



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

Name(s) Dylan Kilby	Project Number J2109
Project Title What Are the Effects of Various Nitrogen Percentages on Daphnia's Heart Rate?	
Abstract Objectives The purpose of my project is to determine how the levels of nitrogen in the ocean affect Daphnia. I will be observing and calculating the rate of change in daphnia's heart rate submerged in different percentages of nitrogen-infused water. Everyone loves the ocean. However, could it be our careless actions are affecting our ocean and it s the precious ecosystem? After my investigation, I will discover if nitrogen affects daphnia s heart rate. I will then have a better understanding of how our careless actions are affecting our ocean and it s the precious ecosystem. Methods Raw nitrogen (or nitrogen solutions), live daphnia, A notebook (observations and heart rate count), binder, microscope, Petri dishes, triple beam balance, vials, timer, water Results The results of my investigation on exposing daphnia to different levels of nitrogen. When daphnia are exposed to 3 different levels of nitrogen solutions the daphnia's heart rate increases at 3 different average rates. 10% Nitrogen:When daphnia are placed in 10% nitrogen solutions, the heart rates average percentage rates, was 6.81% 20% Nitrogen:When daphnia are placed in 20% nitrogen solutions, the heart rates average percentage rates, was 28.91% 30% Nitrogen:When daphnia are placed in 30% nitrogen solutions, the heart rates average percentage rates, was 31.73% Conclusions The results showed the highest increase in heart rate came from the 30% nitrogen group, with an average increase of 84 beats per minute or 31.73%. The lowest average increase of heart rate came from the 10% nitrogen group, with an average increase of 8 beats per minute or 6.81%. As you can see by evaluating the statistics there is a significant increase in each groups average increase heart rate. In conclusion, I found through my investigation that when exposing daphnia to nitrogen their heart rates will increase. Therefore we should try to reduce the amount of nitrogen released in the ocean along with any other toxins to help benefit us and all aquatic life.	
Summary Statement My project replicates and simulates the negative effects of fertilizer runoff or our oceans ecosystem.	
Help Received My mom and dad provided help by driving me to get the materials I needed, along with proof reading spelling error in writing.	