

FISHERIES MANAGEMENT IN A FLOW-REGULATED RIVER ON A PRIVATE RANCH- BLUE VALLEY RANCH, KREMMLING, CO

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INTRODUCTION & PRIVATE MANAGEMENT

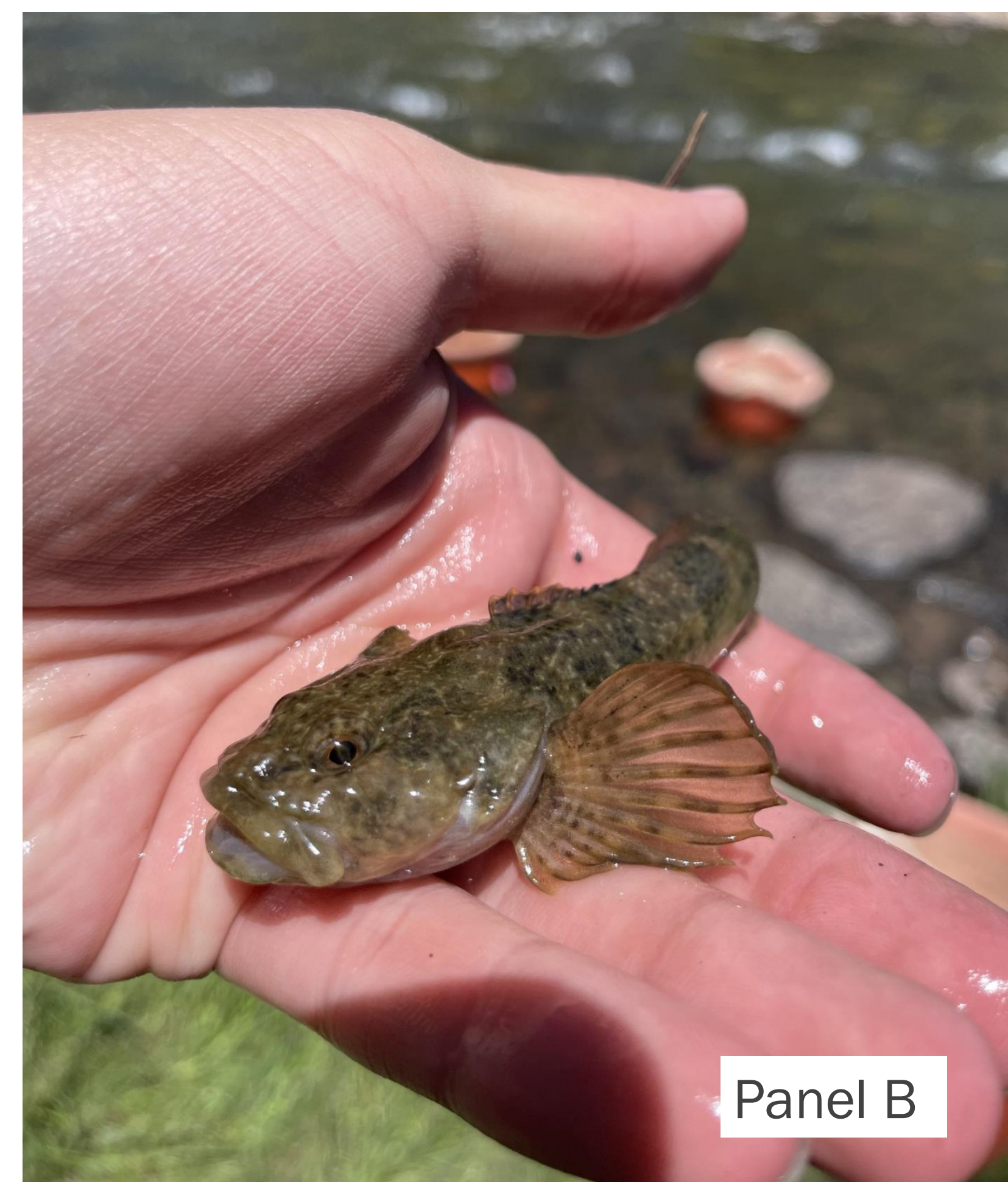
I'm halfway through my bachelor's degree in fish, wildlife, and conservation with Colorado State University's Warner College. I currently have a dual concentration in wildlife biology and fisheries science. This internship, *Fisheries Management in a Flow-Regulated River on a Private Ranch* was aimed to train me on various techniques and practices used in the freshwater fisheries field.

This internship took place near Kremmling, CO, on private property known as the Blue Valley Ranch. The Colorado River passes through Kremmling, and one of its tributary rivers that feeds into it—the Blue River—stretches across much of this property. Not only does the property have part of this natural river, but small, man-made rivers known as oxbows, stock ponds, and a hatchery, all of which were designed for accommodating the life stages of the property's aquaculture-grown rainbow trout. It is estimated there are a little under one-million of these rainbow trout on the property, and much of my tasks from this Summer involved maintaining their hatchery where the eggs and juveniles lived, along with moving the adults from ponds to oxbows. Colorado Parks and Wildlife uses some of these practices.

