



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

Name(s) Nicholas Frutos	Project Number J0309
Project Title Rocking the Boat	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this science project is to determine what effect a pair of bilge keels provides for the stability of a boat in water.</p> <p>Methods Two 2-liter soda bottles, rubber cement, glass marbles (50-60), one wooden dowel (1 foot long), bathtub, stopwatch, double-sided adhesive tape. After constructing the boat, I attached two 5-centimeter bilge keels under the boat and placed the boat within a bathtub of water. After three trials, I cut one centimeter off of the 5-centimeter bilge keels and recorded the total time of the oscillations and number of oscillations the boat encountered.</p> <p>Results The longer the bilge keel length, the less total time of the oscillations and the less number of oscillations encountered by the boat.</p> <p>Conclusions Repeated trials demonstrate that longer bilge keels provide better stability for a boat in water.</p>	
Summary Statement My science project demonstrates that longer bilge keels provide better stability for a boat in water.	
Help Received I constructed the boat and performed the experimental trials myself.	