CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)

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Project Number

S1909

Project Title

The Effect of Light and Diet on the Growth of the Sea Jelly Chrysaora colorata

Abstract

Objectives/Goals

The aim of this experiment was to determine the effect of light and diet on the growth of purple-striped jellies (Chrysaora colorata). Compared to other sea jelly species, the purple-striped jelly is one of the more difficult species to culture in captivity; captive jellies never reach their full potential of growth as they would in the wild. Therefore it was of interest to study and determine with which diet and light level a jelly would yield the highest average growth. It was hypothesized that the purple-striped jellies, Chrysaora colorata, exposed to the light and fed a diet of moon jelly ephyrae, baby brine shrimp, and rotifers would yield the greatest average growth when compared to the other experimental jellies.

Methods/Materials

Sixty purple-striped jellies were collected within 24 hours of strobilation to insure that jellies of the same size were used. Three tanks were each divided into a light and dark portion in which ten jellies were placed. Tank 1 was fed rotifers, Tank 2 was fed baby brine shrimp, and Tank 3 was fed a combination of rotifers, baby brine shrimp, and moon jelly ephyrae. The tanks were fed and cleaned daily, and once a week each jelly was measured using a depressed slide over a ruler. The jellies were measured to the nearest tenth of a millimeter and then the average for each compartment was calculated and recorded.

Results

It was found that the purple-striped jellies in Tank 1B, which were housed in the light and fed a diet of rotifers, had the highest average growth at the end of the seven-week span. The jellies in Tank 3B also grew; however, after the seven weeks, they still had a lower average growth than those in Tank 1B. All remaining jellies either shrank or died.

Conclusions/Discussion

The data did not fully support the hypothesis. The purple-striped jellies exposed to light in all tanks grew more, or in some cases shrank less, than the jellies in the corresponding dark compartments. The hypothesis, which stated that a varied diet would yield the best growth, was first derived from the implication that jellies are not limited to one food type in the wild. However, this part of the hypothesis was not supported because the varied diet of rotifers, baby brine shrimp, and moon jelly ephyrae did not yield the greatest growth. Determining under which conditions the jellies grow the most is important because this in turn could affect the survival of other coastal animals.

Summary Statement

The purpose of this experiment was to determine if various diets and exposure to light would affect the growth of the sea jelly Chrysaora colorata.

Help Received

Used facilities and equipment at Cabrillo Marine Aquarium under the supervision of Dr. Kiersten Darrow, curator.