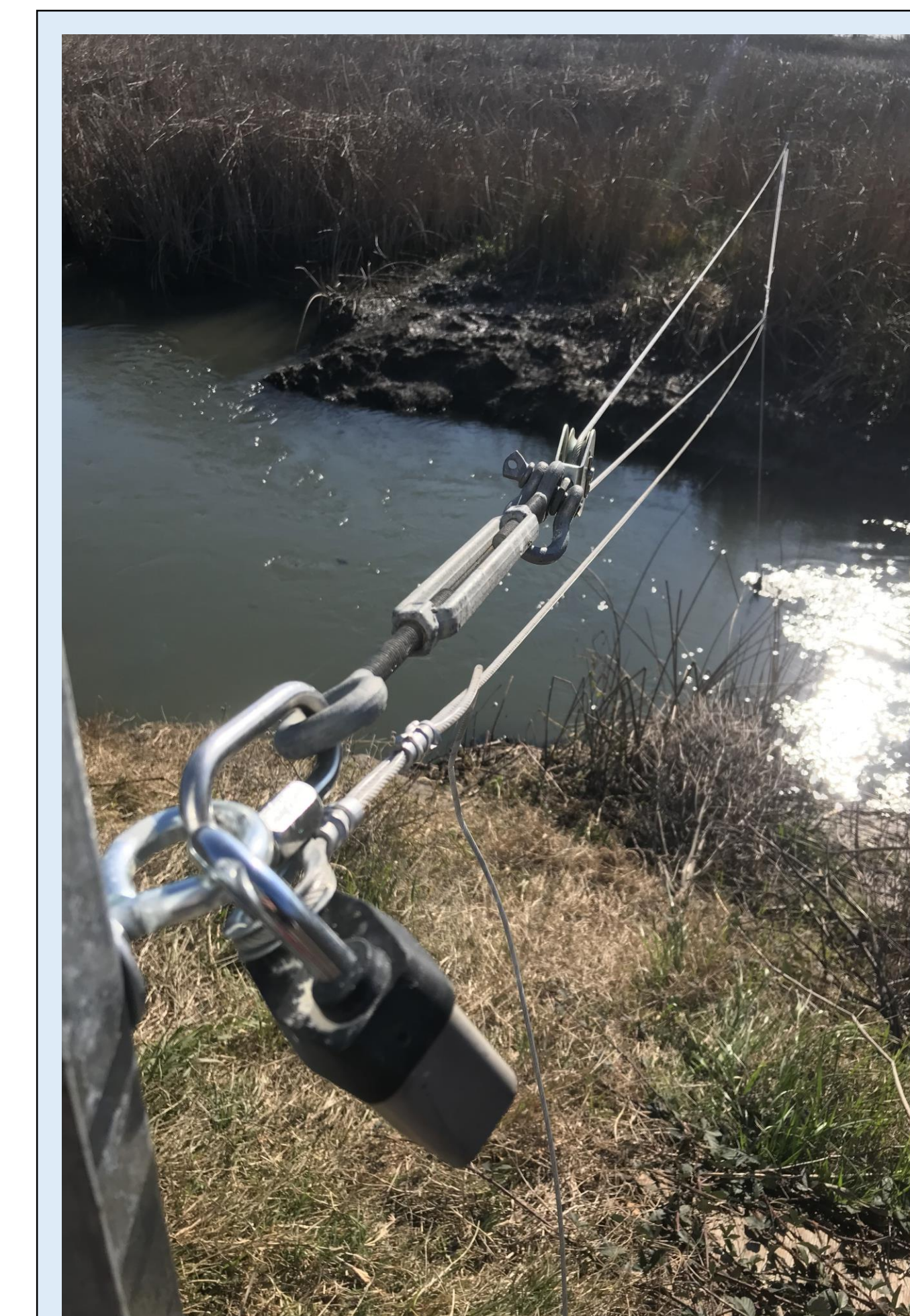


Figure 2: A photo of the Decker Pool Site

Results

- Temperatures are more variable in Decker
- During the Fall, there lower water temperatures within Decker

