Bioluminescence has evolved from more than one common ancestor in over 30 taxonomic groups. Our study focused on the luminescent scale worm *Harmothoe imbricata*. Although many studies have analyzed how light is generated by *Harmothoe*, none have specifically considered why it is produced. Our hypothesis was that scale worms use luminescence as a defense against predators. Data was collected from crab species that live in the same intertidal region as the worms: *Carcinus, Cancer, and Hemigrapsus*. Tanks in lab were regulated on a 12-hour light cycle so that it was dark during our day. For data collection, a worm and crab were placed in a 4”by 4” tank separated by a divider. After an adjustment period, the divider was removed and their interaction was filmed using low light cameras and a night vision device (with an infra-red light source.) Light levels were measured by a photomultiplier and recorded to disk. Preliminary observations have shown two different luminescent responses. The first is a flashing response from an intact worm that is possibly meant to warn or surprise predators. The second is a bright display from the back half of an autotomized worm, allowing the front half to escape and eventually regenerate. Further analysis of the data will take place during the fall and spring semesters.

Figure 1. The intensity of light output from a worm as a crab attacks it. The most intense light was produced around 6.704 seconds. To generate this graph, light intensity was measured by a photomultiplier and then converted to volts using Windaq software.

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