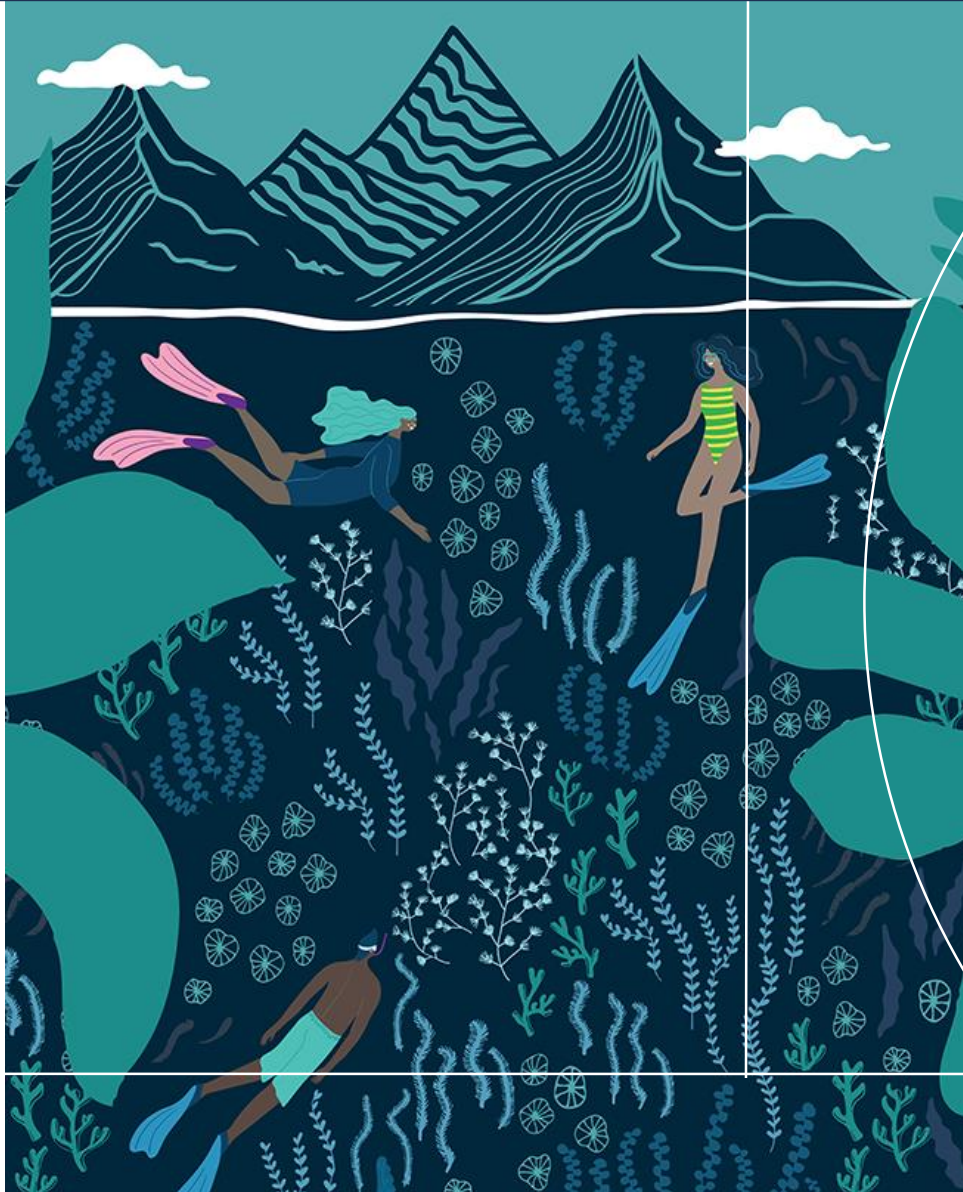




Communication and Dissemination

Meet The Team

- ✓ Joint conference presentation at the SC EPSCoR EOD Conference in 2022 - *"A picture is worth a thousand words, and so is good design"*



Elisa Bryan,
Communication Specialist



Daniel Mele,
Communication Assistant



Goals And Objectives

Virgin Islands EPSCoR

About Us

Areas of Research

Workforce Development

Highlights

Current Events

Contact Us

Watershed Terrestrial Monitoring & Land Use

The Watershed and Land Use research area seeks to understand how human activity on land can affect places downstream, like our coral reefs. This work focuses on understanding how these processes work in the Virgin Islands so that we can do a better job of protecting both our home on the land and in the sea.