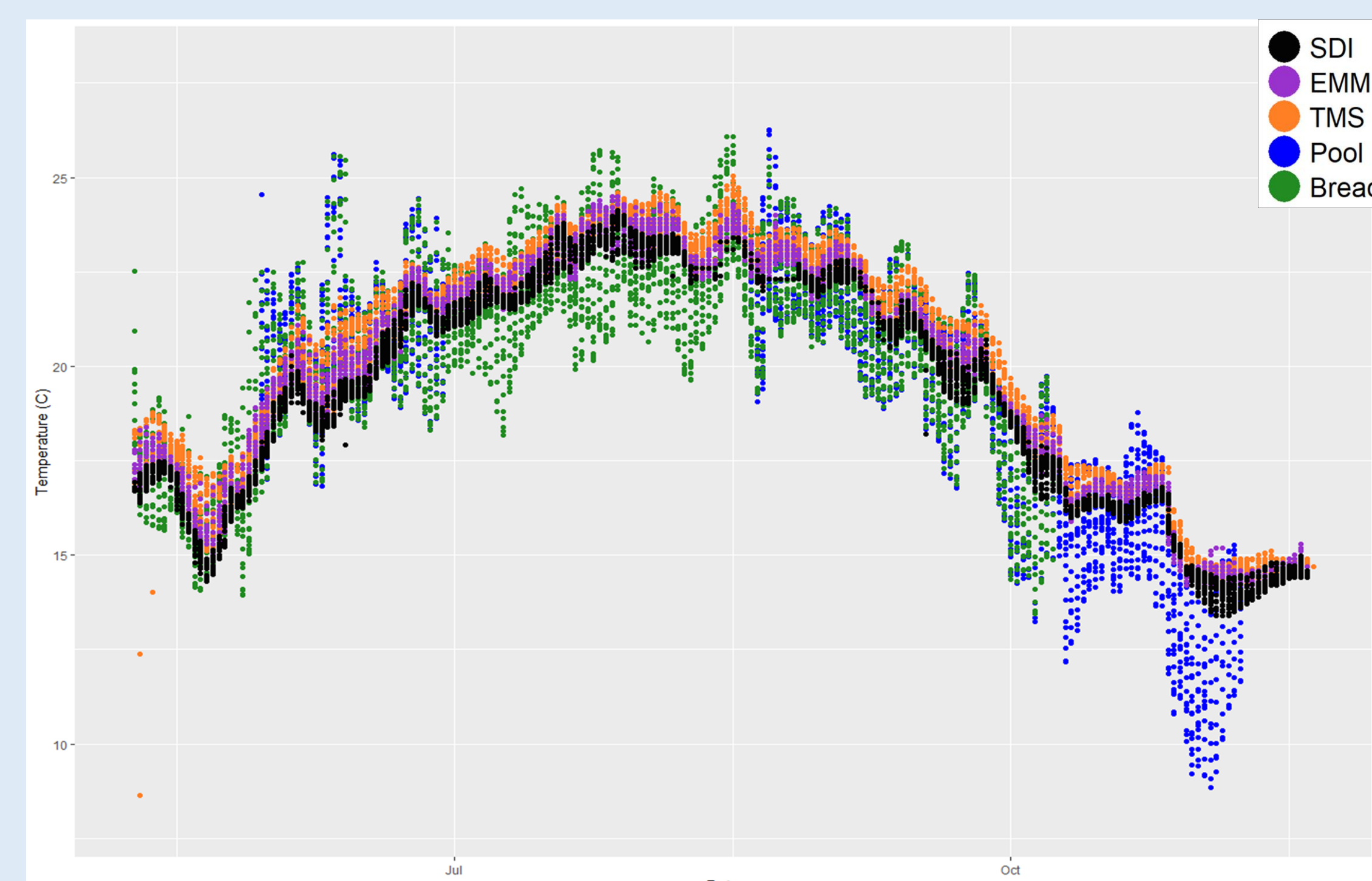


Figure 3: Temperature (Celsius) collected from June to November 2019 at the five stations.

- The main channel had lower and less variable conductivity than the other four stations.

