

TWEEZERHANDS AND GALAXAURA THE ALGAE

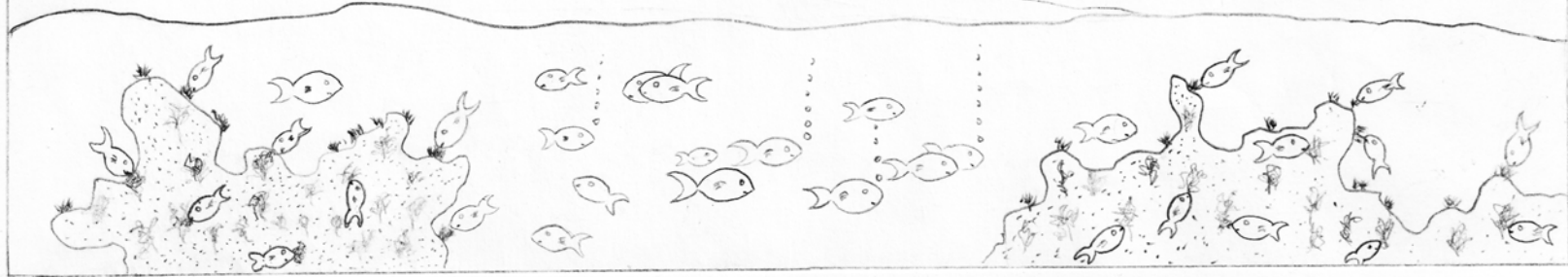
ONCE UPON A TIME, THE TWEEZERHANDS VISITED THE CORAL REEFS IN



WOW, THERE'S A TON OF HERBIVORES HERE! BUT HMM... I WONDER WHY ALGAE ARE STILL SO ABUNDANT.

MAYBE IT'S BECAUSE NUTRIENT SUPPLY IS HIGH SO THE ALGAE ARE ABLE TO OVERCOME HIGH HERBIVORY RATES.


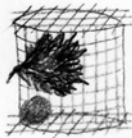

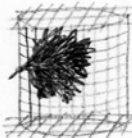
THAT'S TRUE, BUT DO YOU THINK THE ALGAE ITSELF HAS SOME DEFENSES IN RESPONSE TO HERBIVORY WHICH PREVENTS THEM FROM BEING GRAZED DOWN?



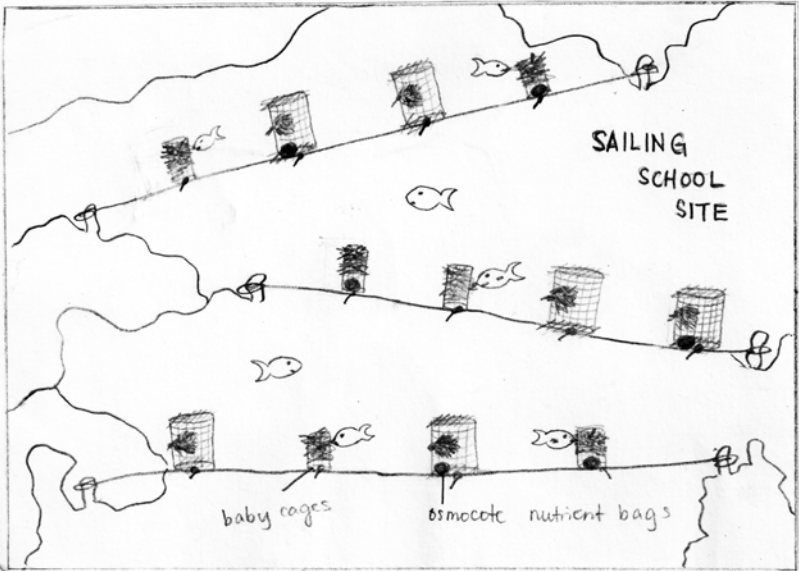
THE TWEEZERHANDS WERE PUZZLED. IN AN EFFORT TO UNDERSTAND THE DYNAMICS AND FACTORS THAT MAINTAIN CORAL REEFS IN AN ALGAL-DOMINATED STATE, THEY SET OUT TO WORK WITH THEIR LONG TIME FRIENDS, THE GALAXAURA FAMILY.