CONTENT LINKS

Watersheds in the USVI / Scientific Solutions / Additional Reading / David Henderson / Project Team

ECOSYSTEM RESTORATION

In The U.S. Virgin Islands

MANROVIE RESTORATION

Mangroves are threatened by global and local stressors. By engaging students and community members in mangrove restoration, we are taking steps to ensure a future for mangroves in the territory.

CORAL RESTORATION

Caribbean corals, the ecosystem engineers of coral reefs, have experienced enormous declines in recent decades. Coral restoration teams are researching best practices for growing and transplanting resilient corals. Student interns are trained and become vital partners in the restoration process.

EMERGING AREAS OF RESEARCH

Seagrass Ecology

Seagrasses really eat the seagrass. This contradicts the commonly cited "energy release hypothesis" that has support when explaining other invasions, such as that of lionfish.

When testing release from natural enemies, it is important to include as many representative herbivores from the invaded area as possible. This proved challenging for some of the larger sea urchins such as the West Indian Sea Egg (*Tyrannopsis carolinensis*) and the green sea urchin (*Littoridina carolinensis*), whose abundances have not recovered after herbivores Iruya and Maria in St. Thomas. Unsurprisingly, a massive die-off of the Caribbean Long-Spined Urchin (*Diadema antillarum*) began as experiments were being conducted with these animals and our understanding of the relationships between that species and the invading seagrass remains incomplete.

Focusing on the herbivores that were most abundant, particularly two species of herbivorous crabs and the rock-boring urchin (*Echinometra lucunter*), it was discovered that those animals can consume invasive seagrass at similar rates as some native grasses. Measurements of various nutrients also suggested that the nutritional profile of the invader does not differ substantially from that of readily eaten native seagrass species. It is unknown, however, if long-term consumption of the invader will carry a cost for Caribbean herbivores. Such investigations remain for the future.

Seagrass beds are nursery grounds for commercially important fish and invertebrates and also serve as buffers for wave action that reduce coastal erosion. Some of these linkages are being explored by the research initiatives led by Drs. Seneeth and Guarnieri.

JENDAVIY ANTONIO, 2023 MMES GRADUATE

Research on invasive ecology is an extremely important component of understanding the health and productivity of an ecosystem. Seagrasses are flowering plants that form extensive meadows underwater. These meadows provide many essential ecosystem services that humans and other organisms benefit from.

My master's thesis research focused on determining the palatability of the invasive seagrass, *Halodule wrightii*, to abundant local invertebrates. The animals that were used are known to feed on seagrasses and contribute to the community structure of seagrass beds. I compared the difference in consumption of the invasive *Halodule* to that of three native seagrasses, *Posidonia oceanica*, *Syringodium filiforme*, and *Halodule wrightii*.

The results of the study revealed that *Halodule* is consumed by numerous species of small crabs and rock-boring sea urchins at similar rates as native seagrass species.

