THE VIEQUES CONSERVATION AND HISTORICAL TRUST

FIDEICOMISO DE CONSERVACIÓN E HISTORIA DE VIEQUES

November 2019

Message from VCHT President Colleen McNamara

Dear Friend of VCHT,

Climate change is real. We at the Trust are committed to addressing this reality and how it affects Vieques, physically, socially, and economically. The Vieques Bioluminescent Bay Natural Reserve Reserve is a unique natural wonder that attracts visitors from around the world and its well-being is of vital importance for the economic health of our island. We are determined to keep it that way even in this time of change. **To do this, we need your continued support.**

Research is a critical part of our work. To understand the complex ecosystem of the Puerto Mosquito bioluminescent bay, VCHT staff and volunteers collect scientific data in the bay and use published data from the USGS monitoring station located in the bay. Our facilities include the Langhorne Lab where VCHT scientist Airamzul Cabral tracks the Bio Bay's dinoflagellate count. Our partners and visiting scientists who are studying lion fish, coral reefs and sea turtles use our lab. We currently also have in-house research projects focused on mangrove reforestation and native plant species. Understanding the environment is key to providing a sustainable and resilient future for Vieques. **Your support is essential.**

Education is embedded in our mission. In our outreach to schools and in the MANTA programs, children learn about and gain an appreciation for their island and its wonders which will someday be their responsibility. VCHT also offers programs for the adult community that focus on nature and the environment. Our popular speakers series is open to all. **We ask for your support.**

The Trust works with government and private organizations at all levels to make informed decisions and shape policies that affect the environment and life in our community. These entities respect our organization and our proven ability to produce measurable results. **Your contribution makes it possible to continue our work.**

Colleen McNamara,
VCHT President

P.S. What we do depends upon what you do.
Please make your contribution today.

VCHT Mangrove Project

The mangroves at the mouth of Bio Bay were destroyed by storm surge during Hurricane Maria. They created the bay's narrow, meandering entrance which slows the exchange of sea water allowing the bioluminescent dinoflagellates to accumulate.

Aerial photo of dead mangroves at mouth of Bio Bay.

Scientists from the Center for Applied Tropical Ecology and Conservation (CATEC), plant ecophysiologists and members of the Latin American Academy of Sciences, Dr. Elvira Cuevas and Dr. Ernesto Medina, donated their time and expertise to VCHT to assess the Bio Bay's mangrove forests, shoreline, seabed and salt flat areas. They found that the mangroves at the entrance of the bay had suffered an irreparable hit. Others were not as badly damaged and were recuperating. Some had flowers, and would bear propagules (seeds) soon. In those mangrove stands where the damage is irreversible, forest recuperation could be assisted with a very carefully executed harvesting of propagules and reforesting project. They estimated that it would take between 15 and 30 years for the area to recuperate naturally. They explained that in that time, the mouth of the bay could widen and Bio Bay, as we know it, would be changed. In their report to VCHT and at a public presentation at the Trust in January 2019, they recommended that a mangrove reforestation effort begin as quickly as possible. **With enthusiastic support from community members and the Trust staff, the VCHT Mangrove Project began.**

Biologist and VCHT board member, Erick Bermúdez, designed a system and process for propagating and raising young mangroves. The system creates inundation, salinity and nutrient conditions that emulate those found in the Bioluminescent Bay. *Avicennia germinans*, (black mangroves) *Laguncularia racemose* (white mangroves) and *Rhizophora mangle* (red mangroves) seeds will be gathered from nearby areas and grown in a greenhouse on the Trust's Barbosa property. When ready, the young mangroves will be transplanted at the mouth of Bio Bay. The greenhouse will be powered by solar energy and will serve as a demonstration and training site for other VCHT programs.

Mangrove propagation system

In June Erick Bermúdez constructed a pilot growing system and installed it at the Trust in Esperanza. It was used as an educational resource for summer MANTA programs. Soon a greenhouse will be built at VCHT's Barbosa property where the full-scale operation will be housed

The VCHT Mangrove Project is being developed in partnership with *the University of Puerto Rico Mayagüez Resident Agent Agronomist agronomist, Hilda Bonilla; the University of Puerto Rico Rio Piedras Center for Applied Tropical Ecology and Conservation's mangrove scientists Elvira Cuevas PhD and Ernesto Medina PhD; the DNER's Vieques Bioluminescent Natural Reserve Manager, Biologist, Edgardo Belardo; the USFWS Vieques Wildlife Refuge Manager and Biologist, Mike Barandiaran; VCHT Board Member Biologist,* **Erick Bermúdez;** *Instituto Nueva Escuela's Adrienne Serrano Montessori School.*

An Artist Leads the Way

Many people have expressed their concern over the devastation of the mangroves from Hurricane Maria and many people have wondered, what could be done about it?