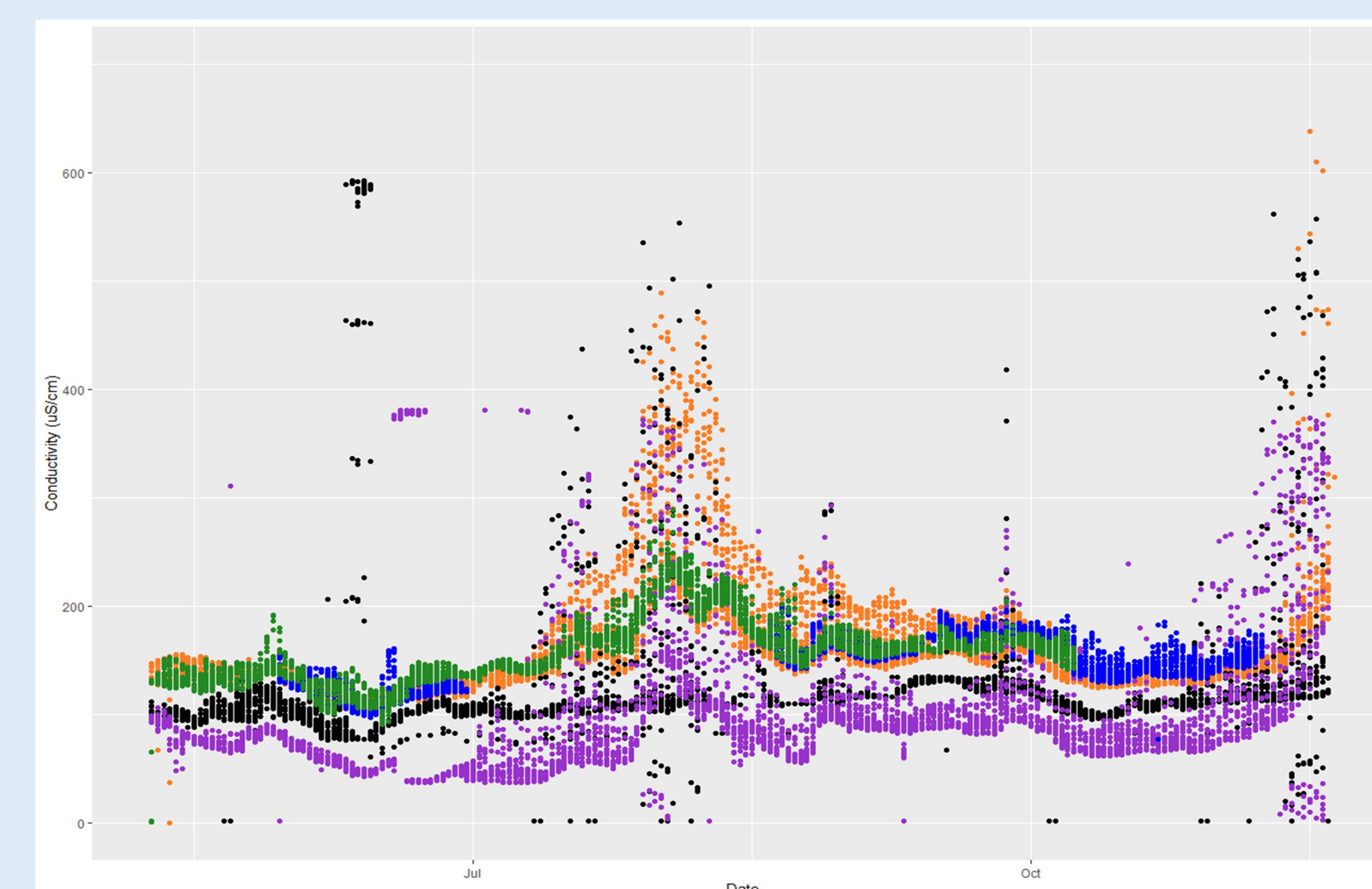


Figure 4: Conductivity (µS/cm) collected from June to November 2019 at the five stations.