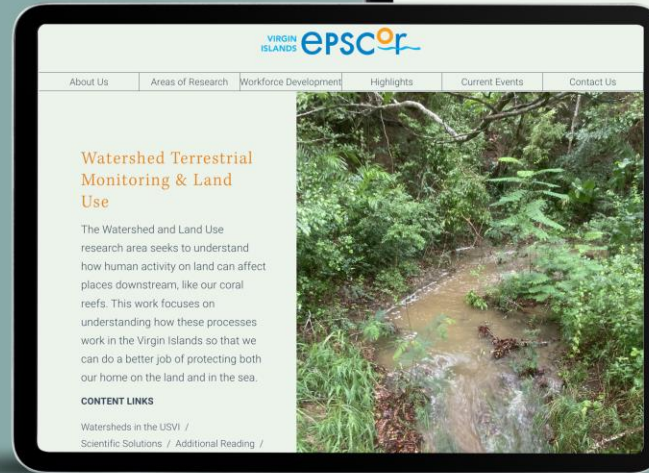
It was very fulfilling to conduct research that helps to answer critical knowledge gaps about this invasive seagrass and its relationship with our local marine ecosystem. It was a pleasure to have successfully completed my master's degree of Master and Environmental Science at the University of the Virgin Islands in Dr. Edwin Cruz-Rivera's lab. I am also very grateful for EPSCoR's support in conducting this research.

