

STONY CORAL TISSUE LOSS DISEASE

SEMI-ANNUAL NEWSLETTER

Sharing Coral Disease Knowledge and Experience
across U.S. Coral Jurisdictions | Summer 2022



- 1 What is Stony Coral Tissue Loss Disease?
- 2 U.S. Coral Reef Task Force Convenes Working Group to Focus on Disease
- 3 A Rush to Treat Imperiled Corals in the Dry Tortugas
- 3 Adventure Aquarium: The Urbanization of Florida Rescue Coral
- 4 Advancing Coral Disease Research in the U.S. Virgin Islands
- 5 Coral Nursery Spotlight: Coral World Ocean and Reef Initiative
- 5 A Plan to Save Puerto Rico's Reefs
- 6 Impacts of Stony Coral Tissue Loss Disease on Symmetrical Brain Corals in Puerto Rico
- 6 ¡Nuestros Arrecifes son Vida!
- 7 Seeking to Understand Stony Coral Tissue Loss Disease Transmission
- 8 Preparing for SCTLD in the Indo-Pacific
- 9 New Resources Available for Managers - Monitoring and Analysis for Stony Coral Tissue Loss Disease
- 9 United National Environmental Program, Gulf & Caribbean Fisheries Institute Publish Guidance on Stony Coral Tissue Loss Disease in the Wider Caribbean
- 10 Supporting Caribbean Coral Rescue in the Face of Stony Coral Tissue Loss Disease
- 11 Research and Reports

What is Stony Coral Tissue Loss Disease?

by Krista Laforest, Florida Sea Grant

Coral reefs are one of the oldest ecosystems on the planet, first forming over 500 million years ago. Often dubbed “the rainforests of the sea,” coral reefs are an incredibly productive ecosystem that provide critical resources - such as medicine, food, and coastal protection - for millions of people around the world. Coral reefs support a quarter of all marine life by providing shelter for fishes, crustaceans, and other marine animals. The incredible biodiversity found on coral reefs supports economically important tourism, recreation, and commercial fishing industries. In 2007, coral reefs across the United States generated an estimated \$1.04 billion from tourism and commercial fishing industries alone, with a total economic value of \$3.1 billion. Healthy reefs also shelter coastlines from waves and flooding, absorbing 97% of wave energy and preventing waves from reaching the shoreline.

Unfortunately, coral reefs across the western Atlantic and Caribbean are being devastated by a deadly coral disease referred to as stony coral tissue loss disease (SCTLD). This disease

is infectious, highly lethal, and spreads rapidly. First detected off Miami's coast in 2014, the disease affects many important reef-building stony coral species and has high rates of mortality. Indeed, once corals

begin to lose living tissue, many will die within weeks to months without active intervention and treatment. Experts believe this may be the most lethal coral disease ever recorded. Extensive efforts are now underway to treat sick corals (see figure below), determine the disease's origins, rescue coral diversity, and restore reefs. More needs to be done if we are to protect the region's remaining reefs and ensure they are resilient and sustainable for future generations. This newsletter highlights key response activities led by scientists, managers, and other stakeholders underway in the U.S. to protect coral reefs from the long-term impacts of this deadly disease.



Distribution of SCTLD throughout the Caribbean



14,632 colonies of coral treated across **32** species of coral in Florida*

* Numbers reflect website update from 4/8/22



3,817 colonies of coral have been treated for SCTLD across **24** sites in Puerto Rico*
Total of **112** intervention dives*



11,653 SCTLD treatments have been administered to coral colonies across **37** sites in the U.S. Virgin Islands*
Total of **512** intervention dives*



To date, **30,102** corals across 32 species of coral in Florida, Puerto Rico, and the USVI have been treated for SCTLD.

U.S. Coral Reef Task Force Convenes Working Group to Focus on Disease

Madyson Miller, NOAA Coral Reef Conservation Program & Megan Considine, Florida Sea Grant

The United States is home to some of the most diverse and spectacular coral reef ecosystems on the planet found throughout seven coral jurisdictions (Florida, the U.S. Virgin Islands, Puerto Rico, Hawai'i, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands), three Freely Associated States (Federated States of Micronesia, Republic of Palau, and Republic of Marshall Islands), and the uninhabited areas of the Pacific Remote Islands, Northern Hawaiian Islands, and Flower Garden Banks. Unfortunately, the reefs are under threat by a variety of stressors ranging from climate change to pollution. In recognition of the value of America's coral reefs and the need to take coordinated, decisive action to save them, the U.S. Coral Reef Task Force ("Task Force") was established in 1998 by Presidential Executive Order.

"The establishment of this Working Group by the Task Force and the dedication of the time and resources of its members is indicative of both the severity of the threat at hand ..."

In response to the growing threat posed by coral disease and the need for coordinated, strategic action, in 2021 the Task Force created the Coral Disease Working Group. Like other Task Force working groups, this group supports national-level collaboration among the federal, state, and territorial agencies involved in coral management, policy, and science. The group consists of nearly 50 members representing

the National Oceanic and Atmospheric Administration, National Park Service, Environmental Protection Agency, Coast Guard, Smithsonian Institute, National Science Foundation, U.S. Geological Survey, and all seven state and territorial governments from U.S. coral jurisdictions. Focused on providing support for local response efforts and enhancing national coordination, the Working Group has established a handful of sub-teams.

