



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

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| Name(s) Romina Blanco-Sarmiento; Miranda Gutierrez; Sarah Honer | Project Number J1104 |
| Project Title Autonomous Marine Plastic Collection Robot | |
| <p style="text-align: center;">Abstract</p> <p>Objectives Our objective was to create a mechanism that could remove plastic from water. Our goal was to pick up 5 pieces of plastic from water in under a minute.</p> <p>Methods We custom fabricated our device using aluminum, stainless steel, rubber, and plastic. We tested the performance of the device in a bathtub. Various plastic objects were placed in front of the mechanism including a bottle cap, food wrapper, six-pack ring holder, spoon, and a plastic bag.</p> <p>Results We confirmed that the device could float with 2.42 pounds of collected material. Each of the five types of plastic tested was successfully captured. The performance of the first scoop design was able to collect a piece of plastic in 9.5 seconds. The best performing scoop took only 7.6 seconds to collect and deposit one piece of plastic, which is equivalent to 473 pieces of plastic per hour.</p> <p>Conclusions The conveyor belt our group designed is capable of collecting plastic from the surface of water. During our testing, we improved the performance of our device by changing the scoops on the conveyor belt that were used to pick up plastic. We came to the conclusion that scoops with less material picked up plastic better, as supported by the notable improvement in our test data.</p> | |
| Summary Statement Our group demonstrated a custom designed mechanism that collected plastic floating on water. | |
| Help Received Our group designed, built, and tested our prototype in consultation with a mechanical engineer. | |