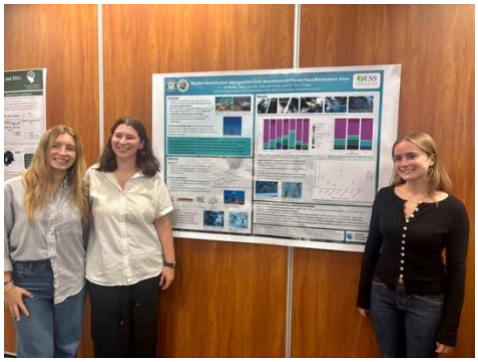
Coast to Coral Reefs Environmental Dynamics Lab (CCRED) SUMMER & FALL 2025 CHRONICLES

The **Coast to Coral Reefs Environmental Dynamics Lab** focuses on interdisciplinary solutions-based marine research. Specifically, we investigate the impacts of anthropogenic stressors on marine ecosystems' function and resilience across coastal interactions and habitats, especially coral reefs. Science education and communication are part of our core, as we are completing multifaceted fieldwork, lab work, GIS projects, and outreach, as well as developing numerous marine science pedagogies related to aquarium maintenance, virtual reality (VR), marine art, and other exciting investigations. And we have a new logo!

SUMMER RECAP

A summer of sediments, statistics, synthesis, surge days, and spatial analysis! Our three coral musketeers, **Hannah**, **Cate**, and **Liv**, completed the rigorous 5-week Faculty Student Summer Research Program (FSSR) – logging a combined 360 hours in the lab, finalising sediment processing, prepping heavy metal analyses, setting up the aquarium, and more! Each presented a research poster at the FSSR Symposium:

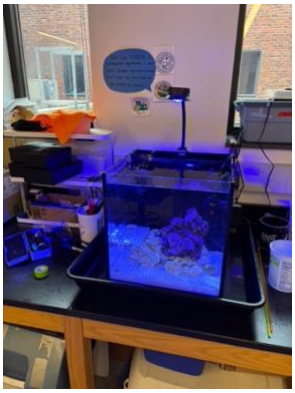
- *Benthic identification and juvenile coral abundance at Florida Keys restoration sites* – Liv Mollo
- *Sediment and algae turf dynamics at Florida Keys and Puerto Rico restoration sites* – Hannah Fetzer
- *Restoration under pressure: algae turfs, sediment, heavy metals, and land-use dynamics in the Florida Keys* – Cate Cochran



We also said, "so long and thanks for all the fishes" to **Emily Healy** (Skidmore '25), who graduated from ESS summa cum laude – Congrats Emily, we will miss you! She is currently working at Longview Logging in Vermont (boo… not an ocean job, but we are still proud of you!).

This summer, TSIP and CCRED summer members participated in multiple R workshops designed to improve their data analysis and visualisation skills. Led by R rockstars **Morgan**, **Kelsey**, and **Tory**, students were guided through the process of analysing datasets and transforming them into clear, effective graphs. CCRED members improved their coding abilities and learned that with the right tools and a LOT of patience, even the most frustrating error messages can be solved! Check out their R skills on their top-notch summer research posters, displayed in the CIS hallways!

CURRENT EVENTS



Aquarium Grand Opening!

Check out our tropical 15-gallon saltwater aquarium filled with live rock, corals, and other invertebrate creatures. Lab members will be responsible for the weekly maintenance, science communication, and the design of educational lesson plans related to this interactive exhibit. Dr Chase always wanted to be that cool elementary school teacher, with a pet in the back of the classroom – and now, through the begging of his students, ESS finally has one!

Marine Virtual Reality

CCRED is making sure the plight of the ocean is at the forefront of the global environmental education conversation - no longer "out of sight, out of mind." Recently, students dived with sea lions in towering kelp forests in the Channel Islands National Park, California, and engaged in a coral restoration activity along the Florida Keys - all through a virtual reality underwater dive! Who knew the ocean could fit into an ESS class in upstate NY?! Come visit us as we try out new experiences and facilitate VR integration into *ES 252 Marine Ecology and Conservation*.