- The Transmission Team is focused on preventing further spread of the disease and is working to compile guidelines to help prevent transmission and disseminate existing best management practices.
- The Affected Jurisdiction Team works to build capacity and support response efforts in U.S. jurisdictions currently affected by SCTLD. The Team is currently hosting a series of virtual workshops to facilitate collaboration across the U.S. Caribbean and a needs assessment is underway to better understand gaps in the response efforts in Florida, Puerto Rico, and the U.S. Virgin Islands.
- The Pacific Preparedness Team is convening coral managers and practitioners from across the U.S. Pacific to support preparedness and planning activities where needed.

While much remains to be done, the establishment of this Working Group by the Task Force and the dedication of the time and resources of its members is indicative of both the severity of the threat at hand and the commitment of our federal, state, and territorial leaders to protecting America's coral reefs now and well into the future.

A Rush to Treat Imperiled Corals in the Dry Tortugas

Dr. Karen Neely, Nova Southeastern University & Maurizio Martinelli, Florida Sea Grant

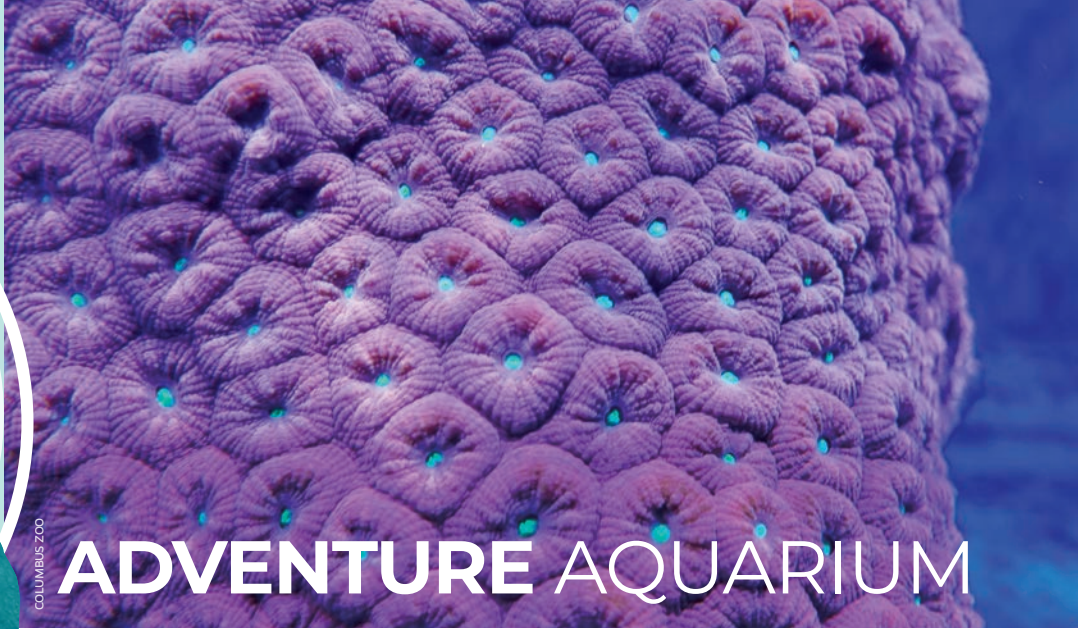
THE DRY TORTUGAS region is a group of islands accessible only by plane or boat, located 70 miles past Key West at the westernmost extent of the Florida Keys. It contains some of the most pristine and diverse reefs in all of Florida and for years was the last remaining region of Florida's Coral Reef unaffected by SCTLD. Unfortunately, the disease finally made its way to the Dry Tortugas in late May 2021. In response to the appearance of SCTLD, NOAA's Coral Reef Conservation Program and the National Fish and Wildlife Foundation authorized the use of funds through the Coral Reef Emergency Response Fund for the treatment of diseased corals in the region. In coordination with Dry Tortugas National Park staff, the priority area of Bird Key Reef was selected for intensive intervention efforts, which typically involve applying an antibiotic paste directly to sick/infected stony corals to stop further spread of the disease.

Intervention operations took place aboard the liveaboard vessel M/V Makai in early September 2021. Eight scientific divers from Nova Southeastern University (Neely lab) and Florida Atlantic University's Harbor Branch Oceanographic Institute (Voss lab) conducted a total of 265 dives equating to over 299 underwater hours of work. The vast majority of Bird Key reef was surveyed and treated during this

time, with the team systematically covering an area larger than 146 football fields. In total, 6,038 corals were treated with divers treating one coral every three minutes on average. Considering the project cost of approximately \$86,000, this equates to a treatment cost of roughly \$14.23 per coral.

These efforts more than doubled the total number of treated corals throughout the whole of Florida's Coral Reef since intervention began in late 2018.

The ability to save this large volume of coral at such minimal cost is unmatched and may be a model for future intervention efforts. Additional focused efforts within the Dry Tortugas, either to revisit Bird Key to address additional outbreaks or focus on other large reef features that require dedicated mission coverage, are likely to be highly beneficial to the long-term health and viability of corals throughout the region.



