

“Strengthening  
our  
Research,  
Education  
and  
Outreach  
Collaborations  
in the Region.”

VIRGIN ISLANDS **epscor**  
*Annual Conference* 2014



UVI Administration and  
Conference Center  
University of the Virgin Islands  
St. Thomas, V. I.

Monday May 12, 2014  
8:00 a.m. - 5:00 p.m.

*Virgin Islands Experimental Program To Stimulate Competitive Research*

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Virgin Islands Experimental Program to Stimulate Competitive Research  
**ANNUAL CONFERENCE**  
Monday May 12<sup>th</sup> 2014  
***Strengthening Our Research, Education  
and  
Outreach Collaborations in the Region***

**AGENDA**

**MONDAY May 12<sup>th</sup>**

8:00 a.m. – 8:30 a.m.

Registration / Breakfast

8:30 a.m. – 9:00 a.m.

**Welcome Remarks**

Dr. Henry H. Smith, Director VI-EPSCoR

Dr. David Hall, President, University of the Virgin Islands

Hon. Donna Christian-Christensen, Delegate to Congress

Dr. Denise Barnes, NSF-EPSCoR Head

Representative of Hon. John P. de Jongh, Governor, US Virgin Islands

9:00 a.m. – 9:30 a.m.

**Keynote Presentation:** Dr. Lee T. Todd Jr., University of Kentucky. *The Impact of EPSCoR on Kentucky's Economy*

**SESSION 1:**

9:30 a.m. – 9:45 a.m.

**Integrated Caribbean Coral Reef Ecosystems**

Mr. Howard Forbes Jr., *Using Biogeochemistry and Phytochemistry to Better Assess and Understand Rhizophora mangle (Red mangrove) Ecosystems in the Virgin Islands*

9:45 a.m. – 9:50 a.m.

Discussion

9:50 a.m. – 10:05 a.m.

Dr. Richard Appeldoorn, *Using Passive Acoustic Technology to Monitor and Manage Groupers at Spawning Aggregations*

10:05 a.m. -10:10 a.m.

Discussion

10:10 a.m. – 10:30 a.m.

**COFFEE BREAK**

10:30 a.m. – 10:45 a.m.

Ms. Rosmin Ennis, *Coral Reef Health Responses to Chronic and Acute Changes in Water Quality Gradients in St. Thomas, US Virgin Islands*

10:45 a.m. – 10:50 a.m.

Discussion

10:50 a.m. – 11:05 a.m.

Dr. Marilyn Brandt, *The Ecology and Etiology of a Coral Killer*

11:05 a.m. – 11:10 a.m.

Discussion

11:10 a.m. – 11:25 a.m.

Ms. Elizabeth Kadison, *Predatory Reef Fish Community Differences Between the US Virgin Islands and the Complexities of Managing Fisheries Across the Territory*

11:25 a.m. – 11:30 a.m.

Discussion

11:30 a.m. – 11:45 a.m.

Dr. Tyler Smith, *Ark or Alamo? Caribbean Mesophotic Coral Reefs as Refugia from Thermal Stress*

11:45 a.m. – 11:50 a.m.

Discussion

11:50 a.m. – 12:05 p.m.

Dr. Dan Holstein, *Vertical and Horizontal Coral Connectivity, and Implications for USVI Coral Reef Resilience*

12:05 noon – 12:10 p.m.

Discussion

**SESSION 2:**

12:10 p.m. – 1:20 p.m.

**LUNCH AND SPECIAL LUNCHTIME PRESENTATION**

Dr. Sean Kennan, Program Director, NSF-EPSCoR. *Partnership and Collaborative Funding Opportunities via the National Science Foundation*

Question and Answer and Discussion

**SESSION 3:**

1:20 p.m. -1:35 p.m.

**Environmental Stewardship**

Dr. William A. Gould, *Partnerships in Caribbean Landscape Conservation Cooperative – A New Framework for Conserving Natural and Cultural Resources*

1:35 p.m. -1:40 p.m.

Discussion

1:40 p.m. – 1:55 p.m.

Ms. Diehdra Potter, *Conserving Nature's Little Secrets*

1:55 p.m. – 2:00 p.m.

Discussion

**SESSION 4:**

2:00p.m. – 2:15 p.m.

**Education**Dr. Sandra Romano, *Cyclic Pathways to Success: A Model for Transforming STEM Education at Minority Serving Institutions*

2:15 p.m. – 2:20 p.m.

Discussion

2:20 p.m. – 2:35 p.m.

Ms. Susan K. Beach, *STEM Goals and Initiatives in the Virgin Islands Department of Education*

2:35 p.m. – 2:40 p.m.

Discussion

2:40 p.m. – 2:50 p.m.

**COFFEE BREAK**

2:50 p.m. – 3:05 p.m.

Dr. Vanere Goodwin, *Strengthening the Pedagogical Skills of K-12 Math Teachers in the V.I.*

3:05 p.m. – 3:10 p.m.

Discussion

3:10 p.m. – 3:25 p.m.