Lulu Atkin, noted Vieques ceramic artist, has chosen to express her concern and take action through her art. A full-time resident of the island for the past 15 years, Lulu has always been interested in supporting the mission of the VCHT. She was spurred into action after first hearing about The Mangrove Project. "The mangroves are crucial in so many ways–they help maintain the environment for the dinoflagellates, and are our first line of defense from the hurricanes, of course, our beautiful bioluminescent bay wouldn't exist without them" says Atkin.

Dr. Elvira Cuevas, a biologist from UPR Mayaguez, came to speak at VCHT last January about the impact the dead mangroves have on the eco system of the island's bays. Lulu was in the audience of the packed conference room listening to the talk. It struck her that she could design a handmade ceramic representation of a dinoflagellate in the form of a necklace. **Her "Dino" necklace could help bring awareness to The Mangrove Project and help with funding at the same time.**

The next day Lulu went to work–first studying the form and shape of the microscopic creature that makes our bay glow. After some experimentation, she pressed stoneware clay into plaster molds that she had made. Each "Dino" has a meticulous multi-step process that requires precision, patience, and the deft hand of an artist. The amazing color and graphic detail are the result of a 3-step glazing process and the finished pendant is fired twice in Lulu's special kiln.

Lulu sold her first necklace for $30 on March 1 and proceeded to sell over 100 by the end of April. She is supported by a sponsor/angel who generously covers the cost of materials, supplies, packaging and shipping. So far, she has proudly donated over $3500 to The Mangrove Project, which will help fund the cost of building a nursery for growing the "propagules" (the baby mangroves) to the actual planting of the hundreds of mangroves that are needed to re-populate the bays. Going forward, Lulu hopes to continue to make people aware of The Mangrove Project and the VCHT through her art. As she says about herself, "I like to be a little bit too busy."

VCHT staff and board wish to thank its many donors for their ongoing support.

Your contributions enable us to engage in all the work it does to preserve and protect what we value in Vieques, and we thank the donors who have supported the VCHT Scholarship Program, and the restoration of the Elizabeth C. Langhorne Lab and the Marine the VCHT Scholarship Program, and the restoration of the Elizabeth C. Langhorne Lab and the Marine Life Exhibit.

We thank the following organizations for supporting the work we do:
ConPRmetidos, Donativos Legislativos, Para La Naturaleza, Hispanic Federation, Resilient Power Puerto Rico, Mercy Corps, Presbyterian Disaster Assitance. Also, we thank the many local businesses and individuals who contribute their time, equipment and expertise in making the Manta programs a resounding success.

Finally, we thank the many volunteers who give generously of their time working in the gift shop, leading tours, setting up exhibits, and assisting in a variety of ways.

VCHT RESEARCH
helps explain the mysteries of Bio Bay

Airamzul Cabral Guadalupe
VCHT Scientist, Lab Director

Unpredictable and indomitable; that's nature. A recent example is Hurricane Dorian, and an example closer to home is the Vieques' Bioluminescent Bay. Of the six bioluminescent bays known in the Caribbean, Puerto Mosquito is the brightest, and most pristine. Although it shines all year round, the intensity may vary depending on the weather conditions.

After Hurricane Maria passed the area on September 20, 2017, Puerto Mosquito experienced a "blackout" for about six months. It was not until May 2018, that its brightness began to recover. Between June 2018, and June 2019, the bioluminescence returned and reached the highest levels ever recorded.

Eventually stability returned to the system of Puerto Mosquito Bay, and the brightness was directly linked to changes in the local climate. From July 28 to 31, 2019, Vieques received heavy rains. Large amounts of fresh water and sediment in the bay affected the salinity, temperature and turbidity of the water, directly affecting the presence of the Pyrodinium bahamense, and the intensity of the brightness. Sporadic and typical rains of the hurricane season continued during the following weeks, and on August 28, Hurricane Dorian passed near Vieques. **The sum of all these typical and natural Caribbean weather events have been directly responsible for the decrease in brightness and intensity in the waters of Bio Bay.** We have seen these types of decreases before and the bay has bounced back. At the time of publishing this newsletter we have seen an improvement in the apparent bioluminescence of Puerto Mosquito.

We are aware of global climate change and intensifying storms. Because of our research we better understand what is happening at the local level, and can act accordingly. See our Executive Director's report on the Mangrove Project. **At VCHT and the Elizabeth C. Langhorne Laboratory we are committed to research and education for the conservation of our environmental treasures, so we can monitor the brightest bioluminescent bay on earth as our world changes.**

VCHT'S COMMUNITY INVOLVEMENT

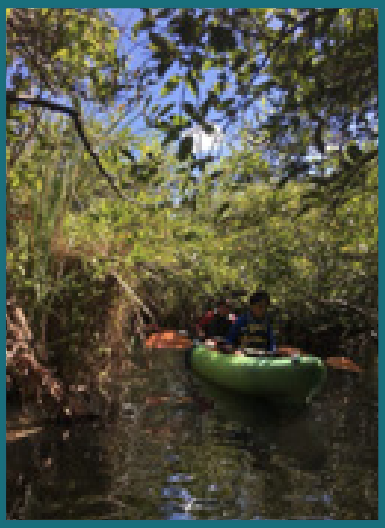
Thanks to the generosity of **Para La Naturaleza, Hispanic Federation, and Resilient Power Puerto Rico and the Rocky Mountain Institute,** the VCHT is now a Community Resilience Hub equipped with a solar energy system of approximately 5kw that includes battery-inverters for energy storage and a rainwater collection, storage and filtration system. The installation of this equipment is an important step in the VCHT's and the community's move towards **Resiliency and Sustainability!**

