

# Sarasota PALS Network

A collaborative program involving Loggerhead Instruments, the Chicago Zoological Society's Sarasota Dolphin Research Program (CZS SDRP), New College of Florida, and Citizen Scientists.

## March 2020 Newsletter

## Vol. 2 No. 1

Previously called the Sarasota Bay Listening Network, we've rebranded our acoustic monitoring stations as PALS (Passive Acoustic Listening Station)!

Sarasota Bay is recovering from the 2018-19 red tide harmful algal bloom, and we can hear it! Within days of the arrival of red tide, sound levels in the bay decreased dramatically as sound-producing species were killed or displaced. A year later we can hear some species have returned, such as snapping shrimp (Figure 1), who are famous for making constant broadband snapping sounds reminiscent of frying bacon. SDRP seasonal fish surveys indicate that fish numbers rebounded quickly after the end of the red tide in January 2019, perhaps in part because this is when larval fish entered the bay after being spawned in the Gulf, and they entered a bay with depleted predators. While acoustic activity hasn't fully rebounded, the signs are positive and we'll continue to listen.

Dr. Reny Tyson Moore and Dr. Athena Rycyk, in collaboration with Dr. Randy Wells, Dr. Katie McHugh, Elizabeth Berens McCabe, and Dr. David Mann, co-authored a manuscript documenting the drastic decline in acoustic activity we observed from the 2018-19 red tide and showcasing the power that the PALS system has for documenting ecological events in coastal regions. The manuscript is now in review for publication in a scientific journal (Title: Passive Acoustic Listening Stations (PALS) show rapid onset of ecological effects of harmful algal blooms in real time).

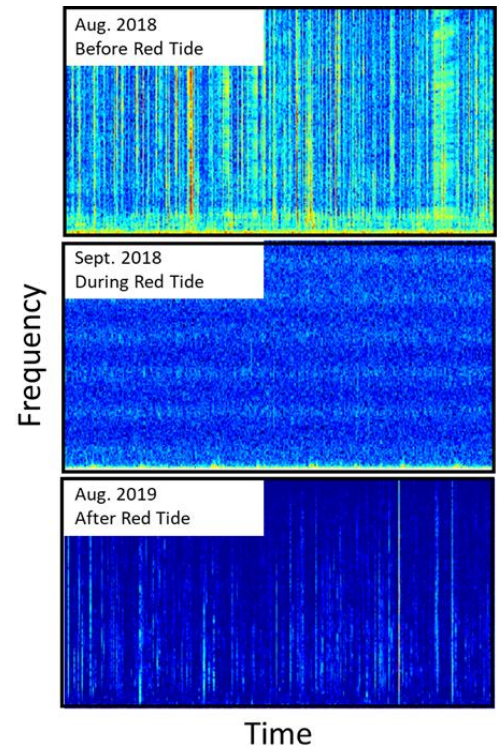
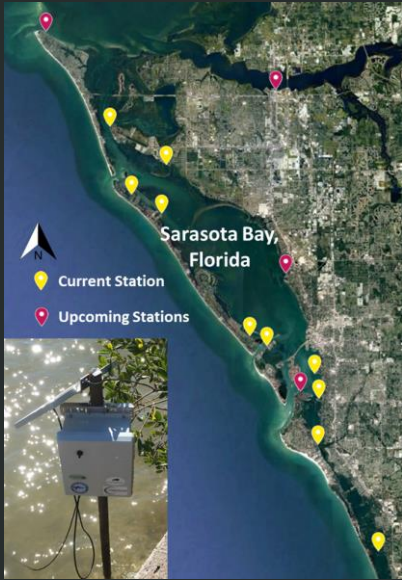


Figure 1. These are graphic representations of the soundscape before, during, and after the red tide harmful algal bloom from a station near Cortez. The brighter, yellow colors indicate louder sounds. The most noticeable difference is the change in "bacon frying" sounds (the vertical lines) from snapping shrimp. Frequent snapping occurs before red tide, almost none during red tide, and then they are starting to return in the following year.



Our PALS Network has expanded to 10 stations with more on the way! The inset picture is of our first listening station at a public location – Historic Spanish Point!



