



VI-EPSCoR Site Visit



Ridge to Reef (R2R):
Processes and Interdependent
Drivers of Small Island
Resilience

Award No. OIA-1946412



Other Project Elements

Education and Workforce Overview	Teacher Professional Development	Undergraduate Education Research	Mentoring and Research Infrastructure	Informal Learning	Communication and Dissemination	Cyber-infrastructure and Data Management	Project Summary
							



Education & Workforce Development Overview



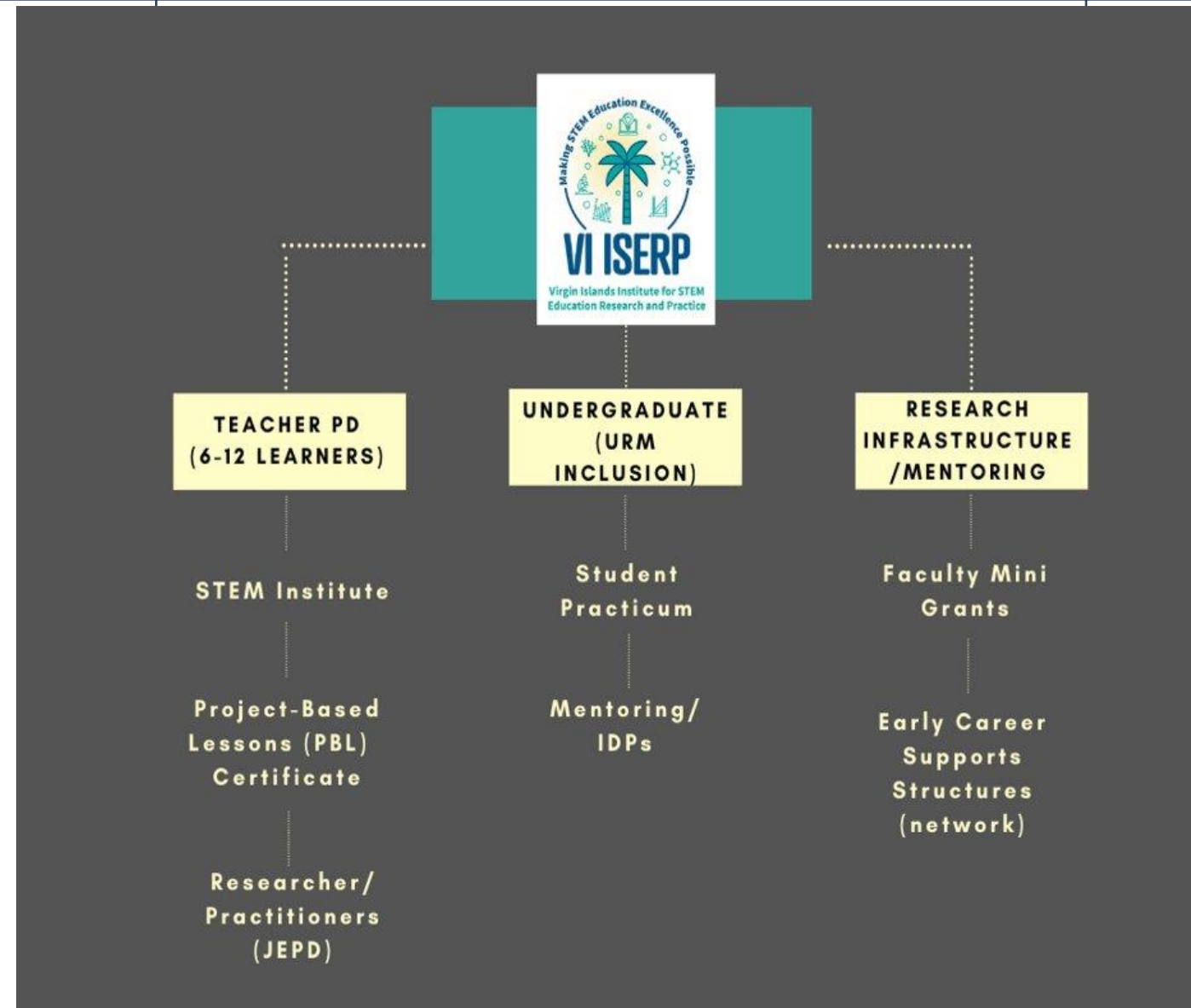
Virgin Islands Institute for STEM
Education Research and Practice



"Making STEM Education excellence possible for every student"

VI-ISERP seeks to reduce barriers to URM STEM inclusion at the pre-college, undergraduate, and early career stages

- ✓ Pre-college
 - ✓ Teacher Professional Development
- ✓ Undergraduate
 - ✓ STEM Education Research
 - ✓ Experiential Learning
 - ✓ Student Practicum
 - ✓ Mentoring
- ✓ Early Career STEM faculty
 - ✓ Faculty Mini Grants
 - ✓ Early Career Support Structure



STEM Institute - Teacher PD



Undergraduate Education Research

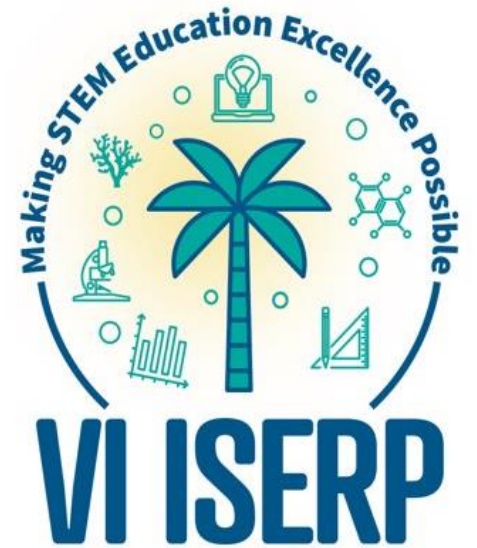


Research Infrastructure and Mentoring



Our Work Balances on Three Pillars

- 1. EQUITY AND INCLUSION:** Combating structural and psychological barriers to URM inclusion and retention
- 2. CULTURALLY STEM LEARNING:** Facilitating STEM learning in partnership with R2R researchers and staff
- 3. SUSTAINIBILITY OF STEM RESOURCES:** Developing expertise, support, and resources in STEM education for the local community and beyond



Virgin Islands Institute for STEM
Education Research and Practice

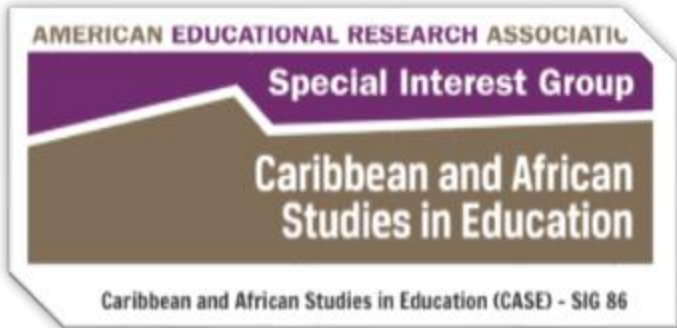
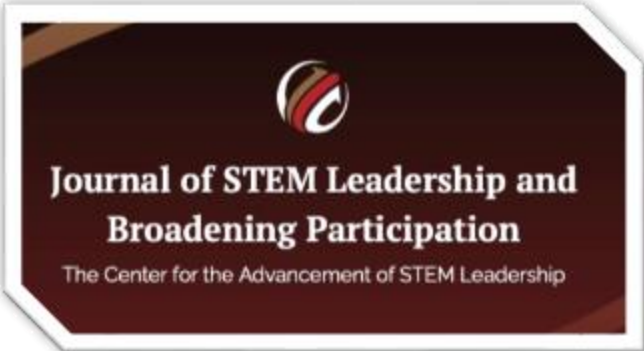


Building Our Center's Expertise

- All 6 faculty leads in Tenure Track Positions
 - 2 attained tenure and promotion
- Increased capacity for STEM Education Research
 - Learning Analytics
 - Qualitative & Quantitative Research Methods
 - focus group development
 - reliability of instruments
 - human subjects research ethics specific to student projects.
 - R, RStudio, SPSS, Envivo
- Principal Investigator/Co-Principal Investigator in additional local & federal grants
 - Community Foundation of the Virgin Islands (2)
 - National Endowment for the Humanities
 - National Science Foundation: BCSER, S-STEM
 - National Institutes of Health U-RISE
- Increased expertise of Master Teachers content attainment and leadership
 - Eco-School Ambassador
 - Candidate in UVI Creativity & Leadership PhD Program
 - Mathematics Department Chairperson



Sharing Our Center's Expertise & Sustainability



Teacher & RA engagement in Research	• Qualitative Analysis: De-Identified Teacher Interviews, teacher artifacts • Quantitative Analysis: Pre/post surveys
Publications	• 2-Book Chapters • 1-Conference Proceedings • Peer-Reviewed Journal Articles • 27-Conference Presentations
Partnerships/ Collaborations	• Universities • Major Corporations • Local Government Agencies • UVI Programs & Colleges



Thank you!

Dr. Nadia Monroe Mills

EMAIL: nmonros@uvi.edu

PHONE: 340-693-1331





Teacher Professional Development

St. Croix

Meet The Team

St. Thomas/St. John



Dr. Joseph Squillace
Assistant Professor of Mathematics
UVI College of Science and Mathematics

Co-Director STEM Institute, St. Croix



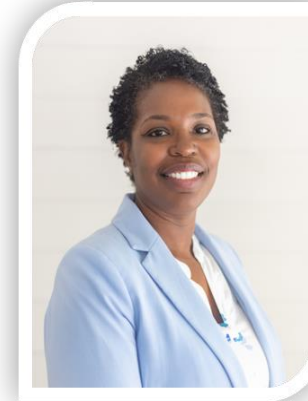
Cassandra King
Master Teacher



Manal Abed
Undergraduate RA



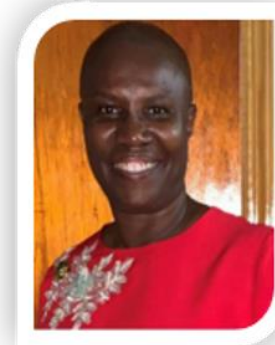
Julene Chapman-Dorsett
Administrative Support



Dr. Nadia Monroe Mills
Associate Professor of Mathematics
UVI College of Science and Mathematics

Co-Director STEM Institute, St. Thomas

Principal Investigator
NSF BCSE: Improving Peer-Led Team Learning and
Peer-Leader Training to Increase Undergraduate
Student Achievement in Mathematics



Michealrose Ravalier
Master Teacher



Celestial Dazle
Undergraduate RA

UVI Teaching Faculty



Dr. Lavidia Rogers
Assistant Professor
of Biology



Dr. Dara Hamilton
Assistant Professor
of Psychology



**Dr. Marc
Boumedine**
Computer Science



Timothy Kentopp
Assistant Professor of
Computer Science



Dr. Xuri Allen
Assistant Professor of
Education

Undergraduate & Graduate Research Assistants



Crystal Carino



Ronicia Liburd



Joash Liburd



Ramiz Hurtalt



Dr. Dianna P. Osborne



Calida Ambrose

Project Goals And Objectives

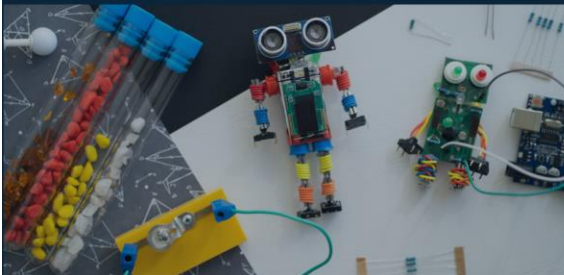


Goal	To integrate resilience research themes into teacher professional development to improve K-12 student preparation
Objective 1:	To integrate resilience research themes into teacher professional development to improve K-12 student preparation.
Objective 2:	To build long-lasting STEM community partnerships for increase sustainability of the VI-ISERP center.

Results, Outcomes, and Accomplishments:

Summer Teacher Workshops 2021-2023

THE RESET:
STEM LEARNING ACCELERATION,
TECHNOLOGY INTEGRATION, AND WELLNESS



**2022 STEM INSTITUTE
SUMMER WORKSHOPS**

Virtual Sessions: May 31 - June 3
In-Person Sessions: June 6 - June 10



VIRGIN ISLANDS epscor
ST. CROIX DISTRICT

**DATA DISCOVERIES IN
STEM EDUCATION**



REGISTER NOW



**VI-ISERP 2023 STEM INSTITUTE
SUMMER WORKSHOPS**

STIPEND FOR TEACHERS THAT QUALIFY

Virtual Sessions: June 12 - June 16
In-Person Sessions: June 19 - June 23



- ✓ Virtual Summer Workshops:
 - 80 Teachers Summer 2021
 - 75 Teachers Summer 2022
 - 44 Teachers Summer 2023
- ✓ In-Person Workshops:
 - 54 Teachers Summer 2022
 - 48 Teachers Summer 2023
- ✓ New Partnerships
 - InSTEP: Online Statistics & Data Science Course
 - NC State University
 - Department of Agriculture
 - Cooperative Extension Services
- ✓ Continued Partnerships
 - Knowles Teacher Foundation
 - Mentor Teachers
 - UVI Faculty
 - R2R Researchers
 - Informal Learning

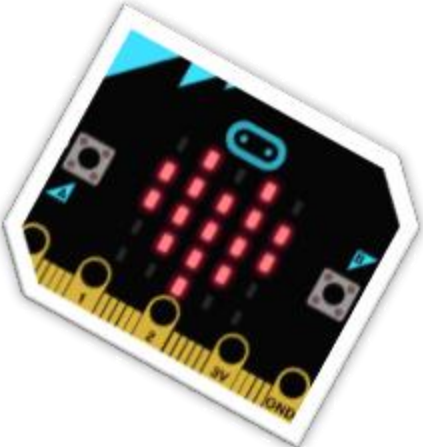
Results, Outcomes, and Accomplishments: STEM Content Knowledge

- ✓ PBL Certificate Program:
 - 5 teachers Cohort 1 Fall 2021
 - 4 teachers Cohort 2 Fall 2022
 - 19 teachers Cohort 3 Fall 2023
- ✓ Virtual Training:
 - Master & mentor teachers
- ✓ In-Person Training (Weekends)
- ✓ Continued Partnerships
 - UVI Teaching Faculty
 - College of Science & Math
 - School of Education

