

Sarasota Bay Listening Network

A collaborative program involving colleges, universities, industry and citizen scientists, led by the Sarasota Dolphin Research Program (SDRP), Brookfield Zoo Chicago.

REBUILDING THE NETWORK

Dear Listening Network hosts, friends and collaborators, we hope that you are doing well as we near the end of what has been a tough hurricane season! As with so many people and places in surrounding communities, the Sarasota Bay Listening Network (SBLN) has not come through the season unscathed. Many of our wonderful Passive Acoustic Listening Station (PALS) hosts are unfortunately contending with damage to their properties, and we are working with them to determine the best time to reinstall our PALS. We often take some of our PALS offline before hurricanes to minimize the potential for equipment loss. Typically, the stations are quickly restarted once a storm has passed, however, this season there was far more damage at our PALS sites than usual and unfortunately we also lost some equipment. Consequently, seven of the 15 stations that were operating before Helene will remain offline for the time being, and the installations of three more stations that are planned are on hold while site repairs are underway.

Now for the good news! These past two weeks our staff and interns have been working hard to restart as many stations as possible (Figure 1). We now have four stations operating north of City Island, including two on Longboat Key and two near Palma Sola Bay, and one station south of City Island near Phillippi Creek. We are eager to get our recordings back and see what changes may have occurred to the local soundscapes in the wake of the storms!



Figure 1. Clockwise from top: Females 2151, F299 and 1793 take a break from socializing near the newly installed Palma Sola Bay PALS. Sarasota Dolphin Research Program (SDRP) interns Emily and Jake pose with the Palma Sola Bay PALS at the end of a productive day spent reinstalling stations! Sarasota Bay Listening Network Manager Katy and SDRP intern Faith attach a solar panel to the Bayou Hammock PALS on Longboat Key.



PALS GENERATION 2 IS ON THE WAY!

Over the next year, a prototype second generation listening station (PALS2) will be engineered and tested with the support of an anonymous local foundation. PALS2 will incorporate automated detection of dolphin and manatee vocalizations and transmit these detections to the cloud, where AI-algorithms will determine whether the dolphin whistles are known signature whistle ‘names’ of individual Sarasota dolphins (Figure 2). Sarasota Bay is an ideal natural laboratory for testing this technology because of the long-term efforts of the Sarasota Dolphin Research Program (SDRP). The SDRP efforts have yielded rich knowledge of the local resident Sarasota bottlenose dolphin community and a globally unparalleled database that supports the acoustic identification of individual dolphins by their signature whistles (the Sarasota Dolphin Whistle Database, SDWD). By leveraging this database, PALS2 will enable us to acoustically track the movements of individual dolphins across the network automatically and in near-real time! This will greatly enhance our ability to study dolphin and manatee presence, movements and other behavior, making the Sarasota Bay Listening Network a more powerful tool for SDRP’s conservation-focused monitoring efforts.

We are also pleased to announce that PALS2 will feature capabilities such as onsite and online listening to live audio, plus online access to recently identified sounds and summary data from each station, such as which dolphins have visited and what we know about them from our long-term monitoring. This has long been a goal of the SBLN and we are excited that we will soon be able to connect our site hosts and the public to the soundscape of the Sarasota Bay estuary! This is a collaborative effort between the SDRP and our partners, Dr. David Mann of Loggerhead Instruments, who engineered the original PALS, Dr. Laela Sayigh of Woods Hole Oceanographic Institution, who curates the Sarasota Dolphin Whistle Database, and Dr. Frants Jensen of Aarhus University in Denmark, who is developing the AI-algorithms that will be used by PALS2.

