**Friends of Sengekontacket 2024 Internship Report:**

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**What I have learned/done during this internship:**

1. **Overall duties/responsibilities of the departments and the interns:**

The main jobs of the shellfish departments are to enforce shell fishing laws, monitor the shellfish populations in the pond, and to grow shellfish from seed to be distributed into the pond. Shellfish laws aim to make sure to allow for recreational shell fishing, while making sure to prevent unsafe consumption and overconsumption. An example of this is the restrictive rules on when certain species of shellfish can be harvested commercially or recreationally. The restricted period depends mainly on when the species will be spawning, as hatching new shellfish is one of the most important ways to improve the population. After a while, the existing adult population of shellfish will diminish due to harvesting. Since most shellfish require about 2 years to fully mature, harvesting the spawning shellfish will severely halt the growth of the population. This leads into the next focus of the shellfish departments, growing shellfish from seed to ensure that an above average amount of them will fully mature and spawn the next generation. This is done by growing the shellfish seed in either mesh bags or bins with a mesh lid and base in an upweller, which prevents tidal disruption but also allows for natural movement of the shellfish. As the seed starts to grow larger, the contents of each bag must be split into two separate bags/bins with increasing mesh size. Once the shellfish are large enough, they are moved from the upweller to a floating cage. This allows the shellfish to have much more space to grow, and since the cages are floating, the shellfish inside will be safe from predators such as crabs and oyster drills. After the shellfish mature more, their cages are lowered to the seafloor since their shells are developed enough to ward off most predators. Once the shellfish are fully mature, they are dispersed around the pond to spawn and create the next generation.

The shellfish departments also have roles that do not involve shellfish, such as water sampling and testing for harmful bacteria/algae and controlling invasive species populations. Cyanobacteria and algae blooms are the main concern to the health of water bodies and to anything that resides in them. These algae blooms can make humans who encounter it become very ill and disrupt the native wildlife species. The main reasons why algae blooms and bacteria can thrive are high nitrogen levels and increased water temperatures. Invasive crab species such as Green crabs and Asian Shore crabs are devastating to native species as they steal their food and will eat almost anything, especially plants and animals that are beneficial to the environment. By placing traps around Sengekontacket rigged with food that only the invasive animals will eat, it allows the departments to weed out the invasive crabs and hopefully promote an ecosystem with high biodiversity.

1. **Importance of the MVSG and the distribution of the shellfish:**

The Martha’s Vineyard Shellfish Group (MVSG) has hatcheries in Vineyard Haven, Oak Bluffs and on Chappaquiddick which are responsible for supplying oyster and scallop seed to the shellfish departments to grow, as well as reclaiming discarded shells from restaurants to use in the growth of future shellfish. MVSG is responsible for providing shellfish seed to the Edgartown, Vineyard Haven, and Oak Bluffs shellfish departments. The spawning mature shellfish are harvested for their seed in the MVSG hatcheries where they are then grown to a large enough size to distribute to the departments.

1. **Rainfall closures and why they are necessary:**

A responsibility of the shellfish departments that is very easily overlooked by most people, myself included, is the closure of Sengekontacket Pond when there is more than 2/10th of an inch of rainfall in a span of 24 hours. When there is that much rainfall, the Pond is closed for 5 days, and the water is tested on the final day to make sure that it is safe to reopen the pond. The reason why the closures are needed is due to the runoff of fecal material and other harmful substances into the Pond. The main reason as to why this runoff is bad is called Fecal Coliform, a species of bacteria that resides in the intestines of mammals and is excreted into their feces. Shellfish such as oysters and scallops will take in the contaminated water and absorb the harmful contaminants. This bacterium does not directly harm the shellfish, but it makes the shellfish unconsumable to humans.

1. **Benefits of an environment with a healthy shellfish population:**

A healthy shellfish population brings many rather important benefits to not just the ecosystem, but also the human population around it. When growing shellfish in an upweller, no input of food is required as they can eat algae filtered out from the water. This eliminates some of the algae from the water and does not require extra resources. The structure that shellfish in the wild bring to the seafloor is extremely important in maintaining the existing seafloor and for recovering already degraded habitats. Since shellfish filter feed, they are also keeping the water they live in clean by filtering out the contaminants. Shellfish also benefit the human population around them by providing numerous jobs and a very sustainable source of food.

**Good aspects of this internship:**

This internship was such an amazing experience for multiple reasons. The biggest reason I enjoyed this internship so much was how I was able to work at 3 different places. It was very interesting to see each department’s similarities and differences despite working in mostly the same areas of water. The different tactics and procedures for the same process are very cool to learn and allow me to get a better understanding of the industry as a whole. Another aspect of the internship that allowed me to gain so much from it were the people working at the departments. They were all super friendly and were always willing to answer my questions and teach me new skills when needed. The last main positive aspect of this internship was how much I was able to be on a boat on the job. My whole life I have not really spent much time on boats other than riding the Steamship. It was very interesting to see how much effort and expertise is needed to maneuver the boats and maintain their quality. I was also very glad that almost 80 percent of our job took place outside on the water.