Results, Outcomes & Accomplishments: Partnerships in Computer Science

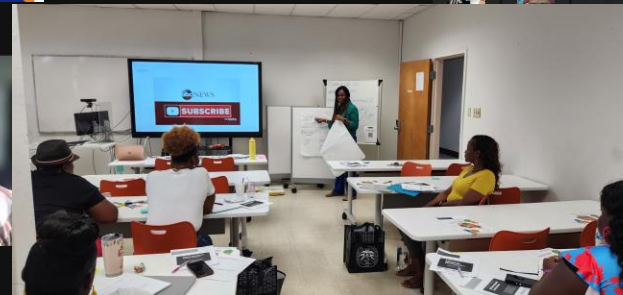
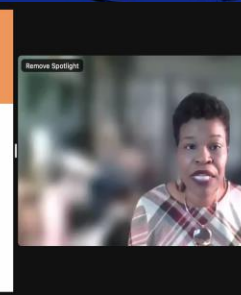
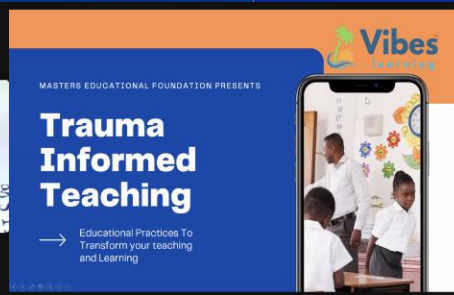
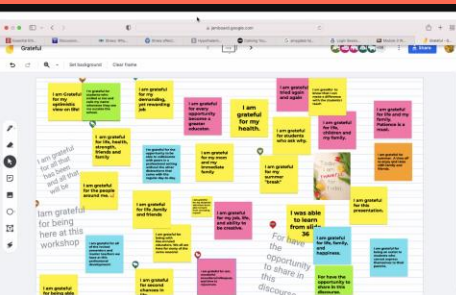
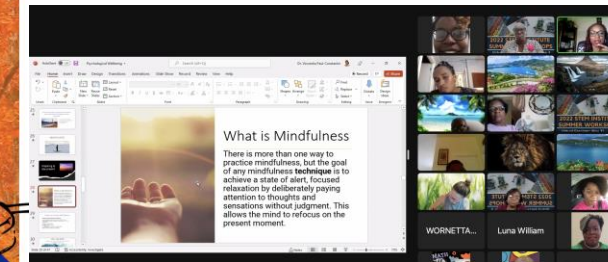
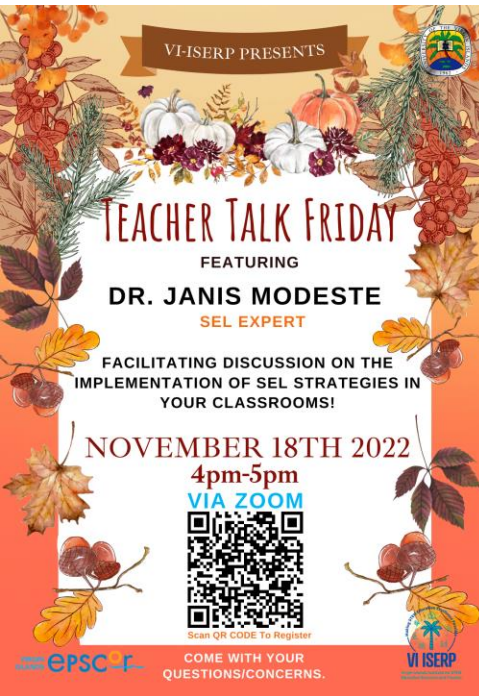


Yolanda Payne
Founder, Tech Knowledge for Teachers



Results, Outcomes & Accomplishments: Mental & Emotional Wellness Training

- ✓ Teacher Talk Fridays
- ✓ Mindfulness Training
- ✓ Social Emotional Training

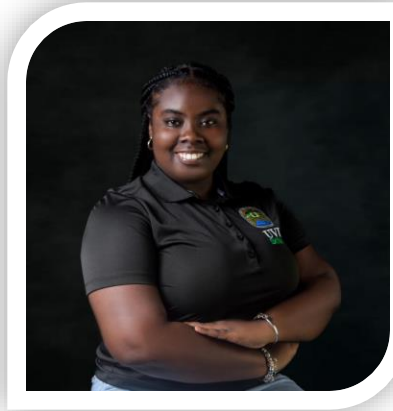


Collaborations



Research Interdependencies

Mentoring & Research Infrastructure: Student Practicum



Dhakiya Liburd
Practicum Student- STT



Allana Jackson
Practicum Student- STX



Anayah Ferris
Practicum Student- STX

Mangrove Restoration



Coral Reef



Watershed & Land Use



Informal Learning



Broader Impacts, Intellectual Merit, & Sustainability

Broader Impacts	Facilitated PD activities 2020-2023 with about 110 teachers in attendance, impacting about 4000 K-12 student
Intellectual Merit	- Data Collection during Summer Workshops 2021-2023 - Preliminary Data Analysis on Technological Pedagogical Content Knowledge - Continued Data Analysis for Years 4 & 5
Sustainability	- Developed Long-lasting and mutually beneficial partnerships - Developed master & mentor teachers that facilitate PD training



Future Plans: Year 4



Academic Year Trainings

- 6 Virtual Trainings Fall 2023 & Spring 2024
- Teacher Talk Fridays October 2023 & March 2024
- 2 In-person Trainings Fall 2023
 - Tech Knowledge for Teachers: Nov. 3-5
 - Local Chapter of CSTA: TBD
- InSTEP Training with NC State Spring 2024

PBL Certificate Program

- Third Cohort Fall 2023-19 teachers
- Project Implementation Spring 2024

Maintain Community Partners

- Stakeholders Virtual Meeting October 24, 2023
- Publication of Annual Center Newsletter: October 2023





Thank you!

Dr. Nadia Monroe Mills

EMAIL: nmonros@uvi.edu

PHONE: 340-693-1331

Dr. Joseph Squillace

EMAIL: joseph.squillace@uvi.edu

PHONE: 340-692-4157



Undergraduate Education Research



Dr. Michele Guannel,
Research Lead

Hypothesis IV: Community exposure to local resilience-themed activities will develop greater STEM affinity, which will translate into measurable gains in retention and persistence, at the university level.

First-year students are developing STEM findings through leading active learning projects in Science 100 and Social Science 100 ... supported by upper-level undergraduate mentors, leaders, researchers.





First-year student Ariel Paul,
Youth Ocean Explorers graduate
and mentor, conducts
coral microfragmentation with
the Brandt Lab (Spring 2023).

How do we transform undergraduate education?



UVI graduate George Francis II,
a 2018 service learning alum,
graduated *summa cum laude*
with a B.A. in Communication (May 2022).



First-year Jordan Wilson,
current sophomore,
UVI Sea Turtle Club President and
Jobsis Lab volunteer,
caught her first sea turtle for her
Science 100 project (Fall 2022).

Meet The Team



Dr. Michele Guannel,
Assistant Professor
of Biology



Dr. Molly Perry,
Assistant Professor
of History & Geography

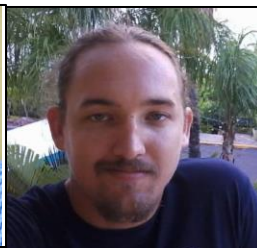


Dr. Lyz Jaeger
Associate Professor
of Social Science



Dr. Michelle Peterson,
Associate Professor
of Biology

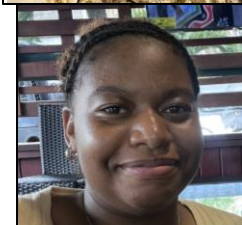
Lab Instructors
Vernon Callwood,
Antonio Farchette,
Dr. Marianne Moore,
Dr. Kayla Blincow,
LeeAnn Sheets



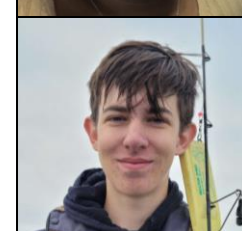
Tara Thompson,
SCI 100 Peer Instructor



Waniya Baig,
SCI 100 Peer Instructor



Darnilla Samuel,
SCI 100 Peer Instructor



Nathan Kohler,
SCI 100 Peer Instructor



Nikita Beck,
Community Engagement Fellow



Megan Anthony,
Service Learning Coordinator



Shani Richardson,
Service Learning Coordinator



Kaidrian Ottley,
Service Learning Coordinator

Research Goals and Objectives

Year 1	Analysis of 2018-2020 experiential learning data
Year 2	Pilot experiential learning option across Science 100 and Social Science 100, to obtain 20% participation by Year 5
Year 3	Institutional Review Board approval – new study design Publications Development of Resilience Leaders pathways

Research Goals and Objectives Highlights: A Cohesive First-Year Experience & Resilience Leader Pathways

First-Year Experience (during / after a global pandemic)

Science 100 and Social Science 100 curricula and instruments developed and aligned

Up to 29% of class chose project over paper, exceeding Year 5 goal

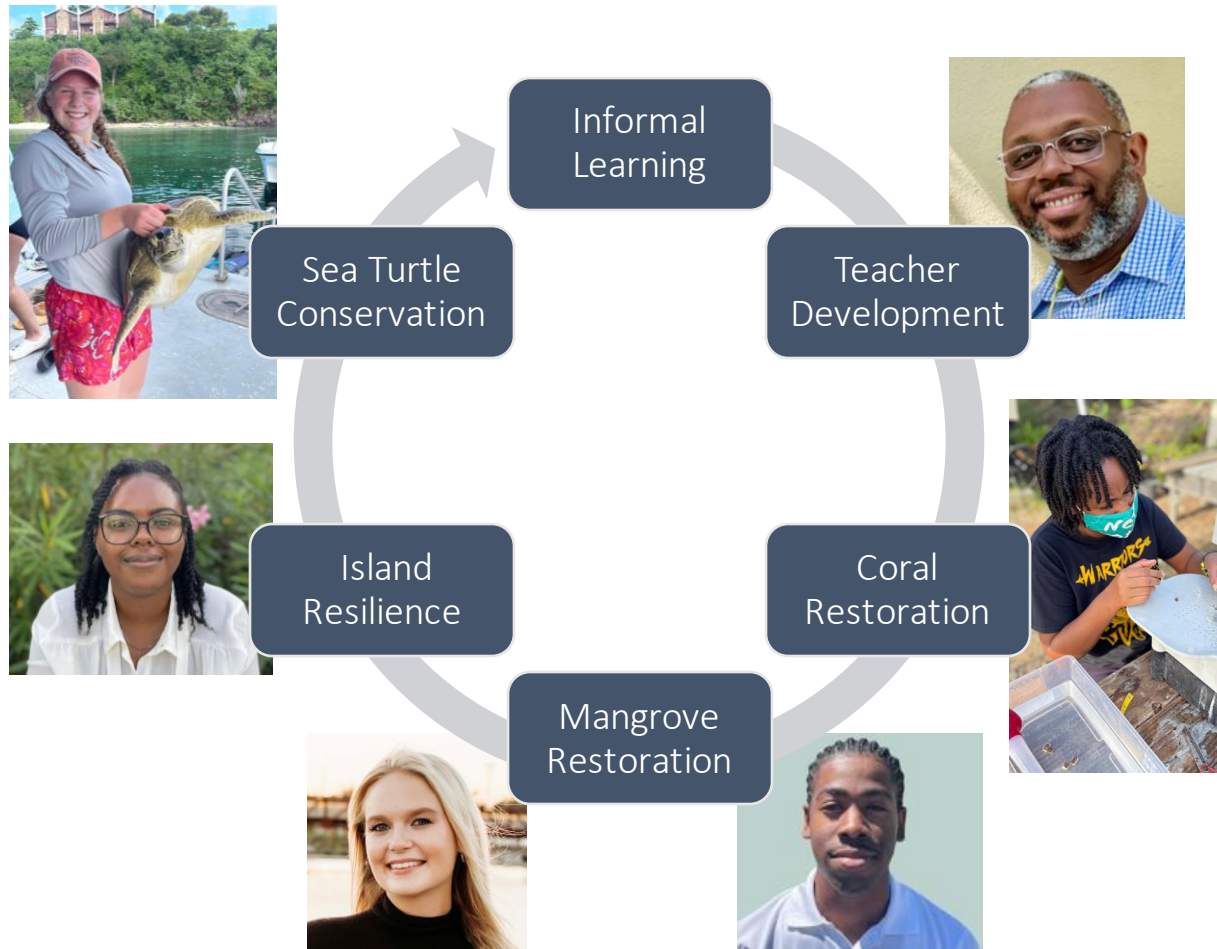
Resilience Leader Pathways

Nine undergraduates / graduates are co-authors on 11 publications and presentations*

Student Instructor roles are powerful for upper-level undergraduates

*See student poster, tomorrow!

Research Interdependencies: the First-Year Experience



R2R-connected team members facilitated an increase in resilience-themed experiential learning with R2R researchers, in SCI 100:

Year 1: 1 of 17 projects (6%)

- Climate Change

Year 2: 9 of 20 projects (45%)

- Corals, Mangroves, Marine Debris

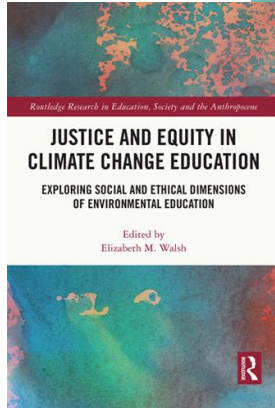
Year 3: 24 of 44 projects (55%)

- Corals, Mangroves, Marine Debris, Sea Turtles, Resilient Infrastructure, *Sargassum*, Water Quality, Climate Change, Recycling

Upper-Level Resilience Leaders: Undergraduate (& graduate) students are education researchers.



Nailah Copemann,
first qualitative
research on lived
experiences of
IrMaria



Bethany Good,
preparedness research now
integrated into SCI 100



**Angelisa
Freeman,** BS 2022
Three
publications,
conference!!
one

Liv Diana, MMES Student
"Teaching SCI 100 made me
want to become a teacher."
[Now she is!!]



**George Francis II
and Deanna Hunt,**
invited speakers –
3 NASEM webinars;
PKAL workshop (Hunt),
both co-authors on
2024 AERA manuscript



Seminar 3: Authentic Learning Experiences

- Meaningful work that is valued by and situated in communities.
- Meets students where they are and involve topics that are **motivating**
- Emphasize the value of each student's **lived experience**
- Involves **interdisciplinary** problem solving

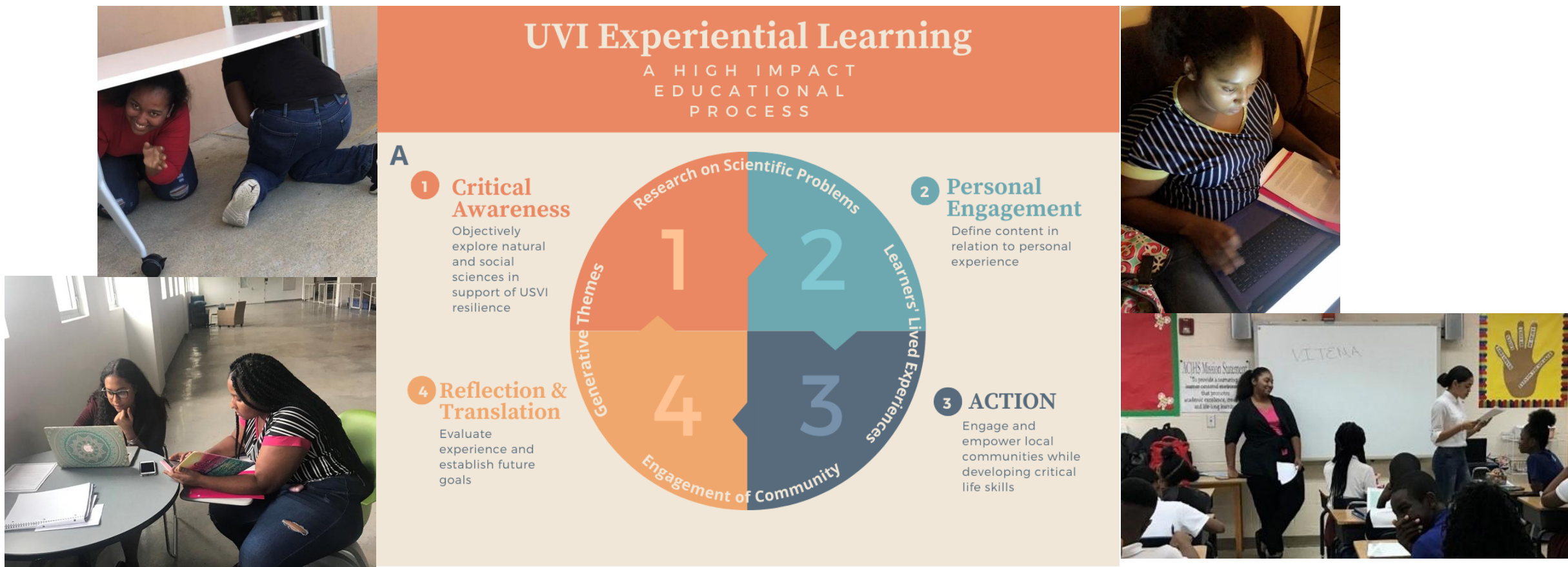


NARST
A global organization for improving
science education through research

Project
Kaleidoscope
(PKAL) | Association
of American
Colleges &
Universities

The National
Academies of
**SCIENCES
ENGINEERING
MEDICINE**

Upper-Level Resilience Leaders: Undergraduate students developed framework for their experiential learning.



