

# Sarasota Bay Listening Network

We are excited to welcome Dr. Peter Simard from Eckerd College as a partner and our 11th acoustic station host! Additionally half of our ten Sarasota Bay acoustic listening stations have been upgraded to more powerful HaikuMarine stations (Figure 1)! And we have plans to upgrade more stations and expand to select locations.

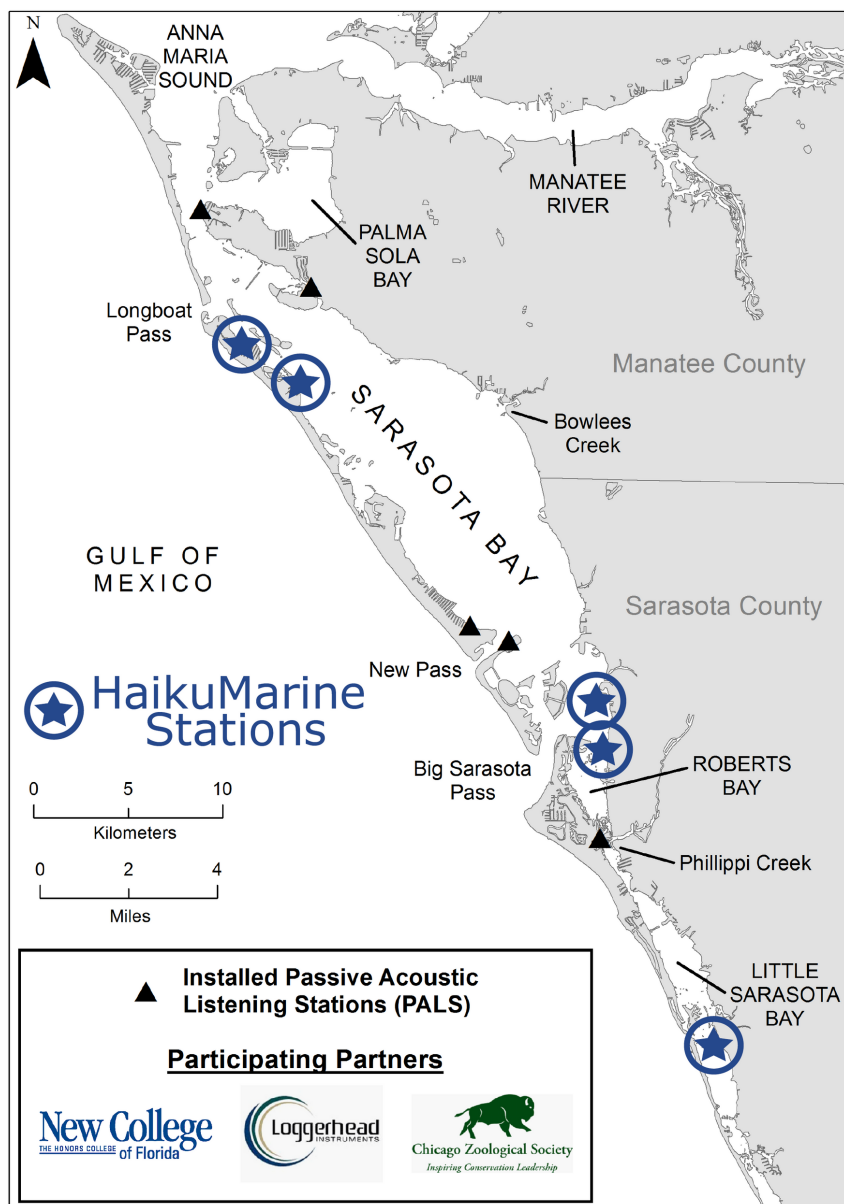


Figure 1: A map of all current Passive Acoustic Listening Stations (PALS) and HaikuMarine Stations in the Sarasota Bay region.

## HAIKUMARINE STATIONS

Loggerhead Instruments has developed a new type of listening station called HaikuMarine (Figure 2). These stations have an on-board computer (Raspberry Pi) with a continuously running neural network designed to detect dolphin whistles. The whistles are instantly uploaded and can be heard on the website <https://listen.haikubox.com/#/marine>. Every whistle from the past day can be heard allowing you to learn the whistles of local dolphins! Additionally, a history of dolphin whistle activity at that station over the past day and month can be viewed (Figure 3).

The neural network that detects whistles can be improved with feedback and you can help by labeling which sounds you consider to be whistles!



Figure 2: A HaikuMarine station (the grey box on the left) near the North Siesta bridge.