- Decker had higher turbidity measurements overall and more fluctuation than SDI

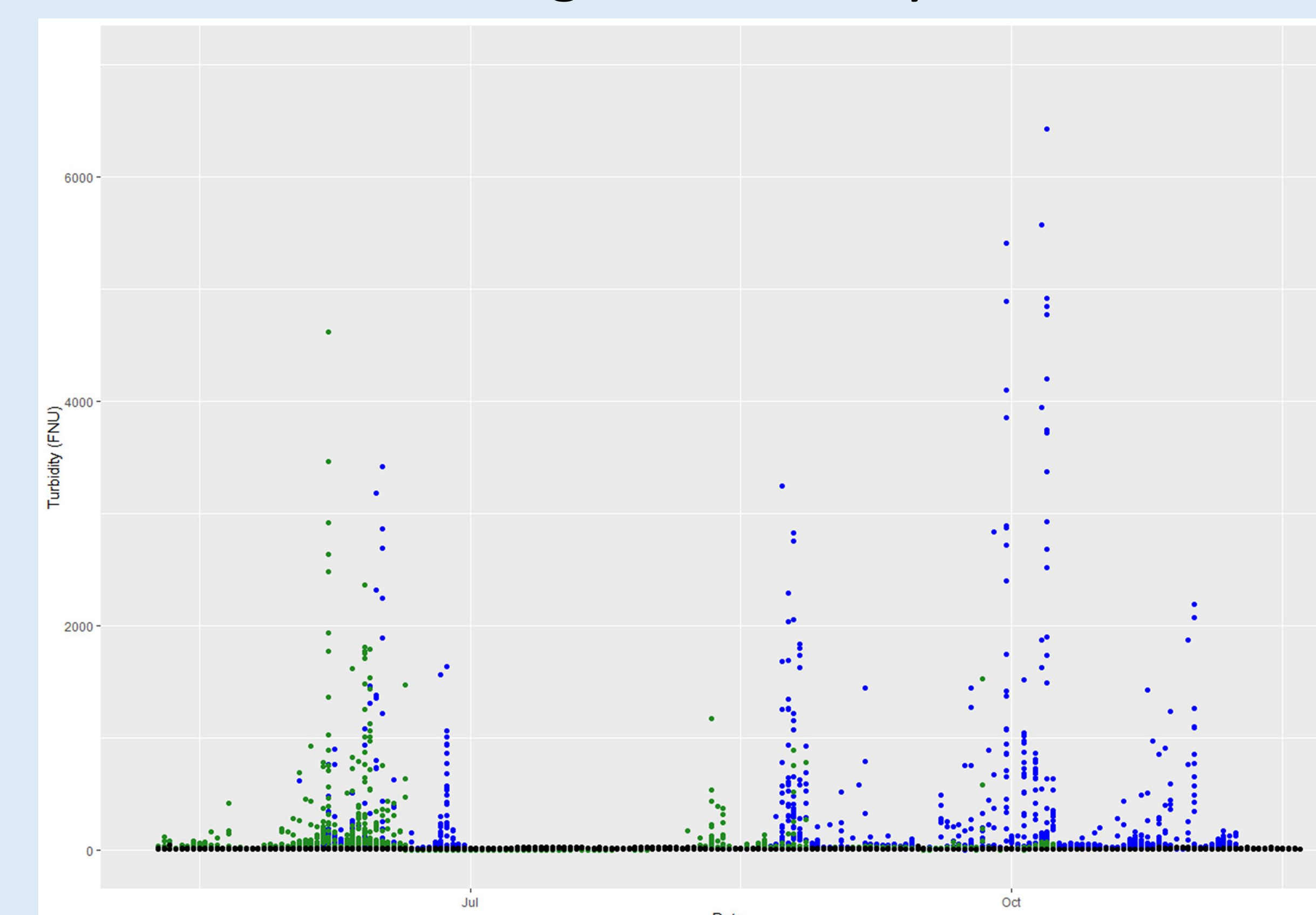


Figure 5: Turbidity (FNU) collected from June to November 2019 at the Breach, Pool, and SDI stations.