Francis, G., Brown, L., **Espinosa, C.**, Hunt, D., Powell, K., Hutcheson, L., Guannel, M. L. (Submitted 2023). Student-directed experiential learning in the United States Virgin Islands: Resiliencing through disaster. American Educational Research Association Annual Meeting 2024.

Results, Outcomes & Accomplishments: Our team nurtures our undergraduates.



**Shani
Richardson,**
Service Learning
Coordinator
2023-??

"My project is actually my reason for joining your team such that I can be of guidance to others who may doubt themselves or shy away from such projects."

"What is the Action project about?
Cur-i-os-ity! I will work with each and every one of you on your projects!"



Deanna Hunt,
Service Learning Coordinator
2020-2023

UVI Employee of the Year 2023

"From your continuous guidance, I was not only able to develop as an employee, but also as an individual because of you looking for opportunities for me. You are an absolute blessing in my life."

Keana Jacobs,
Peer Instructor
2020-2023

Graduated
summa cum laude
May 2023



"Science 100 will always be in my heart. I appreciate you giving me the opportunity to work with the team and the students ... You worked hard with me over the years and helped build me as a future communication professional. ... You turned me into an outstanding individual."

Diversity of disciplines & life experiences = workforce power

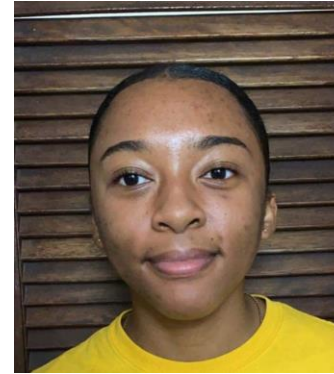


Shani Richardson,
Psychology
Parent of TWINS



Deanna Hunt,
Computer Science

Jaresia Elliott-Hendrickson
Biology Major, Resident Assistant
PR Officer, PRISM LGBTQIA Club
Outstanding Student Organization;
M. Guannel faculty advisor



Shamir Smith,
Applied Math BS &
Computer Science BS
in 5 years



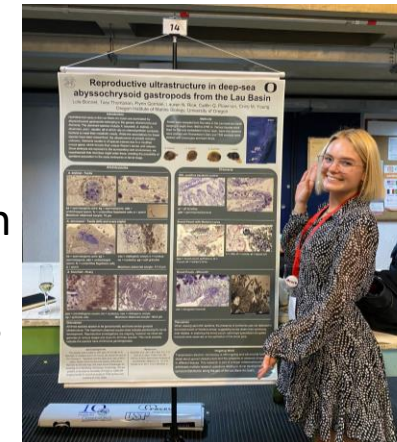
Kahlifah Powell
Marine Biology
Past and Future
Brandt Lab



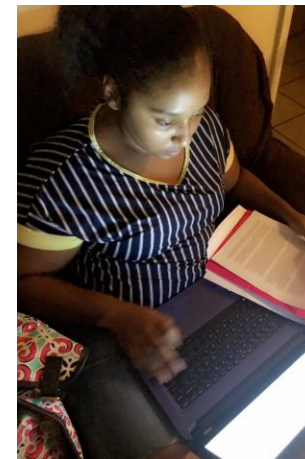
Angelisa Freeman,
Biology; Educator



Keana Jacobs and
George Francis,
Communication



Tara Thompson
Marine Biology
Chemosynthesis
Researcher,
Past Grimes Lab



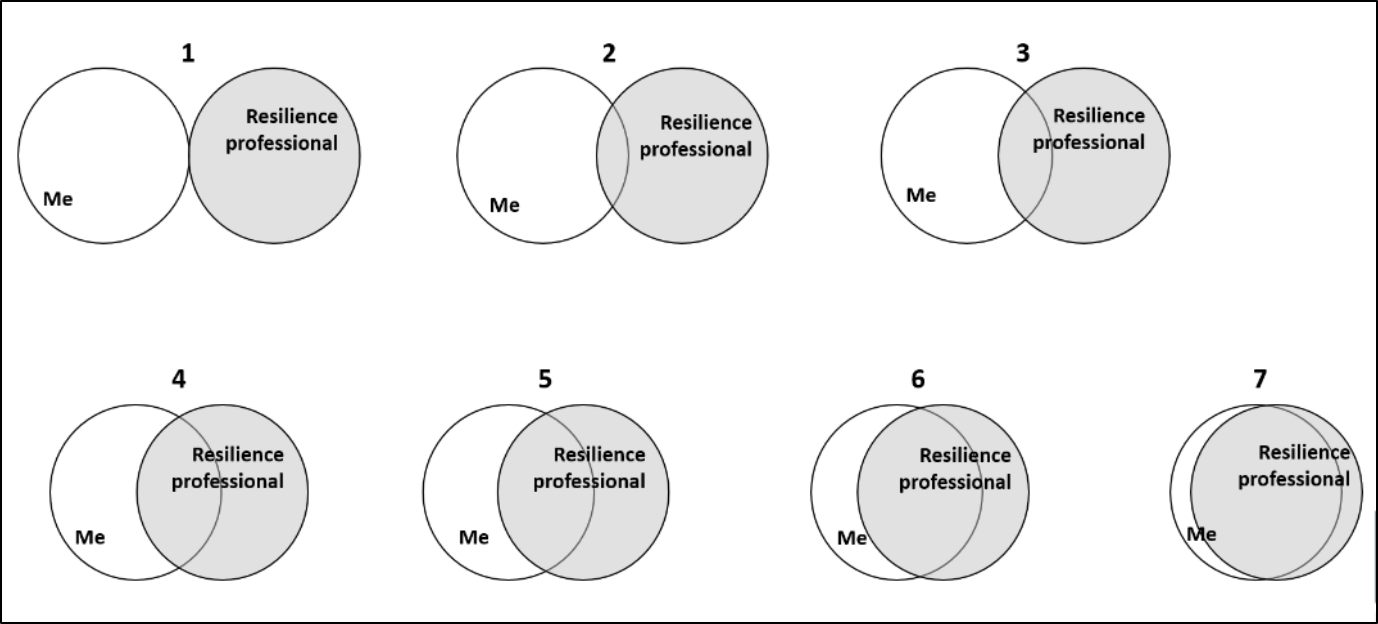
Cheilinett
Espinosa,
Nursing

Broader Impacts, Intellectual Merit, & Sustainability

Multi-Year Training, Mentoring, and Cross-Training	Transdisciplinary Teaching and Assessment	Structural Course Changes (Sustainability)	Leveraged Funding (Sustainability)
Educators: 18 undergraduates 12 graduate / post-bac students Education researchers: 8 undergraduates 3 graduate / post-bac students	Synchronized structure and project progression in SCI 100 & SSC 100 "Wicked problems" from natural and social science perspectives Wide reach - 192 students, Fall 2023	Liberate research time of Research Lead (M. Guannel) via integration of full-time faculty (Blincow, Moore) into SCI 100	Service learning and oral histories grants awarded to SSC 100 Lead, Dr. Molly Perry, and English faculty (National Endowment for the Humanities; CFVI)

Future Plans

Years 3-5	Assess affinity of first-year students with identity of "Resilience Professional" & other new psychometrics (192 students enrolled now!)
Years 3-5	Integrate findings into proposals
Years 4-5	Expand pathways for Resilience Leaders training and professional development
Year 5	Examine retention & persistence of UVI students engaged in projects / leadership



Thank you!

Dr. Michele Guannel

EMAIL: michele.guannel@uvi.edu

PHONE: 340-693-1284





Dr. Laida Rogers
2023 Educational Research
Mini-grant recipient

Mentoring & Research Infrastructure

Meet The Team



Verleen McSween, PhD

Assistant Professor of Biology

UVI College of Science and Mathematics

Director for Mentoring and Research Infrastructure

Virgin Islands Institute for STEM Education Research and Practice (VI- ISERP)
NSF EPSCoR

Co- Principal Investigator

Undergraduate Research Training Initiative for Student Enhancement
(URISE)(T34) National Institutes of Health (NIH)



Shimeeka Stanley

Research Assistant

Virgin Islands Institute for STEM Education Research and Practice (VI- ISERP)
NSF EPSCoR

Senior, marine biology major, minor in environmental science

UVI College of Science and Mathematics

Intern

NASA Office of STEM Engagement (OSTEM)





The 5 B's Boosting Research Capacity at HBCUs

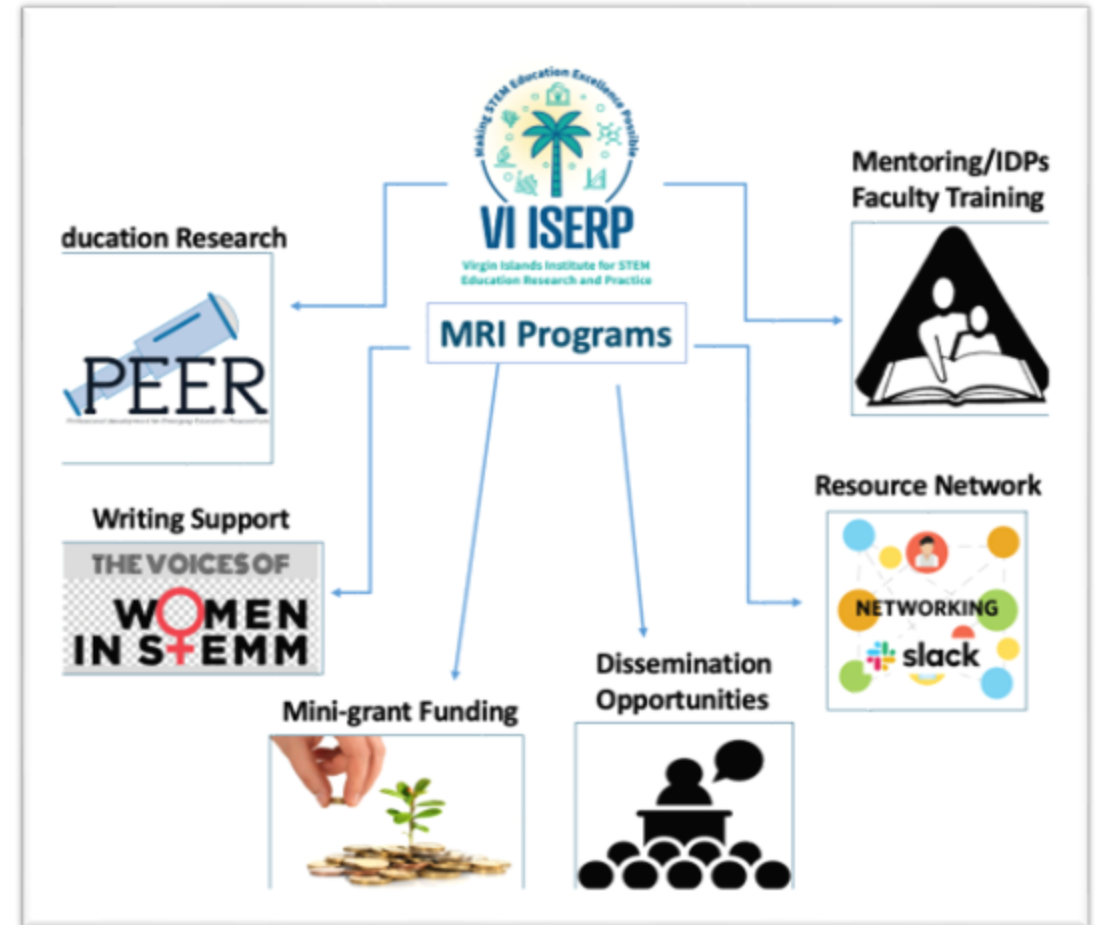
1. Build internal and external collaborations through partnerships
2. Build in-house expertise in mentoring and education research
3. Build professional community through inter- institutional networking and targeted writing groups
4. Be a conduit for research funding
5. Broaden opportunities for dissemination through regional and national platforms



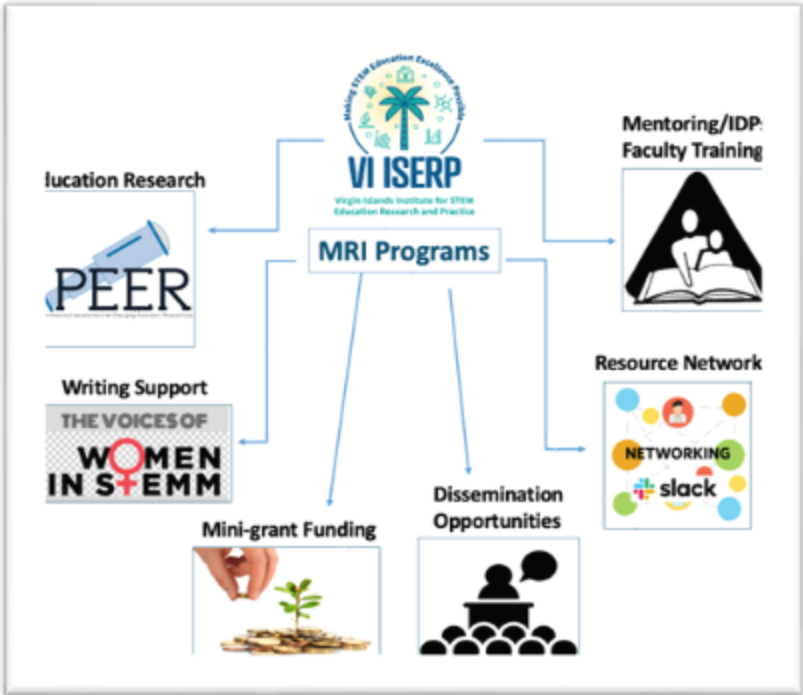
Goals And Objectives

To support student/ faculty research infrastructure via support for the pre- and in-service STEM workforce to increase STEM career interest, skills, and retention

- Objective 1: To develop mechanisms of support and development for **STEM students (undergraduate and graduate)**
- Objective 2: To develop mechanisms of support and development for **early-career STEM faculty**



YEAR 1-3 Objectives



YEAR 4 Here we come!

Provide support for mentor training of UVI faculty through implementation of mentor trainings workshops	Establish an Integrative Student Support Network
Promote the use of individual development plans to promote evidence- based practices in undergraduate student mentoring	Support the professional development of early career STEM Faculty
Promote R2R research exposure and the use of STEM skills within an education context through an undergraduate practicum program	Support educational research among early career STEM faculty
Developing a Graduate Student Professional Development Plan/ Listserv	

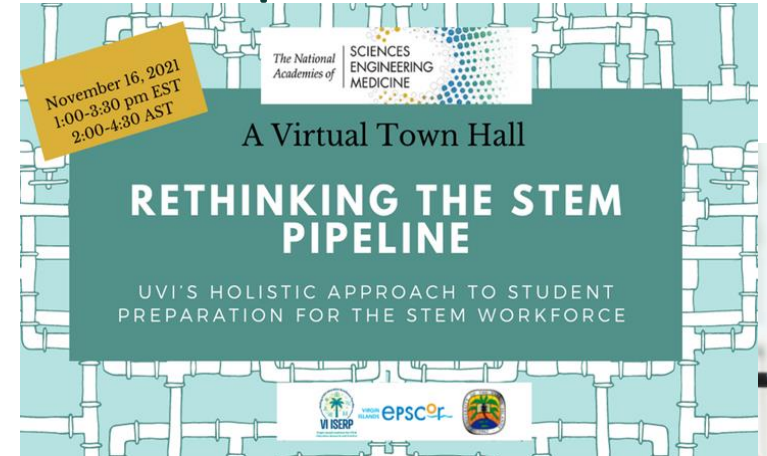
Results, Outcomes & Accomplishments



**Wisconsin Center for
Education Research**
SCHOOL OF EDUCATION
UNIVERSITY OF WISCONSIN-MADISON



Center for the Improvement of
Mentored Experiences in Research



**Emerging
Caribbean Scientists**



VIRGIN ISLANDS **epscor**

ECS/VI-ISERP FACULTY MENTOR WORKSHOP

LOOKING TO IMPROVE YOUR MENTORING SKILLS AND
IMPROVE YOUR STUDENT'S RESEARCH EXPERIENCE?