Ms. Charlotte McDevitt, *Sustainability in the BVI from a Not-For-Profit Perspective*; and Susan Zaluski, *Partnerships in Progress: Environmental Education and Outreach Activities in the (British) Virgin Islands*

3:25 p.m. – 3:30 p.m.

Discussion

**Environmental Stewardship (Resumed)**

3:30 p.m. – 3:45 p.m.

Dr. Kostas Alexandridis, *Knowledge and Adaptation Pathways for Environmental and Climate Change Research*

3:45 p.m. – 3:50 p.m.

Discussion

**SESSION 5:**

3:50 p.m. – 4:05 p.m.

**Outreach**Mr. Nick Drayton, *VI-EPSCoR's World of Outreach*

4:05 p.m. – 4:10 p.m.

Discussion

4:10 p.m. – 4:25 p.m.

Dr. Chenzira Davis-Kahina, *UVI's VICCC: A Resource for Cultural Research and Outreach*

4:25 p.m. – 4:30 p.m.

Discussion

**SESSION 6:**

4:30 p.m. – 4:45 p.m.

**Wrap-up**

Dr. Richard Nemeth and Mr. Nick Drayton, Review of the Day's Proceedings, Discussion and Evaluations

4:45 p.m. – 5:00 p.m.

**Closing Remarks**

Dr. Henry H. Smith

## Keynote Presentation

### The Impact of EPSCoR on Kentucky's Economy

*Dr. Lee T. Todd Jr. University of Kentucky*

#### About the Speaker:

Lee T. Todd, Jr. served for 10 years as the 11<sup>th</sup> president of the University of Kentucky. After a one-year leave-of-absence, he returned to UK as an Electrical Engineering faculty member.

Dr. Todd, a native of Earlington, Kentucky, received his BS degree in Electrical Engineering from UK and his MS and PhD degrees from M.I.T. where he received six U.S. Patents in the area of large-screen, projection displays. He returned to U.K. where he taught and performed research for nine years before leaving to begin two technology companies based on his research. Projectron, developer of high-resolution, projection CRTs for flight simulators, was purchased by Hughes Aircraft and Todd became Vice President of Hughes Display Products. DataBeam, developer of teleconferencing systems and software, was purchased by I.B.M. in 1998. Todd became Senior Vice President of I.B.M.'s Lotus Development Company and served in that capacity until returning to U.K. as President on July 1, 2001.

Dr. Todd also co-founded the Kentucky Science and Technology Corporation (KSTC) in 1987, a not-for-profit organization focused on increasing university research capacity, developing science and technology education (K-12) programs, and encouraging an entrepreneurial economy in Kentucky.

Dr. Todd served as a member of the National Academies' Committee on Research Universities and presently serves as chair of the Advisory Committee for the National Science Foundation's Directorate for Education and Human Resources.

### Using Biogeochemistry and Phytochemistry to Better Assess and Understand *Rhizophora mangle* (Red mangrove) Ecosystems in the Virgin Islands

*Mr. Howard Forbes Jr. University of the Virgin Islands*

#### Abstract

Red mangrove, (*Rhizophora mangle*) forests are productive ecosystems; aiding in numerous ecosystem and cultural services such as protecting juvenile fish and the tanning of leather respectively. However, these forests are being threatened from both natural and anthropogenic disturbances which can ultimately result in ecosystem degradation. Currently, *R. mangle* ecosystems are assessed via the monitoring of biophysical and geochemical parameters, however; they only provide surface details. Therefore, it is possible that an all-inclusive approach, encompassing both biogeochemistry phytomonitoring, can aid with assessments of mangrove ecosystems. During September through November 2013, monthly biophysical and biochemical assessments were conducted on *R. mangle* forest stands at Perseverance Bay, Magens Bay, and Compass Point Marina. Additionally, total chlorophyll concentrations of *R. mangle* seedlings was measured after exposure to varying concentrations of copper chloride, a heavy metal that can interfere with the synthesis of chlorophyll. Biophysical assessments revealed that *R. mangle* trees at Compass Point Marina were statistically taller and wider ( $p = 0.0029$  and  $p = 0.0018$  respectively) compared to Perseverance Bay and Magens Bay. The spot test for the presence of flavonoids indicated more flavonoids in extracts collected in October, however; further testing is needed to evaluate significance. Total chlorophyll concentrations of *R. mangle* propagules subjected to copper chloride did not vary over the two week test period. Although non-significant, this data can suggest that *R. mangle* can tolerate heavy metals in this concentration range and therefore be utilized for restoration projects, however; more work should be done to elucidate this. Phytomonitoring, with emphasis on utilizing plant flavonoids, can possibly be used to monitor *R. mangle* forests; via analysis of crude extracts with HPLC and MS spectroscopy for specific flavonoid profiles. These flavonoids can then be matched to their function within the plant and to a specific environmental perturbation. Individually, each component of biogeochemistry and phytomonitoring pro-

vides superficial cues about ecosystem structure and health. But together, they are like puzzle pieces that depict a more thorough picture of environment health.