ADVENTURE AQUARIUM

The Urbanization of Florida Rescue Coral

Beth Firchau, Association of Zoos and Aquariums

Next time you board an airplane destined for a vacation or work location, consider that your airplane may not be only carrying you, your family, or a few precious pets on board. Shipping animals within the cargo holds of commercial aircraft is nothing new for public aquariums and zoos. And it's the way that recently, Florida rescue coral made their way to their new home in Camden, New Jersey.

In August 2021, after weeks of planning and the expansion of holding space at the Adventure Aquarium funded by the Florida Department of Environmental Protection, 12 Florida stony corals were transported to the aquarium. The new stony corals, representing 10 different species, increased the number of Florida "reef-ugees" held at this inner-city collection to 75 corals in total. While animal transfers can be complicated by flight delays and poor handling by airport personnel that can result in damaged boxes, loss of water from leaks, and animal injury, this recent shipment from the Florida Coral Rescue Center in Orlando went without a hitch and the corals seem to have settled into their new homes. The Florida Coral Rescue Program is focused on collecting, or "rescuing," corals for the dual purpose of preserving genetic material and restoration of Florida's Coral Reef. The program includes rescuing healthy corals from ahead of the disease boundary and survivor

corals that continue to inhabit areas affected by SCTLD. Rescued corals are then housed in land-based facilities such as the Adventure Aquarium.

"Since joining the project in 2019, we have expanded our holding capabilities and have plans to place an exhibit for public display," says Nikki Grandinetti, General Curator at the Camden Aquarium, who is proud of the center's growing commitment to coral rescue.



Travis Kraker

For Travis Kraker, Senior Biologist and primary rescue coral aquarist, participating in coral rescue is a confirmation that what he does is making a difference. "This project has given me such a sense of fulfillment. We get into the public aquarium industry to make a difference for our environment and to inspire the guests we engage. A lot of the time, we're not sure if we're being successful. With coral rescue and the AZA-FRTRP [Association of Zoos and Aquariums Florida Coral Reef Tract Rescue Project], I see our impact on a daily basis. Without our help, these Florida corals we care for may not have survived. The connections we have made with others and the enthusiasm that we all share for this project gives hope to our coral reefs and oceans. I'm just very honored and privileged to be a part of this effort."



IN-DEPTH STUDY

Advancing Coral Disease Research in the U.S. Virgin Islands

Sonora Meiling and Dr. Marilyn Brandt, University of the Virgin Islands

For more than seven years, SCTLD has been destroying reefs throughout the Western Atlantic and Caribbean. However, it is still not fully understood exactly how the disease affects corals. In an effort to get to the bottom of this, a multidisciplinary team of marine biologists from all over the country are banding together to try and better understand SCTLD under a \$2.5 million dollar grant from the National Science Foundation's (NSF) Ecology and Evolution of Infectious Diseases program. This team of ecologists, ocean connectivity and disease modelers, microbiologists, histopathologists, and coral

immunologists (from the University of Virgin Islands (UVI), Louisiana State University (LSU), Rice University, University of Texas-Arlington and the Woods Hole Oceanographic Institution) is working to develop a model that predicts the transmission of the disease.

The team will collect both apparently healthy corals and corals obviously affected by SCTLD to compare with each other. A small piece of each coral will be collected and examined to observe bacteria, algal-symbionts, viruses, immune responses, and visual signs of stress present. The remaining portion of each coral on the reef will be monitored over time to

track SCTLD lesion progression rates and survival. All of this information will then be combined with patterns observed on the whole reef to build the model. Once finalized, this model can be easily adapted for other coral diseases as well, making it a useful tool for resource managers.

Project findings will be broadly communicated through virtual public programming, and through the Virgin Islands Coral Disease Advisory Committee with updates on the vicoraldisease.org website. Project results will also be presented and used to support disease response planning at an upcoming U.S. Virgin Islands coral disease response workshop.



