



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title
How Does the Amount of Acanthocephalan Parasites Affect the Swimming and Burrowing Times of the Pacific Mole Crab?

Abstract

Objectives/Goals
Our objective was to learn if the amount of acanthocephalan parasites affects the swimming and burrowing times of the Emerita analoga.

Methods/Materials
Each sand crab was tested for three swimming and burrowing times. Andrew would release the sand crab when one fourth of the body was in water, simultaneously starting his watch. When the swimming was over and the burrowing began Andrew would stop his watch and Esther would begin the burrowing time until the sand crab was completely under the sand. The sand crab would then be cut from the telson to the primary antennae. With the scalpel we would search the insides for parasites the number of parasites would then be recorded.

Results
Our linear regression line shows as the number of acanthocephalan (thorny head worm) parasites in Emerita analoga increased, the burrowing time also increased by .87 of a second. Our linear regression line also shows as the number of acanthocephalan (thorny head worm) parasites in Emerita analoga increased, the swimming time increased by .0055 of a second.

Conclusions/Discussion
Our results supported our hypothesis that pertains to the increase in burrowing times with increasing amounts of parasites in the crab. If the Emerita analoga takes longer to burrow into the sand, the crab will be more at risk of being dislodged by swash velocities and swept away into the open ocean-where the crab becomes easy prey. If a sea otter eats an infected sand crab it will die of peritonitis. If there is a major die off of sea otters- a keystone species- because of acanthocephalan peritonitis, like there was for Surf Scooters-a type of bird-, there could be drastic changes in bio diversity in kelp forest. A decrease in population of sea otters will cause a rise in population of sea urchins. More kelp forest would be eaten with an increase of sea urchins, upsetting the balance of the kelp forest.

Summary Statement
Because of the negative effect of the acanthocephalan parasite on its definitive and dead end hosts, we sought to recognize whether the number of parasites would affect the swimming and burrowing times of Emerita analoga (pacific mole crab)

Help Received