

## Citizen Science



### Outreach/Education/Citizen Science

#### • Improve science literacy and engagement in USVI

A significant effort to involve the wider USVI community in science issues is planned. A STEM/science interpretive center will be opened on UVI's St. Thomas Campus. Public presentations will be offered throughout the Territory.

#### • Work with government and non-government groups

A full-time citizen science coordinator will be hired to work closely with a range of local agencies and organizations.

#### • Significantly increase engagement of Virgin Islanders in locally relevant science issues

Mare Nostrum will publicly demonstrate how applying the disciplines of science can help lead to a better quality of life in the USVI and the wider Caribbean.

#### • Engage residents in research, outreach and education with terrestrial and marine programs

Scientific processes will involve individuals in the investigation of marine and terrestrially important issues, providing a public base for

the USVI to become nationally competitive in research in both Caribbean ecosystems and science education.



### Outreach & Education

## Mare Nostrum Caribbean

Our Caribbean Sea - 2014-2019



### Cyber Infrastructure

### Cyber Infrastructure

#### • Upgrade and improve capacity and security of UVI networks; integrate web-based services

UVI's Information and Technology Services (ITS) provides technical support and guidance for VI-EPSCoR and Mare Nostrum. It will improve and upgrade the capacity and security of electronic communication networks, and integrate web-based services to support VI-EPSCoR initiatives and outreach activities in support of the project.

Cyber Infrastructure projects will include improved network closet security, upgraded building cabling, upgraded core, distribution and access layer switches, upgraded power backups, and upgraded wireless coverage on campuses.

#### • Establish cloud-based disaster recovery plan

In response to a growing reliance on Internet, or cloud-based, applications and data storage services, ITS will design a system to ensure the program's ability to recover data lost to unexpected service interruptions or disasters.



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# Mare Nostrum Caribbean

Our Caribbean Sea  
- 2014 to 2019 -

Stewardship Through Strategic Research  
and Workforce Development

## Mare Nostrum Caribbean

Our Caribbean Sea - 2014-2019

The marine ecosystems of the U.S. Virgin Islands, especially coral reefs, are key to the economic viability and prosperity of the Territory. But they are vulnerable to both land-based and water-based human activities, as well as climatic and oceanographic change.

Mare Nostrum Caribbean is a five-year, \$20 million project. Our goal is to leverage the location of the USVI and UVI's research capacity to study the issues and propose responses that support the natural resilience and tolerance of Caribbean coral reef ecosystems facing current and future external pressures.

Mare Nostrum is led by VI-EPSCoR, at UVI and funded by the National Science Foundation (NSF).

#### Areas of Major Focus for Mare Nostrum:

- Coral Reef Research
- Emerging Research
- Workforce Development
- Cyber Infrastructure
- Outreach & Education
- Citizen Science



University of the Virgin Islands

# Mare Nostrum Caribbean

Our Caribbean Sea - 2014-2019

## Stewardship Through Strategic Research and Workforce Development

Mare Nostrum Caribbean is designed to support research that will increase understanding of the challenges facing local coral reef ecosystems - from climate change to destructive human impacts. The goal is to predict coral reef responses to these conditions, propose strategies to alleviate the destructive impact of human behaviors, and intervene where possible to protect our natural resources and way of life today and for future generations.

The project will: build community collaborations; increase and improve opportunities in Science, Technology, Engineering and Mathematics (STEM) education; build a more competitive workforce; and cultivate a scientifically informed population.

Mare Nostrum offers a unique opportunity to protect resources while strengthening our abilities to tackle the challenges of an uncertain future.

## Emerging Research

### • Coastal Oceanography

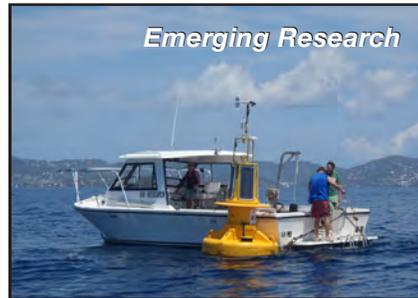
UVI's marine science research capabilities will be strengthened with the addition of two new faculty, including a coastal oceanographer, with support from graduate and undergraduate students.