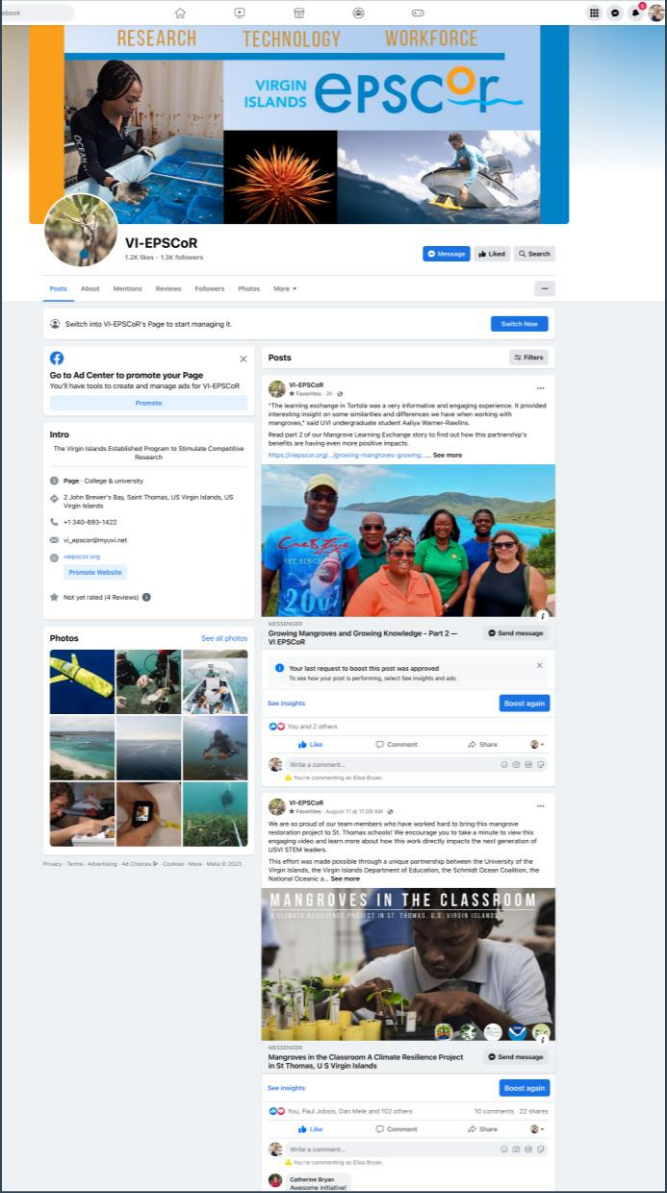


Outcomes - Website

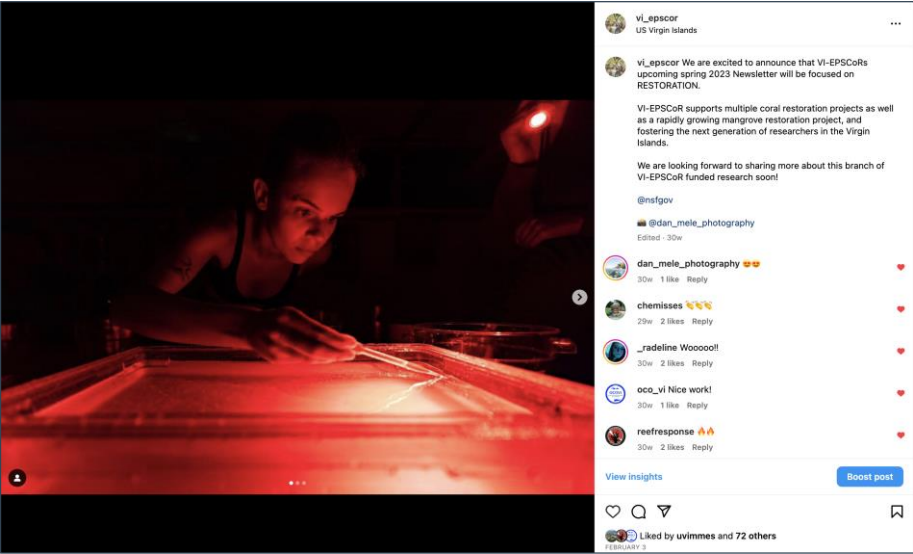
- ✓ 34K Website Visitors since January 1, 2020 with numbers increasing by thousands each year
- ✓ Completed: Advanced CSS training program
- ✓ Completed: Website upgrade

viepscor.org





Outcome - Social Media



118,000 Social Media Engagements

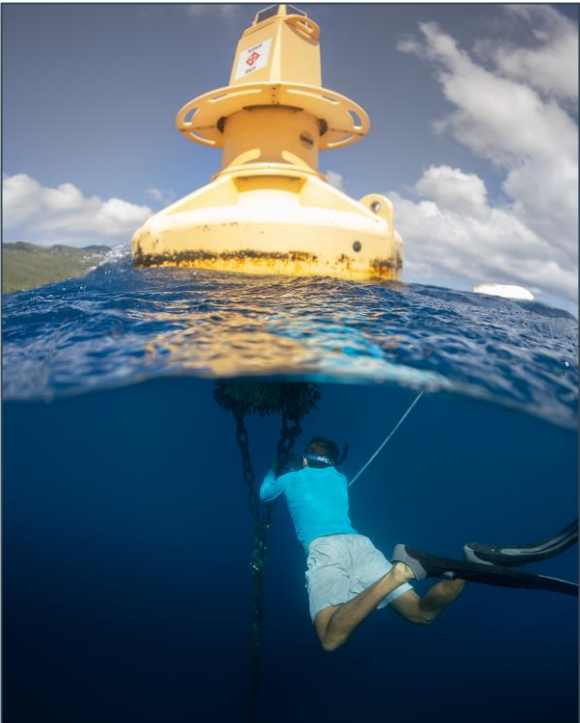
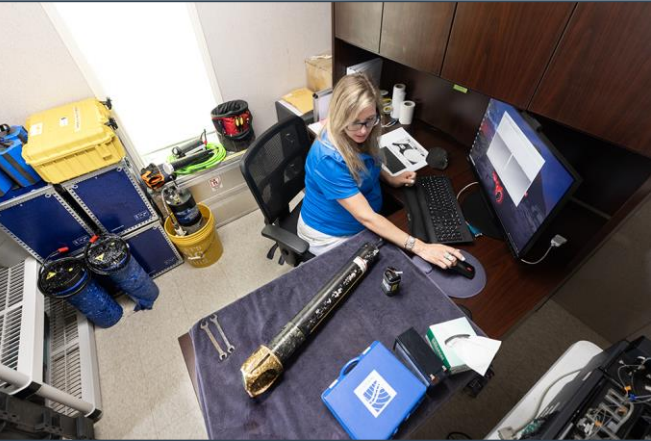
11 YouTube Videos

4,256 Video Views



Outcomes – Blog posts

Blog posts are stronger and more authentic with post-specific photo shoots.