#### **About the Speaker:**

Howard Forbes Jr. is a recent graduate of the Masters in Marine and Environmental Sciences (MMES) program at UVI. A native to the Virgin Islands, St. Croix to be exact and as stated before, alumni of the University of the Virgin Islands; received his Bachelor of Science degree in Biology in 2010 and Masters degree in 2014. While attending UVI from 2007-2010, Forbes was a MARC (Minority Access to Research Careers) scholar which afforded him the opportunity to conduct cutting edge research both at UVI and at several institutions on the mainland such as Rutgers University. Developing a passion for Biology early on in his high school education in addition to working at his local hospital's pharmacy department as an assistant pharmacy technician helped build the framework for his research interests which include food technology, drug discovery and medicinal chemistry.

Having undergone training through the Masters program at UVI, Forbes has developed a keen interest in understanding mangrove forests. Applying his background knowledge of medicinal chemistry to the mangrove forests, his Masters thesis work has been able to suggest that monitoring of plant secondary metabolites, such as flavonoids can aid in the monitoring of these ecosystems by providing additional information that is lacking from traditional monitoring protocols. Aside from conducting research, Forbes enjoys learning about traditional medicine; learning about local flora and elucidating what chemical constituents present within plants are responsible for producing medicinal properties.

## **Using Passive Acoustic Technology to Monitor and Manage Groupers at Spawning Aggregations**

*Dr. Richard Appeldoorn, University of Puerto Rico, Mayaguez*

**Co-Authors:** Michelle Schärer, Timothy Rowell

#### **Abstract**

Worldwide, grouper populations are threatened by extensive fishing on spawning aggregations. Yet, the same factors that promote overfishing, the concentration of populations at known locations and times, can also serve to focus monitoring activities. The problems facing managing agencies with limited manpower are that there can be multiple sites, and they are difficult to get to under winter sea conditions. Passive acoustics, using hydrophones to listen for sounds emitted by aggregating groupers offers a potential solution to these problems. We have deployed bottom hydrophones to monitor multiple spawning aggregation sites over the course of the spawning seasons for red hind (*Epinephelus guttatus*), Nassau (*E. striatus*), yellowfin (*Mycteroperca venenosa*) and black (*M. bonaci*) groupers. Hydrophones were installed well before the spawning season and recovered after, spreading the effort over time and eliminating the problem of weather dependence. Calibration against diver surveys indicate that noise levels track abundance over the course of the season. Results clearly show when fish spawn, that the day of spawning is variable among sites and in which months peak aggregations occur. Fish remain on site longer than anticipated, such that they remain vulnerable after seasonal closures end. Results can also be used to calibrate diver surveys by standardizing density counts to time of day and time of the lunar cycle.

#### **About the Speaker:**

Richard Appeldoorn is a Professor of Marine Sciences and Executive Director of the Caribbean Coral Reef Institute at the University of Puerto Rico – Mayagüez, with over 30 years' experience in coral reef fisheries and tropical resource management. His research has focused on queen conch population dynamics and fisheries, the ontogenetic migrations of reef fishes, habitat control of fish movements and MPA design,

deep mesophotic coral ecosystems and, most recently, the spatial and temporal dynamics of grouper spawning aggregations. Dr. Appeldoorn is a long-standing member of the Caribbean Fishery Management Council's Scientific and Statistical Committee.

## **Coral Reef Health Responses to Chronic and acute changes in water quality gradients in St. Thomas, US Virgin Islands**

*Ms. Rosmin Ennis, University of the Virgin Islands*

**Co-authors:** Tyler Smith<sup>1</sup>, Marilyn Brandt<sup>1</sup>, Kristin Wilson<sup>2</sup>

<sup>1</sup> University of the Virgin Islands, St. Thomas, VI 00802

<sup>2</sup> Well National Estuarine Research Reserve, Wells, ME 04090

### **Abstract**

Development in the coastal zone has been increasing worldwide. Alteration of coastal land cover has increased runoff into the nearshore environment. Sediment and nutrient loading are among the most influential components of runoff, as they have been shown to negatively impact corals, causing or contributing to disease, bleaching, and mortality. The southern coast of St. Thomas, USVI contains highly developed areas and it is suspected that nearshore water quality and coral reef health are impaired as a result. Therefore, land cover, water quality, sediment deposition, and coral reef health were assessed in three zones based upon observed human influence: nearshore high impact, nearshore intermediate impact, and offshore low impact. Watersheds draining to the nearshore high impact zone had the greatest impervious land cover. Total nitrogen, total phosphorus, chlorophyll, and turbidity were about 40%, 3%, 40%, and 20% higher in nearshore zones, respectively. Net sediment deposition and terrigenous sediment content decreased by about 45% and 4%, respectively, along a nearshore-offshore gradient. Nearshore net sediment deposition and terrigenous content also increased by 35% and 3%, respectively, during heavy rainfall. Macroalgae cover was highest in nearshore zones and increased with heavy rainfall. Coral bleaching and paling prevalence was about 20% higher in nearshore zones, especially during heavy rainfall. The prevalence of macroalgae overgrowth and deposited sediment on corals decreased by about 36% and 53%, respectively, along a nearshore-offshore gradient. These results will allow management action to be specifically tailored to the needs of this area, potentially preventing further degradation or habitat loss.

