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When do salps bloom? Engaging Primary students in underwater citizen science

Claudio Aguayo
Auckland University of technology
Claudio.aguayo@aut.ac.nz

Moira Decima
NIWA
moira.decima@niwa.co.nz

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Abstract:

When do Salps bloom? In this MBIE Curious Minds funded project we sought to address the growing need to involve people at a young age in learning involving active scientific research, to enhance societal understanding of science and technology and promote careers in STEM/STEAM to groups traditionally less represented. We engaged Leigh Primary School children with Salp research led by Dr Moira Decima from NIWA, and with citizen science through involvement in the co-design of a mobile app to report salp (marine invertebrate) sightings in coastal and underwater environments in our case study site: Goat Island Marine Reserve. The goal of the project was to engage students in cutting-edge marine science research and conservation; and in technological development through the co-design of a mobile app to report salps sightings in local coastal environments.

Salps constitute essential prey items for multiple species of fish (including commercially important species like Hoki and Oreos), and can play a major role in ocean biogeochemistry by enhancing carbon (CO₂) sequestration. In addition, the presence and extent of population blooms has increased in some parts of the world, presumably as a consequence of global warming, making these organisms sentinels of climate change. They are also unique in New Zealand because they seem to predictably bloom during the summer in coastal areas, yet this information is anecdotal and hence constituted a real opportunity to involve Leigh School to contribute to globally-relevant marine research. Important to local communities, the presence and abundance of these organisms affects tourist and local enjoyment of marine habitats, as low densities can result in attractive items for underwater experiences, but high densities render diving, fishing, boating and other water activities problematic.

Students participated in a series of face-to-face events, including two visits to the Goat Island Marine Discovery Centre (University of Auckland); vlogging with Dr Decima while leading the RV Tangaroa on the #SalpPOOP (Salp Particle expOrt and Oceanic Production) research voyage; snorkelling at Goat Island Marine Reserve; and learning presentations by Leigh School children during SeaWeek 2019, where students presented their learning, enjoyed a sausage BBQ, and tried out virtual reality experiences designed to learn about salp research and marine conservation in general. We also engaged with Goat Island Dive & Snorkel dive instructors and selected customers during the app co-design phase to gain app prototype feedback.

A mobile application (salpcount.nz) following a citizen science engagement framework that will allow data collection of salps in New Zealand was created with input from Leigh School students and selected Goat Island Dive & Snorkel customers and instructors, and with the engagement of multiple partners and through a hands-on educational program. Leigh School students were able to learn about an interesting marine biology topic relevant to them, while contributing to an application that will hopefully produce data through citizen science on the patterns and frequency of salp blooms around New Zealand. Here we report on this case study project highlighting what worked and what we learned, and some implications for future practice.