GOALS

- ❖ Learn general skills of managing a fisheries on a private ranch
- ❖ Understand how to adjust plans when regulated flows vary
- ❖ Electroshock fish as a means to collect them for data
- ❖ Surber sample aquatic macro-invertebrates for data collection
- ❖ Collect algae samples to understand river health
- ❖ Practice hatchery maintenance and fish transport

Figures 1. Juvenile Brown Trout (A) and Adult Mottled Sculpin (B)



RESEARCH & CSU SAMPLING

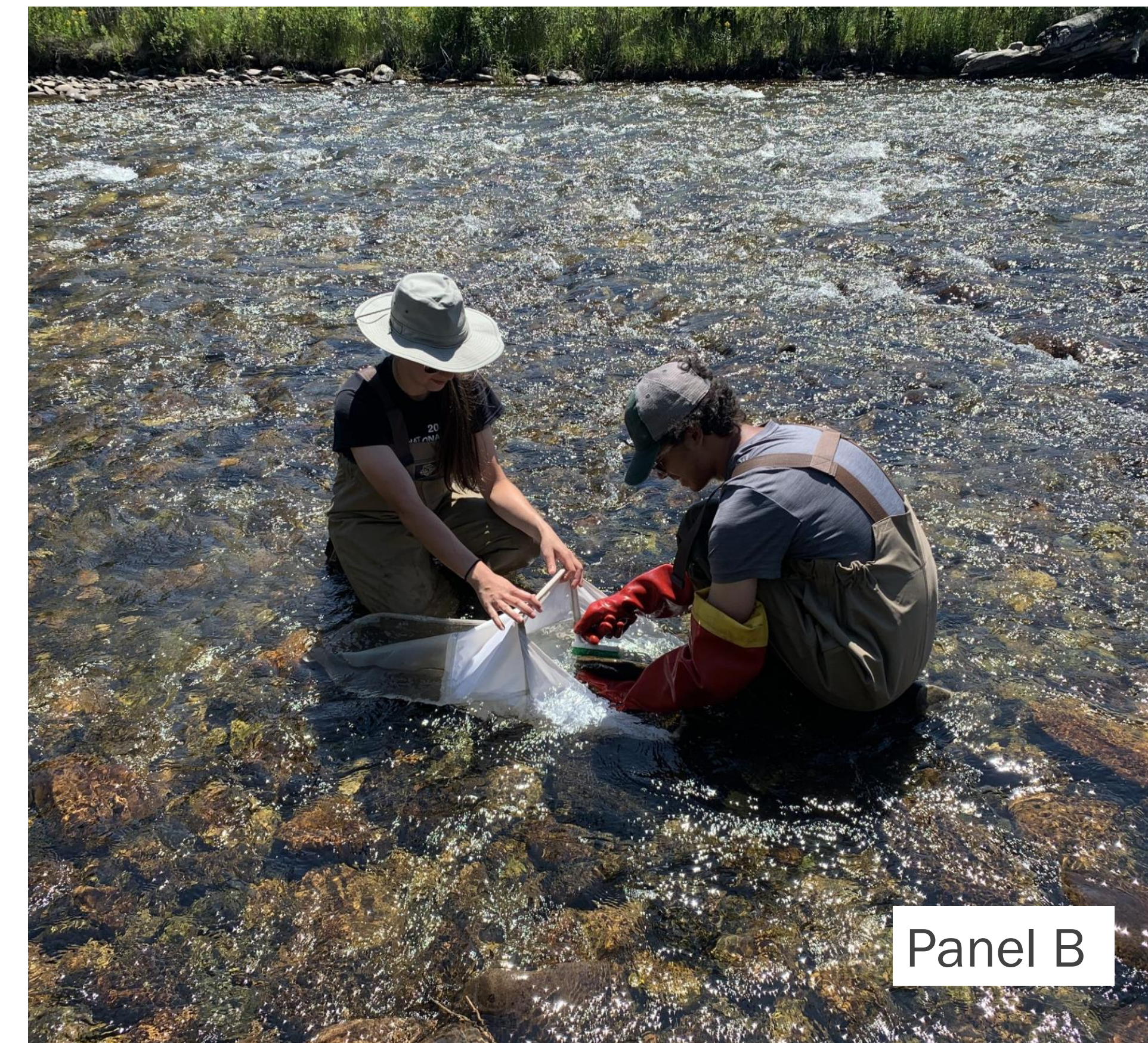
Phosphorous Study

Understanding foodweb health is a means of understanding river health. Dams such as the one upstream at the Green Mountain Reservoir can trap nutrients from reaching the river downstream, so manually pumping phosphorus has been proposed as a solution to compensate for this. Before doing so however, the river's current health must be thoroughly understood. A means of understanding this is through the observation and data collection of its organisms. This is done by sampling them.