### **About the Speaker:**

From New Hampshire, Ennis did her undergrad at the University of Rhode Island. Ennis graduated with a degree in marine biology and a minor in oceanography. While in Rhode Island she worked on nutrient budgets and nutrient input from wastewater treatment facilities in the Narragansett Bay watershed. Ennis also had the opportunity to go to the Bermuda Institute of Ocean Sciences to study coral reefs as part of her undergrad. This is where she really became interested in reef ecosystems. Ennis moved to the VI from Rhode Island to attend UVI as part of the MMES program. Her main research interest involves looking into how human development in the coastal zone impacts water quality and coral reef health.

## **The Ecology and Etiology of a Coral Killer**

*Dr. Marilyn Brandt, University of the Virgin Islands*

**Co-authors:** Tyler B. Smith<sup>1</sup>, Elizabeth Clemens<sup>2</sup>, Logan Williams<sup>2</sup>

University of the Virgin Islands, Center for Marine and Environmental Studies

UVI, College of Science and Mathematics, Masters of Marine and Environmental Science



## **Abstract**

Coral disease is an important source of mortality on Caribbean reefs. The disease white plague is particularly notorious as it is known to affect multiple reef-building species, has a wide distribution and has contributed to rapid and severe losses of coral cover on many reefs in recent years. However, studying the ecology and etiology (causal agents) of white plague has historically been difficult due to its rarity and patchiness in time and space. The situation was further complicated by low host abundances in reef systems that have experienced severe declines. Recently, our work in the US Virgin Islands has allowed us to identify key characteristics about this important coral killer by leveraging our unique proximity and access to a range of reef systems. Etiologic investigations revealed a distinctive viral community associated with the disease. This is the first time a virus has been identified as a potential coral pathogen. Ecological studies have identified the primary modes of transmission of the disease as well as important risk factors, including fragmentation and contact with sediment. Future studies will investigate the temporal dynamics of white plague microbial communities and the effect of species diversity on disease transmission.

## **About the Speaker:**

Marilyn Brandt began as a VI-EPSCoR-supported Research Assistant Professor at UVI in 2010. Her research program at UVI is focused on investigating the dynamics of health and disease in coral reef ecosystems. She also teaches in the Masters of Marine and Environmental Science program and is a research mentor for undergraduates. Before joining UVI she received her doctorate in Marine Biology and Fisheries from the University of Miami and then worked as a post-doctoral researcher with the National Park Service in Miami. She has been researching coral reef diseases in the Caribbean for over 15 years.

## **Predatory Reef Fish Community Differences Between the U.S. Virgin Islands and the Complexities of Managing Fisheries Across the Territory**

*Ms. Elizabeth Kadison, University of the Virgin Islands*

**Co-authors:** M Brandt<sup>1</sup>, T Smith<sup>1</sup>, R Nemeth<sup>1</sup>, J Martens, Jeremiah Blondeau<sup>2</sup>

<sup>1</sup>Center for Marine and Environmental Studies, University of the Virgin Islands, St. Thomas, USVI 00802-9990, USA

<sup>2</sup>NOAA Southeast Fisheries Science Center, 75 Virginia Beach Drive. Miami FL 33149, USA

## **Abstract**

Based on the long term datasets of both the USVI Territorial Coral Reef Monitoring Program (TCRMP) and NOAA, significant differences exist between the northern USVI and St. Croix in both the occurrence and size of several species of large and commercially important reef fishes. These are primarily apex piscivores and generally the first species' over-exploited in small scale fisheries. The disparities between the fish communities on the two platform shelves, separated by the deep water Anegada Passage, cannot be explained by differences in habitat (coral cover), fisheries management, or the relative amount of marine protected area in the local waters. They are instead probably caused by a combination of several other interrelated factors including water depth, fishing methodology, fishable area, and the presence or absence of viable fish spawning areas (FSA). This study considers those aspects, and illustrates the need for management of island artisanal fisheries that is tailored to the physical and spatial constraints imposed by insular platforms.

## **About the Speaker:**

Miss Kadison has been a research technician at the Center for Marine and Environmental Studies (CMES) at the University of the Virgin Islands since 2002. She currently works as an Ecology Laboratory Specialist. In that position she provides technical support for CMES's coral and fish monitoring program, deep

water mesophotic reef exploration and characterization, fish spawning aggregation research, and fish hydro-acoustic tracking. Prior to working at UVI, Miss Kadison worked for the British Virgin Islands as a Fisheries Scientist and Marine Consultant, and Florida Fish and Wildlife as a Marine Associate. She received her Bachelor's degree in 1988 at Florida State University and Master of Science from the University of Central Florida in 1992.

