

PROJECT INTRODUCTION

The Green Mountain Reservoir regulates water discharge into the lower Blue River which runs ~16 miles until draining into the Colorado River. The lower Blue River faces nutrient deficiency on account of altered water flows caused by two dams located at the Green Mountain Reservoir (Blue River Watershed Group, 2021). Unnatural river flows and nutrient deficiency has led to excessive invasive algae growth. *Didymosphenia geminata* also known as Didymo or rock snot has out competed most native algae species within the lower Blue River. Didymo thrives in low phosphorous environments, leaving the lower Blue River optimal habitat. Consequently, the lower nutritional value from didymo has been attributed to lower diversity and abundance of aquatic macroinvertebrates. The decreased diversity and abundance in prey sources directly affect fish growth and population sizes. These changes to populations in the lower Blue River have become a source of concern for stakeholders and landowners. A team comprised of CSU and Blue Valley Ranch are collaboratively working to restore river ecosystems via habitat restoration and fisheries management.

LABORATORY/FIELD WORK



Figure 2. Measuring algae biomass in the Blue River using a Benthotorch



Figure 3. Measuring trout body condition with bioelectrical impedance meter ("fat meter")



Figure 4. Macroinvertebrates sample from the Blue river waiting to be identified



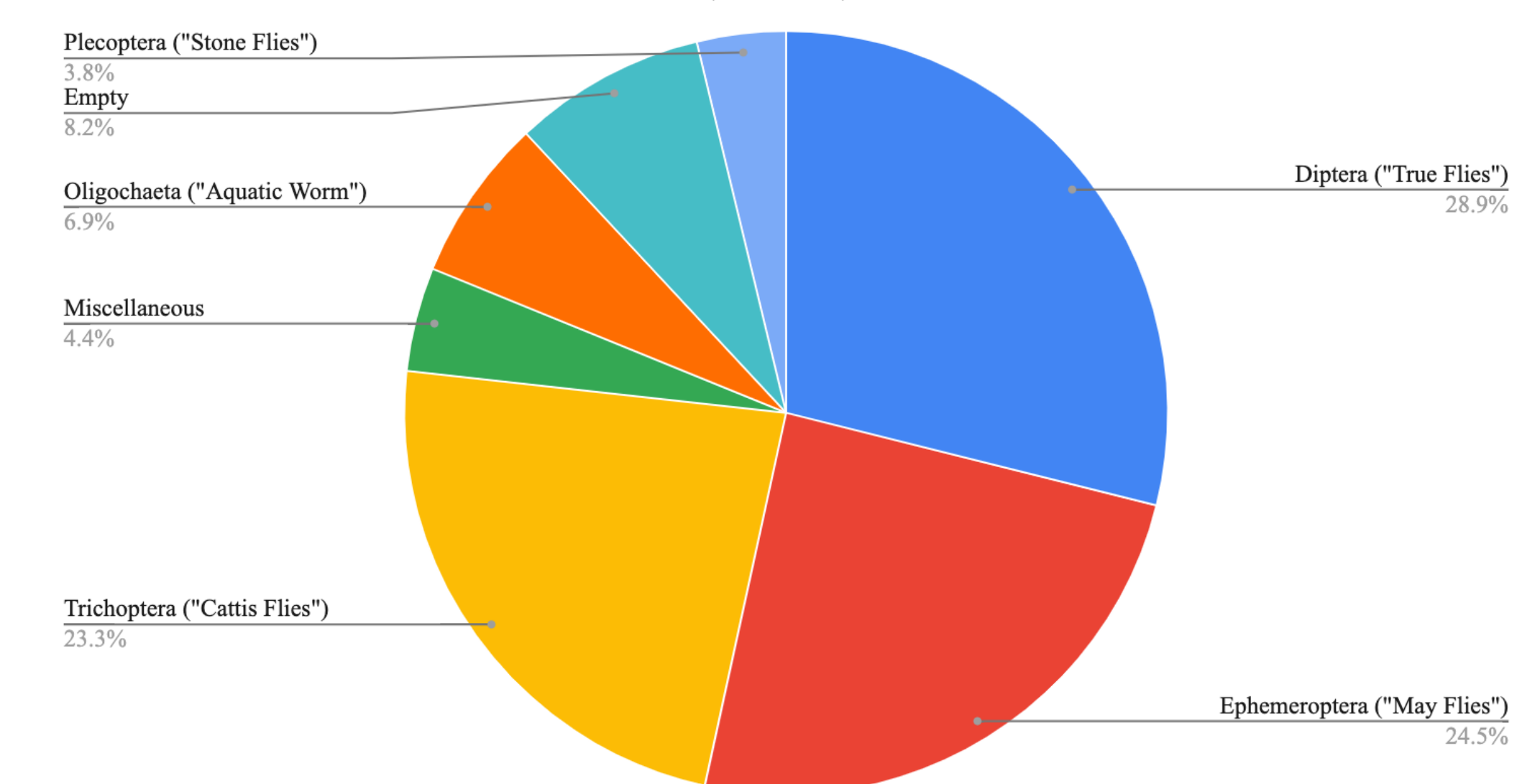
Figure 5. Seining trout from rearing pond on the ranch, and stocking into the Blue River