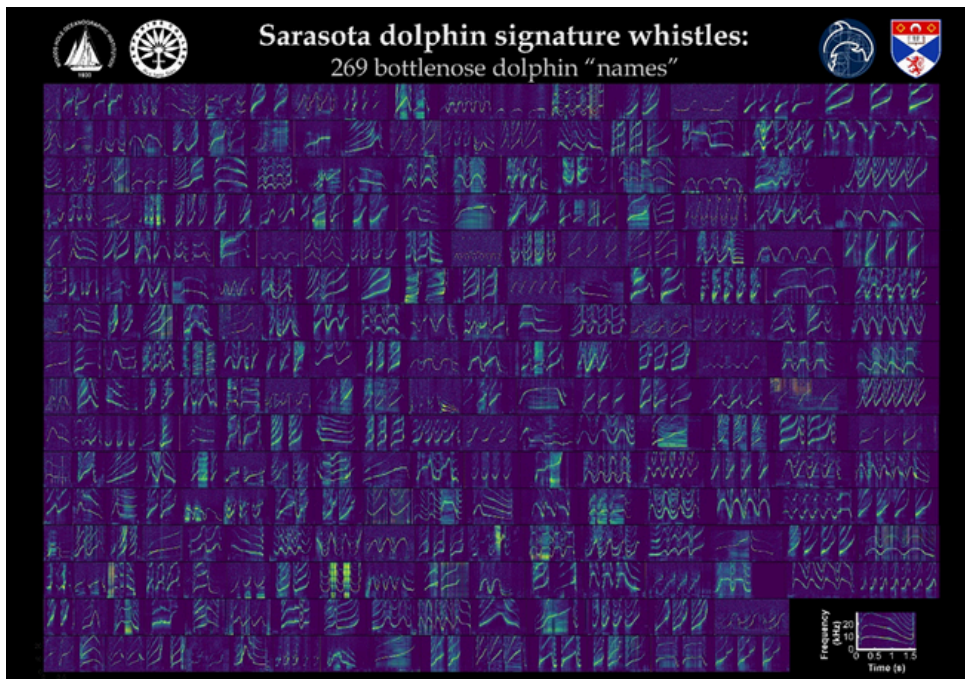


Figure 2. Example spectrograms of signature whistle ‘names’ from 269 bottlenose dolphins in Sarasota Bay. Time is along the horizontal axis and frequency (pitch) along the vertical axis. Whistles (lighter colors) vary in frequency over time, and each dolphin has a distinctive frequency modulation pattern. Figure courtesy of Drs. Laela Sayigh and Frants Jensen.

FUNDING UPDATE

We would like to take this opportunity to thank the anonymous local foundation that is making PALS2 possible through their generous support of its development and implementation. This will be a major step forward for the Sarasota Bay Listening Network's scientific program and community engagement. We would also like to thank the anonymous Brookfield Zoo Chicago donor who recently sponsored the purchase of a server for storage of SBLN's acoustics data, which will greatly streamline the data downloads and management for our growing network, as well as for supporting the purchase of PALS2 stations. Thank you!

WELCOME BACK CECILIA!

We are thrilled to welcome back Cecilia Thompson to the team at SDRP as a full-time BZC staff member. Cecilia recently completed her master's degree in marine mammal science at the University of St Andrews in Scotland and formerly worked as an SBLN contractor. In her new role as a Staff Researcher, she will contribute to Sarasota PALS network research and community outreach activities, assist with maintaining the SBLN, Sarasota Dolphin Whistle Database and other acoustic projects, and contribute to long-term SDRP dolphin monitoring surveys and other projects. You can read about her master's thesis work, using the SBLN, below.



ACOUSTIC TRACKING OF DOLPHINS WITH THE SBLN

BZC-SDRP graduate student and new acoustics Staff Researcher Cecilia Thompson completed her graduate thesis in August. Cecilia explored the use of bottlenose dolphin signature whistles captured at SBLN stations as a non-invasive monitoring method. She matched signature whistles captured by a whistle detection algorithm run at SBLN stations to known individuals in the SDWD. Long-term SDRP visual observations that show individual ranging patterns were applied to validate the acoustic presence of an individual and compare visual and acoustic monitoring methods. During a two-month study period, 18 signature whistles in the SDWD were captured across five SBLN stations, with seven captured at multiple stations. This study demonstrates how passive acoustic monitoring can fill spatial and temporal gaps in visual observation data for a more comprehensive understanding of individual movements and habitat use.



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RESEARCH PROGRAM
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THE HONORS COLLEGE
of Florida



AARHUS UNIVERSITY

ECKERD COLLEGE
DolphinProject

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