IF SO, WE'VE GOT YOU COVERED!

JOIN US FOR AN EVIDENCE- BASED
MENTORING WORKSHOP

TRAINING MODULES:

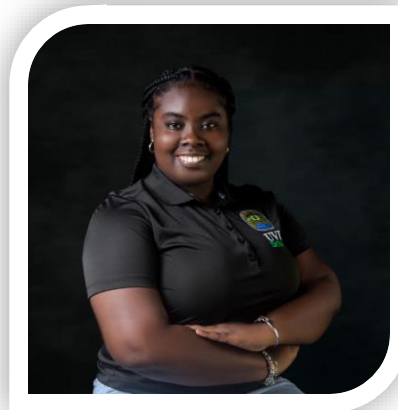
- MAINTAINING EFFECTIVE COMMUNICATION
- ALIGNING MENTOR- MENTEE EXPECTATIONS
- FOSTERING MENTEE INDEPENDENCE
- ADDRESSING EQUITY AND INCLUSION



Alexanne Carr
UVI Grad/ NIH RISE scholar

Evidence- Based

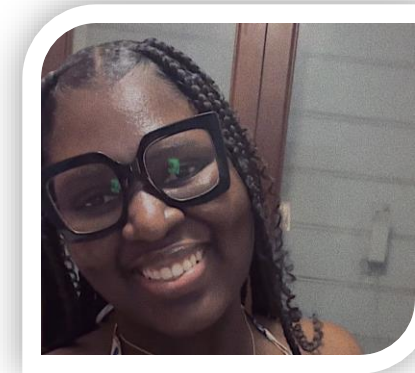
Results, Outcomes & Accomplishments



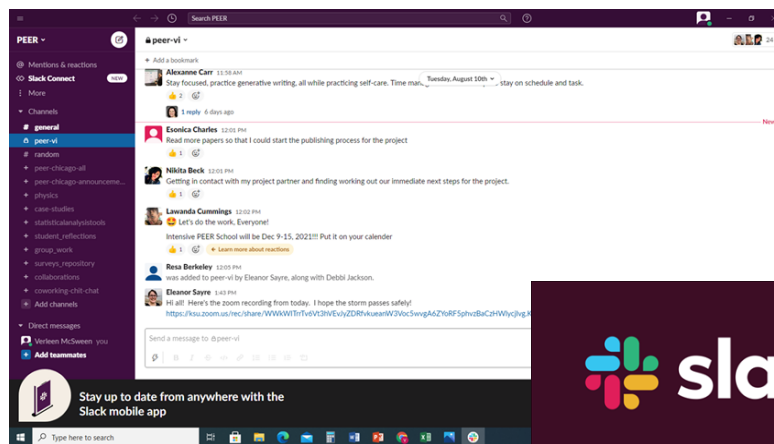
Dhakiya Liburd
Practicum Student- STT



Allana Jackson
Practicum Student- STX



Anayah Ferris
Practicum Student- STX



Results, Outcomes & Accomplishments

Writing Support: Voices of Women in STEM (VOWS)

Publication Support and Structured Writing
2022- 2023

34 students mentored in research

22 conference proposals submitted

20 research conference acceptances

28 publication drafts

13 publications submitted for publishing

12 publications accepted for publishing

17 grant proposal drafts

14 grant proposals submitted

8 grant proposals funded



Meria Marcel- Lewis
Math Instructor
VOWS Scholar



Results, Outcomes & Accomplishments



**Resources for
Kickstarting your Research Productivity**

VERLEEN MCSWEEN, PhD
LAWANDA CUMMINGS, PhD
University of the Virgin Islands

Eastern Caribbean Center

THE CURRENT WORK IN TRAINING AND RESEARCH DEVELOPMENT

Faculty Affiliate



FALL 2023 Training

TRAINING TOPIC	MONTH
Research Questions to Methodology	SEPTEMBER
Introduction to Qualitative Methods	OCTOBER
Scale and Interview Protocol Development	NOVEMBER



ating
research
methods skills
ative
design emphasis
tical unclear developing need extent
time
agement collection
er frame enough mixed
istent opinion
ing harmonize phenomenological
personal findings

Results, Outcomes & Accomplishments



Bernard Castillo, PhD
Ass. Prof- Math
2022 Recipient



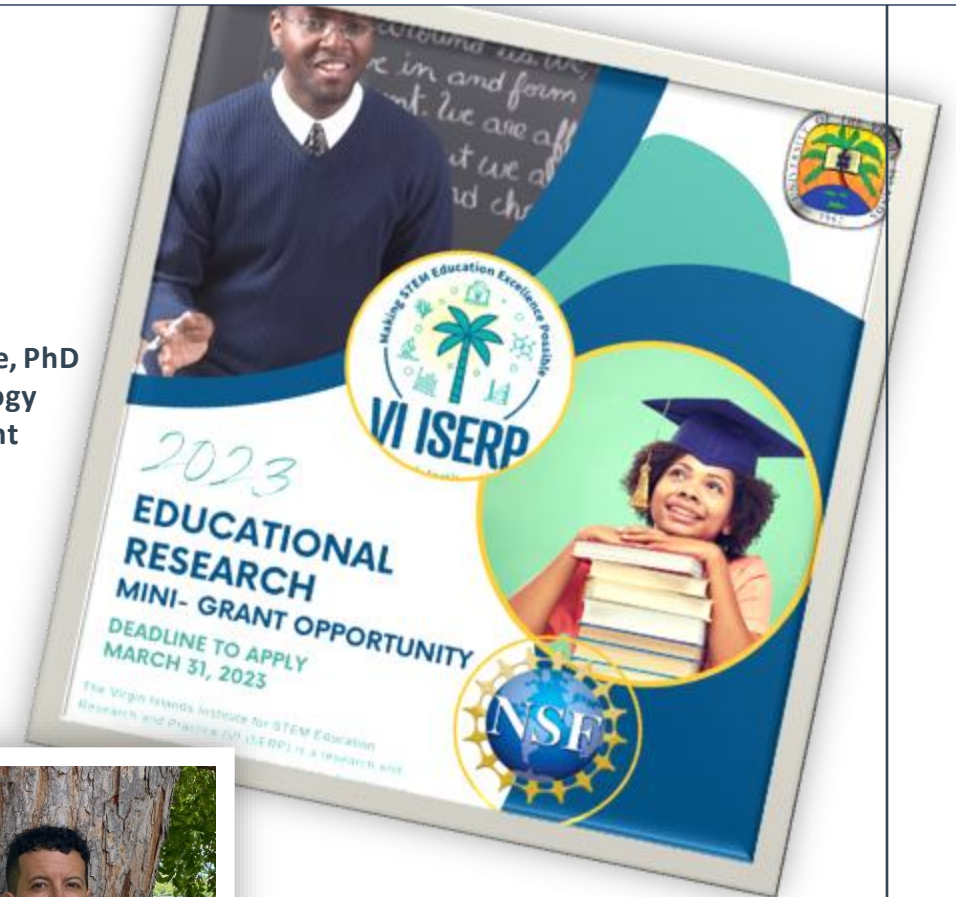
Guilherme N Corte, PhD
Ass. Prof- Biology
2023 Recipient



Lavida Rogers, PhD
Ass. Prof- Biology
2023 Recipient



Joseph Squillace, PhD
Ass. Prof- Math
2023 Recipient



Research Interdependencies

Educational research mini- grant funding awarded to researchers engaged in the STEM Institute programming

Engagement of practicum students in workforce experiences centered on implementation of R2R- based project- based learning curricula

Mentor training for R2R researchers as well as their governmental partners engaged in mentoring UVI undergrads

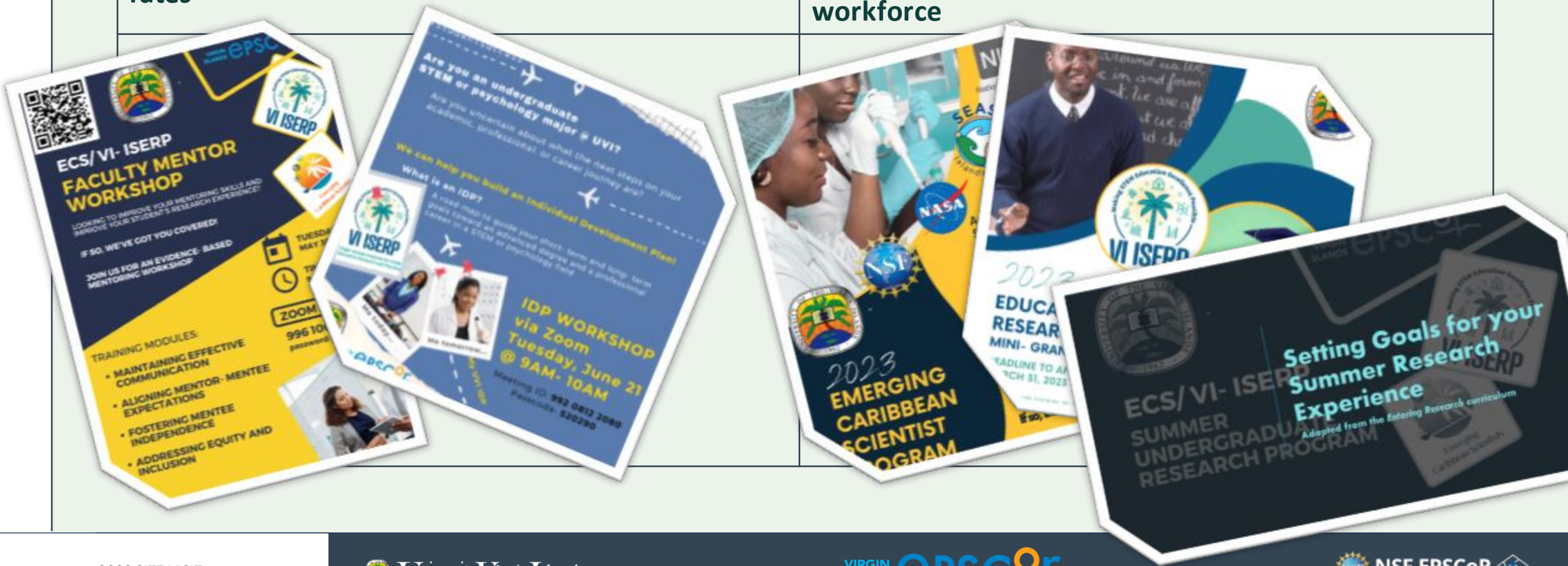
Mentee training for undergraduate student researchers participating in summer R2R research opportunities

Participation of R2R Researchers or staff in research career panels, grad school panels or facilitating PD workshops

Broader Impacts, Intellectual Merit, & Sustainability

Contributing to boosting STEM student graduation rates

Preparing undergraduate students for STEM career inclusion and successful transition to the STEM workforce





Collaborations



Georgia Institute of Technology



Diversity



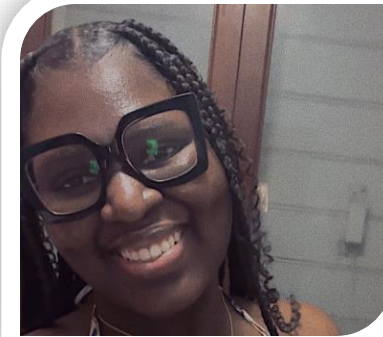
Shimeeka Stanley
MRI Research Assistant



Dhakiya Liburd
Practicum Student- STT



Allana Jackson
Practicum Student- STX



Anayah Ferris
Practicum Student- STX



Alexanne Carr
UVI Grad/ NIH RISE scholar



Meria Marcel- Lewis
Math Instructor
VOWS Scholar



Lavidia Rogers, PhD
Ass. Prof- Biology
VOWS Scholar



Guilherme N Corte, PhD
Ass. Prof- Biology



Joseph Squillace, PhD
Ass. Prof- Math

Future Plans

continued implementation of our current work



Support mentee/ mentor training for student training grants at UVI + collaborators	Engage our Student Support Network to promote sustainability of our current efforts
Support education research through mini- grant funding	Recruit and engage scholars for our practicum program
Implementation of our in-house educational research training series	Serve as a resource hub for professional development and dissemination opportunities.
Support faculty writing and scholarship	





Thank you!

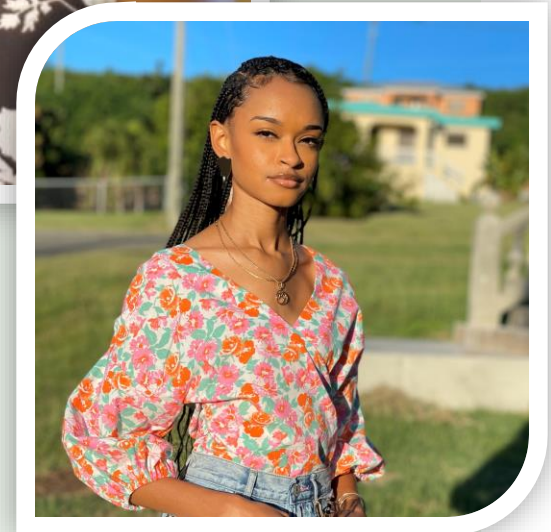
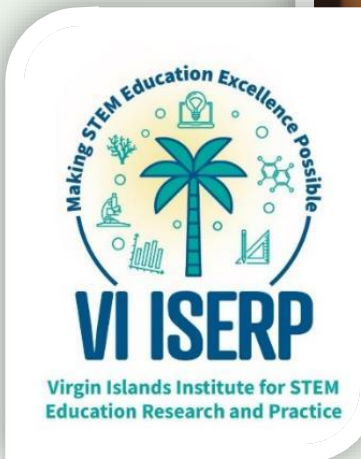
Dr. Verleen McSween

EMAIL: verleen.mcsween@uvi.edu

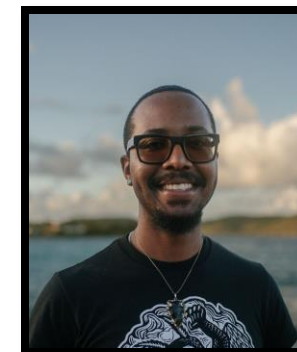
PHONE: 340-692-4108



RESEARCH



Informal Learning



Jarvon Stout,
STT/STJ Engagement Specialist



Kai Nielsen,
STX Engagement Specialist



Shamoy Bideau,
STX Outreach Assistant

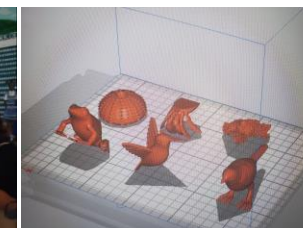
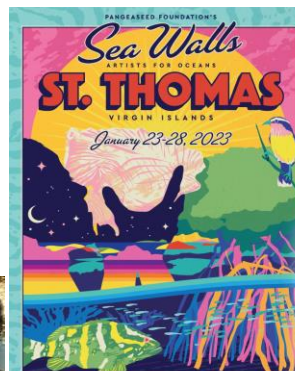
Research Goals & Objectives



Goal 1	Expanding IL's reach
Goal 2	Diversifying science themes
Goal 3	Workforce development
Goal 4	Becoming a resource
Goal 5	Understanding our audience
Goal 6	Becoming self sufficient

Results, Outcomes & Accomplishments

- 4,000 Virgin Islanders reached
- 2,000 k-12 students engaged



- Creating community spaces
- Better outreach tools



Broader Impacts, Intellectual Merit, & Sustainability



IMPACT ONE	IMPACT TWO	IMPACT THREE
STEM exposure and professional development	Conferences, publications and webinars	Funding and sustainability
-405 k-12 students in STEM interventions	-3 conferences -2 publications -4 Webinars	-\$200,000



Bringing Science to the Classroom:
Promoting education and research through 360° videos

Authors

- Jarvon Stout, Community Engagement Specialist, Virgin Islands EPSCoR, University of the Virgin Islands
- Howard Perkins, a Scientist, Virgin Islands Science Advisory Service, University of the Virgin Islands
- Gabriella Rodriguez, Communications Manager, Virgin Islands EPSCoR

Affiliations

USVI EPSCoR, VIMAS, EPSCoR

Introduction

NSF EPSCoR's goal is to broaden the participation of historically underrepresented groups (HUGs) in STEM. Through the innovative use of 360° video and virtual reality (VR) technology, we are providing a virtual experience for students interested in geoscience and broader STEM fields. This is one way of bringing technology to allow students to have these experiences in a virtual environment, and if they are able to visit or travel to have the experience in person.

