



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Elizabeth M.B. Lindholm</b>	<b>Project Number</b> <b>J2312</b>
<b>Project Title</b> <b>Can I Have Some of That? Group Foraging in Coral Reef Fishes across Multiple Islands in the Western Caribbean</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Group foraging in coral reef fishes has been studied for many years, but the focus has mostly been on the benefits of participation to individual fish. Less is known about the effects of group foraging on species diversity in the communities where it occurs. This study focused on the relationship between the frequency of group foraging and species diversity at three Caribbean Islands (Grand Cayman, Roatan # Honduras, and Cozumel # Mexico). Because the species at each island were assumedly the same (all western Caribbean fishes), I hypothesized that species diversity and group foraging behavior would also be the same at each island, and that multi-species foraging behavior would be the most common.</p> <p><b>Methods/Materials</b> I used SCUBA to observe fishes for 10 minute periods in their natural habitats and recorded data on a waterproof slate and using a GoPro camera. Each of the survey sites at each island was within the same depth range (40-70 feet deep) and water temperature was the same (82-83°F). The data I recorded included fish species diversity, the number of foraging bouts for both single- and multi-species groups, and the identification of each fish that participated.</p> <p><b>Results</b> Total fish species diversity was higher at Cozumel (45 species) than at Roatan (28 species), but when I divided the totals by the number of surveys I conducted, to find the unit rate, the diversity was basically the same (Cozumel 13 species per survey &amp; Roatan 12.6 species per survey). The fish species participating in single- and multi-species groups were also mostly the same at each island. However, the rate at which the bouts occurred varied by reef site and by island. Unfortunately, no data were collected at Grand Cayman due to weather conditions (high surf and strong winds).</p> <p><b>Conclusions/Discussion</b> In conclusion, all of my hypotheses were confirmed. The fish species diversity did not differ much at each island, and multi-species foraging behavior was the most common. I am planning to go back to the Caribbean next year to four different islands in the eastern Caribbean to continue this project.</p>	
<b>Summary Statement</b> This project is about fish species diversity in relation to the amount of group foraging occurring at three western Caribbean Islands.	
<b>Help Received</b> I built my project within a bigger project my dad has been working on around the world. This project occurred as part of a week-long meeting aboard a cruise ship called Cruising For Conservation. I received help collecting data from my dad on one day when I was too sick to dive.	