TAKE AWAYS

- My internship provided me career- related lab, field, and hatchery experience
- Lab work has correlated to my growth of an ecological perspective, in fisheries, as I analyzed the nutrition of trout and sculpin
- The field work has prepared me for sampling techniques, such as tote barging and electrofishing, that I will use in my career
- Exposure to hatchery and trout aquaculture promoted insights into fisheries management for human needs and future sustainability

Figure 6. Frequency of macroinvertebrates taxonomic groups in fish diets

Brown Trout Diet Trends (n=91)



Sculpin Diet Trends (n=68)

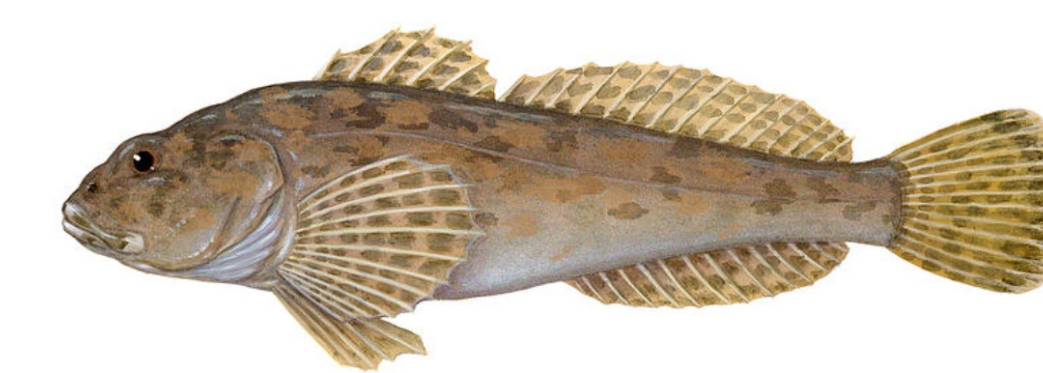
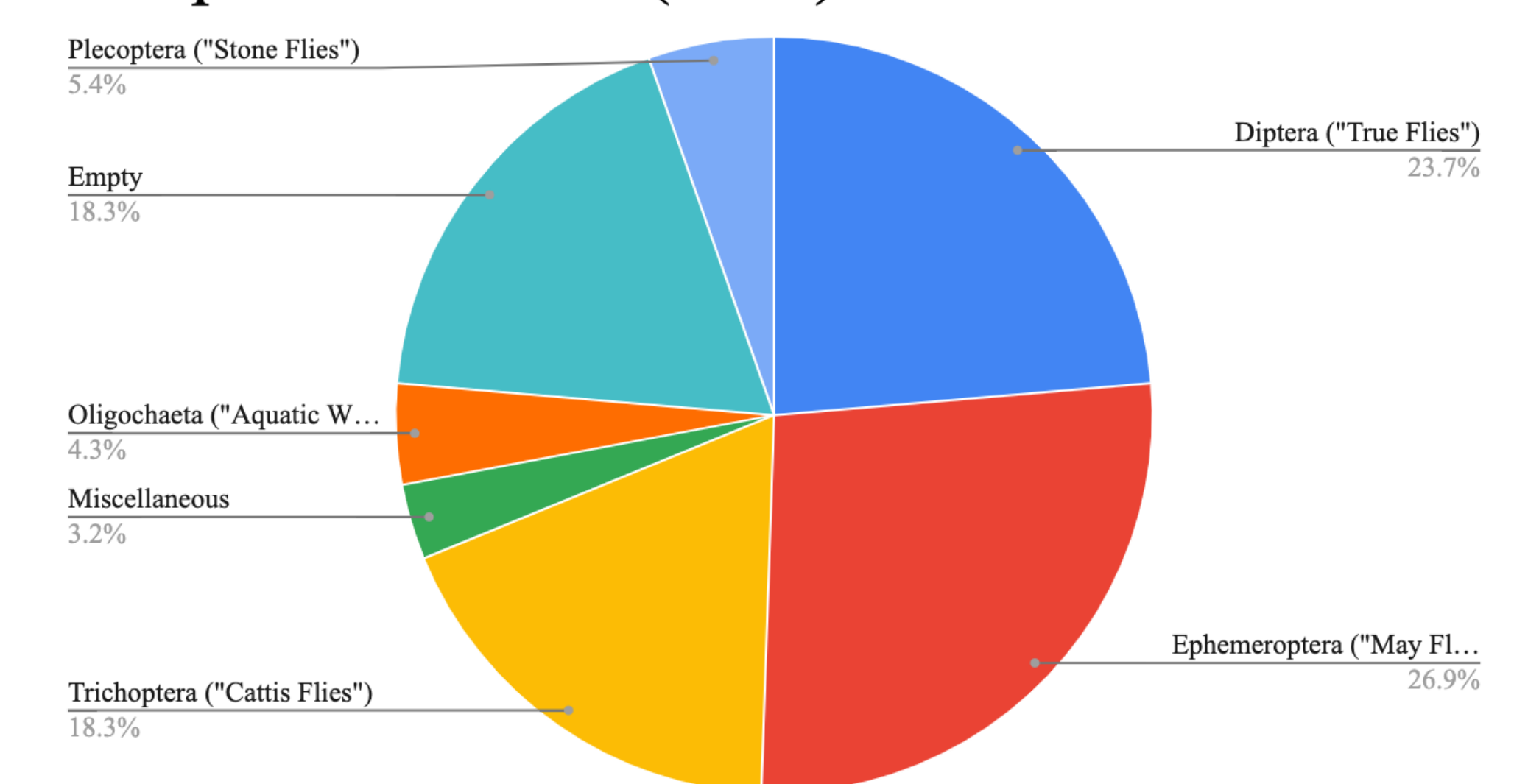
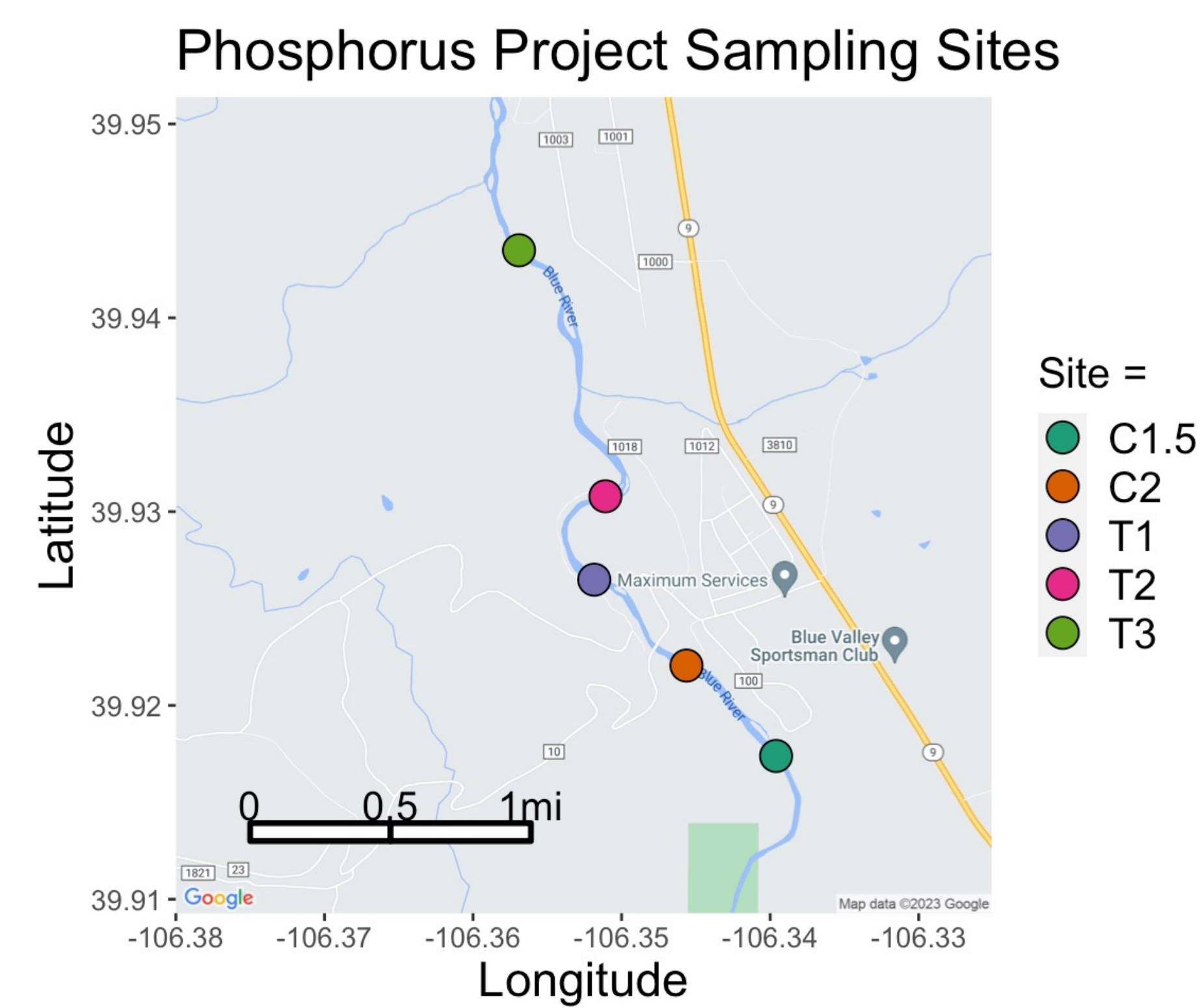


Figure 1. Map of study locations in lower Blue River (Kremmling, CO)



INTERNSHIP GOALS

- Establish water quality, algae, macroinvertebrate, and ichthyofauna community data in the lower Blue River
- Gain hands on experience in fisheries research, development, execution, and dissemination
- Learn about conservation and public outreach on private lands

NEXT STEPS

- Processing diet samples for August and October
- Assisting with future lab and field work for the project
- Developing an undergraduate research project