


Dr. **HEIL** Cynthia

Mote Marine's Director of their new Red Tide Institute



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RED TIDE—the words that instill fear in hoteliers, restaurateurs, commercial fishing boat workers, beachgoers, drum circles, and residents—is entering the third year of an offensive bloom that has stretched from Naples to northward of the Sarasota and Manatee shores.

For over 40 years researchers have been studying methods that eliminate, control, and/or mitigate the effects of red tide. Mote Marine Laboratory, a non-profit research facility with 90 employees, 27 of which are Ph.D.'s and one is D.Sc., has been studying red tide, but recently raised its visibility with the hiring of Dr. Cynthia Heil as the Director of the new Red Tide Institute. With impressive professional and educational credentials, Cindy (her preferred name) arrived at Mote on January 1 from the Bigelow Laboratory for Ocean Sciences in Maine.

Cindy is intent on helping the layperson understand red tide. “Red tide—*Karenia brevis*—is a single cell marine plant composed of microscopic cells in the ocean that is toxic. It is common in the Gulf of Mexico on the west coast of Florida with blooms that reoccur every year. When it moves into the surf, it makes aerosols whose toxins migrate up to three miles inland. Its elimination is not technically, financially, and labor wise possible. We can, however, target a canal or a beach area that is impacted,” she says. “There are no easy answers to red tide. Some of the best scientific minds are working on it. Every year scientists from around the world meet to discuss Harmful Algal Blooms (HAB's)—of which red tide is one.”

Cindy says that one of the Institute's research focus is on mitigation of red tide. Mote has a clay application that sticks to the cells and sinks to the bottom that is used in the Far East. She says ozonation water treatment can be applied to the bloom and fairly easily breaks up cells, but toxins remain. Enzymes are a possible mitigation method and testing is taking place in test tubes in the lab to determine if it is effective with *Karenia*.

Researchers are considering new methods to reduce aerosols and to investigate other methods that are working globally in canals, rivers, and other bodies of water. Several times Cindy mentions the lack of research funding. Thanks to the \$1-million philanthropic investment from the Institute's Founding Donor, the Andrew and Judith Economos Charitable Foundation, the research at Mote continues. Sustaining funding is still a challenge. Funders are more interested in a year when there is a red tide outbreak; in a year without a major outbreak, people tend to overlook the need for continued funding.

Cindy says, “This first year our focus is on mitigation technology and ground tested technology. We are assessing different technologies and whether they are applicable to red tide. My own research goal is to study which of the 12 red tide nutrient (i.e., food) sources in Florida water can be mitigated, including atmosphere, estuaries, recycled waste from small organisms, decaying fish, light, currents, and nitrogen.”


Semi-retired internationally renowned red tide scientist Dr. Karen Steidinger, for whom red tide is named and who lives in Bradenton says, “Dr. Cynthia Heil is a

leader in *Karenia brevis* research and is known for her multi-year, multi-investigator studies of this harmful alga, and others, in Florida waters. She has headed studies on red tides both offshore and inshore. Dr. Heil is an algal physiologist and ecologist who has researched the big picture as well as the individual components of Florida red tides such as preference for certain nutrients and interactions with other planktons. She is widely respected within the community and has published extensively. Just as importantly, Cindy is able to convey her results in a concise, understandable way both graphically and verbally. The latter point is critical because she can relate to the public's concern for Florida's economy, public health, natural resources, and wildlife.”


Working at Mote is a homecoming for Cindy as she received her Master's degree from the University of South Florida. After receiving her Ph.D. in Rhode Island, she returned to USF on an algal bloom project and was research faculty in the College of Marine Science from 1998-2003. Five days a month she and other researchers were at sea studying red tide. From 2003-2010 she was Senior Research Scientist and Administrator and Harmful Algal Bloom Group Leader of the Fish and Wildlife Research Institute of the Florida Fish & Wildlife (FFW) Conservation Commission. Until her appointment at Mote she was Senior Research Scientist at the Bigelow Laboratory.

“I left FFW to return to my home state of Maine. I had waited seven years to adopt a baby girl from China. I had just stepped onto the dock from a research boat trip when my phone rang and I was told I had a baby. But it wasn't a girl—it was a boy. With a new baby and family in Maine, I left Florida. The Bigelow job had new lab facilities and I had the freedom to look globally at red tide. Now my son is eight years old now so I welcomed the return to Florida. The job is a good fit with my research focus. This is where I need to be; Mote is the epicenter of red tide mitigation,” Cindy says. “The uniqueness of the opportunity at Mote is one that does not come along often. I was drawn to the position because I can study red tide, focus on my research area of interest, and study a topic that impacts people, such as health and environment. I am motivated by a curiosity about science, how things work, and a life-long goal of studying red tide.”

Born in Steubenville, Ohio, to a metallurgical engineer father and an artist mother, Cindy's interest in marine science developed during the family summers in Maine. She earned a Bachelor's degree in Biology at Purdue University, a Master's degree in Marine Science at the University of South Florida, and a Ph.D. in Biological Oceanography with a focus on red tide at the University of Rhode Island Graduate School of Oceanography. Her sister is an architect and her two brothers are engineers. Her son Alex is in the fourth grade at Southside Elementary School. Together they work with Legos and like to go boating and fish. Beading is her go-to leisure activity using semi-precious gems to design necklaces. On her bucket list is a trip to Antarctica.

We all look forward to updates on the Institute's research findings. 

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