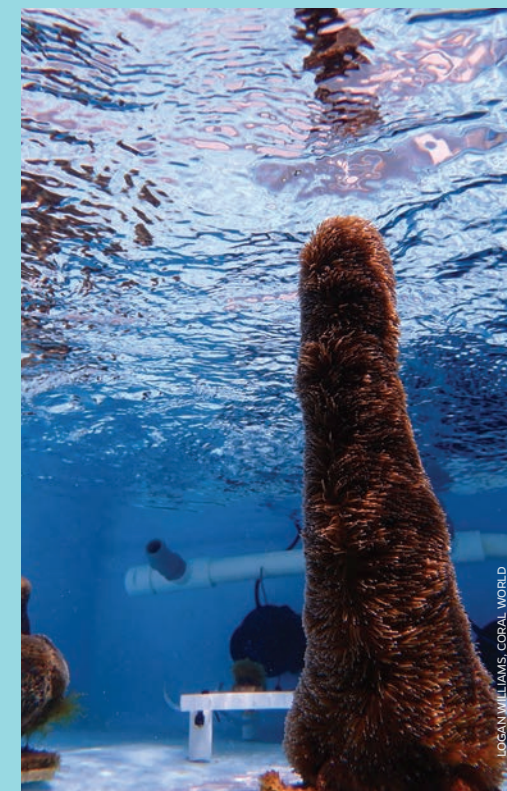
SPOTLIGHT

Coral World Ocean and Reef Initiative

Logan Williams, Coral World Ocean Park

Coral World Ocean and Reef Initiative Inc. (CWORI), a nonprofit organization based in St. Thomas, U.S. Virgin Islands, dedicated to protecting marine environments and empowering others to do so, has teamed up with Virgin Islands National Park to help restore three declining reefs on the northside of neighboring island, St. John, USVI. Currently, CWORI is using their land-based coral nursery facility to house and support the reproduction of vulnerable species such as elkhorn, star, and pillar corals using the microfragmentation method, where corals are broken down into smaller pieces of individual polyps. Within a single week, CWORI is able to produce hundreds of microfragments representing multiple species and genotypes, which will help promote genetic diversity. The goal is to hopefully have a few thousand corals housed at the facility!

At home in the waters of St. Thomas, CWORI is in the process of installing coral nursery structures to efficiently grow colonies of Caribbean branching corals like elkhorn, staghorn and finger corals. As an active member of the Virgin Islands Coral Disease Advisory Committee (VI-CDAC), CWORI also manages one of the territory's coral rescue centers that houses multiple species of coral that are considered highly susceptible to SCTLD. These corals were removed from the reef with active SCTLD lesions and were then



treated and rehabilitated at Coral World Ocean Park and the University of the Virgin Islands. Rescued and rehabilitated corals will remain at Coral World for preserving genetic material, breeding, and outplanting purposes. Within a couple of years, nursery-reared corals will be transplanted, or outplanted to nearby depleted coral reefs to help restore this vital underwater ecosystem. These efforts were made possible by the Coral Emergency Response Fund, the first of its kind funding program that allows for quick responses to emergency events.



A Plan to Save Puerto Rico's Reefs

Dr. María Vega-Rodriguez, Puerto Rico Department of Natural and Environmental Resources

On August 30, 2021, the Governor of Puerto Rico, Lic. Pedro Pierluisi Urrutia declared ([via Executive Order: OE 2021- 066](#)) a State of Emergency for Puerto Rico's coral reefs due to the spread of SCTLD. Through the Executive Order, the Governor allocated \$1 million to support key response efforts across the island to combat the disease. The Puerto Rico Department of Natural and Environmental Resources collaborated closely with partners to develop the [SCTLD Puerto Rico Emergency Response Plan](#), laying out key activities that will help control and mitigate the spread of the disease on Puerto Rico's reefs. The plan is broken down into two phases. Phase I centers on short-term activities to be implemented in the first year with the Governor's \$1 million allocation, with a focus on intervention. Phase II describes longer-term activities focused on sustaining coral reef health, such as coral rescue and restoration. Although this plan was developed specifically in response to SCTLD, it may also serve as a future roadmap to addressing future emergencies threatening the island's coral reefs.

PREDICTING PATTERNS

Impacts of Stony Coral Tissue Loss Disease on Symmetrical Brain Corals in Puerto Rico

Fabiola Rivera-Irizarry, Sociedad Ambiente Marino, Inc.

A team of researchers working alongside the Puerto Rican nonprofit Sociedad Ambiente Marino (SAM) has been seeking to better understand the dynamics of the rapidly expanding disease outbreak across the island since January 2021. The study consists of monthly monitoring of healthy and diseased colonies of symmetrical brain coral (*Pseudodiploria strigosa*) at three locations: Playa Carlos Rosario (PCR) and Punta Melones (PME) located in Culebra Island, and Vega Baja (VBA) located in the northern coast of Puerto Rico. Researchers decided to focus on this species because it is highly susceptible to SCTLD and plays a key role in building reefs on Puerto Rico's high-energy shallow coral reefs. Current one-year data (Rivera-Irizarry et al., in preparation) shows a decline in populations at all study sites (Figure 1) and indicates that the disease is impacting coral colonies of all sizes.

Using preliminary results, researchers developed a model to help them understand how disease dynamics vary in space and time. The model projects all populations disappearing within four to eight years without some kind of intervention. The model also indicates that some sites are being affected differently by the disease, potentially because of differences in water quality. Researchers are now comparing water quality parameters with disease patterns, creating projections that will help

drive future restoration alternatives. The results of this study will enable researchers to understand how the disease varies through space and time and help inform coral reef management and disease mitigation strategies. Given Puerto Rico's dependence on services generated by healthy coral reefs, it is critical to understand how SCTLD is altering coral reef community structure and what strategies might work best to protect coral reefs for future generations.

This project has been partly supported by NOAA's NOS Office for Coastal Management, Grant # NA20NOS4820136 to SAM.