## NEW COLLEGE OF FLORIDA STUDENTS

Following the HaikuMarine station deployments, students at New College of Florida (NCF) used the collected dolphin whistles to learn more about the Sarasota Bay dolphin community. As part of Dr. Athena Rycyk's Marine Mammal Biology course, students examined more than 4,000 sound clips, matched whistle types, and determined which are signature whistles. Thanks to the Chicago Zoological Society's Sarasota Dolphin Research Program (CZS SDRP) and collaborators, a catalogue of signature whistles curated by Dr. Laela Sayigh of Woods Hole Oceanographic Institution (WHOI) can help match signature whistles to specific dolphins. Dr. Sayigh did her MIT/WHOI doctoral research on Sarasota Bay dolphin whistles starting in 1986, and she has continued to work with us since then.

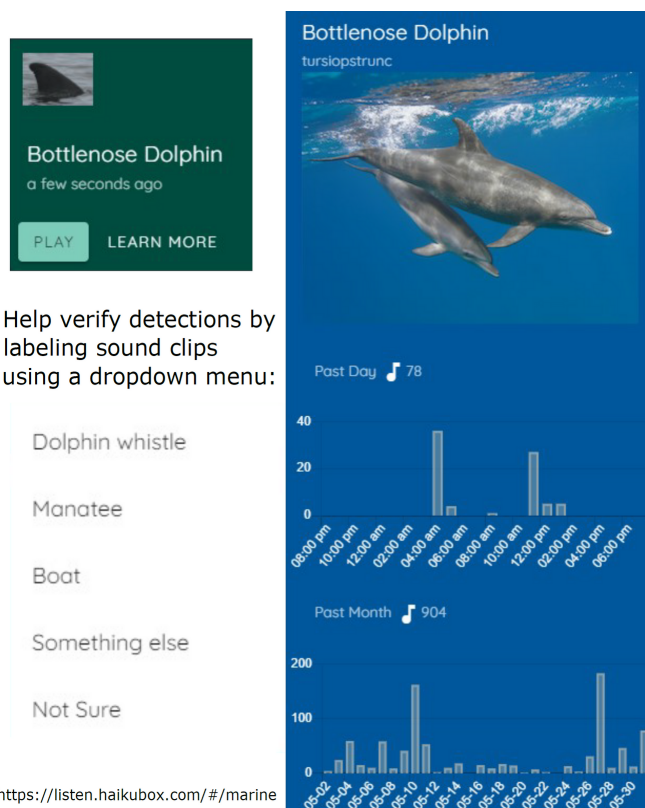


Figure 3: On the HaikuMarine website, each whistle has a card (top left) with the option to play the sound, learn more about Sarasota Bay's dolphins, and a dropdown list to (optionally) label the sound (bottom left). A history of dolphin whistle detections during the past day and month can be viewed for each station (right).

## SUMMER RESEARCH

This summer we are building on this foundation with the help of several college interns from a variety of institutions (NCF, State College of Florida, Oberlin, Middlebury, University of Miami, and Duke University). They are working together from across the country to learn about dolphin vocal communication and use recordings from the Sarasota Bay Listening Network to find more signature whistles. This will allow us to identify which specific dolphins have visited an acoustic station and compare temporal and association patterns of acoustically detected dolphins. Further, we'll be able to compare acoustic detections to visual surveys conducted monthly by the CZS SDRP and link behavioral observations to vocal activity.

## ECKERD COLLEGE JOINS THE LISTENING NETWORK

In February 2021, the third HaikuMarine station was installed about 30 km (20 miles) to the north of Sarasota Bay. This station is operating at Eckerd College, located on the shore of Boca Ciega Bay and part of the Tampa Bay estuary (Figure 4). Similar to Sarasota Bay, Boca Ciega Bay has a highly resident population of bottlenose dolphins, and is studied by researchers and students with the Eckerd College Dolphin Project (ECDP). This summer, three ECDP interns are being trained to analyze sound files recorded and uploaded by the Eckerd HaikuMarine station. This will improve the accuracy of the neural network, and will eventually give researchers another tool to study the dolphins in this area. The ECDP occasionally finds Sarasota residents in Boca Ciega during their research cruises, and the HaikuMarine station will allow researchers to monitor for signature whistles of Sarasota Bay dolphins around the clock. This fall, Dr. Peter Simard of Eckerd College will begin using the HaikuMarine station in his Conservation Biology, Marine Mammal Science and Bioacoustics classes.



Figure 4: The latest HaikuMarine station, located at Eckerd College on the shore of Boca Ciega Bay.



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