

Explorers Club Expedition Report Flag #219

Shifting Climate, Shifting Dolphins: Climate Change and Dolphin Movement in the Bahamas

June 2-11, 2015



TEC Flag #219 flies in the wind onboard *R/V Stenella* alongside flags of the Bahamas, United States and Divers. © Anne Doubilet

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PROJECT OVERVIEW

Due to storms and shifting climate changes over the past several years, a large group of known dolphins we had been observing for 31 years had changed location.

We did a survey in the northern Bahamas area to determine the residency status in two locations—around Little Bahama Bank (LBB) 274200N, 790500W and Great Bahama Bank (GBB) 254000N, 791000W—of two species of dolphins: Atlantic spotted dolphins, *Stenella frontalis*, and bottlenose dolphins, *Tursiops truncatus*.



Spotted Dolphins *Stenella frontalis*

PROJECT MEMBERS

Explorers Club members Dr. Denise Herzing FN'04 Expedition Co-Leader, Anne Doubilet FR'02 Expedition Co-Leader, Ruth Petzold FN, Ivi Kimmel MN, Martha Watkins Gilkes FI; Tanya Burnett, Underwater Photographer, Sydne Kimmel (13-year-old grandniece of Ivi Kimmel) Intern. Crew: Captain Greg Mounts; First Mate & 2nd Captain Bradley Louis Ruda; Graduate Students Sommer Kuhn and Alyson Meyers; Chef

and Intern Ariel Vierheller. We lived onboard The Wild Dolphin Project's vessel, *R/V Stenella*.



TEC Members L to R: Doubilet, Kimmel, Herzing, Petzold, Gilkes



Crew for joint flag expedition with Explorers Club and Explorers Museum

PROJECT METHODS

We methodically cruised the waters in a grid off each area of LBB and GBB. When dolphins were spotted, our team groups —divided into Group A and Group B—alternated jumping in the water to photograph and video the dolphins for behavior observation and identification purposes. Graduate students collected samples of fecal material used for DNA extraction back at the university lab. All team members were assigned watch shifts—same time each day--from the upper deck for dolphin sightings and logging data. Swimming is snorkel only as SCUBA exhale bubbles disturb the natural behavior of the dolphins. Observing “Dolphins on Their Terms, in Their World” is the mission and part of the methodology of The Wild Dolphin Project. At each day’s end all photos and video were downloaded to laptop computers and data was analyzed. Photo IDs of individual dolphins (collected and collated in loose leaf notebooks onboard) over the years allow recognition through comparisons of distinctive markings on dorsal fins, pectoral fins, etc. and tracking.



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Dr. Herzing videotaping a dolphin



© Anne Doubilet

Group A in water with boat *R/V Stenella*



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Sommer Kuhn working on a software program to ID dolphins by dorsal fin markings

PROJECT RESULTS

We were able to spend time in both our study sites, finding many of the dolphins that we were looking for. We were able to verify that the dolphins that had migrated to the new southern area have remained there. Most of the other resident dolphins on LBB seem to be staying where they are. In addition, seeing the local Bimini dolphins interacting and associating with our LBB dolphins, suggests that these two pods are at least trying to integrate on some level.



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Juvenile spotted dolphins *Stenella frontalis* interacting



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Juvenile Spotted dolphins *Stenella frontalis* gradually develop more and more spots as they age

Following are excerpts from Dr. Herzing's daily log:

June 2 2015

R/V Stenella departed the Port of Palm Beach around 10 am. Onboard where Explorer Club members Co leaders Dr. Denise Herzing and Anne Doubilet, Ruth Petzold, Ivi Kimmel, and Martha Gilkes. In addition, underwater photographer Tanja Burnett, intern (Name – Ivi grand niece) and Dr. Herzing's graduate students joined the expedition. We arrived West End GBI, around 4 pm to clear customs. Headed north to anchor at Sandy Cay for the evening and to prepare our plan to survey. On the way to Sandy Cay we observed a mother/calf bottlenose dolphin briefly.