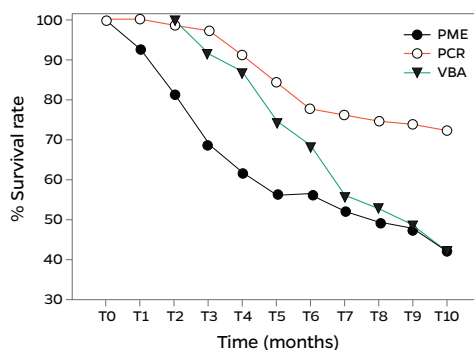


FIGURE 1. Spatiotemporal survival rates of *Pseudodiploria strigosa* studied populations. Study sites included Punta Melones (PME), Playa Carlos Rosario (PCR), and Vega Baja (VBA). Figure shows a decline in *P. strigosa* populations over time at all study sites.



¡NUESTROS ARRECIFES SON VIDA!

Amanda L. Prieto, Puerto Rico Department of Natural and Environmental Resources

THE PUERTO RICO Department of Natural and Environmental Resources (DNER) invites the public to celebrate local coral reefs during this year's annual Coral Reef Week from June 5 to 11, 2022! A full week of exciting activities has been planned that will promote coral reef awareness and protection and highlight coral conservation efforts throughout the island. 2022's theme is "Nuestros Arrecifes son Vida," or "Our Reefs are Life," recognizing the critical role Puerto Rico's reefs play in supporting coastal communities and economies. Throughout the week, DNER's Coral Reef Program will collaborate with stakeholders on events focused on science, community and outreach, art, and natural resource management.

GETTING TO THE SOURCE

Seeking to Understand Disease Transmission

Megan Considine, Florida Sea Grant

In a short amount of time, scientists have made great strides in understanding how SCTLD spreads, confirming that it can be transmitted directly through contact with sick corals and indirectly through methods like ocean currents and sediment. A recent study by Dr. Michael Studivan, NOAA Atlantic Oceanographic and Meteorological Laboratory, and colleagues (2022) identifies reef sediment as a potential pathway for the spread of SCTLD. The study found that disease-inoculated sediments were able to transmit SCTLD, with the most striking infections occurring in as little as 24 hours. "Our findings indicate that disease-associated microbes may reside in sediments, which can help explain how this disease outbreak has been able to spread and persist largely unabated for the last seven years," said the study's lead author Dr. Studivan. These findings have implications for port expansion and dredge projects and additional considerations may be necessary for these types of activities to help limit the spread of SCTLD.

While these methods of transmission can explain the movement of the disease locally (i.e. how the disease spread along Florida's Coral Reef), these methods of transmission cannot explain how the disease has moved across greater distances, such as from Florida to Jamaica, where the disease was first detected in the Caribbean. The way

SCTLD has spread throughout the wider Caribbean suggests that humans likely play a role in transmitting the disease. Researchers are currently investigating whether shipping activities may be transmitting the disease. For example, Dr. James Evans with the U.S. Geological Survey is investigating biofilms as a transport mechanism. Researchers are also exploring whether ballast water - water stored in a ship's hull to provide stability - may be transmitting the disease when ballast water or sediment potentially contaminated with SCTLD is discharged near coral reef ecosystems.

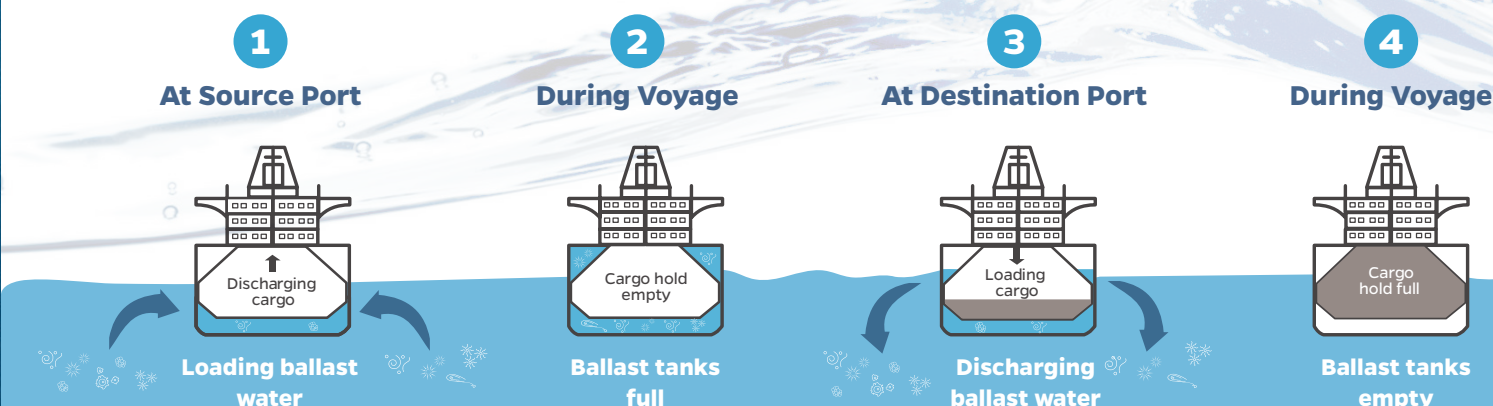
practices aimed to limit the transmission of SCTLD.