## **Ark or Alamo? Caribbean mesophotic coral reefs as refugia from thermal stress**

*Dr. Tyler B. Smith, University of the Virgin Islands*

**Co-authors:** Joanna Gyory<sup>2</sup>, Marilyn E. Brandt<sup>1</sup>

<sup>1</sup>UVI Center for Marine and Environmental Studies, St. Thomas USVI

<sup>2</sup>Department of Ecology and Evolutionary Biology, Tulane University, New Orleans, LA.

### **Abstract**

VI-EPSCoR investments in research infrastructure have facilitated the description of mesophotic coral ecosystems (MCE), which form at depths below 30m (100'). This led to the discovery that MCE in the USVI surpass the area and development of shallow water coral reef ecosystems. Further investments from VI-EPSCoR and partners have provided us with the first global records of MCE response to thermal stress. This is critical, as the dim and cool conditions of MCE may make them refugia from the impacts of increasing thermal stress and MCE have relatively high coral abundance relative to degraded shallow reefs. This has led to the question, are MCE "arks" that will act as refugia for shallow water coral species, or are they "Alamos" that are the last stand of coral reef development that are ultimately doomed by rising seawater temperatures? We were able to compile eight years of data to develop temperature-based bleaching thresholds for 22 shallow and MCE environments in the USVI. Bleaching thresholds decreased significantly ( $p < 0.001$ ) with depth, indicating that, all things equal, MCE are more susceptible to thermal stress, even at reduced temperatures. MCE did accumulate thermal stress in 2005, which led to some bleaching and disease, but they didn't bleach in 2010. Surprisingly, MCE did bleach in 2012, when shallow reefs were not thermally stressed, but deep temperatures were anomalously high. Our data suggest that there is cause for concern about the future of MCE, but that we cannot extrapolate the response of shallow reefs into the deep.

### **About the Speaker:**

Dr. Tyler Smith is a coral reef ecologist and research associate professor at the Center for Marine and Environmental Studies. He is the coordinator for the Virgin Island Territorial Coral Reef Monitoring Program and a research scientist in VI-EPSCoR. Tyler is working on diverse projects, including the ecology of mesophotic coral reefs, water quality and coral reef health, coral reef algal dynamics, ciguatera fish poisoning, and physical forcing and the trajectory of coral reefs. Dr. Smith lives in St. Thomas with his wife Marilyn and son Liam.

## **Vertical and Horizontal Coral Connectivity, and Implications for USVI Coral Reef Resilience**

*Dr. Daniel M. Holstein, University of the Virgin Islands*

**Co-authors:** Claire B. Paris<sup>2</sup>, Tyler B. Smith<sup>1</sup>

<sup>1</sup>Center for Marine and Environmental Studies, University of the Virgin Islands;

<sup>2</sup>Applied Marine Physics, University of Miami, FL

## **Abstract**

The continued persistence of coral reefs depends not only on the survival of local adult populations, but also on replenishment of those populations through the settlement of marine larvae. Where do these larvae come from? Are they produced locally, or do they come from far away? The answers to these questions become critical when making conservation or management decisions. In the US Virgin Islands, we've found that extensive offshore "mesophotic" coral ecosystems may produce orders of magnitude more larvae than shallow, nearshore coral reefs. We are investigating what the fates of these planktonic larvae may be, and if these deeper ecosystems are capable of boosting resilience of territorial and regional coral reefs by providing coral recruits.

## **About the Speaker:**

Daniel M. Holstein is a Postdoctoral Research Associate at the Center for Marine and Environmental Studies, working on projects for VI-EPSCoR in the lab of Dr. Tyler Smith. He received his doctorate from the University of Miami in 2013, and has been conducting research in the US Virgin Islands for over 6 years. He specializes in the reproductive biology and general ecology of marine invertebrates, and the biophysical modeling of planktonic larval dispersal. Additionally, he teaches advanced statistics (Research Methods and Tools II) in the Masters of Marine and Environmental Science Program.

## **Partnership and Collaborative Funding Opportunities via the National Science Foundation**

*Dr. Sean Kennan, National Science Foundation –Experimental Program to Stimulate Competitive Research*

## **Partnerships in Caribbean Landscape Conservation Cooperative – A New Framework for Conserving Natural and Cultural Resources**

*Dr. William Gould, Caribbean Landscape Conservation Cooperative*

## **Abstract**

The Caribbean Landscape Conservation Cooperative is a framework for partnership among research and management agencies, organizations and individuals who are interested in achieving a sustainable future for the Caribbean Islands by addressing some of the issues that currently threaten our land and marine resources. The Caribbean Landscape Conservation Cooperative is one of twenty-two Cooperatives recently initiated by the US Department of the Interior. There are eight federal partners, eight territorial and commonwealth partners and four nongovernmental partners involved in the steering committee. Government scientists and university scientists and students are involved in the planning and science delivery of the cooperative. Government, nongovernmental, university and international partners are involved in articulating priorities, helping build best practices for the Cooperative and planning appropriate conservation actions. In a way – the Caribbean Landscape Conservation Cooperative serves as a stable hub that helps facilitate a network of partnerships of short or long duration, broad or narrow scope that are focused on responding to climate and land use changes that affect the sustainability of natural and cultural resources.

