



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Thomas D. Zumkeller</b>	<b>Project Number</b> <b>J2324</b>
<b>Project Title</b> <b>Investigating the Effects of Salinity on the Survival of Tigriopus californicus Copepods</b>	
<b>Objectives/Goals</b> Copepods are very important to the ocean's ecosystem. Copepods, a type of zooplankton, are at the bottom of the food chain but they are major food organisms needed for all types of marine life to survive. Climate change has affected the salinity level in our oceans. These changes have a direct effect on the survival of copepods which in turn threatens the survival of marine life. This project aims to determine which salinity level of water allows copepod populations to survive in the most.	
<b>Abstract</b> Copepods are very important to the ocean's ecosystem. Copepods, a type of zooplankton, are at the bottom of the food chain but they are major food organisms needed for all types of marine life to survive. Climate change has affected the salinity level in our oceans. These changes have a direct effect on the survival of copepods which in turn threatens the survival of marine life. This project aims to determine which salinity level of water allows copepod populations to survive in the most.	
<b>Methods/Materials</b> This study measured one variable, salinity in reverse osmosis water. Five various levels of salinity were measured and mixed with reverse osmosis water in five separate one gallon buckets. Seven petri dishes were filled from each of the five buckets. Each petri dish held 20 Tigriopus Californicus copepods. Every two days, two drops of phyto feast were added to each petri dish to feed the copepods. A magnifying glass was used daily to count and record the number of copepods surviving in each petri dish over 15 days.	
<b>Results</b> Results showed that salinity does have an effect on the survival of copepods. The highest survival rate of copepods was 45% in the salt water solution of 34 ppt. The lowest rate of survival at 15% was the 27 ppt salinity treatment. These results demonstrate that marine life in our oceans are at risk of dying due to the changes in our climate that alters its salinity levels.	
<b>Conclusions/Discussion</b> This data demonstrates that water salinity directly affects the survival of Tigriopus californicus copepods. Climate change has a great impact on the salinity in our oceans. The salinity levels are rising in some parts of the world and decreasing in others. While these changes threaten the survival of copepods, it is in turn threatening the existence of various species of marine life. These changes are causing harm to our ocean's fragile and complex ecosystem.	
<b>Summary Statement</b> I showed that the changing levels of salt in our oceans are destroying copepods which are a major food source for various species of marine life.	
<b>Help Received</b> Mrs. Diane Loflin and Mr. Carl Gong	