In March 2022, The Coast Guard hosted a virtual training for domestic Marine Inspectors and foreign vessel Port State Control Examiners responsible for regulating and enforcing discharges of ballast water by commercial ships and vessels within US waters. In attendance were inspectors from U.S. Coast Guard Sector San Juan (including U.S. Virgin Islands), Sector Miami, and Headquarters in Washington D.C. "We began the session with a discussion of the need for

Researchers are currently investigating whether ballast ... may be transmitting the disease when ballast water or sediment potentially contaminated with SCTLD is discharged near coral reef ecosystems.

Efforts are also underway to better understand the potential relationship between vessels and disease transmission and identify strategies for preventing further spread of the disease. For example, the U.S. Coast Guard has assembled an SCTLD Task Force dedicated to increasing ballast water discharge compliance and is working to develop a risk profile that identifies high-risk vessels transiting from the Atlantic/Caribbean region to the Pacific. In 2019, the Coast Guard released a Marine Safety Information Bulletin that included a series of voluntary best management

heightened compliance in the region due to the dangers of SCTLD, and the potential for its spread through ballasting operations by commercial vessels," says Lucas Elder, a Lieutenant Commander in the Coast Guard. A heightened system for screening ballast water reports from vessels coming to U.S. ports in the Caribbean and methods for monitoring compliance with ballast water regulations were also discussed. The Coast Guard reported that attendees indicated the training made them more prepared to verify compliance with ballast water regulations during future vessel inspections.





PLANNING AHEAD

Preparing for SCTLD in the Indo-Pacific

Madysen Miller, NOAA Coral Reef Conservation Program

If SCTLD is indeed spread via the movement of vessels, the potential exists for the disease to spread west from the Caribbean through the Panama Canal and into the Pacific Ocean. While SCTLD has not yet been detected in the Indo-Pacific, the likelihood of the continued spread of the disease westward is unknown. Given the scale of devastation caused by the disease in the Atlantic/Caribbean region, it makes sense for the Pacific to be prepared. To promote SCTLD preparedness in the Indo-Pacific region, the U.S. Coral Reef Task Force Coral Disease Working Group has established a Pacific Preparedness Sub-Team to generate resources, facilitate trainings, and share lessons learned from the Atlantic and Caribbean with coral managers and practitioners from Hawai'i, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. The team recently published [SCTLD](#)

[Surveillance Guidelines for the Indo-Pacific](#), intended to provide guidance to Pacific coral managers and practitioners on where to look for the disease, what to look for, and what to do if the disease is potentially spotted. The team has also hosted several virtual workshops focused on preparedness and surveillance planning, promoting the identification and implementation of preparedness strategies in Pacific jurisdictions. Future priorities for participants include: training on disease identification and treatment, identifying survey methods, sampling protocols, developing and strengthening partnerships, permitting, and identifying funding sources.

In addition to efforts by the Pacific Preparedness Team, researchers are currently working to determine the potential susceptibility of Pacific coral and plans are in the



*Includes Hawai'i, American Samoa, Guam, Commonwealth of the Northern Mariana Islands

works to coordinate with partners in Panama to ensure Panamanian reefs in the Atlantic and Pacific are being monitored for SCTLD. If the disease shows up in Panama, it will be an early warning sign that the disease is moving west towards reefs in the U.S. Pacific. Staying ahead of the disease and being prepared will hopefully avoid disastrous results should SCTLD reach the Pacific, preventing delays in disease identification and rapid response.

NEW RESOURCES

SCTLD Monitoring and Analysis for Managers

MPAConnect, Gulf and Caribbean Fisheries Institute, NOAA Coral Reef Conservation Program

WITH SCTLD now occurring in 20 Caribbean countries and territories, MPAConnect launched a series of videos on monitoring and the analysis of findings – part of a series of short videos designed to help natural resource managers to prevent, monitor, and combat the spread of the disease. Full of practical tips, expert guidance and up-to-date information, the short videos are available in English and with Spanish captions. MPAConnect is a learning network of Caribbean MPA managers that works to increase the effectiveness of MPA management by addressing specific capacity needs of individual MPAs. The video series was produced in collaboration with many field practitioners, coral reef scientists, and experienced natural resource managers.



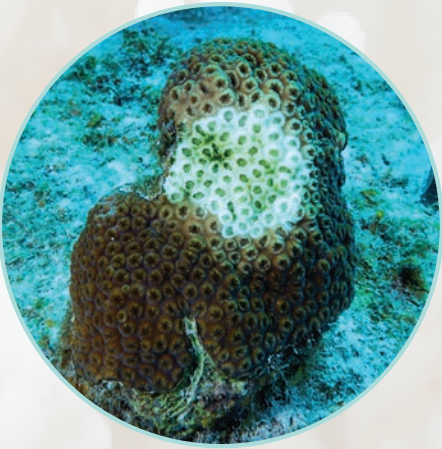
- How divers can help to prevent SCTLD
- How fishers can help to prevent SCTLD
- How you can help to document SCTLD
- How to monitor reefs for SCTLD
- How to analyze the data collected while monitoring your reefs
- How to mix the treatment for SCTLD
- How to prepare the mixture for application to reefs
- How to treat corals affected by SCTLD

