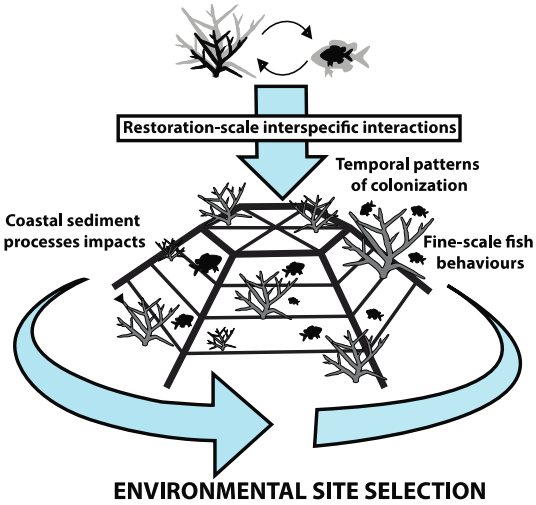
Coast to Coral Reefs Environmental Dynamics Lab

The **Coast to Coral Reefs Environmental Dynamics Lab** focuses on interdisciplinary solutions-based coral reef research. Specifically, we investigate the impacts of anthropogenic stressors on marine ecosystems' functioning and resilience across coastal interactions.

Key Focus Areas

Marine Conservation | Ecology | Coral Reefs | Sediments
Fish Functions | Restoration | Science Communication

Marine ecosystems are under pressure globally, resulting in dramatic losses in structure, function and biodiversity. Headlines of reef destruction, mass coral bleaching, degraded terrestrial stormwater runoff to coasts, and ocean pollution are prevalent in our oceans – as a result, our interdisciplinary research on anthropogenic threats and solutions is exceptionally relevant. **Our integration of terrestrial-coastal management efforts and restoration activities strongly support the UN Decade of Ocean Science for Sustainable Development (2021-2030).** The team is pioneering new ways to spatially and temporally quantify marine sediment, resiliency, and measures of coral reef health through field- and lab-based work.



Come check out our lab during the Skidmore BTCIS Celebration on October 18th, 2024, starting at 2:30PM in CIS 229!

MEET THE TEAM

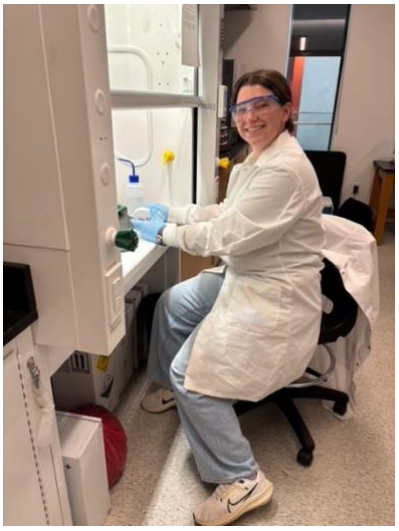
Emily Healy (Skidmore ESS '25)

Emily is combining art and coastal threats spatial analyses in her *ESS Independent Study* to make corals jump out of the textbook and analyse coastal threats spatially. Using resin and PLA plastic methods, and in collaboration with the Skidmore Idea Lab, she is 3D printing corals for educational applications. Her work will be integrated into ESS courses (e.g., Marine Ecology and Conservation), and implemented in community outreach events, and with coral restoration agencies for out-planting on natural reefs. Visualizing coral reefs and anthropogenic stressors is a continual challenge – Emily is tackling this by mapping patterns of sediment stress spatially via GIS in critical coral reef regions around the globe.

Fun facts: *Owns "fish flops" and loves the movie Mamma Mia!.*

Liv Mollo (Skidmore ESS '26)

At the ground sediment level, Liv's *ESS Independent Study* investigates the relationships between turf algae length with sediment mass, organic/inorganic loads, and size classes. As reef benthos consists of ~70% turf algae, this critical substrate has the ability to trap terrestrial and oceanic sediments, causing a decrease in critical fish and coral processes. You'll see Liv in the lab, fondly processing >80 sediment samples from Puerto Rico and Florida, rinsing, drying, weighing, and more. Liv can't get enough of this ocean sediment/dirt!