## **About the Speaker:**

Bill Gould is a research ecologist with the USDA Forest Service at the International Institute of Tropical Forestry in Río Piedras, Puerto Rico. His research involves integrating field and remote sensing data to analyze landscape patterns and processes in a wide range of ecosystems including tropical, temperate, boreal and arctic biomes. He is active in studies of conservation science, biodiversity, ecology, land cover mapping, modeling future scenarios for conservation planning, and field education and outreach. He is the team leader of the Puerto Rico Gap Analysis Project and associated studies, the Coordinator of the Carib-

bean Landscape Conservation Cooperative, Director of the USDA Caribbean Climate Subsidiary Hub, and leads the GIS and Remote Sensing Laboratory at the International Institute of Tropical Forestry.

## **Conserving Nature's Little Secrets**

*Ms. Diehdra Potter, National Parks Trust of the Virgin Islands*

### **Abstract**

Since 1961, the National Parks Trust of the Virgin Islands (NPT) has worked to preserve and manage designated natural and cultural areas in order to improve the quality of life in the Virgin Islands. Environmental education and public awareness have been important facets of NPT's conservation efforts, as an environmentally aware community will better appreciate and work in support of the conservation efforts of the Trust.

### **About the Speaker:**

A 2013 graduate of the University of Central Florida, Diehdra holds a Bachelor of Science Degree in Event Management and Marketing, with Honours. Upon her return to the VI, Diehdra joined the National Parks Trust of the Virgin Islands as the Environmental Outreach Officer, where she is afforded the opportunity to marry her love for community service/outreach, youth and exploration with her passion for events and marketing.

## **Cyclic Pathways to Success: A Model for Transforming STEM education at minority serving institutions**

*Dr. Sandra Romano, University of the Virgin Islands*

### **Abstract**

Preparation of STEM professionals in general in the US is lagging behind other nations. Numerous studies indicate the need for a transformation of STEM preparation to develop the intellectual capital to meet the new challenges of the 21<sup>st</sup> century. At a workshop in January, UVI faculty along with collaborators and experts in STEM education reform, used Creative Problem solving strategies to develop a model for transforming undergraduate STEM education at small institutions like UVI. The model draws on the psychology, STEM education, and business research literature as well as the extensive expertise of science education researchers, university administrators, college faculty, and creativity professionals to transform the experiences of students in STEM-related majors at UVI. The proposed model was designed to enhance academic and social integration by paying close attention to transition interfaces at which students might exit, e.g. drop out as STEM majors. At each transition interface are specific activities to support student retention and persistence in STEM education. The proposed program will have an impact on the accelerated development of the next generation of emerging leaders and scientists who represent the ethnic, racial, and cultural diversity of our nation.

### **About the Speaker:**

Dr. Sandra Romano is currently the Interim Dean of the College of Science and Mathematics at the UVI. She joined the faculty in 2000 as a professor of marine biology and has taught a variety of courses for both majors and non-majors. A number of students have worked with her on her research on the molecular systematics of corals. In addition, Dr. Romano has served as the Pre-Health Professions Advisor, the Coordinator for the MBRS-RISE program on the St. Thomas Campus, the Director of the Masters in Marine and Environmental Science Program, and Chair of the Dept. of Biological Sciences. She is a Partnership for Undergraduate Life Sciences Education (PULSE) Fellow. PULSE was developed with support from NSF, NIH, and HHMI to implement the recommendations of the AAAS Vision and Change Report.

## **STEM Goals and Initiatives in the Virgin Islands Department of Education**

*Ms. Susan K. Beach and Ms. Karissa Poszywak, Virgin Islands Department of Education*

### **Abstract**

The Virgin Islands Territorial Science, Technology, Engineering, and Math (STEM) Plan provides strategic direction for addressing STEM education in the Virgin Islands. The STEM plan has been designed to provide a blueprint for territory-wide actions as well as specific guidance for university, district, and school planning. The action items detailed in the plan target the development of educator skills and content knowledge in STEM through best practices from Pre-Kindergarten through graduate school at the university (PK-20). The implementation of the STEM plan will allow students to gain a foundation of knowledge in the subjects that are considered to be critical for college and career success. Our goal is to increase the STEM knowledge base for students and develop their ability to innovate in STEM areas, as these skills are essential to future economic development in the territory.

### **About the Speaker:**

Susan began teaching secondary science for VIDE in 1980. In 2002, she went to graduate school and became a librarian and moved to the district library in 2006 that became a NASA Educational Resource Center. As a NASA education specialist, she attended several trainings at Kennedy Space Center over the years and now collaborates with classroom teachers to conduct engineering design activities that align to the new Next Generation Science Standards. In November 2013 she was an NSF sponsored team member at Northern Iowa University to align GLOBE program activities to NGSS.