Methodology

Using a combination of 360° video and virtual reality (VR) technology, we are providing a virtual experience for students interested in geoscience and broader STEM fields. This is one way of bringing technology to allow students to have these experiences in a virtual environment, and if they are able to visit or travel to have the experience in person.

Virtual Reality has the potential for transforming the way that underrepresented groups are immersed in the Geosciences and broader STEM fields.

Participant Feedback:

- "The use of VR in my classroom provided a new way to better engage the at-risk students in my science classes."
- "I am excited to see the use of VR in my classroom to get out of their seats during class!"
- "I feel like I was one of the students doing on the field trip!"

Take a look!

- USVI Coral Restoration 360
- USVI Mangrove Lagoon 360
- ND-EPSCoR 360 playlist

What's Next?

Assess the efficacy of VR for increasing student interest, understanding, and attitudes towards STEM.

NSF SC EPSCoR '22

eod EDUCATION Outreach & DIVERSITY

CONFERENCE 2022

September 11-14, 2022
Wild Dunes Resort | Isle of Palms, SC

TO REGISTER, VISIT:
nsfepscoreod2022.org

For additional information or questions, contact:
April Heyward at april.heyward@scira.org
The 2022 NSF EPSCoR '22 Conference is partially supported by the National Science Foundation Award #204136003

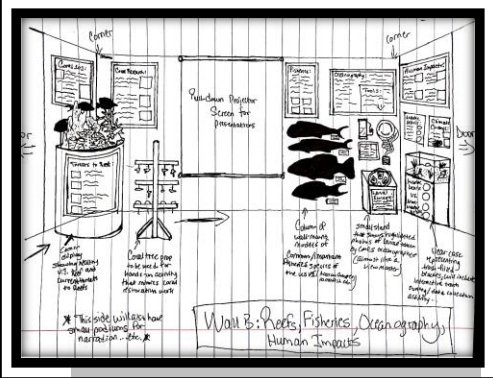
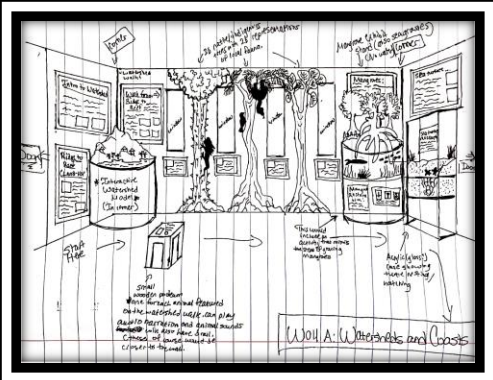


Collaborations





Future Plans, Highlights



Welcome to the Kismet Alphonso, Alexander Rod. Memento. Nerves.

This museum restoration site is named in honor of Kismet Alphonso, Alexander, a passionate environmental and nature lover who left us abruptly to join our ancestors at the young age of 24. Dedicated to giving back to his community, and the natural world he called home, Kismet worked tirelessly to both preserve our natural resources, and educate the future generations of Virgin Islands' scientists about their responsibility and rights to protect our native home. Kismet found joy and purpose in volunteering at community outreach events, educating Virgin Islands' youth about marine science, and discussing the countless visions he had regarding the Virgin Islands' role in nature. In his own way, and possibly without knowing it, Kismet established his own roots through the mangroves he planted at this very site and through the many lives he touched. So doing so, he ensured that he would always be with us.

May the roots and canopy of this mangrove forest forever grow and provide an outdoor classroom for future scientists, a sanctuary for countless organisms, and stand as a testament to Kismet's life and legacy.

"His, every day, and every opportunity don't come to everyone, so, once I can help it's a good opportunity. Thanks a lot for allowing me the chance to help, and I'm looking forward to learning more and helping more with the kids."

Kismet A. Alphonso (December 11, 1999 - April 14, 2024)



"Bro, every day, and every opportunity don't come to everyone, so, once I can help it's a good opportunity. Thanks a lot for allowing me the chance to help, and I'm looking forward to learning more and helping more with the kids."



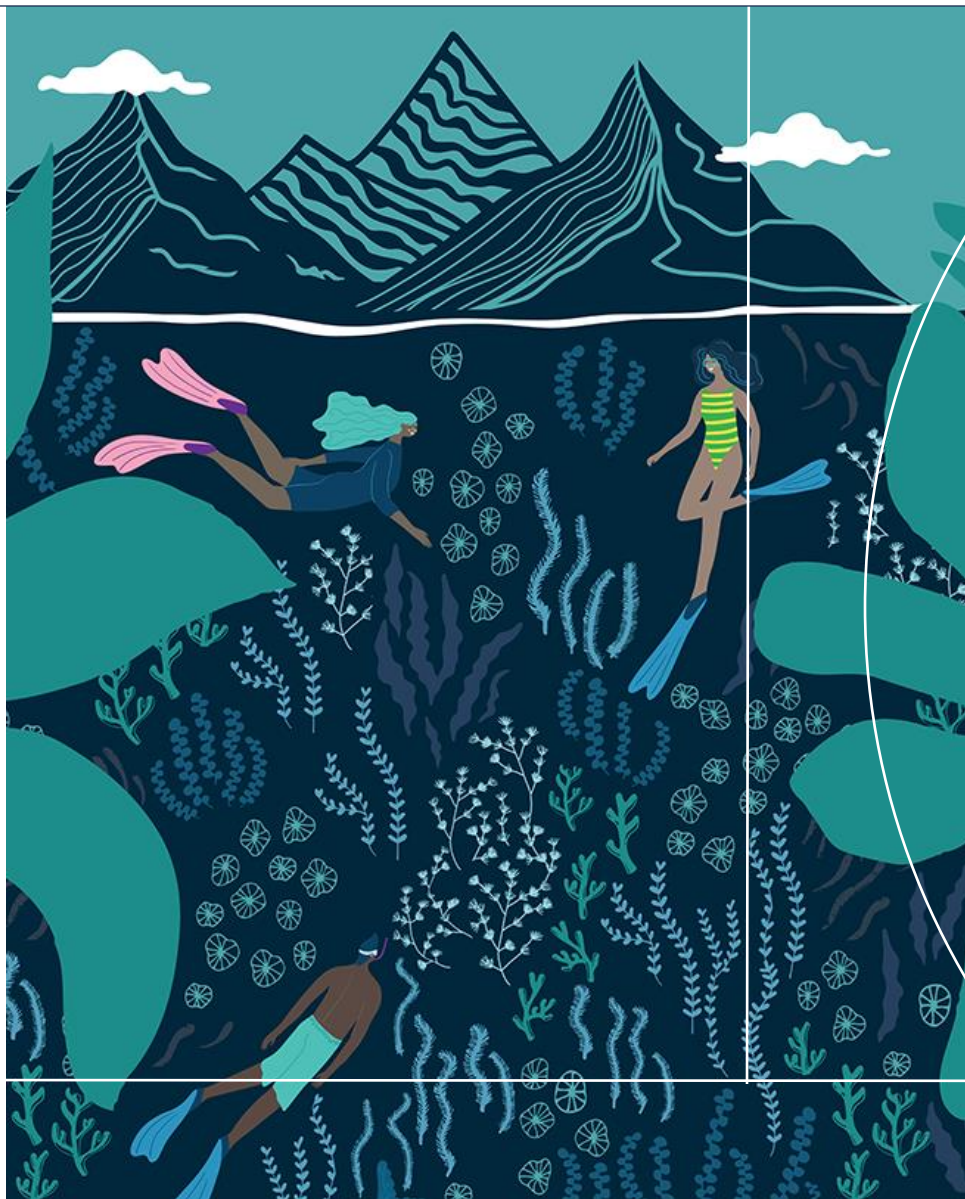


Thank you!



Jarvon.stout@uvi.edu
Kai.Nielsen@uvi.edu





Communication and Dissemination

Meet The Team

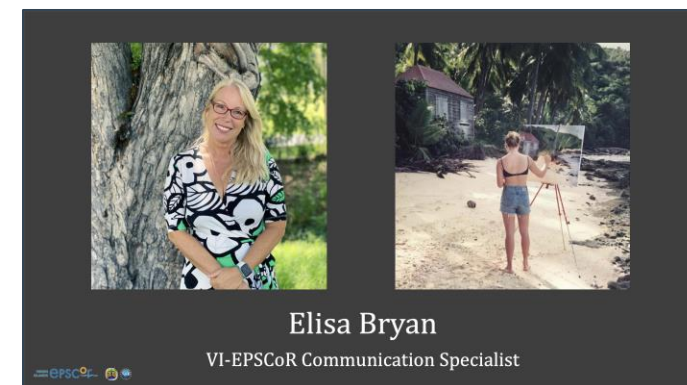
- ✓ Joint conference presentation at the SC EPSCoR EOD Conference in 2022 - *"A picture is worth a thousand words, and so is good design"*



Elisa Bryan,
Communication Specialist

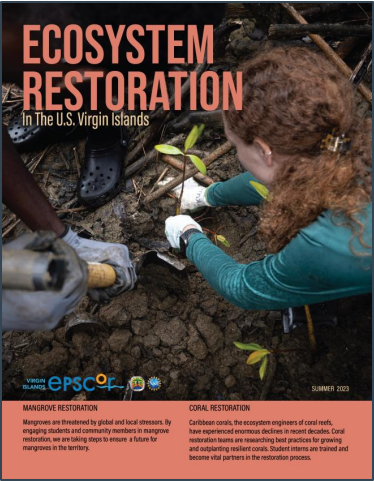
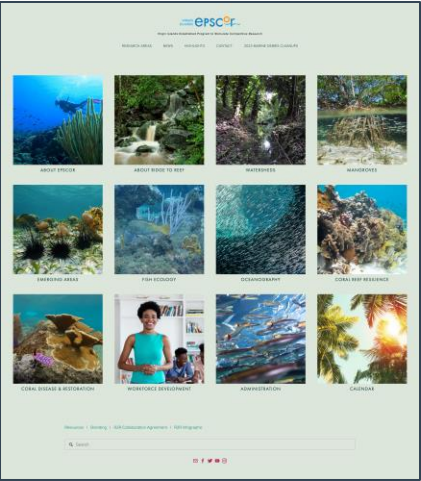


Daniel Mele,
Communication Assistant



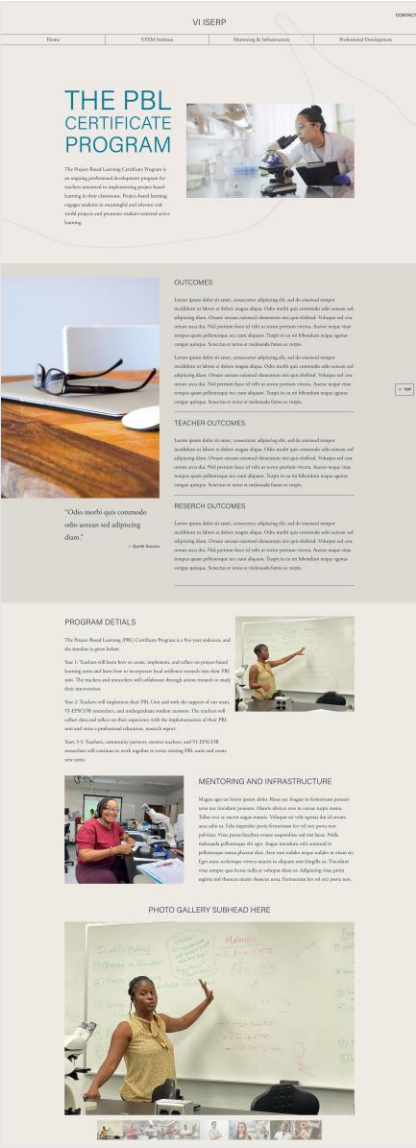
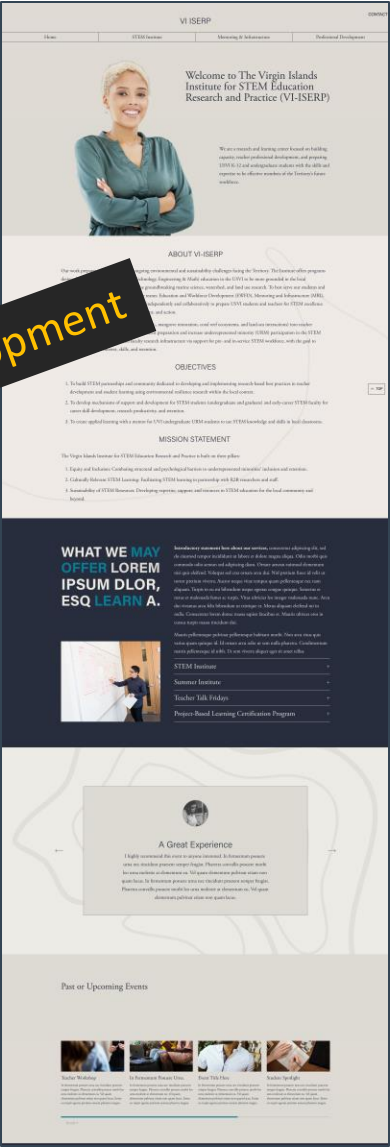
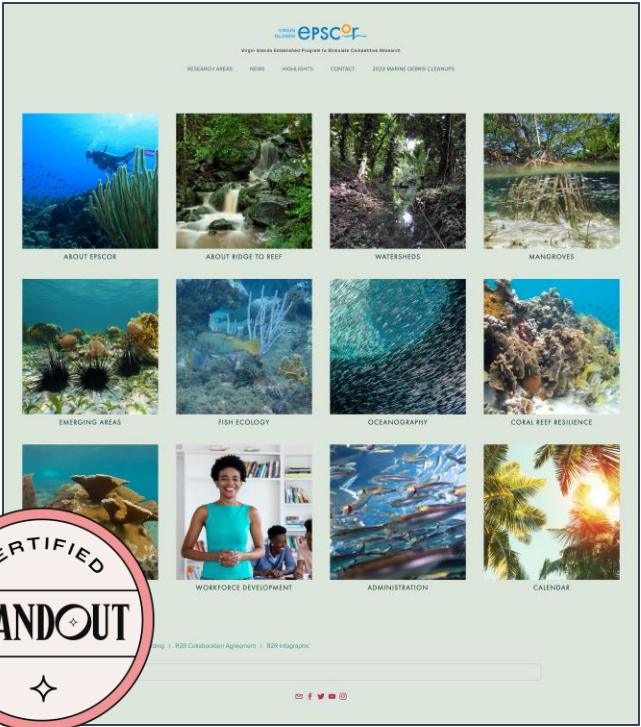
Goals And Objectives

