



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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| Name(s) Lauren J. Lee | Project Number 33443 |
| Project Title The Effects of Pressure on the Spawning and Hatching Processes of Haliotis rufescens | |
| Abstract Objectives/Goals Haliotis sorenseni, or white abalone, are the first marine invertebrates to be listed as endangered due to overharvesting and reproductive failure. Many breeding techniques have been studied, but have thus far been proven unsuccessful. The objective of this study was to observe changes in the spawning and hatching processes of Haliotis rufescens, commonly known as red abalone. The main purpose of experimentation was to determine if pressure could help induce spawning and hatching of abalone species. If proven successful, because of similarities in their anatomies and reproductive behaviors, the same breeding technique could potentially be used on the white abalone. Methods/Materials Six adult red abalone specimens were divided into three groups of two. Each group was treated with pressure, desiccation, and no prior treatments to induce spawning. Upon spawning, the gametes of the same adult subjects were gathered and fertilized. Pressure was obtained through a pressure chamber in which the adults and fertilized eggs would be placed. Results were recorded the week after fertilization. Larvae were photographed and counted. Additionally, experimental adult test subjects were observed a week later to ensure health and eating habits. Results The results show that the pressure treated adult abalone had a greater spawning success rate in comparison to desiccation and no prior treatment groups. After performing a chi-square analysis for the larvae, however, the results show the larvae treated with pressure hatched at a delayed rate in comparison to the control group. Conclusions/Discussion The study shows pressure treatment can be used as a potential captive breeding technique that would optimize spawning success rates and ultimately could help to restore declining populations of threatened deep-water species including the endangered white abalone. | |
| Summary Statement My study is to discover a new induction treatment, pressure, to promote spawning and hatching of abalone species and apply the same techniques to restore an endangered species. | |
| Help Received Project overlooked by Dr. Kiersten Darrow and staff members at Cabrillo Marine Aquarium; mentored by Marissa Velarde; Parents helped with transportation to research facility; Mr. Peter Starodub was the research mentor and teacher | |