GUMP REEF - SIMULATED HERBIVORY EXPERIMENT



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|---|---|
| <p>① SMALLER CAGES TO PROTECT THALLUS WHILE EXPOSING TIPS TO HERBIVORES</p>  <p>(+) HERBIVORY (+) NUTRIENTS TREATMENT ①</p> | <p>③</p>  <p>(-) HERBIVORY (+) NUTRIENTS TREATMENT ③</p> |
| <p>②</p>  <p>(+) HERBIVORY (-) NUTRIENTS TREATMENT ②</p> | <p>④</p>  <p>(-) HERBIVORY (-) NUTRIENTS TREATMENT ④</p> |

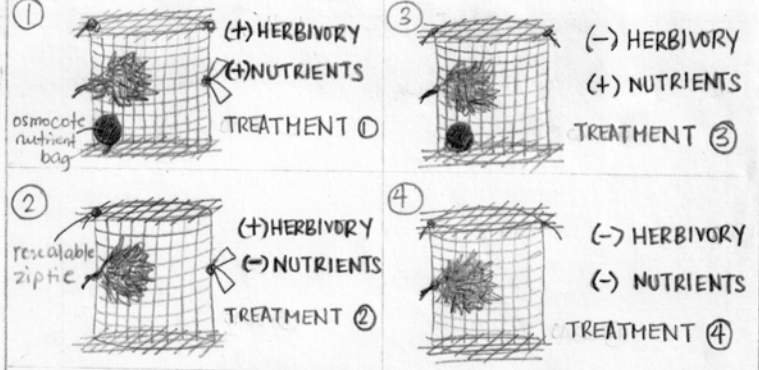
THEY PREPARED 40 BUNDLES OF GALAXAURA, ALLOCATING 10 BUNDLES FOR EACH OF 4 TREATMENTS AND DEPLOYED THEM AT THE SAILING SCHOOL



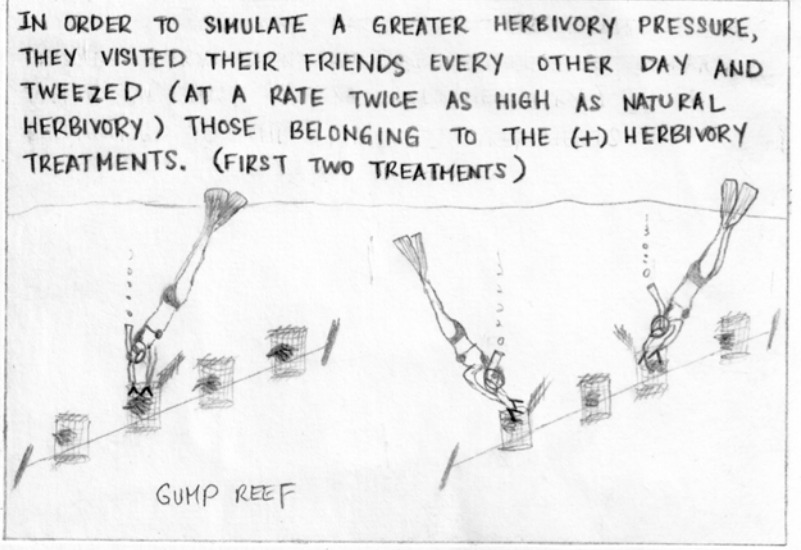
GUMP DOCK... (SUPPOSEDLY DOCK NAP TIME) THE TWEEZERHANDS THEN STARTED TO WONDER...

HOW WOULD GALAXAURA RESPOND IF HERBIVORY PRESSURE INCREASED BEYOND NORMAL HERBIVORY RATES? WOULD GALAXAURA UTILIZE A DEFENSE MECHANISM?

