



# CALIFORNIA SCIENCE & ENGINEERING FAIR

## 2018 PROJECT SUMMARY

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| Name(s)<br><b>Elizabeth M.B. Lindholm</b>  | Project Number<br><b>J2307</b>   |
| <b>Project Title</b><br><b>Focus On Me! Focal Species Participation in Group Foraging at Four Eastern Caribbean Islands</b>  |  |
| <b>Objectives/Goals</b><br>This study was conducted to expand the minute section of human knowledge that is dedicated to the ocean and marine life. Using the data collected, the behavioral patterns of tropical fish will be better understood. Most importantly, the more people are able to understand about the ocean and the marine life within it, the more they will be aware of their impact and willing to help.   | <b>Abstract</b><br>This study was conducted at four different coastal places in the eastern Caribbean - Grand Turk, Turks and Caicos; Half Moon Cay, Bahamas; San Juan, Puerto Rico; and St Thomas, US Virgin Islands. The data were collected through diving while utilizing basic SCUBA gear and waterproof paper and pencils. |
| <b>Results</b><br>There were three questions. The hypothesis for the first question, (Do all focal species have fish following them?), was that not all of the focal species will have "followers" because some of their natural habitats may not have other species occupying them or the fish that are present have no need of the extra resources. For the second question, (Which focal species participates the most in group foraging?), the hypothesis was, focal species that have a larger byproduct of their feeding will have more species of fish surrounding them due to the fact there will be more individual opportunities for each fish to save time and/or energy obtaining sustenance. This can also lead to a higher density of followers as well because the amount of leftover food will be able to support more fish, the hypothesis for the third question,(Which focal species have the highest density of fish surrounding them?). |  |
| <b>Conclusions/Discussion</b><br>All three hypotheses were supported with the proposed explanations probably being true as well. There are a couple possible reasons for the absence of followers in many cases. First, that specific focal animal could have been occupying a habitat where there were not any other fish that participate in group foraging. Another could be that that focal fish was not feeding at that moment, although there were some cases where they still had followers. The yellow goatfish were the most common focal species and they had the highest density of followers surrounding them. This may be due to both their larger size relative to other species, and the much larger size of their byproduct.   |  |
| <b>Summary Statement</b><br>This project aimed to explore the lesser known components of group foraging, specifically the participation of each focal species.   |  |
| <b>Help Received</b><br>None   |  |