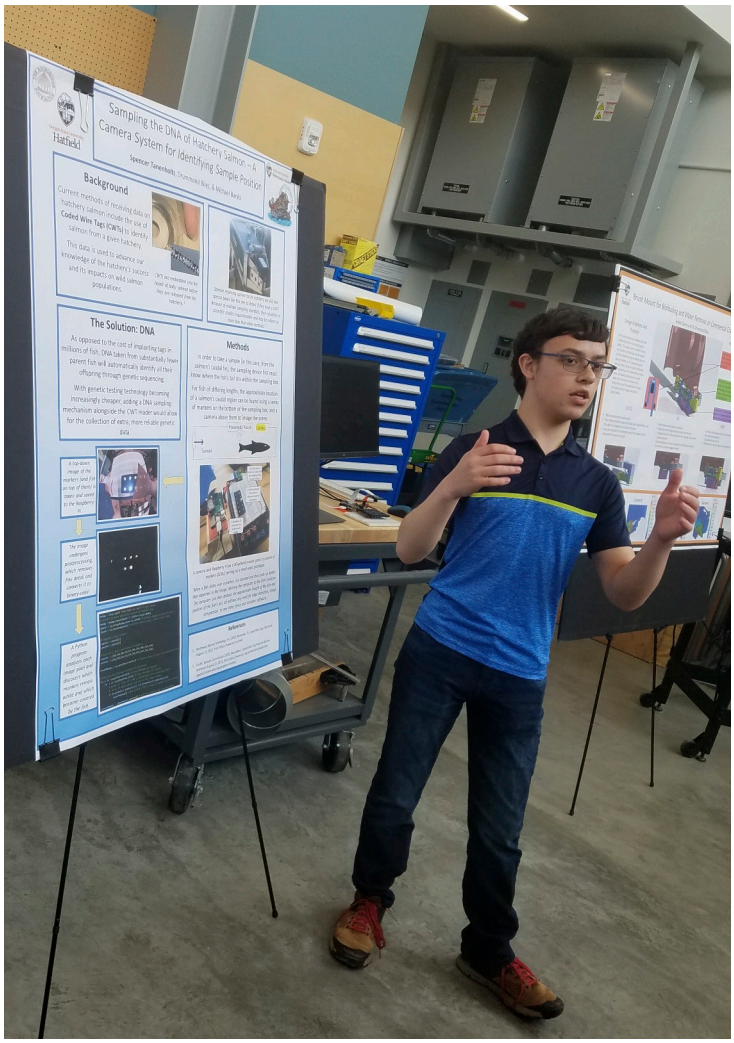
My project consisted of designing, prototyping, and building a camera system to be used in a new device to study fish from hatcheries. Fish would be caught as they return upriver to the hatchery, and would be slid through a box, which would automatically take a tissue sample from the fish's tail fin. My portion of the project was specifically the camera system, which would use a small camera and a Raspberry Pi computer to determine the location of the fish's tail and send that information to a sampling instrument. The project required me to research a suitable camera, design a program to take a photo and process it to determine the location of the fish fin, and integrate that system with another intern's work on the sampling instrument.

I also worked on some smaller side-projects in which I often designed and built small pieces of equipment for the lab, utilizing machinery like a bandsaw, milling machine, lathe, and more. My larger project gave me experience particularly in the use of the Solidworks modeling program, soldering irons, 3D printers, Python programming, and Raspberry Pi computers. I learned so much, and I have no doubts that I will use this experience in my future career, considering that all of these skills are crucial for a lot of engineering work.

As I mentioned, I don't think that the experience impacted my long-term career goals – to use engineering skills for conservation-focused work in an aquatic setting – but I did learn that I enjoy 3D modeling, and dislike computer programming for the most part. My next step, now that the internship has ended, is embarking on another project with the same mentor who acted as a supervisor on my project. I really enjoyed my time with him, and I'm super excited to try something new and different, probably in the field of fish genomics.

I'm extremely thankful for the opportunity this internship has given me to learn more about the field of engineering; I had so much fun.

Spencer Tanenholtz


Sampling the DNA of Hatchery Salmon – A Camera System for Identifying Sample Position
Hatfield
Background
The Solution: DNA
Methods