Students Take the Lead with SciComm

At CCRED, our student researchers aren't just learning and doing science - they're practising how to talk about it, too! From rapid-fire research updates and timed snappy elevator pitches, to polished posters, they're sharpening their communication of science. Every fortnight, a different student guides the lab through a scientific publication they've picked – from algae turfs, reef sediments, marine science education, sponge functions, or even heavy metal impacts. Together, the group evaluates the findings, connects the dots to their own research, identifies knowledge gaps, and brainstorms how these science discoveries can fuel CCRED's outreach and conservation goals.

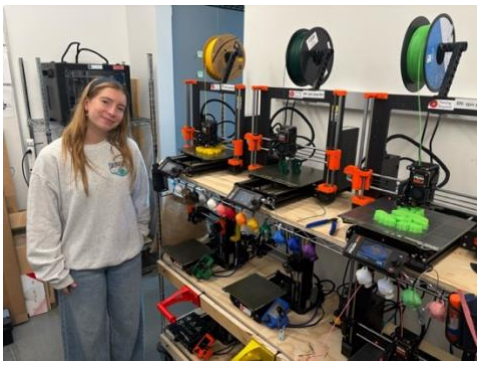
CCRED TEAM MEMBERS – Fall 2025

Liv Mollo (Skidmore ESS '26) *continuing CCRED member*

Liv's ESS Independent Study this semester will largely focus on heavy metal data analysis and the investigation of potential impacts of the presence of specific heavy metals on coral growth and abundance at crucial Florida Keys restoration sites. Liv is living out their *Chasing Coral* dreams and will continue to measure nutrient concentrations and clean/care for CCRED's saltwater coral aquarium. Still thinking about the amazing summer, Liv will continue analyzing previously gathered data using R, including algae turf density, coral cover, and juvenile abundance.

Fun facts: *Got scuba-certified last semester, conducted research in coral nurseries in Panama, and loves the movie "The Birdcage".*

Hannah Fetzer (Skidmore ESS '27) *continuing CCRED member*

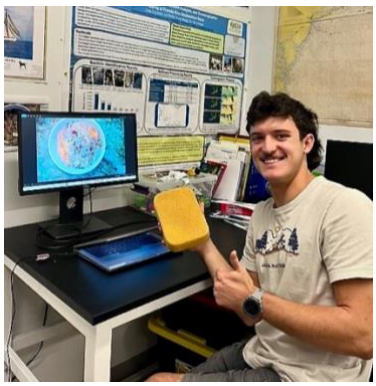


This semester, Hannah, our resident "educator-researcher-and-artist-in-residence" is focusing on finding the most fun and engaging ways to show the rest of Skidmore the importance of coral reefs. The construction of a coral restoration tree made from PVC pipe and 3-D printed coral fragments has been underway while she works on incorporating the saltwater aquarium, board games, and VR into robust lesson plans. She will also continue to analyse the role of algae turf density at the seven Mission: Iconic Reefs in the Florida Keys.

Fun facts: *Was able to feed and pet Galapagos turtles over the summer at the Turtle Conservancy in Ojai, California, and can be found giving out Tractor Beverage drinks around campus!*

Tomas Ruiz (Skidmore ESS '26)

Tomas, a new member of the CCRED team, will initially be temporarily championing the role of "voice of the oceans". As part of this work, he is completing a list of marine petitions and a platform for education to help inspire change, and share with the public as an outreach resource for students eager to make a difference in ocean conservation. Additionally, Tomas is diving into research with sponges, but no, not the kind we use to clean the lab! His project focuses on uncovering hidden sponge abundance by analysing and tracing benthic images for sponge abundance at Florida coral restoration sites – this is critical for often overlooked sponge-algal turf dynamics, which play an important role, especially on degraded reefs.