Virgin Islands Established Program to Stimulate Competitive Research

RESEARCH AREAS NEWS HIGHLIGHTS CONTACT 2023 MARINE DEBRIS CLEANUPS

What You Need To Know About Oceanography In The USVI

July 29, 2022

70% of the Earth's surface is covered by oceans and, as the US Virgin Islands are mere specks in the northeastern Caribbean, we are directly impacted by its influence. Oceanography is the study of the Earth's oceans and is central to understanding the mysteries of its vast yet largely uncharted depths.

Only 5 percent of the oceans have been explored but we already know that their impact upon the earth is significant. On a global scale, oceanic processes like the continuous exchanges of heat, moisture, and carbon with the atmosphere influence the earth's temperature and weather. Most rainfall is tied to these processes and, as the USVI is in the midst of a long-term drought, we know that a number of these oceanic dynamics are exacerbating the drought.

On a local scale, ocean currents and water temperatures have a direct effect upon biological processes such as coral recruitment, coral bleaching and fish spawning. Currents also influence the dispersal of marine animals in their egg or larval stages, as well as the dispersal of their food supply and nutrients. These same currents can help determine where larvae, eggs and even coral polyps will settle and grow. Life in the sea is inextricably linked to these ocean processes.

Oceanic Data Supports Coral Research

One of the functions of the Ridge to Reef (R2R) Oceanography research area is to provide data to the [Coral Reef Resilience Team](#).

Coral bleaching and thermal stress are ongoing concerns, and these events are completely dependent upon the ocean's (and therefore, the earth's) climate. One example of the partnership between these research areas is that by using data collected from oceanographic equipment and insights from ocean models, coral specialists can often predict where and when a coral bleaching event may occur. The ability to anticipate coral bleaching events allows researchers to closely study affected and less affected areas and identify which corals survive. These survivors may be more resistant to warmer sea temperatures. Surviving corals can be earmarked for coral restoration projects which aim to create a more robust collection of corals capable of surviving a warming planet.



Above, a lone Elkhorn coral survivor at Stumpy Bay, St. Thomas amongst an entire reef of dead Elkhorn colonies. Since this specimen has survived all previous bleaching, disease, hurricanes, and other disturbances, researchers are using fragments of this coral to propagate it and grow it onto other reefs. Photo: Dan Mele

Above, this Boulder Brain Coral in Brewers Bay, St. Thomas was badly affected during the 2019 mass bleaching event. Hot ocean temperatures can greatly stress a coral and sometimes but not always lead to death by starvation. photo credit Dan Mele

Latest Posts

Growing Mangroves And Growing Knowledge - Part 2
Aug 30, 2023

Growing Mangroves And Growing Knowledge - Part 1
Aug 7, 2023

What You Need To Know About Oceanography In The USVI
Jul 29, 2022

Do You Know What's In The USVI Red Hook Mangroves?
Jul 21, 2021

The Tide Is Turning On Marine Debris In The Territory
Sep 28, 2020

There Are Seven New Masters Of Marine And Environmental Studies Graduates. Join Us In Celebrating Them!
May 12, 2020

VI-ISERP Teacher Featured In Distance Learning Webinar
Apr 13, 2020

The Baird Foundation Donates \$120,000 Dollars To UVI For Endangered Sea Turtle Research

Outcomes – YouTube Videos

11 YouTube videos with 4,256 views

Recent Videos



- 1,157 views on Instagram
- 200 views on Facebook
- 353 views on YouTube



- 2,035 views on Instagram
- 897 views on YouTube

Project Outcomes – Newsletters

Three R2R newsletters available digitally and in print



ECOSYSTEM RESTORATION

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MANGROVE RESTORATION

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SUMMER 2023

Spring | 2022

VIRGIN ISLANDS **epscor**

“Education is the most powerful weapon you can use to change the world”

– Nelson Mandela

**RIDGE
TO REEF**

Summer 2021

A National Science **VIRGIN ISLANDS epsco** Foundation Program

Education & Workforce Development

The Education and Workforce Development Team focuses on providing STEM training to both formal and informal sectors in the USVI. This work is critical in the development of an empowered STEM workforce for the future.