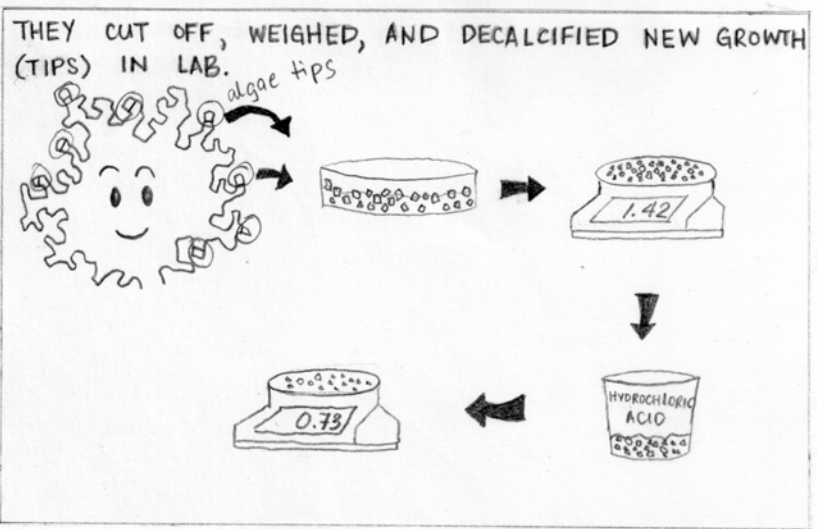




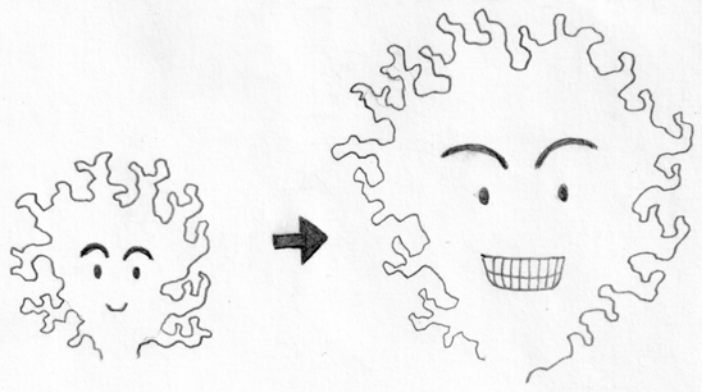
THEY PREPARED 40 BUNDLES OF GALAXAURA, ALLOCATING 10 BUNDLES FOR EACH OF 4 TREATMENTS AND DEPLOYED THEM ALONG GUMP REEF.



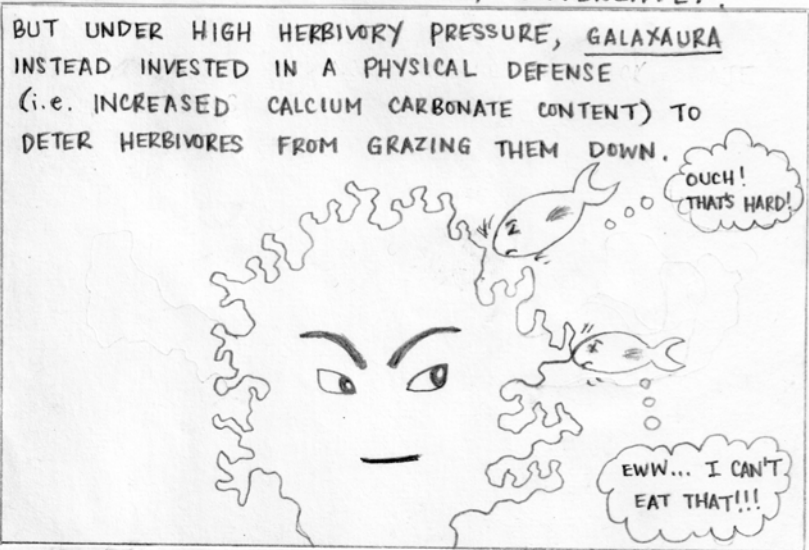
AFTER A PERIOD OF TIME FROM THE FIRST DAY THE EXPERIMENTS WERE DEPLOYED, 15 DAYS AT GUMP AND 11 DAYS AT SAILING SCHOOL, THEY COLLECTED THEIR SAMPLES AND CHECKED ON THEM IN LAB.



TO THEIR AMUSEMENT, THEY FOUND THAT NUTRIENTS DID NOT HAVE ANY SIGNIFICANT EFFECTS ON THEIR GALAXAURA FRIENDS! HOWEVER, GALAXAURA RESPONDED TO VARYING LEVELS OF HERBIVORY DIFFERENTLY!



UNDER LOW HERBIVORY PRESSURE, GALAXAURA ACTUALLY GREW TO COMPENSATE AND OVERCOME LOSS DUE TO HERBIVORY!



THE TWEEZERHANDS THEREFORE CONCLUDED THAT FOR THEIR GALAXAURA FRIENDS, INCREASING CALCIUM CARBONATE DEPOSITION (CALCIFICATION) IS A VERY COSTLY DEFENSE STRATEGY SO GALAXAURA ONLY INVESTED IN CALCIFICATION WHEN THE THREAT WAS HIGH. FURTHERMORE, UNDER HIGH HERBIVORY PRESSURE, PHYSICAL DEFENSE SERVES AS A STABILIZING MECHANISM THAT MAINTAINS AN ALGAL-DOMINATED STATE IN A REEF ECOSYSTEM.

THIS PROJECT WAS PERFORMED AT THE RICHARD GUMP RESEARCH STATION IN MOOREA BY THE TWEEZERHANDS (JERYL YU, KATIE LUBARSKY, TRISHELLE MORRIS) FOR THE UCLA MARINE BIOLOGY QUARTER, SPRING 2010.