“We’re grateful for expert guidance from NOAA’s Coral Reef Conservation Program, the Atlantic and Gulf and Rapid Reef Assessment Program, Nova Southeastern University, Ocean Alchemists and Florida Keys National Marine Sanctuary,” commented Emma Doyle, MPAConnect Coordinator. “Importantly, the videos share practical experience gained so far by Caribbean coral reef managers. Thanks to those who generously collaborated with us in the production of the videos, stretching from the Turks and Caicos Islands to the Grenadines and from Honduras to the Dutch Caribbean,” she added. You can find the videos on GCFI’s website [Stony Coral Tissue Loss Disease - Gulf and Caribbean Fisheries Institute \(gcfi.org\)](#). For more information, please contact mpaconnect@gcfi.org

Guidance on Stony Coral Tissue Loss Disease in the Wider Caribbean

Gulf and Caribbean Fisheries Institute, Caribbean Environment Programme, United Nations Environment Programme

The United Nations Environment Programme (UNEP) Cartagena Convention Secretariat and the Gulf and Caribbean Fisheries Institute (GCFI) recently published a [White Paper](#) designed to help regional partners make informed decisions about coral disease monitoring and response to stony coral tissue loss disease (SCTLD).



“Stony coral tissue loss disease can have devastating impacts on Caribbean coral reefs and on the communities and economies that are dependent on them,” said Ms. Ileana Lopez, Programme Officer for the Cartagena Convention’s Protocol Concerning Specially Protected Areas and Wildlife.

“We know that regional collaboration between managers and multiple actors at various levels is essential to respond to the threat that SCTLD poses to the Caribbean region,” added Ms. Lopez.

The new paper provides a comprehensive overview of the disease – from its distinguishing characteristics and appropriate monitoring strategies, to its impacts on coral reef ecosystems and threats to economies in the region. It also highlights best management practices and communication techniques, as well as possible interventions to respond to the disease.

“The document contains up-to-date, credible, scientific information,” explains Robert Glazer, GCFI’s Executive Director. “It’s also designed to be as user-friendly as possible for Caribbean policy makers, natural resource managers, and field practitioners who need to have the best science at their fingertips as they face this new threat to coral reefs.”

Accordingly, the White Paper describes existing platforms for collaboration, such as the SCTLD Caribbean Cooperation Team coordinated by the United States National Oceanic and Atmospheric Administration’s Coral Reef Conservation Program and the Atlantic and Gulf Rapid Reef Assessment Program (AGRRA). It also highlights further recommendations on how actors at regional, national, and local levels can plan and work together to tackle the coral disease.

The White Paper on Stony Coral Tissue Loss Disease can be accessed on the website of the UNEP Cartagena Convention Secretariat and the Gulf and Caribbean Fisheries Institute. The development of the White Paper was made possible through funding provided by the Government of Sweden.



FWC FISH AND WILDLIFE RESEARCH INSTITUTE

BEST PRACTICES



Supporting Caribbean Coral Rescue in the Face of Stony Coral Tissue Loss Disease

Gulf and Caribbean Fisheries Institute, MPAConnect, NOAA Coral Reef Conservation Program, Atlantic and Gulf Rapid Reef Assessment Program

On April 4, 2022, MPAConnect and the leaders of the Caribbean Cooperation Team from Florida's Stony Coral Tissue Loss Disease Response (NOAA Coral Reef Conservation Program and the Atlantic and Gulf Rapid Reef Assessment Program, AGRRA) co-hosted a virtual online training session entitled, "Caribbean Coral Rescue in the Face of Stony Coral Tissue Loss Disease: An Introduction." Now available online on GCFI's [YouTube channel](#) and [AGRRA's website](#), this is the fifth webinar in the series about stony coral tissue loss disease. It follows webinars on disease identification, monitoring protocols, best practices for treatment and strategic communications in support of stony coral tissue loss disease response. This virtual workshop will have an in person follow up training at

Reef Futures in September 2022. Coral rescue refers to efforts to save the biodiversity of stony corals in the face of this rapidly advancing and devastating coral disease. Co-host Dana Wusinich-Mendez of NOAA's Coral Reef Conservation Program explains: "The webinar introduces various approaches to coral rescue that are underway in Florida and the Caribbean region – removal and preservation of healthy coral tissue from impacted reefs, promoting larval propagation, biobanking of living colonies of the coral species susceptible to the disease, establishing a bio-repository of gametes including via cryopreservation, undertaking assisted coral reproduction, rearing coral recruits and undertaking subsequent stony coral restoration."

MPAConnect Coordinator Emma Doyle commented: "Since questions

surround the feasibility of coral rescue in the Caribbean, this webinar allowed us to hear from presenters who are implementing stony coral rescue efforts in the region, particularly Mexico, the Dominican Republic, US Virgin Islands and Florida. They share practical input about in-water and land-based approaches to coral rescue, the scale of investment involved, the level of required partner/stakeholder engagement and lessons learned from the challenges they've faced."

Session hosts thank NOAA's Coral Reef Conservation Program for supporting MPA capacity building in the Caribbean and for helping to share knowledge and best practices for detecting, monitoring and responding to the threat posed by this coral disease. For more information please contact mpaconnect@gcfi.org and see the resource hub at [AGRRA's SCTLD website](#).

