

How trematodes influence the motility of the periwinkle species, *Littorina littorea* in Castine, Maine

The common periwinkle, *Littorina littorea*, is the first intermediate host for the trematode species *Cryptocotyle lingua*. *C. lingua* has many negative health effects on periwinkles, such as a higher mortality rate, a decreased fecundity and a lower algal consumption rate. These health impacts on the periwinkles can allow algae to overgrow with the potential of dying and suffocating the beach. Periwinkles were collected from Wadsworth Cove Beach in Castine, Maine for an experiment to study the effects that the parasites have on the periwinkle's motility. The periwinkles underwent trials that allowed each of them to freely move in flowing seawater tables for the average distances between infected and uninfected to be compared. The periwinkles were dissected to determine the infection status. Orange-footed periwinkles trended to travel shorter distances (27.55 cm) compared to white-footed periwinkles (32.08 cm), however there was no significant difference. The average distance traveled by the verified infected periwinkles (27.50 cm) and the uninfected periwinkles (32.56) remained non-significant. The color of the periwinkles' feet was an accurate (80%) indicator for infection in the periwinkles. Trematodes can wreak havoc inside of the periwinkles, damaging their digestive glands. The damage to the digestive glands can cause pigments to be released into the feet, causing the orange coloration. The damage to the digestive glands can also result in a decrease in the functionality of the digestive glands to effectively absorb nutrients for energy, therefore decrease the periwinkles motility.

Advisor: Sarah O'Malley