June 3, 2015

We headed north to our normal study site on Little Bahama Bank (LBB). Weather was stormy, with squalls and lightening. Summer is hurricane

season in the Bahamas and even though this can be a challenge, the seas are usually much more workable than in the winter. Unfortunately with the impending storms and the large swell we turned back to find shelter. We focused our work in the southern area near Grand Bahama Island where it is more protected. Of all the resident dolphins on LBB, the southern pod is the largest now, after the exodus of the central pod. We were hoping to find them today but nothing.

June 4 2015

We had anchored south of the island last night to shelter from northeast winds. We were able to observe a group of 7 bottlenose dolphins just north of Sandy Cay. The group consisted of two mothers and calves and both pregnant. We were able to observe them digging for their favorite conger eel snack by crater feeding on the bottom. The dolphins were particularly curious about our explorer team who were busily observing and taking photo identification shots. After we left the bottlenose dolphins we surveyed for spotted dolphins but did not see any. We did a quick snorkel on the Sugar Wreck to take a break and check out the local fish populations. Just as we left the Sugar Wreck some spotted dolphins showed up. These were mostly individuals from the southern group but surprisingly our four northern dolphins, were there. Didn't have much time with them but it was nice to see them with the southern group instead of in the north just as a group of four. Of all the major changes that have occurred over the last couple years, the fact that only four northern dolphins remain is the strangest of all. Clearly it is not safe to live in such a small group so we were excited to see that the northern spotted dolphins were interacting with the southern pod.

June 5, 2015

Left our Sandy Cay anchorage after sheltering there again last night and we decided to go back up to Memory Rock area to look for southern group again. We were hoping to find more individuals to identify before we move to our second location further south in search of other dolphins.

June 6, 2015

Today we ran down to Great Bahama Bank (GBB) where our central group of spotted dolphins recently took up residence. First we ran into

multiple Bimini dolphins, of which we have over 50 identified. Then we saw Caroh, Nassau, Marble, and Laguna, all dolphins from our southern cluster on LBB. All these females were pregnant except Marble who appears to have her first calf. The pattern of pregnant females associating with other pregnant females is very typical for this species. One of the Bimini dolphins, Roo has a new open wound on her left side. It has been our sense that these Bimini dolphins are generally more beat up, and have serious wounds, probably from fast small boat traffic, than our LBB dolphins who live in a more remote area away from boat traffic. But it is interestingly that the LBB/GBB are mixing at least in this area. We are going to look for more dolphins tomorrow, including Burgundy who was pregnant last year, and her calf would be our first known fourth generation dolphin.

June 7 2015

Ran into a small group of Bimini dolphins late morning, including Kunis who is now missing her left fluke. We had a brief encounter and then headed way up north towards Great Issacs light where we found a large traveling group of dolphins right off lighthouse, but they were in travel mode so difficult to observe. Apparently Meridian, a LBB dolphin, was in this group of 25 others, which also included some Bimini dolphins.

June 8 2015

After a day of searching we finally ran into a group of three juvenile dolphins we knew. They were seriously engaged in sargassum play, dragging and passing the seaweed between each other while we humans observed. This is a typical dolphin game with their natural toy in the ocean, and often times they invite humans into their game of keep away

June 9 2015

Another day of searching on GBB brought us in touch with some very small newborn calves. Spotted dolphins in the Bahamas are pregnant for about a year and give birth every three to four years, birthing in the spring and fall. With extensive childhoods and teachings, time with the mother and her associates is critical for learning to become an adult

dolphin. Later that day we ran into a small group of adults engaged in courtship behavior. This usually involves a small male coalition of 3-4 adult dolphins, chasing one female adult who most likely is in estrus. Males chase the female inverted, hoping to mate with her belly to belly. As much as it is a delight to interact with these dolphins when they are playful, it is even more of a delight to observe their natural behavior in the wild.

June 10, 2015

Our last day on GBB and the weather is still workable so we searched around until heading back to the U.S.



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Pod of Spotted dolphins *Stenella frontalis* swims quickly by underneath us