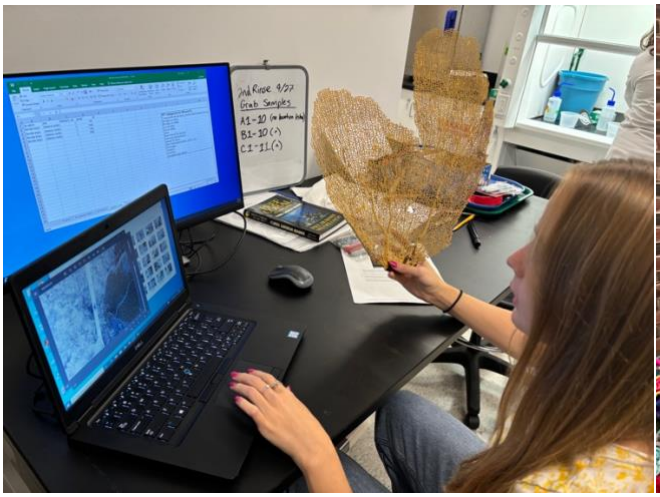


Fun facts: *Has broken 4 bones (ouch!) and loves the movie Finding Nemo.*

Cate Cochran (Skidmore ESS '27)

Cate's *ESS Independent Study* research passion is thinking about what is happening to corals at the scale of a 200m^2 restoration site, in terms of the benthic community analysis. Coral reefs are known for…well corals, right? By looking at a lot of images…2800 to be exact…she is recording something that scientists have been very concerned about in recent decades – some reefs consist of <1% corals! Cate will complete a series of species diversity and community composition analyses for Caribbean reefs.

Fun fact: *Lived in 3 different states and loves the movie Journey to the Center of the Earth.*



Dr. Tory Chase (ESS)

Tory currently wears the hat of a "marine environmental ecologist" and teaches interdisciplinary courses in Skidmore's Environmental Studies and Sciences Department. He is a recent co-PI of a State of Florida Department of Environmental Protection – Coral Protection and Restoration Program grant and some of his team's projects are focused on turf algae sediments and coral cover on restoration sites in the Florida Keys.

Fun fact: *Wanted to be Indiana Jones when he was young (…and still does…).*

For more information about the team, check out the ***ESS Skidmore web pages:***
https://www.skidmore.edu/environmental_studies/faculty/chase.php
https://rss.com/podcasts/wheretheyarenowelonunibio/1584831/

CURRENT EVENTS

Fieldwork in the Florida Keys

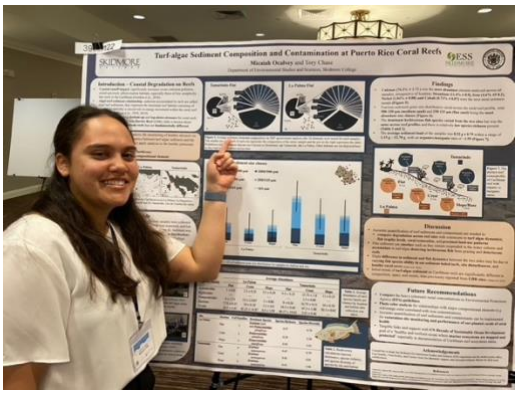
Part of an international team, Dr. Chase lead a research expedition to the Florida Keys this previous summer, investigating the benthic health of key NOAA: Mission Iconic Reef coral restoration sites.

Lab Trip to Capital Coral

This fall the lab team visited *Capital Coral Research and Restoration* https://capitalcoral.com/) in Albany to check out their research and coral aquaculture/ husbandry aquaria, to continue and to develop research collaboration opportunities, and to source live corals for a potential ESS *Coral Reef Dynamics course*.

RECENT SCIENCE COMMUNICATIONS

- Elon University Biology Department Alumni Podcast, Where are they now and where will we follow: "S02E03: From the classroom to coral reefs", July 2024
- Chase TJ, Hein MYS, Hoogenboom MO (2024) Colony occupation by specialized coral-dwelling damselfish is consistent over days and months. *Environmental biology of Fishes* doi:10.1007/s10641-024-01571-w
- Ocalvey M, TJ Chase (2024) Turf-algae sediment composition and contamination on Puerto Rico coral reefs (Poster) 52nd Benthic Ecology Meeting Conference, Charleston, SC April 10-14, 2024
- Chase TJ, Johnson ER, Bellwood DR, Tebbett SB (2024) Spatial comparison of coral reef sediments: contaminants and land-use perspectives (Oral Presentation) 52nd Benthic Ecology Meeting Conference, Charleston, SC April 10-14, 2024



Micaiah Ocalvey (Skidmore ESS '24) presenting her year-long Independent Study Research at the 52nd Benthic Ecology Meeting Conference in April 2024