Formal Learning occurs on Teacher Professional Development, Secondary and Research Infrastructure, and Undergraduate Enrollment.

Informal Learning occurs on Enrollment of science skills and programs and Community outreach events.



DR. LORRAINE CUMMINGS FOR LEAD RESEARCHER, STEM EDUCATION RESEARCH, AND STEM INNOVATION INITIATIVE	DR. MICHAEL EDWARDS RESEARCHER UNIVERSITY RESEARCH AND PROFESSIONAL DEVELOPMENT	JEROME EUSTY FOR LEAD RESEARCHER, RESEARCH, LEARNING, COMMUNITY DEVELOPMENT SPECIALIST
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1997 Wetland Inventory
 The first wetland inventory was completed in 1997 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

2000 Wetland Inventory
 The second wetland inventory was completed in 2000 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

2003 Wetland Inventory
 The third wetland inventory was completed in 2003 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

2006 Wetland Inventory
 The fourth wetland inventory was completed in 2006 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

2009 Wetland Inventory
 The fifth wetland inventory was completed in 2009 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

Movement Ecology

The Invasive Species

In the summer of 2010, Dr. James H. Brown and his team conducted a study on the movement ecology of the invasive species, the Asian tiger mosquito (*Aedes albopictus*). The study was conducted in the wetlands of the Florida Everglades, which are home to a large number of native species, including the American alligator (*Alligator mississippiensis*).

The study found that the Asian tiger mosquito is a highly mobile species, capable of traveling long distances between wetlands. This is in contrast to the native species, which are typically more sedentary. The study also found that the Asian tiger mosquito is a highly adaptable species, capable of surviving in a wide range of environments, including wetlands, urban areas, and rural areas.

The study has important implications for the management of the Asian tiger mosquito, which is a major public health concern in many parts of the world. By understanding the movement ecology of this species, researchers can develop more effective control strategies.



1970s Wetland Inventory
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2010s Wetland Inventory
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2020s Wetland Inventory
 The sixth wetland inventory was completed in 2020 and was the first to include a detailed map of the wetlands. The map was used to identify wetlands and to determine the types of wetlands present. The map was also used to determine the types of wetlands present in the area.

[illegible]

Ridge to Reef Research

The ability of coral ridges and outer reefs to buffer and store dissolved silica, nutrients and sediment runoff has been demonstrated previously. But understanding how the function of the various biotic and abiotic components of the ridge and reef systems and how they interact to buffer runoff of sediment and nutrients and to store sediment and silica is still poorly understood. Ridge to Reef Research is a multi-agency, multi-disciplinary project that will address these issues. The project is led by the U.S. Geological Survey, with participation from the U.S. Environmental Protection Agency and the U.S. National Science Foundation. The project is funded by the U.S. Environmental Protection Agency and the U.S. National Science Foundation.

Project Goals: The project will address the following goals: 1) Understand the role of coral ridges and outer reefs in buffering runoff of sediment and nutrients and in storing sediment and silica. 2) Understand the role of the various biotic and abiotic components of the ridge and reef systems in buffering runoff of sediment and nutrients and in storing sediment and silica. 3) Understand the interactions between the various components of the ridge and reef systems in buffering runoff of sediment and nutrients and in storing sediment and silica.

Project Objectives: The project will achieve the following objectives: 1) Develop a conceptual model of the role of coral ridges and outer reefs in buffering runoff of sediment and nutrients and in storing sediment and silica. 2) Develop a research plan to test the conceptual model. 3) Conduct field and laboratory studies to test the research plan. 4) Synthesize the results of the field and laboratory studies to develop a final report.

Project Timeline: The project will run from 2000 to 2005. The project will be managed by the U.S. Geological Survey, with participation from the U.S. Environmental Protection Agency and the U.S. National Science Foundation.