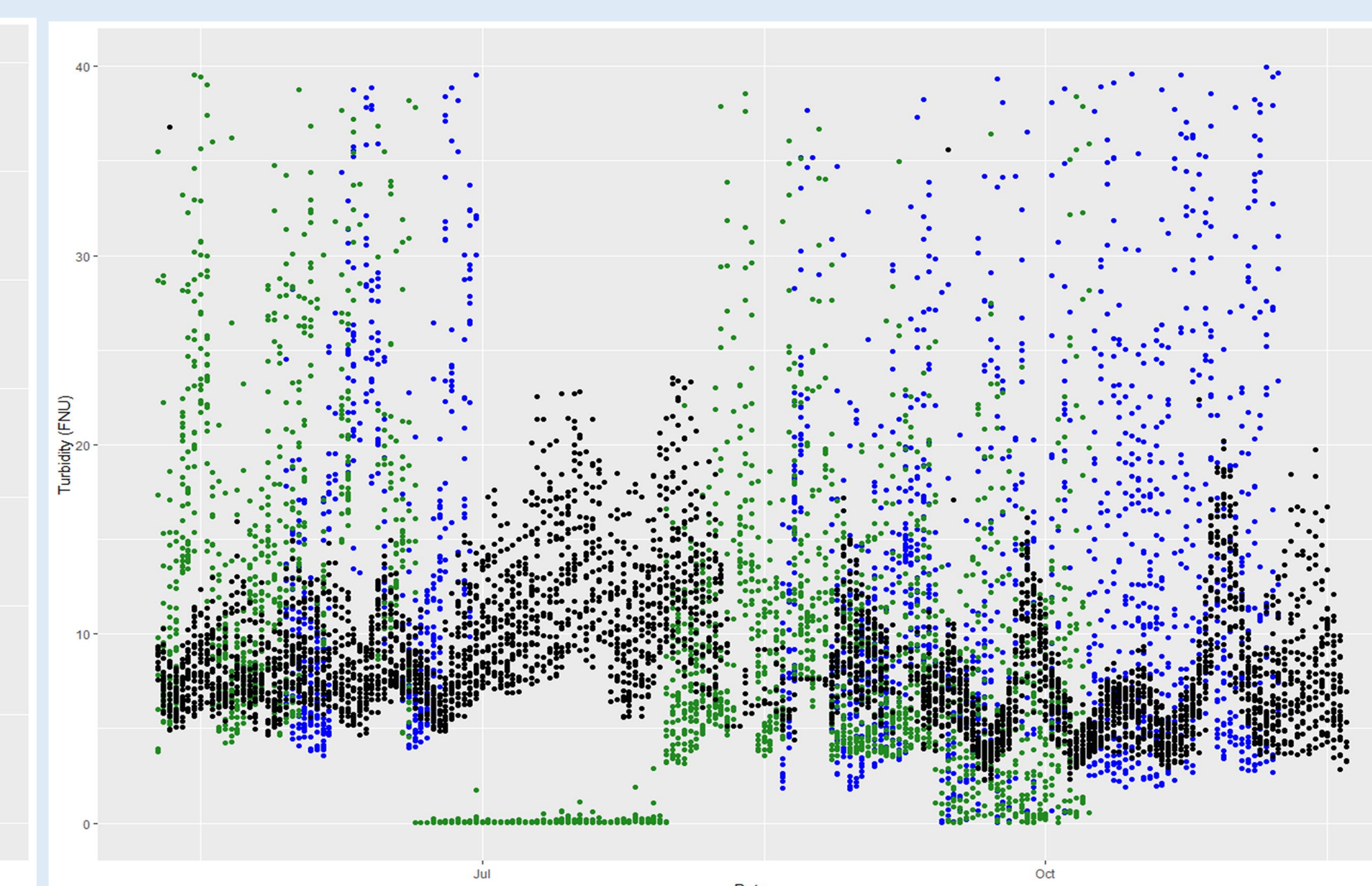


Figure 6: This graph displays the same Turbidity (FNU) collected from June to November 2019 at the Breach, Pool, and SDI stations on a smaller scale.



Figure 7: A photo of Decker Breach Site facing into the Island

Discussion

- Warmer temperatures may increase productivity of invertebrate fish food
- Decker may provided cooler temperatures
- Decker may increase the turbidity of the local area, decreasing chance of predation



Figure 8: A photo of Decker Breach Site facing the breach into Horseshoe Bend

References

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