Dr. Michael Latz of the University of California Scripps Institute of Oceanography and expert on bioluminescence made a joint presentation with Scripps Institute's Melissa Carter and the VCHT's Mark Martin Bras and Airamzul Cabral Guadalupe at the 2019 international Association for the Sciences of Limnology and Oceanography (ASLO) held in San Juan. **Then as part of a VCHT community training program he engaged with 15 guides of the different Bio Bay tour groups.**

Red Lights are now being installed in place of white or yellow lights in some areas of the island to help preserve the brightness of the Bio Bay. **Red** is a temperature that doesn't reflect onto the bay and is seen less by organisms sensitive to bright lights, especially sea turtles. Students from the VCHT Casa Montessori Program, under Mark Martin's guidance, assisted in this Puerto Rico Electric Power Authority project. They were the first to identify which lights to change.

VCHT'S EDUCATIONAL PROGRAMS

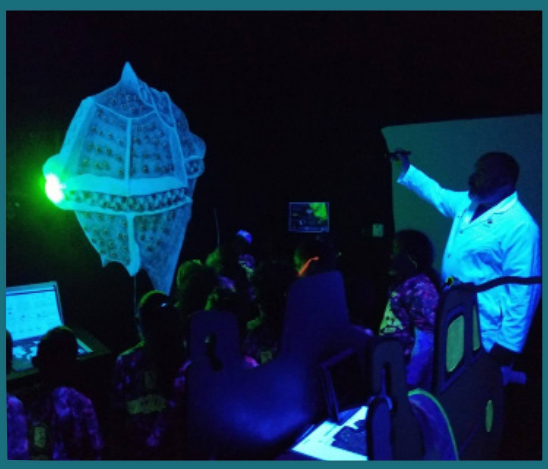
Prepare Future Leaders



Again this summer, nearly 100 Vieques youngsters attended the Trust's MANTA programs where, while having fun, they learned about the natural wonders and beauty of their island. In **Mini-MANTA,** children 5 to 8 years old, were introduced to the magic of bioluminescence. They saw it in the Barbara Bernache Baker Bio Bay Room, and they saw it on Puerto Mosquito. In Mini-MANTA the children developed respect and appreciation for this island.

MANTA Raya children 8 to 11, began to learn about the science of the natural wonders of Vieques. They learned about composting and sustainable agriculture. They planted trees, native species, which will benefit the island and the world in this time of climate change. They learned to use a microscope and measure water quality. As they were learning skills and developing appreciation for their environment, they were having fun.

In the **MANTA** program boys and girls 12 to 17, explored the mangrove canals, became birders, studied bat life and collected samples of dying coral. They became immersed in scientific inquiry. They are equipped with knowledge and skills that will help them to survive and make informed decisions for the island. **Because of your support for MANTA, there is a brighter future for Vieques.**



Mission Statement

The mission of the Vieques Conservation and Historical Trust (VCHT) is to foster, protect and conserve the environmental, archaeological and cultural resources of Vieques, Puerto Rico. One of the primary goals is to preserve and study the bioluminescent bays found on the island. The VCHT supports a broad array of educational programs for the community, with a special focus on children, through lectures, educational exhibits, seminars, summer programs, publications, computer resources and a unique Vieques scholarship program.

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VCHT is a 501(c)(3) nonprofit organization. Your contribution is tax deductible to the extent allowed by law.

VCHT: TOURS AND EVENTS 2019-20

VCHT offers a variety of special events: birding walks, house tours, the Playa Grande Tour, a lecture series, and art and artisan exhibits. Space is limited on some tours. We recommend that you make reservations.

For more information and reservations call the VCHT at 787-741-8850

MARK YOUR CALENDARS

December 21	Playa Grande Tour
December 28	Playa Grande Tour
January 4	Playa Grande Tour
January 11	Playa Grande Tour
January 14	Birding with the Trust
January 17	VCHT Open House
January 25	Playa Grande Tour
January 30	House Tour
February 6	Birding with the Trust
February 8	VCHT Gala
February 15	Playa Grande Tour
February 19	Birding with the Trust
February 20	VCHT Annual Meeting
February 20	Playa Grande Tour
February 27	House Tour
March 7	Playa Grande Tour
March 11	Birding with the Trust
March 14	Playa Grande Tour
March 21	Playa Grande Tour
March 28	Playa Grande Tour
April 4	Playa Grande Tour
April 11	Playa Grande Tour