Project Contacts: For more information about the project, please contact the project manager, [Name], at [Phone Number] or [Email Address].

Education & Workforce Development

VAPPCo's Education and Workforce Development team is preparing both students and employers for the jobs of the future in the electric industries of the U.S. Through hands-on training, students learn the skills and knowledge needed to enter the workforce, while employers benefit from the specialized training of their future employees.

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Source: *Electric Industry in a 21st Century*, 2014, Electric Power Research Institute

Sea Turtles in Grenada



Project Accomplishments

- EPSCoR's video highlighting UVI's sea turtle research in Grenada was accepted into two film festivals
- Dan was a finalist out of over 300 applicants to the Jackson Wild Media Lab. He was invited to join the crew team, which is where he is now during this presentation
- Dan was accepted into the International League of Conservation Photographers emerging fellowship.

Dan Mele

2023 Wildlife Conservation Film Festival Selection

2023 Science Film Festival Selection

Finalist – Jackson Wild Media Lab

ILCP Emerging League Program



INTERNATIONAL LEAGUE OF
CONSERVATION
PHOTOGRAPHERS

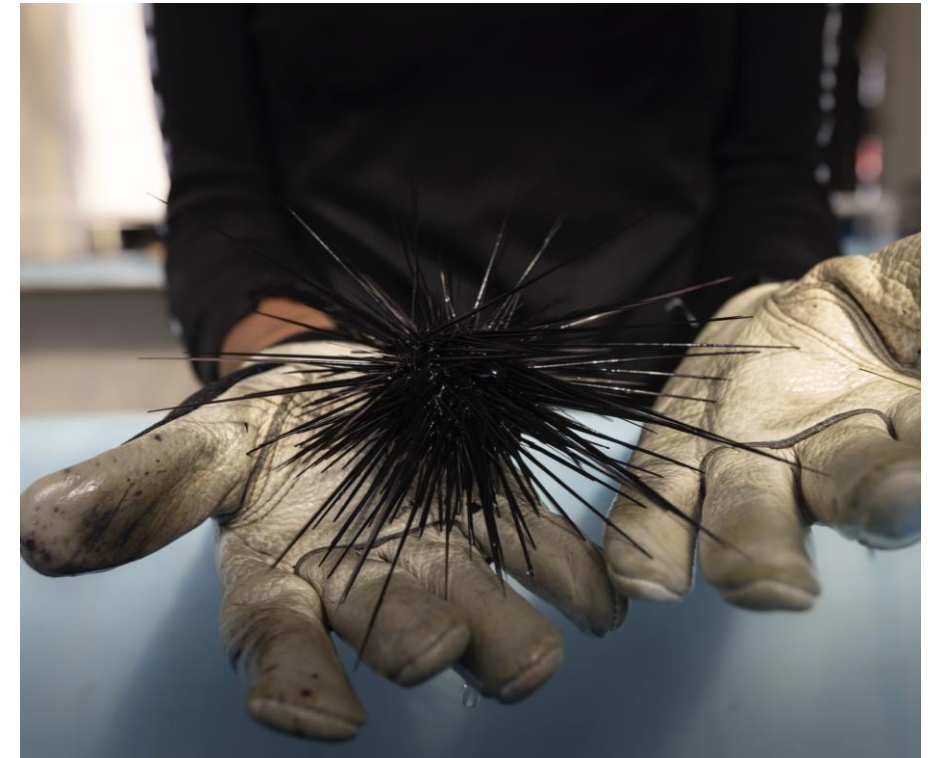
Year 4 Goals

"Your crash course on illustrator, especially using the color schemes and palettes has been extremely helpful!"

- Course participant

Adobe Workshop Participants

- ✓ Refine VI-EPSCoR website
- ✓ Continue team training opportunities
- ✓ Continue to support research team's outreach goals.





Thank you!

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PHONE: 240-687-6578