Fish Sampling

The fish species present in this environment include brown trout, rainbow trout, and small, insectivorous fish known as mottled sculpins. The Trout are sampled at the juvenile stage, while the sculpins are sampled at the juvenile and adult stage. Thanks to backpack-mounted electroshockers, the fish are stunned and easily netted. These fish were netted in five different control and test sites, with three 100 meter areas used for shock passes. A typical shock crew will have three backpack shockers (who also hold nets), two complete netters, and two fish bucket carriers (who are also holding nets). The fish are then analyzed for fork length, weight, and stomach contents, known as gastric lavage. This helps us understand

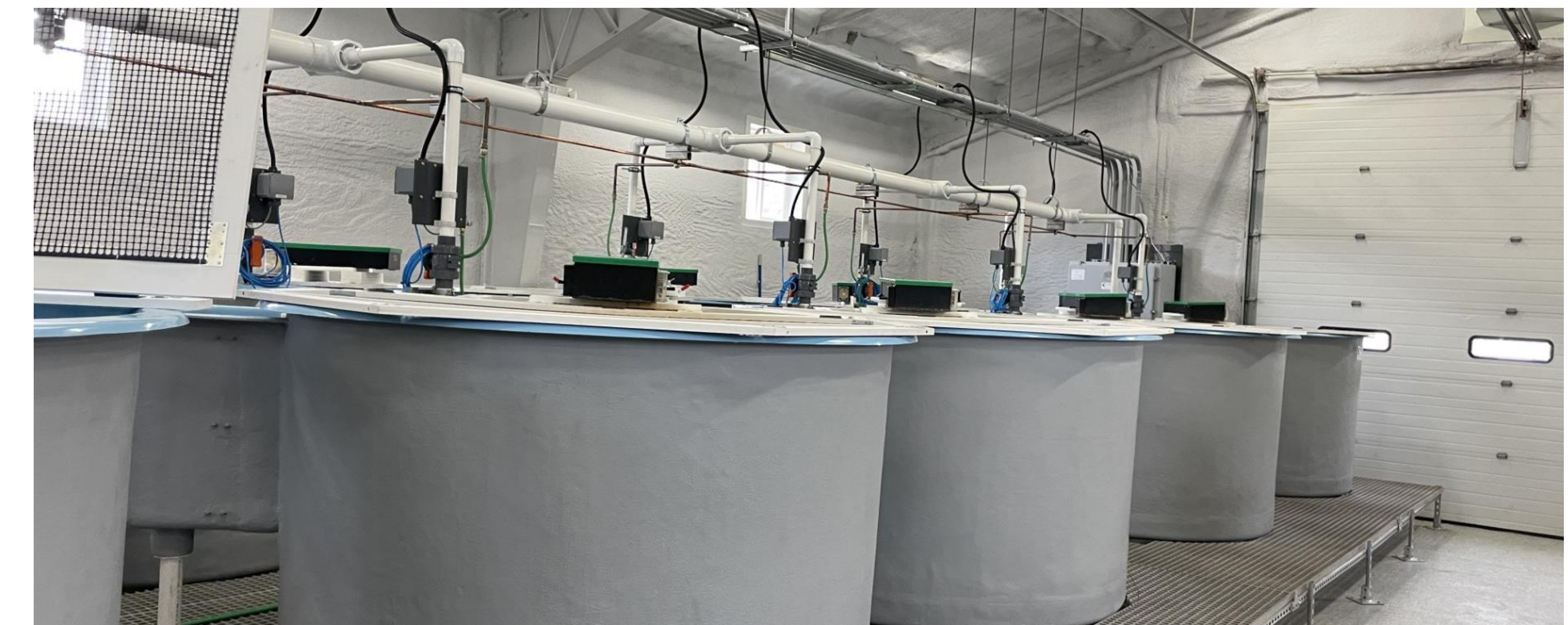
Figures 2. Electroshocking Fish (A) and Surber Sampling (B)



Macro-Invertebrate Sampling

Macro-invertebrates such as insect larvae and worms are also collected. Through the use of a surber net which helps capture the debris and invertebrates of a 10X10 inch square, we're able to understand the species richness and diversity of the river. This indicates the river health, as certain species thrive and are more abundant under conditions with less nutrients. This is typically a two-person job, with one person holding the net facing the flow, while the other scrubs invertebrates off the rocks. Five samples are collected from five sites on the property. This and the fish lavage

Figure 3. Hatchery Tanks Containing Juvenile Rainbow Trout



TAKE AWAYS

- ❖ Learned how to maintain a fish hatchery, including bad egg disposal, cleaning tanks, feeding appropriate amounts of pellets, calculating average size and fish count for appropriate amounts of pellets, and moving said fish from troughs, to tanks, to ponds, to oxbows, from eggs to adults.
- ❖ Learned how to operate offroad equipment for fish transport via oxygenated fish tanks (see figure 4.).
- ❖ Learned how to electroshock fish via backpacks with CSU and a barge via BVR.
- ❖ Learned how to gastric lavage fish & surber sample
- ❖ Learned that private fisheries typically prioritize introduced gamefish, over gamefish and native fish as seen with public fisheries.

Figure 4. Moving Adult Rainbow Trout Via Fish Tanks with Oxygen