## **Strengthening the Pedagogical Skills of K-12 Math Teachers in the V.I.**

*Dr. Vanere Goodwin, University of the Virgin Islands*

### **Abstract**

Strengthening the Pedagogical Skills of K-12 Math Teachers in the Virgin Islands “How mathematics is taught is just as important as what is taught. Students’ ability to reason, solve problems, and use mathematics to communicate their ideas will develop only if they actively and frequently engage in these processes. Whether students come to view mathematics as an integrated whole instead of a fragmented collection of arbitrary topics and whether they ultimately come to value mathematics will depend largely on how the subject is taught.” So said the Mathematical Association of America (MAA) and so we set out to do in the Master of Art in Mathematics for Secondary Teachers Program (MMAT) at the University of the Virgin Islands. This presentation is partly a review of our work to date and an exposition of some strategies we employ to keep content and pedagogy together in a relatively new graduate program. Some challenges are highlighted.

### **About the Speaker:**

Vanere Goodwin, Associate Professor of Mathematics, is a mathematics educator with an interest in the teaching and learning of mathematics in developing societies. He earned the following degrees: A.A; B.A; M.A; and Ph.D from College of the Virgin Islands, Lincoln University, University of Rochester and SUNY Buffalo respectively. He taught Mathematics:

- At the secondary level in Antigua and St. Thomas for two years;
- At the University of the Virgin Islands;
- At Hampton University where he was also Department Chair for six years;
- At Fayetteville State University where he was chair for four years
- At the University of the Virgin Islands from 2005 to the present.

He also has served as the Coordinator/Director of the Master of Art in Mathematics for Secondary Teachers Program since its inception in 2006 and has been a volunteer teacher of mathematics at two are high schools, St. Joseph High School and Manor High School on St. Croix

## **Sustainability in the BVI from a Not-For-Profit Perspective**

*Ms. Charlotte McDevitt, Green VI*

### **Abstract**

Green VI implements numerous projects along the themes of waste, water, energy and environmental education.

### **About the Speaker:**

Charlotte McDevitt completed her Masters in Industrial Administration in 2008 and her dissertation focused on how the BVI can reduce waste and improve resource management. Before relocating to the Caribbean twelve years ago, Charlotte McDevitt worked for the City of Cape Town (South Africa), developing strategies to reduce litter, illegal dumping and waste to landfill. Charlotte McDevitt is the executive director of Green VI, a not-for-profit organization dedicated to a greener, cleaner and healthier BVI. Green VI facilitates projects that demonstrate the principles of sustainability along the themes of waste, water, energy and education.

## **Partnerships in Progress: Environmental Education and Outreach Activities in the (British) Virgin Islands**

*Ms. Susan Zaluski, Jost Van Dykes Preservation Society*

### **Abstract**

The Jost Van Dykes Preservation Society (JVDPS) works to protect the natural environment of Jost Van Dyke and its surrounding islands through conservation, education, and research. Current projects involve protected area co-management of nearby Protected Areas, Research and Monitoring of VI Birds including GPS and satellite tracking of Frigate birds, island restoration via invasive species control, and youth education that links island youth to research initiatives while developing skills for the modern BVI economy, such as dive and sail training. JVDPS recently finished construction of its 32 foot wooden vessel Endeavour II, which serves as a floating classroom for its programmes.

### **About the Speaker:**

Susan Zaluski holds a Master's degree in International Development (Natural Resources and Sustainable Development) from Tulane University. She first came to the Caribbean in 2000 as an undergraduate to study economic development and sustainable development at the University of the West Indies - Mona, Jamaica. She has been the Jost Van Dyke Preservation Society's Executive Director since 2008.

## **Knowledge and Adaptation Pathways for Environmental and Climate Change Research**

*Dr. Kostas Alexandridis, University of the Virgin Islands*

### **Abstract**

The interactions between social knowledge and environmental sustainability and resilience is critical in understanding pathways to social-ecological stewardship at the local community and society level. The ways we acquire, represent and diffuse social-ecological knowledge affects our individual, social and institutional responses and adaptation to environmental and climate transformations. The scientific analysis

of dispositions, attitudes, narratives, discourse, scenarios and action propensities at the community and group levels reveals how our cognitive and social interactions contribute to our ability to respond and build stewardship capacity for change. A series of local and global case studies of social-ecological knowledge systems will be presented, along with key inferences and insights.

#### **About the Speaker:**

Dr. Kostas Alexandridis holds a PhD in Natural Resource Policy from Purdue University, and is a Research Assistant Professor of Marine and Environmental Science at the Center for Marine and Environmental Studies. He is the coordinator of the Institute for Geocomputational Analysis and Statistics (GeoCAS), and holds a joint teaching appointment with the Department of Computational Sciences (College of Science and Mathematics) at UVI. He has been working with local communities and local social-ecological systems across the world including North America and the Caribbean, Australia and South Asia, and Africa. Kostas is also a Certified Geographic Information Systems Professional (GISP) and serves in the editorial board of the Journal of Environmental Modeling and Software.

### **VI-EPSCoR's World of Outreach**

*Mr. Nick Drayton, Virgin Islands Experimental Program to Stimulate Competitive Research*

#### **Abstract**

This presentation examines historical and traditional approaches to outreach and their impacts. It then assesses some of the current social, economic and environmental trends, both at the local and national levels. In a call for new and innovative approaches to outreach in the light of these trends, Drayton presents a framework for VI-EPSCoR's future outreach strategies and identifies opportunities for partnerships in this context.