RESEARCH AND REPORTS

Aeby, G. et al. 2021. Changing Stony Coral Tissue Loss Disease Dynamics Through Time in *Montastraea cavernosa*.

Allen, M. et al. 2021. Resident Perceptions of Ecosystem Services Provided by U.S. Coral Reefs: Highlights from the First Cycle of the National Coral Reef Monitoring Program's Socioeconomic Survey.

Becker, C. et al., 2021. Microbial bioindicators of Stony Coral Tissue Loss Disease identified in corals and overlying waters using a rapid field-based sequencing approach.

Bourne, D., Smith, H., & Page, C. 2022. Diseases of scleractinian corals. In: *Invertebrate Pathology*. Edited by Rowley, A. F., Coates, C. J., Whitten, M. M. A., Oxford University Press.

Brandt, M. et al. 2021. The Emergence and Initial Impact of Stony Coral Tissue Loss Disease (SCTLD) in the United States Virgin Islands.

Clark, A. et al. 2021. Characterization of the Microbiome of Corals with Stony Coral Tissue Loss Disease along Florida's Coral Reef.

Costa, S. et al. 2021. Diversity and Disease: The effects of coral diversity on prevalence and impacts of stony coral tissue loss disease in Saint Thomas, U.S. Virgin Islands.

Cróquer, A. et al. 2021. Similarities and Differences Between Two Deadly Caribbean Coral Diseases: White Plague and Stony Coral Tissue Loss Disease.

Dahlgren, C. et al. 2021. Spatial and Temporal Patterns of Stony Coral Tissue Loss Disease Outbreaks in The Bahamas.

Deutsch, J. et al. 2021. Metabolomics of Healthy and Stony Coral Tissue Loss Disease Affected *Montastraea cavernosa* Corals.

Deutsch, J. et al. 2022. Metabolomics Approaches to Dereplicate Natural Products from Coral-Derived Bioactive Bacteria.

Dobbelaere, T. et al. 2022. Connecting the dots: transmission of stony coral tissue loss disease from the Marquesas to the Dry Tortugas.

DRNA, NOAA CRCP. 2021. Puerto Rico Stony Coral Tissue Loss Disease Intervention Plan.

Evans, J. et al. 2022. Combining tangential flow filtration and size fractionation of mesocosm water as a method for the investigation of waterborne coral diseases.

MackKnight, N. et al. 2021. Microbial dysbiosis reflects disease resistance in diverse coral species.

Meiling, S. et al. 2021. Variable Species Responses to Experimental Stony Coral Tissue Loss Disease (SCTLD) Exposure.

Neely, K. et al. 2021. Short- and Long-Term Effectiveness of Coral Disease Treatments.

Rogers, C. & Ramos-Scharrón, C. 2022. Assessing Effects of Sediment Delivery to Coral Reefs: A Caribbean Watershed Perspective.

Rosenau, N. et al. 2021. Considering Commercial Vessels as Potential Vectors of Stony Coral Tissue Loss Disease.

Spadafore, R. et al. 2021. Multi-Variate Analyses of Coral Mortality From the 2014–2015 Stony Coral Tissue Loss Disease Outbreak Off Miami-Dade County, Florida.

Studivan, M. et al. 2022. Reef Sediments Can Act As a Stony Coral Tissue Loss Disease Vector.

United Nations Environment Programme- Caribbean Environment Programme. 2021. White Paper on Stony Coral Tissue Loss Disease.

Veglia, A. et al. 2022. Alphaflexivirus genomes in stony coral tissue loss disease-affected, disease-exposed, and disease-unexposed coral colonies in the U.S. Virgin Islands.

VI-CDAC. 2022. 2022 Action Plan for U.S. Virgin Islands Coral Disease Response.

Williams, S. et al. 2021. Prevalence of Stony Coral Tissue Loss Disease at El Seco, a Mesophotic Reef System off Vieques Island, Puerto Rico.

Work, T. et al. 2021. Viral-Like Particles Are Associated With Endosymbiont Pathology in Florida Corals Affected by Stony Coral Tissue Loss Disease

STONY CORAL TISSUE LOSS DISEASE SEMI-ANNUAL NEWSLETTER | SUMMER 2022

Editors & Contributors

Megan Considine

Florida Sea Grant

Caroline Donovan

NOAA Coral Reef
Conservation Program

Kristina Edwards

USVI Department of Planning
and Natural Resources

Shelly Krueger

Florida Sea Grant

Sophie Maginnes

NOAA Hollings Scholar

Maurizio Martinelli

Florida Sea Grant

Caroline McLaughlin

Florida Sea Grant

Madyson Miller

NOAA Coral Reef
Conservation Program

Dr. Valerie Paul

Smithsonian Marine Station

Dr. Rachel Skubel

Florida Department of
Environmental Protection

Matthew Warham

USVI Department of Planning
and Natural Resources

Dana Wusinich-Mendez

NOAA Coral Reef
Conservation Program



CONTACT: Caroline McLaughlin, National Coral Disease Coordinator, Florida Sea Grant, cmclaughlin1@ufl.edu