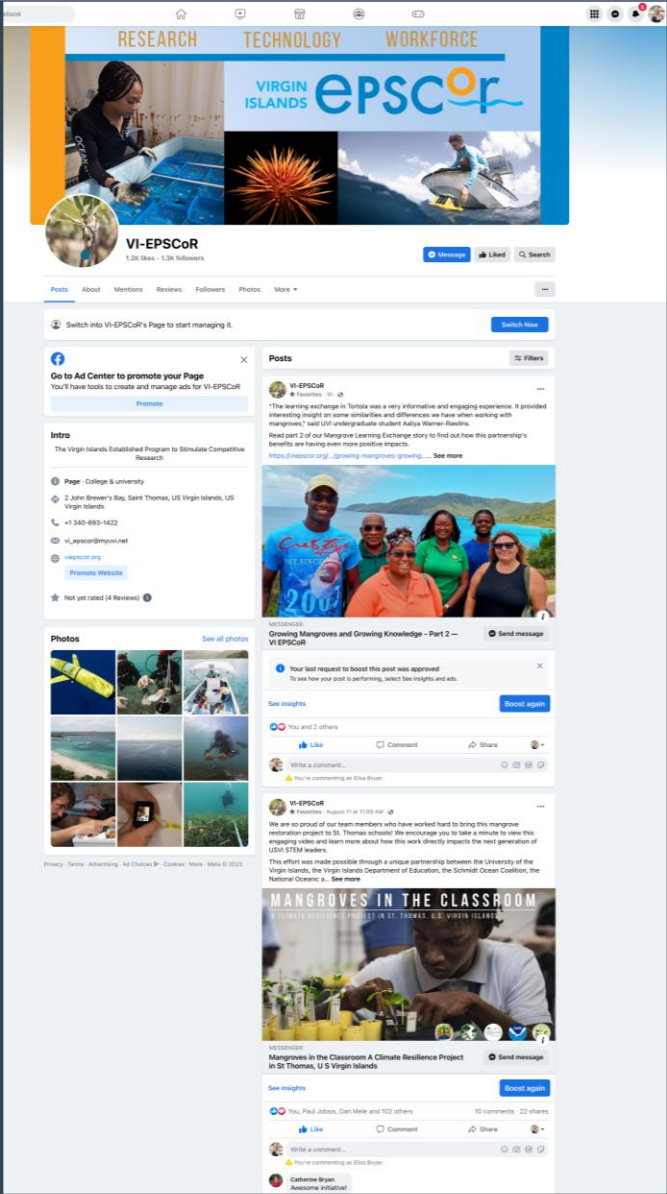
Goal CD1	Inform stakeholders and community of R2R Project research and educational goals and progress made toward achieving those goals.
Goal CD2	Produce annual VI EPSCoR newsletter.
Goal CD3	Support R2R Project team's promotional needs.



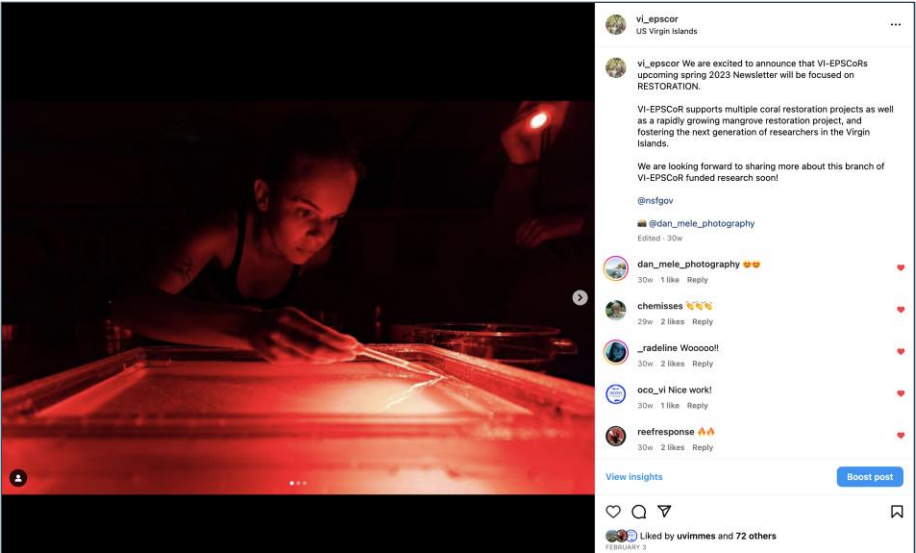
Outcomes - Websites

- ✓ 27K Website Visitors
- ✓ Advanced CSS training program completed.
- ✓ Website upgrade in progress
- ✓ New VI ISERP website in progress





Outcomes Social Media



118,000 Social Media Engagements

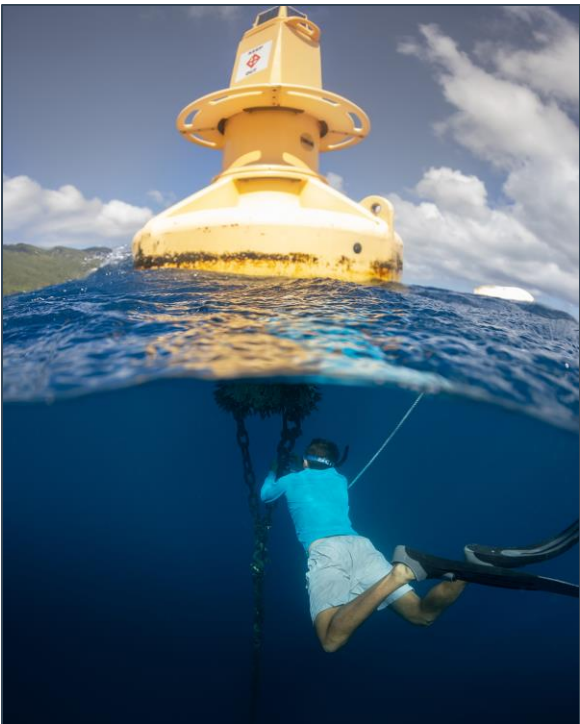
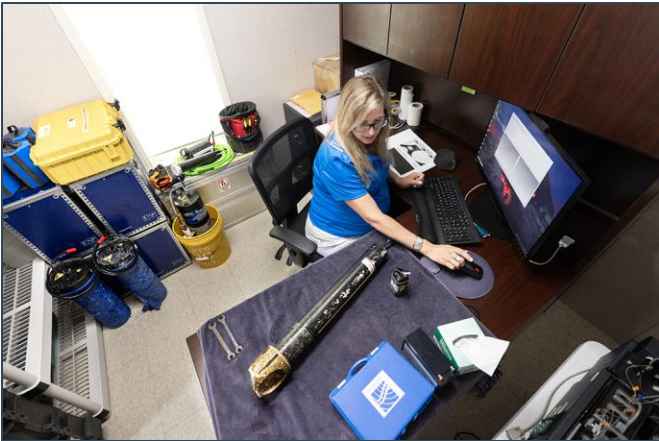
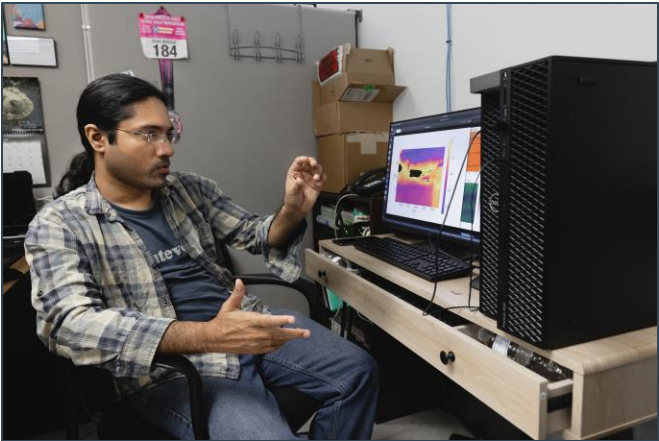
11 YouTube Videos

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 28, 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

In The U.S. Virgin Islands

MANGROVE 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 outplanting resilient corals. Student interns are trained and become vital partners in the restoration process.

VIRGIN ISLANDS **epscor**  **SUMMER 2023**

Preparing A STEM Workforce For The USVI

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 epscor** Foundation Program

[illegible][illegible]

Marine Debris in the U.S. Virgin Islands: A Historical Perspective

1950 - 2000

The 1980s saw the first reported marine debris clean-up organized by independent groups in the USVI. Plus, the first annual Virgin Islands Coastweeks event kicked off and is the longest ongoing, data-collecting clean-ups on record in the territory.

2001 - 2010 The Virgin Islands Waste Management Authority funds an analysis of USVI landfills to estimate solid wastes. Coastweeks expands and new independent clean-up efforts are launched. Special clean-ups are hosted following hurricane Marilyn.

2011 - 2020 The University of the Virgin Islands (UVI) collaborates with teachers to develop a marine debris curricula for the territory. After hurricanes Irma and Maria in 2017, a Federal Emergency Management Agency-funded response (Emergency Support Function -10) removed large debris, like washed-up boats, and volunteers cleaned beaches and shorelines. UVI conducts the first Great Mangrove Clean-up on St. Thomas.

2021 - 2030 The NOAA Marine Debris Program funds a \$4.2 million USVI Department of Planning and Natural Resources removal grant of hurricane-generated debris. New legislation geared toward reducing marine debris is instituted.

Single-use plastic bags are banned, followed by a ban on plastic straws.

Led by UVI, the Marine Debris Action Plan is funded, along with an expansion of the Great Mangrove Clean-up to all three islands. Additional efforts to address debris include V1 Clean Coasts. NOAA MDP & stakeholders develop a Marine Debris Emergency Response Plan for the U.S. Virgin Islands.

What's Next?

The Marine Debris Action Plan

The USVI MDPAP is a NOAA-funded effort led by the University of the Virgin Islands that provides a comprehensive framework for identifying objectives, strategies, and recommended actions to ensure that the USVI and its coasts, people and wildlife are free from the impacts of marine debris.

It is a living document that will be updated every five years. As the issues of marine debris change, so will this plan.

NOAA MARINE DEBRIS PROGRAM (MDP)

NOAA MDP has funded more than \$4.84 million in grants to USVI organizations, for marine debris removal, education, and prevention. To date, more than 377,500 lbs of marine debris has been removed from USVI shorelines.

PLUS, COASTWEEKS!

V1 Coastweeks has cleaned up beaches for 30+ years and removed more than 275,000 lbs of debris from USVI shorelines.

If you could watch the length of coastline cleaned, you would have walked more than 508 miles! Since 1986, the effort has expanded to 82 beaches on St. Thomas, St. John, St. Croix and Water Island.

THANK YOU VOLUNTEERS!

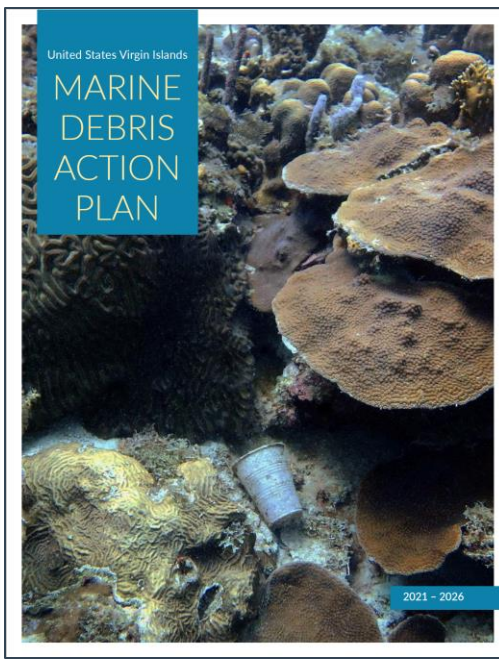
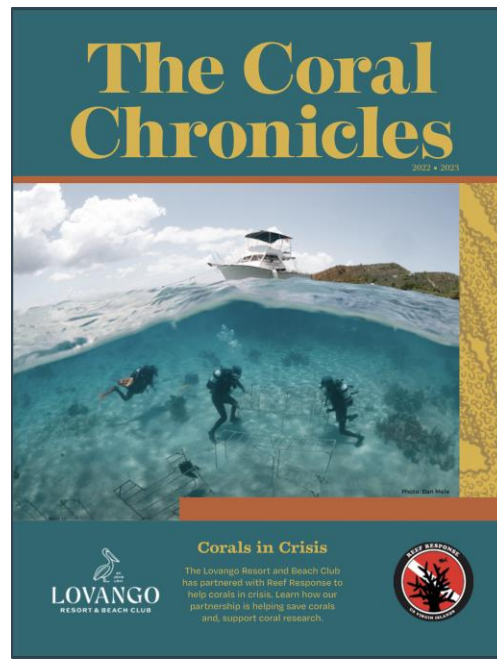
2.4 years or 21,000 collective hours. That's how much time volunteers have logged during coastweek clean-ups alone, and those make up only a fraction of the clean-ups that have happened in the USVI.

34 local and federal organizations and counting have contributed to the efforts outlined here.

PARTNERS Virginia Islands Marine Activities Service | The Ocean Conservancy | U.S. Fish & Wildlife Club | Coast Bay Communities Council | Emergency Site Property Owners Association | Virgin Islands Department of Planning and Natural Resources | Virgin Islands Division of Coastal Zone Management | Virgin Islands Division of Fish and Wildlife | St. Croix Environmental Association | Bay Section of American Sea Grant | Cook Beach Ocean Ship | Virgin Islands Conservation Society | Coastal Health Center | Virgin Islands National Park | Federal of US National Park Service | CARRMI Dive Club | Adventure in Diving Professionals | Blue Flag USVI | V1 EcoAdventures | Virgin Islands Marine Sanctuary Authority | US Environmental Protection Agency | The Environmental Futures Center at Stonewall University | The Virgin Islands Recycling Partnership | The National Park and Wildlife Foundation | US Coast Guard | National Oceanic and Atmospheric Administration | US Navy Corps of Engineers | Federal Emergency Management Agency | Red Carbon St. Thomas | Clean Sweep Foundation | CleanPP | US Coast Guard | US Fish and Wildlife Service | US Coast Services & Communications | Marine Pollution Fund | USVI | University of the Virgin Islands | Center for Marine and Environmental Studies | Virgin Islands | Established Programs for Sustainable Competitive Research

NOAA CORAL REEF
NATIONAL SYSTEM OF PUBLIC LANDS

EPSCoR



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

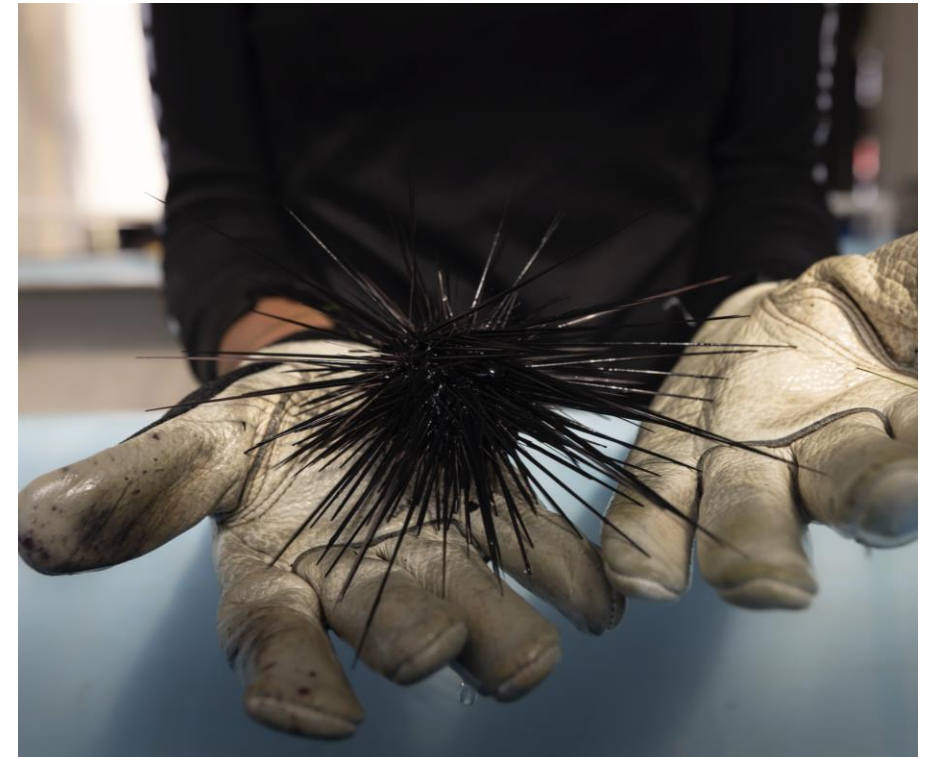
Year 4 Goals

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

- Course participant

Adobe Workshop Participants

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





Thank you!