### • Watershed Dynamics

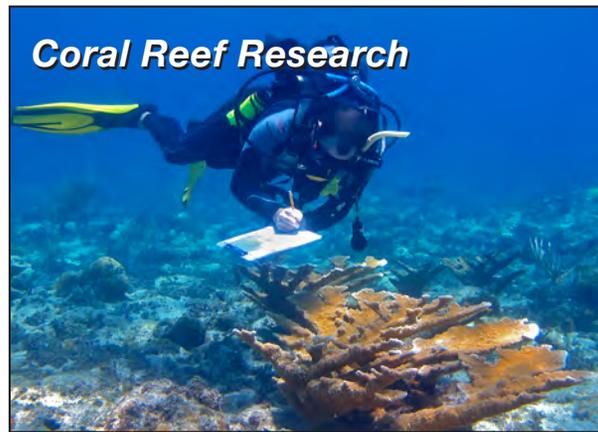
A researcher with specialization in watershed dynamics will be added to the existing staff at UVI to focus on the interactions between land and sea. Along with improving the learning experiences of students, the researcher will also provide significant support to this project's Citizen Science component.

### • Human Dimensions

Mare Nostrum acknowledges the significance of stakeholder and citizen participation in managing our environment and natural resources. It will provide a social-ecological approach to sustainable management and contribute to our understanding of how cultural perspectives, attitudes and behaviors contribute to small island social-ecological systems' ability to adapt to environmental change.



Emerging Research



Coral Reef Research

## Coral Reef Research

### • UVI scientists, grad and undergrad students

The USVI has faced a long history of local stress to coral reefs, including the escalating use of land and sea resources with little planning and regulation. More recently, the invasive Indo-Pacific lionfish (*Pterois volitans*) threatens small island economies through the decline of commercial fisheries and the associated loss of ecologically important species, adding to the stress on coral reefs.

Mare Nostrum research will be led by experienced UVI scientists, with assistance from three postdoctoral researchers to be hired. It will also involve graduate and undergraduate students serving as young researchers.

### • Research equipment for St. John and St. Croix

The grant includes the purchase of one research vessel each to be based in St. John and St. Croix. It will also fund infrastructure renovations to the Virgin Islands Environmental Research Station (VIERS), on St. John.

### • Focus: Dynamics, Disease and Demographics

Researchers will focus on understanding the dynamics and diseases that affect coral populations, including reproduction and mortality. They will also investigate the influence water temperatures have on fish and coral reproduction, as well as other factors that influence the growth of marine plants.

## Workforce Development

### • Improve STEM education K-12 through university

The workforce development component of Mare Nostrum will develop the best formal and informal educational strategies for Science, Technology, Engineering and Mathematics (STEM) education.

The program will improve the skills and abilities of the USVI workforce, by strengthening the economic competitiveness of our citizens in Science, Technology, Engineering and Mathematics (STEM) fields. A workforce with improved STEM skills will be better prepared to pursue STEM related careers.



Expand Opportunity

Included will be the establishment of the Virgin Islands Institute for STEM Education Research and Practice (VI-IS-ERP) to oversee STEM education research and practice at UVI. We will also collaborate with the V.I. Department of Education to expand STEM opportunities at the K-12 level throughout the Territory.

### • Improve skills, competitiveness of USVI workforce

The Workforce Development area also includes a plan to develop a Cooperative Fisheries Institute, with a laboratory on St. Croix. This will be a joint effort by UVI's Center for Marine and Environmental Sciences and the V.I. Department of Planning and Natural Resources. It is designed as a training program to increase the expertise of people doing fisheries research in the USVI. The lab will provide opportunities for more research to be conducted in-house and consolidate management and the dissemination of data.



Workforce Development