Rogue Wave

Team ID: HS-304

Engineering an ROV Attachment for the Retrieval of Underwater Vegetation

The turtle above, Fred, has a large tumor on his right side due to the FP virus and is currently being treated at the Marathon Turtle Hospital.

Motivation

Our team began to research the cheloid fibropapillomatosis herpes virus after visiting the Marathon Turtle Hospital and seeing firsthand how FP affects sea turtles. We saw countless turtles waiting to get these tumors removed. Fibropapillomatosis is found along the southeastern coast and, being from a coastal community, we were shocked at how little research had been done. Our team wants to use our ROV and STEM knowledge to create a tool that can collect data regarding the location of the virus by collecting samples of the seagrass.

The Collection of Data Regarding the Presence of Cheloid Fibropapillomatosis Virus

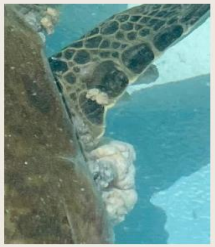
The turtle above is at the Marathon Turtle Hospital because of the FP virus on her eye and flippers.

Our Goal

Through this engineering process, we have designed an innovative and effective tool to integrate into our ROV that will give the ability to collect seagrass and return it to land for analysis. This will allow to be able to locate the presence of and further our knowledge of this virus.

Background Research

Cheloid fibropapillomatosis herpes virus, commonly referred to as FP virus, is the name of the virus that causes cauliflower-like tumors to grow on sea turtles. Runoff pollution has been linked to an increase of FP in our waterways. It is spread through infected seagrass and algae that sea turtles eat. It can cause blindness, immunosuppression, mobility issues, infection, and mortality. Foraging habits of sea turtles are in near-shore waters and often contain seaweed and algae that contain this herpes virus. Most commonly found in green sea turtles, fibropapillomatosis's presence is most significant in the southeast United States, although it varies by geographic location. There is still a lot to learn about the FP virus and factors that can contribute to the development of the disease and there is not yet an effective solution to decreasing the impact of fibropapillomatosis in sea turtle populations.

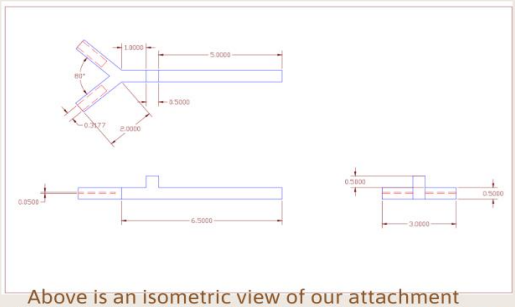


Up close of FP Tumor.

Why?

It is imperative to pinpoint which areas are safe for turtles to feed and which are infected so researchers and rehabilitation centers can figure out where to focus their environmental rehabilitation efforts and treatment interventions. Using ROV technology can advance our knowledge and interventions for the future of our sea life.

Isometric View of Attachment



Above is an isometric view of our attachment designed in AutoCAD, a computer aided design program. The blades,TPI T-Shank Reverse Jigsaw Blades, would go into the Y aspect and a net would be placed behind.

Skeeter(pictured above) has tumors growing under left flipper caused by FP virus.

Next Time

We plan to continue extensive testing and refine our design further. We will share our design with the Marathon Sea Turtle Hospital in hopes to implement our ROV attachment to help solve this real world problem.