Elisa Bryan

EMAIL: elisa.lacatena@uvi.edu

PHONE: 340-693-1039

Dan Mele

EMAIL: daniel.mele@uvi.edu

PHONE: 240-687-6578





Cyberinfrastructure & Data Management



Introduction

- Data Manager and Underwater Glider Technician
- Ancestral Virgin Islander
- UVI Alumni
- BS Marine Biology
 - Minor in Data Science and Environmental Science
- Programming Languages: Python, SQL, R
- Certified Microsoft Azure and Networking Technician

Collaborations



Research Goals And Objectives

Goal 1	Multi-home the internet connection and increase bandwidth capacity to 10 Gbps on and between both campuses.
Goal 2	Upgrade fiber optic infrastructure and pathway system for research buildings from multimode to single mode fiber to support 10+ Gbps building uplink speeds.
Goal 3	Upgrade research related in-building wired and wireless services.
Goal 4	Expand public cloud services in support of research data needs.
Goal 5	Deploy on-premises research virtual server and storage environment with replication to MS Azure.



Results, Outcomes & Accomplishments

- ✓ Completed Campus Network Assessment
- ✓ Upgraded Research Internet Access (Internet2) from 1gb to 10gb
 - Core network equipment upgrades
 - Upgraded Cisco Networking Equipment for research buildings
 - Increased Wi-Fi Access Points from 200 to 500
 - Increased user connection speed up to 800Mbps
- ✓ Research building network fiber and inbuilding wiring upgrades
 - CMES Annex
 - Marine Science building
 - Simulation Center (STX)



Results, Outcomes & Accomplishments

- ✓ Expanded public cloud services in support of research
 - Microsoft Azure Integration
 - Azure Hybrid Services
- ✓ Purchased HPC Dell servers & storage equipment
 - High Performance Computing Servers
- ✓ Participated in EDOCs development and testing



Results, Outcomes & Accomplishments

3 New Grant Awards = **\$3,680,000** in additional funding

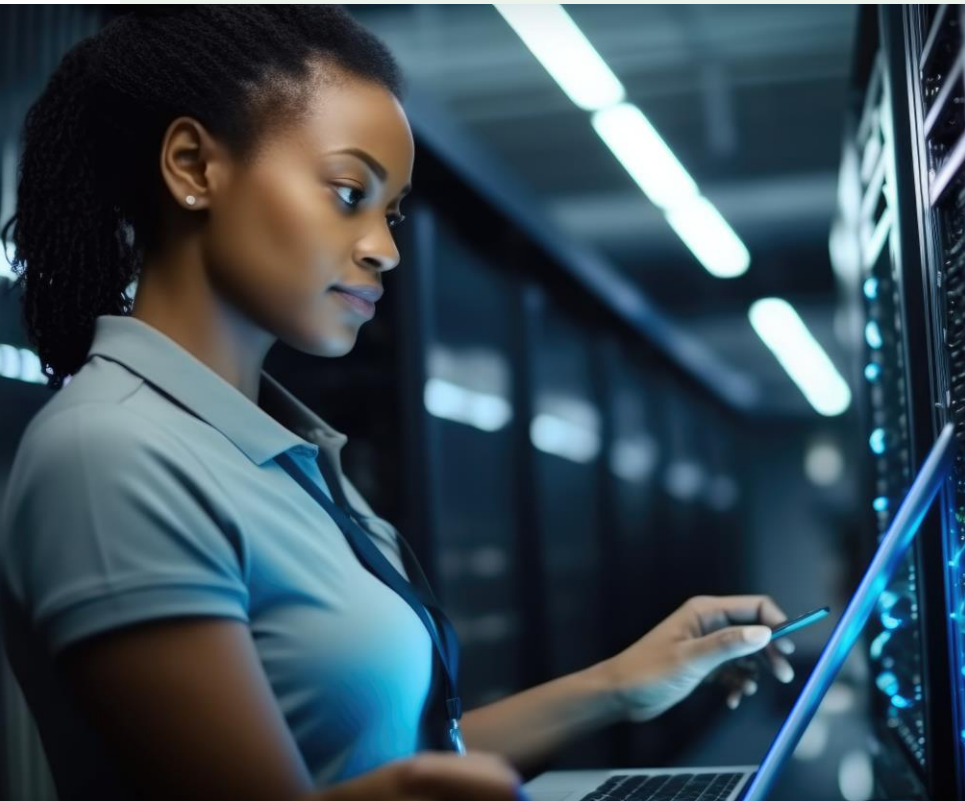
1. NSF Campus Cyberinfrastructure Grant - *CC* Networking Infrastructure: Improving the University of the Virgin Islands' Scientific Research Data Movement Infrastructure and Network Capacity* (Award #220148) - **\$500,000**
2. Cloudbank Award - **\$180,000 (\$15k monthly)**
3. National Telecommunications and Information Administration Grant - **\$3,000,000**



Future Plans

Assessment	Ongoing assessment of network resources for research needs
Install & Configure	Install and configure onsite high-performance servers & storage to replicate to MS Azure
Collaborate	Collaborate with researchers to create upload, organization, and archival procedures for research data





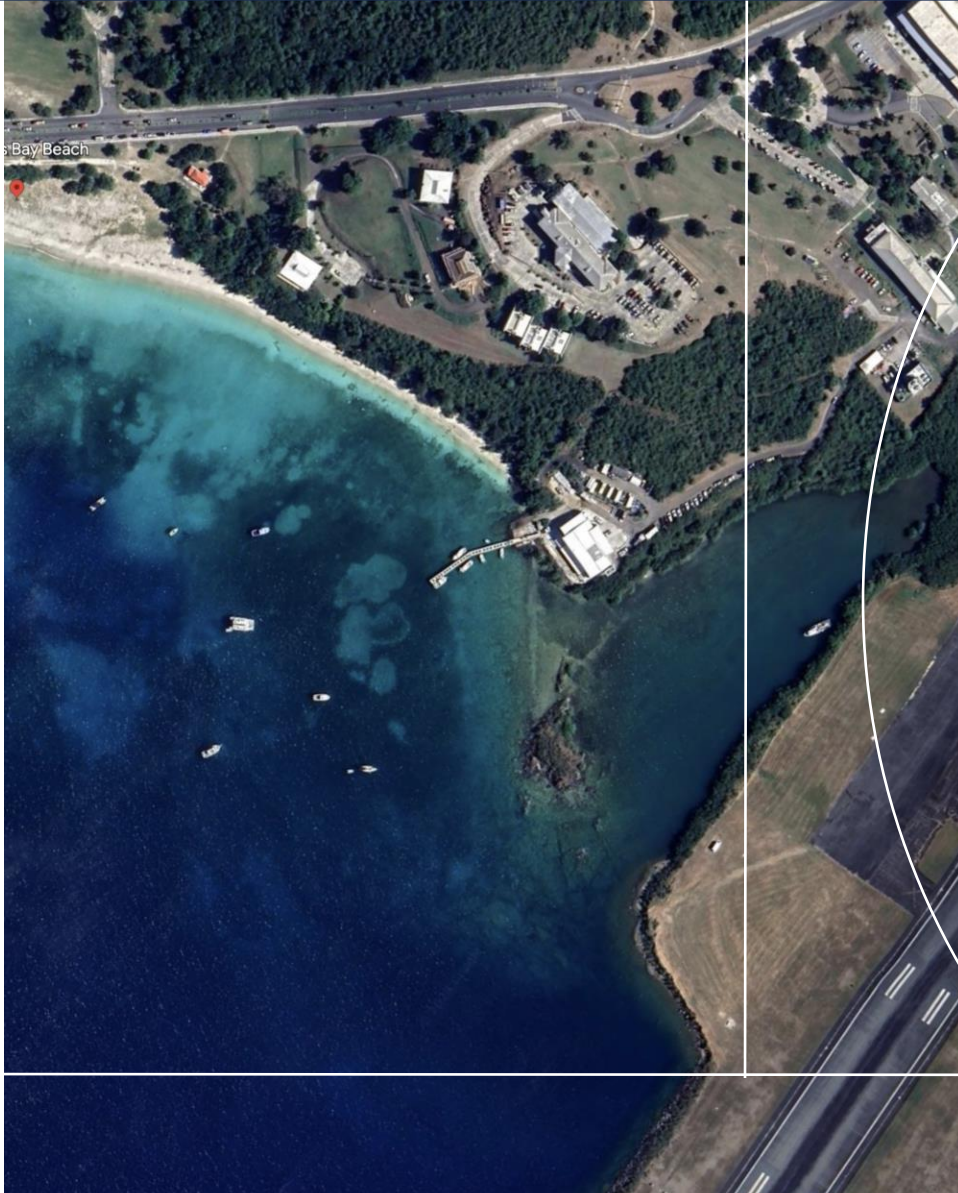
Thank you!

Travis Hamlin

EMAIL: travis.hamlin@uvi.edu

PHONE: 340-642-6858





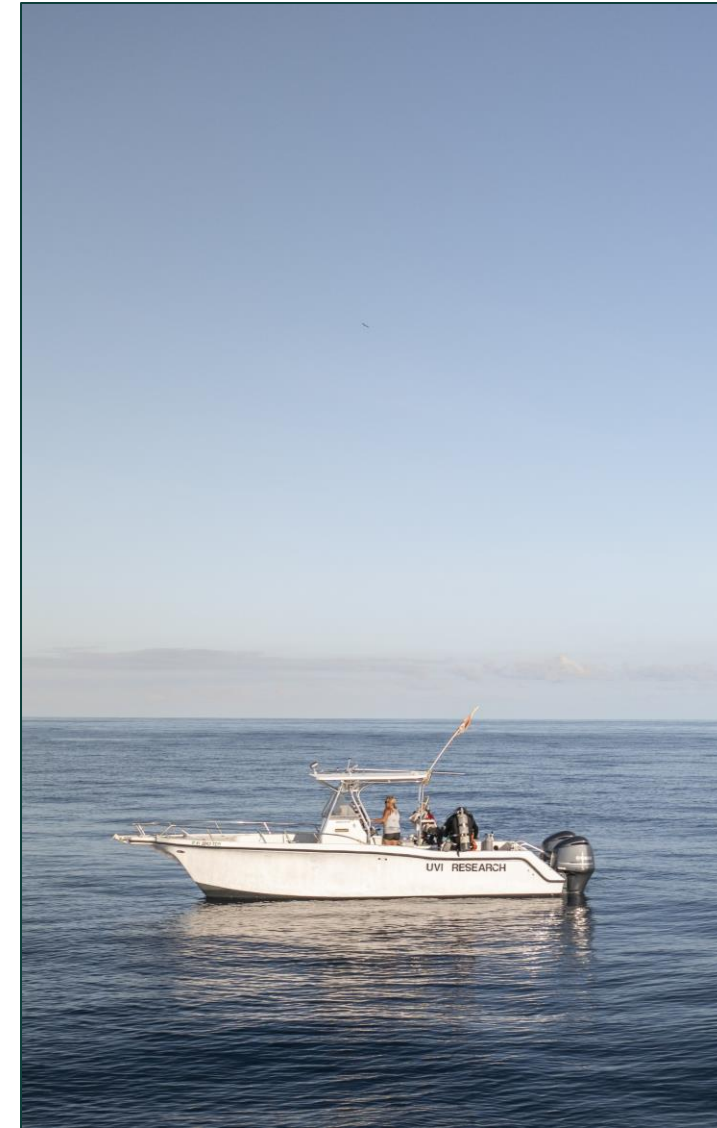
Project Summary

- Broader Impacts and Intellectual Merit
- Sustainability
- R2R Highlights
- Post Doc Mentoring
- Broadening Participation & Diversity Efforts



Broader Impacts

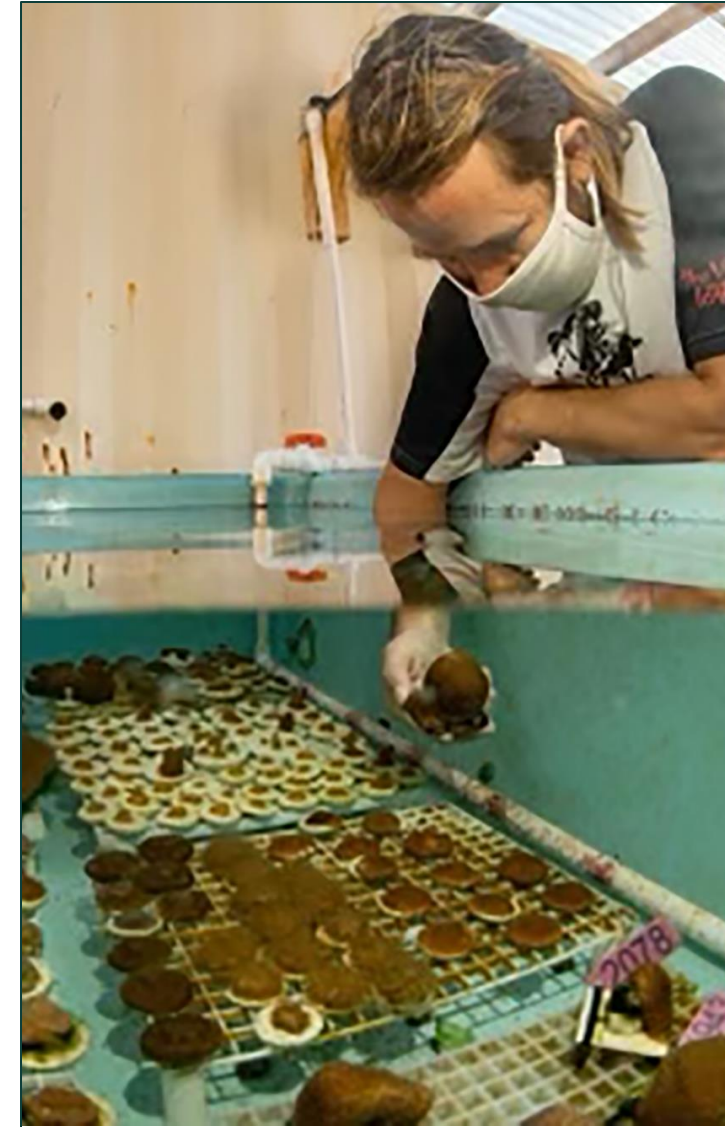
- Reach
- Actionable Science:
 - MDAP, CRRP, and
 - CDORP, HMRP