Chenoah DuBree, a Marine Biology student from New College of Florida, visualizes some of the amazing organisms and interactions we acoustically detect with the Sarasota PALS Network.



“The Sarasota Dolphin Research Program has supported a unique database of acoustic recordings of whistle vocalizations of dolphins. Individual dolphins are recorded with suction cup hydrophones attached to the head (dolphin equivalent of a lapel microphone) during health assessments since the 1980s. Knowing the signature whistles of most of the dolphins in the Sarasota population creates an amazing opportunity for PALS to remotely track the movements and whistling behavior of the population. Expanding the current matching algorithm to include more signature whistles, and analysing these data from the expanding set of listening stations will give us a completely new view of habitat use, patterns of association (different signature whistles recorded at the same time and station), and whistling behavior of the Sarasota dolphins.”

~Peter Tyack, Professor of Biology at University of St. Andrews

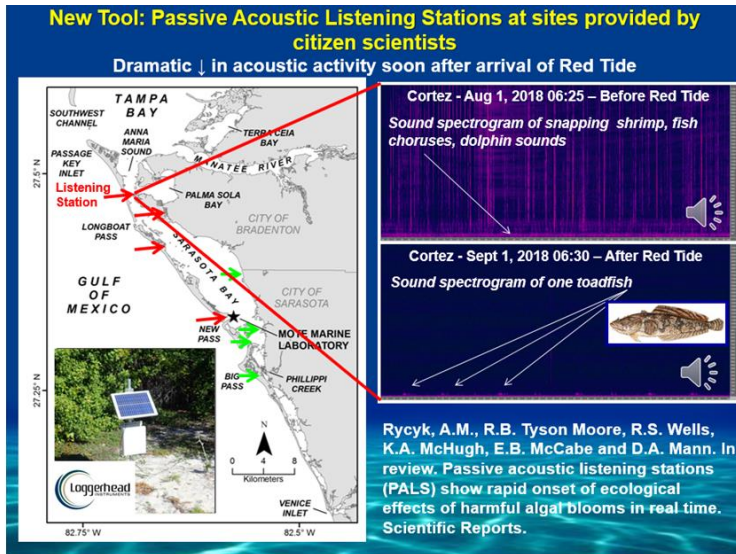


Figure 2. A slide from Dr. Randy Wells' presentation at the World Marine Mammal Conference.

Dr. Randy Wells, Director of the SDRP, included the red tide findings in a talk at the World Marine Mammal Conference (WMMC) in Barcelona, Spain in December, 2019 (Figure 2). He presented findings across disciplines describing the effects of red tide harmful algal blooms on bottlenose dolphins (Title: Bottlenose dolphins and red tide harmful algal blooms: Are patterns of dolphin responses emerging from repeated events?). In addition to acoustics, he discussed changes in bottlenose dolphin distribution, frequency of human interactions, prey base decline, and health. Elizabeth Berens McCabe, who leads the SDRP's fish surveys, presented a poster at the conference, on the red tide effects (Title: Bottlenose dolphin, *Tursiops truncatus*, predator – prey responses to a red tide harmful algal bloom).

Dr. Katie McHugh used PALS as a monitoring tool to study human-dolphin interactions and presented her findings at the WMMC (Title: Turning the tide: Addressing increasing adverse human-dolphin interactions through complementary research and outreach approaches). The PALS was used in conjunction with video monitoring to assess the effectiveness of a new sign outlining safe ways to view dolphins while minimizing the risk of disturbing them (Figure 3). Additionally, an SDRP intern, Shelby Brown, used PALS data for her Master's project at the University of Miami. Her project (Title: Evaluating the use of remote monitoring to establish boater compliance with marine mammal viewing guidelines in Sarasota Bay, Florida) was completed in December, 2019.



Figure 3. Dr. Katie McHugh presenting her research about human-dolphin interactions at the World Marine Mammal Conference

We greatly appreciate the support of Mote Scientific Foundation, Disney Conservation Fund, the Chicago Zoological Society, and several donors and citizen scientists towards establishing, maintaining, and enhancing this network. Sarasota Bay Listening Network Board Members: Drs. Katie McHugh, David Mann, Athena Rycyk, Reny Tyson Moore, and Randy Wells