#### **About the Speaker:**

Nicolas Drayton is the Assistant Director of the Virgin Islands Experimental Program to Stimulate Competitive Research. He was formerly Ocean Conservancy's Caribbean Ecosystems Program Director in the U.S. Virgin Islands Field Office. He holds a Masters' degree in Coastal Biology from the University of North Carolina at Wilmington, and over the years Nick has worked with marine parks and protected areas across the Eastern Caribbean. He has represented institutions and agencies such as the University of the West Indies, the Caribbean Conservation Association, the BVI National Parks Trust and The Nature Conservancy. Nick has been involved in a wide range of marine conservation-related roles, including training, advocacy, planning, management and administration of Caribbean MPA's. While he was Director of the BVI National Parks Trust, he served on the BVI's National Tourism Development Strategy Implementation Committee. More recently, Nick has been a key player in the establishment of the East End Marine Park, on St. Croix, the first Territorial marine park in the U.S.V.I. and was the Chair of the East End Marine Park's Advisory Committee. In 2005, Nick was recognized for his "...commitment to protecting and enhancing environmental quality." by the U.S. Environmental Protection Agency with their Environmental Quality Award, -the highest recognition presented to the public by the agency. More recently, in October of 2006, Nick received an award from the U.S. Coral Reef Task Force, "... for outstanding efforts in the USVI, BVI, and beyond to strengthen coral reef management..."

### **UVI's VICCC: A Resource for Cultural Research and Outreach**

*Dr. Chenzira Davis-Kahin, University of the Virgin Islands*

#### **Abstract**

This presentation will provide a concise overview of the significant role of culture and heritage restoration

in the realms of science, technology and economic development. Appropriate technologies and sustainable economic development are linked to the Virgin Islands and Caribbean Cultural Center (VICCC) that is nestled within the academy of the College of Liberal Arts and Social Sciences (CLASS) at the University of the Virgin Islands (UVI). Details on the VICCC's designated focus to intellectually and pragmatically support, produce, promote, institute and develop scholarly research, appropriate technologies, publications, digital media, conferences, heritage restoration initiatives, historic preservation programs, cultural education colloquia, community and socio-economic projects, and related resources will be shared. This presentation will share a visual glimpse of the VICCC's mission to preserve, cultivate, research, document, teach, conserve and nurture Virgin Islands and Caribbean cultural heritage resources through transcultural and multidisciplinary interactive education, arts, sciences, appropriate technologies, socio-cultural economic development and beyond. Strategic research institutes and programs used by the VICCC to develop and sustain partnerships, cooperative agreements and collaborations with multiple governmental and non-governmental organizations in the VI, Caribbean, USA and globally will be explicated.

**About the Speaker:**

Chenzira Davis Kahina is an educator, cultural performing artist, naturopathic therapist, ordained minister, community developer, published author, scholar and visionary. Her Diasporan Indigenous Afrakan Caribbean ancestry compliment her interdisciplinary training, research, publications and educational studies at Rutgers, Pepperdine, University of California, and Natural Health Institute in concert with other international certifications, and clinical studies. Davis Kahina is a co-founding director of Per Ankh, Inc.- a UN ECOSOC Special Consultative NGO and NPO that institutes *Culture, Health, Arts, Technology and Spirituality for Life, Inspiration, Freedom and Education=CHATS4LIFE*©. [www.perankhu.org](http://www.perankhu.org). She is a founding director of NUWOMANRising2LIVEUP©—a community health and women empowerment enterprise and Our Legacy Initiatives (OLI)—an inter-generational heritage restoration, cognitive technology and cultural preservation media initiative. Currently, Davis Kahina is the director of the *Virgin Islands and Caribbean Cultural Center* (VICCC) in the College of Liberal Arts and Social Sciences at the *University of the Virgin Islands* (UVI).[www.viccc.net](http://www.viccc.net).

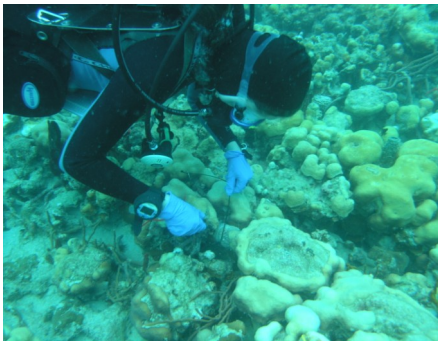


# NOTES



**This material is based upon work supported by the National Science Foundation under Grant No. 081447. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.**

Financial support for the work presented during this Conference was also provided by others, including the the University of the Virgin Islands, Lana Vento Charitable Trust, the Black Coral Penalty Settlement Fund, the Research Institute for Humanities and Nature (RIHN), the National Oceanic and Atmospheric Administration (NOAA) and the Virgin Islands Department of Planning and Natural Re-



VIRGIN ISLANDS **epscor**