Fun facts: *Can ride a unicycle and…speaking of "diving into research" – Tomas does both types of "diving" – from a high board in the pool and with SCUBA.*

Sophie Zuckman (Skidmore ESS '26)

The last *Fall Fantastic Four* member is Sophie, who is complex…so complex that she is bringing reef benthic complexity data to life through statistical analysis and visualisation across the Florida Keys Mission: Iconic Reefs. She's also teaming up with Tomas to study sponge abundance, and working on perfecting the sponge investigation laboratory protocol, which currently needs some work, as it is full of pores…! On top of that, she's putting her stellar GIS skills to use and mapping marine spatial dynamics across the Florida Keys, and building a database of marine science organisations in the northeastern USA. This will be showcased as an interactive ArcGIS StoryMap, giving educators, researchers, students, and organisations resources to discover and collaborate with marine centres near them.

Fun facts: *Worked as a mountain guide and is currently in the process of getting Luxembourgish citizenship.*

Dougie (Skidmore ESS '26, Guide Dog Foundation)
Dougie is a golden retriever and a guide dog-in-training, and he is being raised by Sophie and Liv. Dougie will be spending most of the semester sleeping, looking cute, and boosting lab morale!

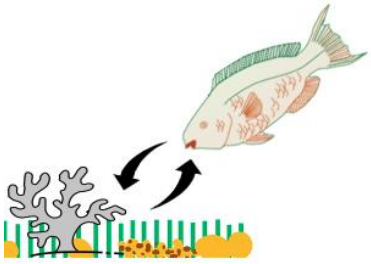
Fun facts: *Loves peanut butter and Cheez Whiz (interesting tastes...) and is a champion napper.*

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, including *Marine Ecology and Conservation*, *ESS Capstone*, and *Field Studies in Environmental Science*. In the classroom, Tory encourages students to think critically about the connections between humans and the marine world. While doing research, they gain hands-on experience studying coastal and underwater environments.

Fun fact: *His marine spirit animal is an octopus, as he is constantly trying to do eight different things at a time, wishes he were in an autumn-themed Hallmark movie, and has made a pledge to bike to work at least 3 days a week, this entire fall semester.*

CCRED MEMBERS AT LARGE

- Cate Cochran (study abroad Ecuador/Morocco/Nepal Fall 2025)
- Luke Kretschman (study abroad Australia Fall 2025)
- Emily Healy (class of 2025)
- Carolyn Scott (class of 2024)
- Micaiah Ocalvey (class of 2024)
- Nicole Messerlian (NSU Master's candidate)
- Manuel Ploner (NSU Master's candidate)



RECENT SCIENCE OUTPUTS, AWARDS, AND COMMUNICATIONS

- Student Opportunity Award **- Kretschman, L (2025)** Marine Educational Design
- Faculty Development Award – **Chase T (2025)** Comparison of heavy metal biomagnification ascending reef tropic levels in the Caribbean Sea
- Faculty Student Summer Research Program – **Chase, T and Mollo, L (2025)** Refocusing Florida coral reef restoration site analyses: sediment dynamics, benthic communities, and education extensions.
- Carmignani A, Barneche D, Skrzypek G, Meeken, M, Shantz A, **Chase T**, Brooker R **(2025)** The relationships between nutrient supply from resident fishes and the growth, condition and thermal resilience of corals. *Coral Reefs* https://doi.org/10.1007/s00338-025-02680-3
- BioTIME consortium (including **Chase TJ**) **(2025)** Bio-Time 2.0: Expanding and improving a database of biodiversity time series. *Global Ecology and Biogeography* doi.org/10.1111/geb.70003
- Stier AC, **Chase TJ,** Osenberg CW **(2025)** Fish services to corals: A review of how coral-associated fishes benefit corals. *Coral Reefs* https://doi.org/10.1007/s00338-025-02647-4

><(((º> Stay tuned for more lab work, fieldwork, and research updates! ><(((º>

- ESS Instagram: @northwoodess
- ESS Newsletter: https://www.skidmore.edu/environmental_studies/newsletter/index.php
- CIS 2nd floor hallway student research posters
- CIS ESS video screen announcements

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

CCRED Fall 2025 Group Photo: Our science community thrives through teamwork, and we're appreciative of these top student researchers engaged in our ongoing coral ecology investigations. Who says collaborative lab work can't have "pawsitive" energy?