Intellectual Merit

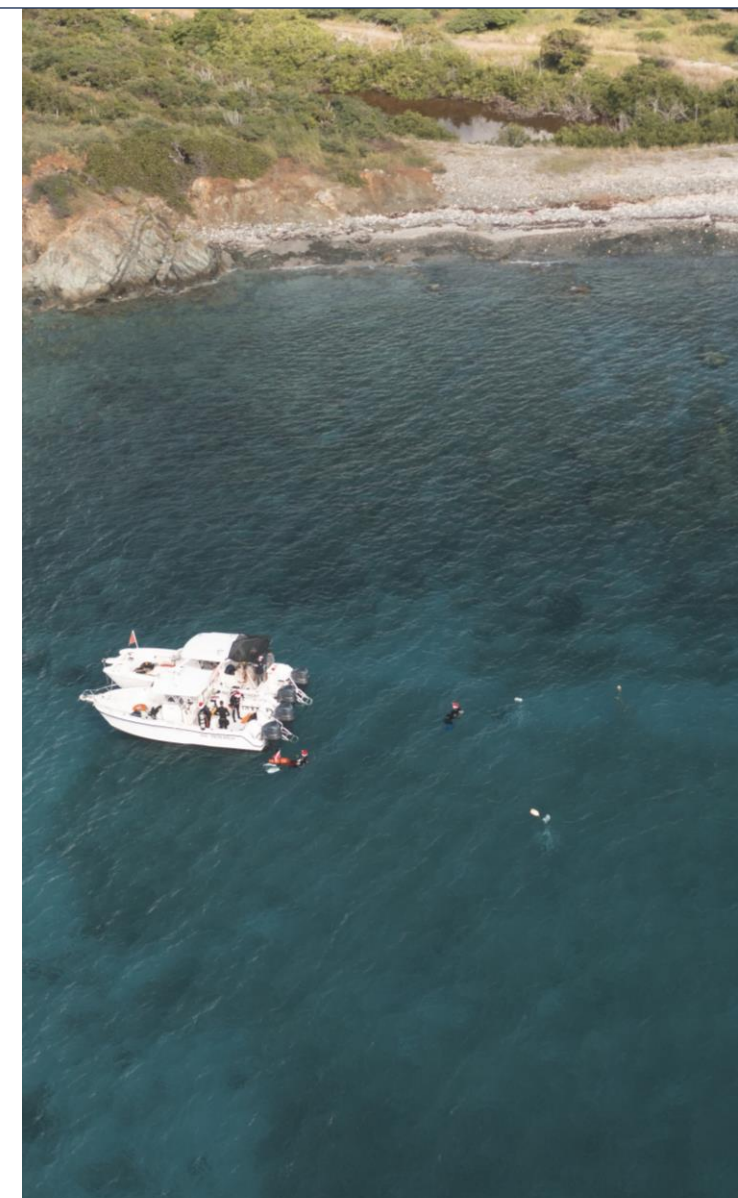
- 50 peer-reviewed publications
- 55 grant proposals awarded
- \$18.8M



Sustainability

Proposal Collaborations and Synergies

Title	R2R Proposal Submission Collaboration	Award Amount
RII-BEC: Securing STEM Island Pathways	Kristen Wilson-Grimes, Lawanda Cummings	\$1,000,000
Expanding science-based coral and mangrove restoration to protect Virgin Islands shorelines	Marilyn Brandt, Kristen Wilson-Grimes	\$619,805
Monitoring of natural and out-planted threatened <i>Acroporid</i> corals in the US Virgin Islands	Marilyn Brandt, Tyler Smith	\$747,189
Strengthen Coastal Resilience in the US Virgin Islands through Coral Reef Restoration	Kristen Wilson-Grimes, Marilyn Brandt	\$237,455
Total		\$2,604,449



Sustainability

Total VI-EPSCoR-Generated Research Funding

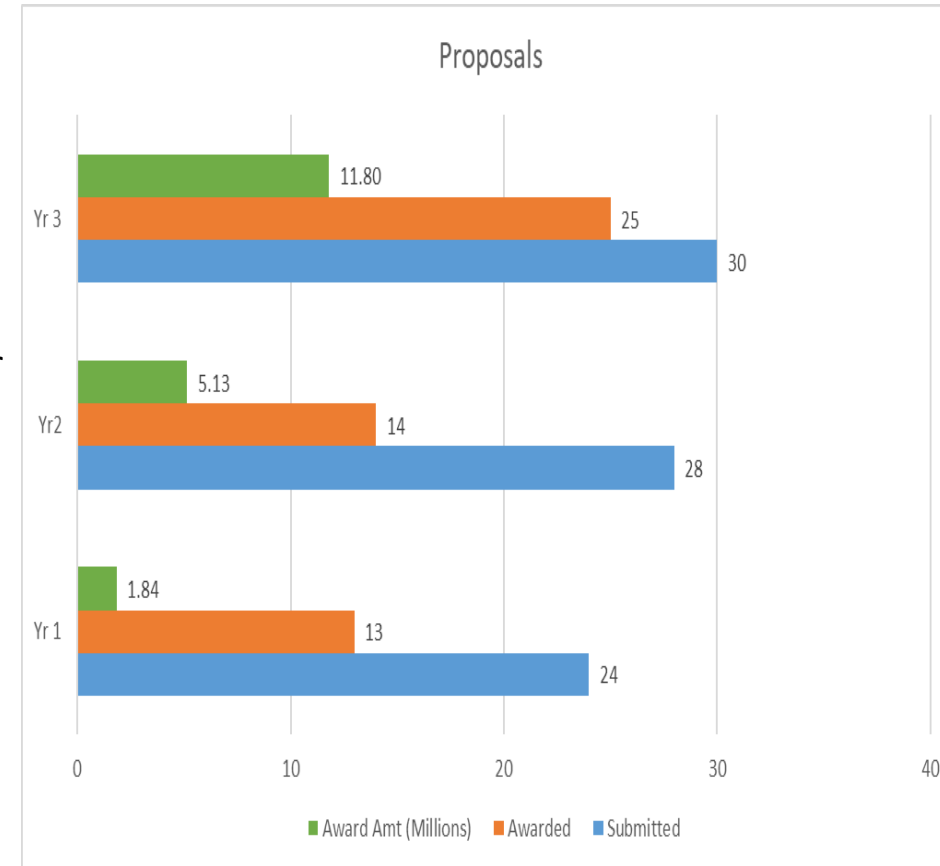
Title	Funding Total
VI-EPSCoR- related funding	\$18,772,944
Non-VI-EPSCoR related funding	\$26,682,202
Total Research Funding	\$45,455,146





Sustainability

- Not just # of grants and pubs
- Community awareness engagement and impact
- Interdependencies and synergies with other projects & awards –e.g., SEAS Islands Alliance/HMRP/RII-BEC/CC*/CoPE
- Leveraging limited research infrastructure across a network of projects sharing common objectives of environmental monitoring and management
- Research that leads to government action, implementation and policy (i.e., MDAP, CRRP)



Highlights from R2R Project

- A High-Resolution US Caribbean Regional Ocean Model Created by VI-EPSCoR's Oceanography Team
- Coral Disease research to better understand the relationship between coral disease and coral restoration to maximize success
- A Nation-wide Townhall meeting hosted by the US National Academies of Sciences and VI-EPSCoR's EWFD Team "Rethinking the STEM Pipeline: A Holistic Approach to Student Preparation for the STEM Workforce"



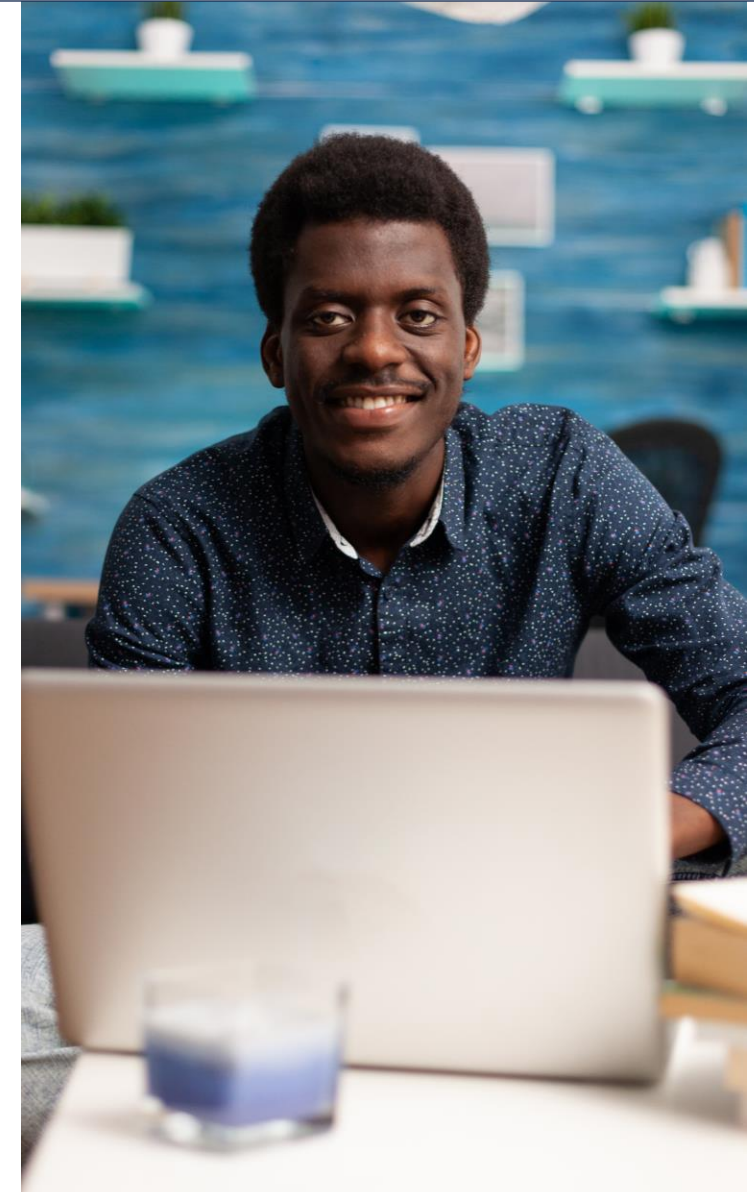


Post Doc Mentoring

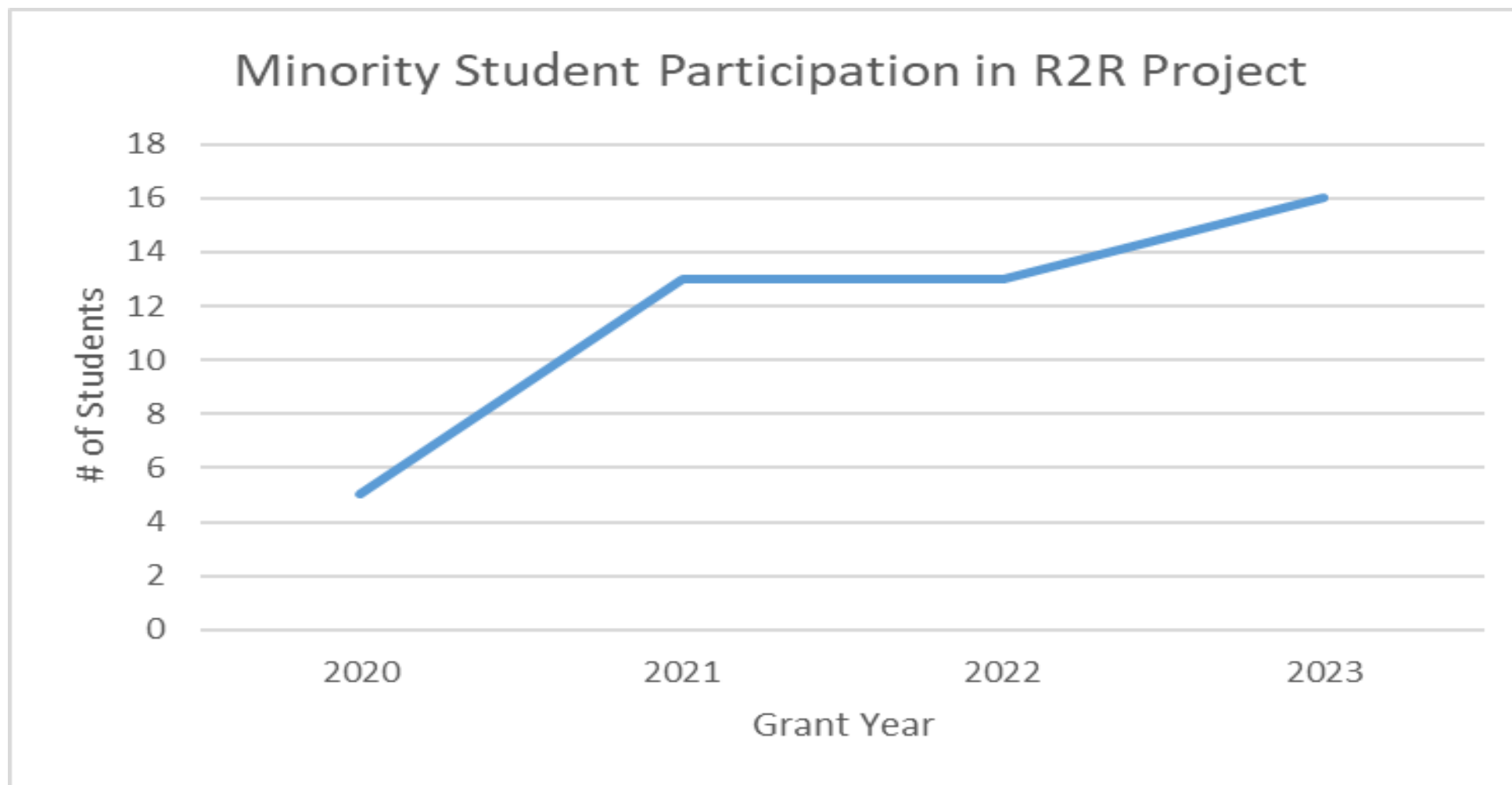
"Coffee With Post Docs"

Informal Friday morning Zoom conversations with each other on research, job searches, career path options.

Also mixed in are conversations with scientists in academia, non-profits, government and private sector who discuss career success, pathways, and lessons learned.



Broadening Participation & Diversity Efforts



WE'RE CONNECTING THE DOTS FROM RIDGE TO REEF

FISH BAY

WATERSHED
Understanding land-based inputs in runoff and the downstream impacts on coastal and marine ecosystems.

REEF BAY

OCEANOGRAPHY
The study and modeling of ocean conditions that impact marine life in the face of environmental stressors like climate change and pollution.

CORAL REEF RESILIENCE
How biodiversity and water quality affect the persistence and resilience of coral reefs over time.

FISH ECOLOGY
Examining environmental factors shaping fish reproduction, foraging & habitat preference in changing & degraded coastal ecosystems.

EUROPA BAY

MANGROVES
Characterizing historic and current distribution of mangroves and identifying factors that influence restoration potential.

MARINE DISEASE & RESTORATION
Evaluating biodiversity and water quality on the prevalence of coral disease. Evaluating the role of water quality on outplanted corals.

EMERGING AREAS
How seagrass shapes coastal habitats and affects marine animal feeding and habitat use. Understanding factors that lead to increases of sargassum in the VI.

EWFD

THE RIDGE TO REEF PROJECT (R2R) The connection between our research areas is the water that originates as rain and runs down the hills and ghuts of our islands. The flow of water emerges from our watersheds carrying sediments, nutrients, pollutants and debris as it enters our coastal and marine ecosystem. We strive to understand these inputs and their impacts on the health and function of ecosystems – with the goal of mitigating the negative effects and improving the management of our natural resources within the backdrop of climate change.

EDUCATION & WORKFORCE DEVELOPMENT (EWFD) EWFD is the unifying resource to share R2R research with the USVI students and citizens through formal and informal educational tools—and prepare a diverse workforce to address the environmental challenges of today and tomorrow.

ABOUT R2R A 5-year National Science Foundation (NSF)-EPSCoR Track 1 Research Infrastructure Improvement Grant (OIA 1946412) titled "Ridge to Reef Processes and Interdependent Drivers of Small Island Resilience".

Visit us at www.viepscor.org



Thank you!

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