

Notes From the Field | Fall 2023



Research Update

Why is everyone suddenly trying to decode animal communication?

ou may have seen the headlines "Machine learning attempts to decode sperm whales" and "The animals are talking. What does it mean?" in The New Yorker and The New York Times, respectively.

Why now? And how? The answer is really pretty simple. Suddenly we have new and powerful computer tools, machine learning and artificial intelligence, that promise to be able to do things that the average human brain cannot. Sort of the superhero of decoding. And it's true. Machine learning, deep learning, and artificial intelligence are rocking the biological world and one of human's ongoing fascinations is talking to animals, or at least decoding their signals to see if they have language. Let's take a look at how we got here, where we are going, and the challenging steps along the way.

Artificial Intelligence, or

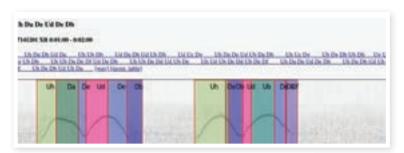
Artificial Intelligence, or AI, has been rapidly evolving and entering our daily lives for a decade. We have Siri, Alexa, Google searchers, and Facebook, all based on mountains of human-derived data to look for patterns. And although there is no magic program that lets us throw in data and get a clean result, we are getting close.

Machine Learning refers to software usually with various algorithms, neural nets, and deep learning techniques that do the heavy lifting. There is Supervised Learning - where the expert gives direction and feedback with results to improve the computer's functioning. There is Unsupervised Learning where we just throw in data and see what comes out. There is also a hybrid version where you might at least tell the computer "this is junk and ignore it, but please categorize the rest".

Along with Dr. Thad Starner and colleagues from Georgia Institute of Technology we have been trying to decode communication signals from our dolphins in two ways:

1) Using Machine Learning we have built models of their sounds and a user interface to let us dig into our data

(continued on page 2)



SPECTROGRAM with codes





Scott Gilliland from Georgia Tech with CHAT LITE







Celeste Mason from Georgia Tech with CHAT SENIOR

LETTER FROM THE PRESIDENT



t is my privilege to continue to serve as President of The Wild Dolphin Project's Board of Directors as Dr. Herzing comes up on the 40th anniversary of her organization's founding. In the past 40 years, running the only continuous underwater study of dolphins in the wild, Dr. Herzing and her team have made significant strides and gained

significant knowledge about these fascinating animals ... "In their world, on their terms."

Of course, technology has played a major part in their research all along. Starting with underwater photography and grainy video, Dr. Herzing and her colleagues have, over the decades, developed tools specifically tailored to assist in their work.

In just my short tenure on the Board of Directors, I have been lucky enough to witness the development of a number of exciting technologies like an Acoustic Positioning Overlay Device (A.S.P.O.D.) which enables the researcher to film a group of dolphins and pinpoint which animal is vocalizing. With this new tool, we can now correlate sounds with individual dolphins as well as behavior, which is a giant leap forward in understanding how they interact and socialize with each other.

Another exciting technological advance Dr. Herzing and her team have made in the past few years is Cetacean Hearing Augmentation Technology (C.H.A.T.) which we're hoping will one day soon enable us to engage in two-way communication with dolphins. Still in the early stages of development, the device assigns a sound that a dolphin can hear and mimic to an item that the animal may want to play with, such as a scarf, a piece of rope or sargassum. If the dolphin wants the rope, for example, he can "ask" for it by mimicking the sound assigned to it. The wearable CHAT computer will hear and interpret the dolphin's sound and he will be handed the item he asked for.

As exciting as the technological aspect might be, we never forget that the dolphins are at the center of it all, and learning the previously unknown about their behaviors in the wild is ultimately the goal. In 2022, our crew observed six new calves and 16 pregnant females. This positive trend continued in 2023 and we're hopeful that the resident populations at LBB and GBB are recovering after dipping in recent years. It's always encouraging to see pregnant females and new calves because that means the females are finding enough food to support a pregnancy which can be a good indicator of a healthy population.

I look forward to continued advancements in our research through technology and the commitment of our team for the next 40 years, and hope to see you on one of our trips in the future.

Axel Stepan, Board of Directors, President

RESEARCH (from page 1)

and extract patterns. At first this started as a dissertation for Daniel Kohlsdorf a PhD student at Georgia Tech. Later, it evolved into a 3-year grant from the Templeton World Charity Foundation, under the program called "Diverse Intelligence". This grant really jump-started our work and helped us focus on decoding dolphin vocal sequences.

For further reading about the Templeton World Charity Foundation's Diverse Intelligence Program, please visit templetonworldcharity. org/projects database

2) C.H.A.T. (Cetacean Hearing Augmentation Technology) is an underwater computer capable of playing and receiving sounds. Since it is meant to be a simple system for human/dolphin communication, it also incorporates real-time sound recognition (using Machine Learning algorithms) to help identify vocalizations in the water. The first version of CHAT (CHAT SENIOR) was a large chest-worn aluminum housing which worked well but was a bit bulky and also required a tech team to keep it running. Since that version we have gone modular, creating an armworn module that plays sounds (CHAT LITE), and a chest-worn smart phone that both receives and translates sounds (CHAT JUNIOR) for the researcher in the water. Finally, we have been able to use off-the-shelf hardware, smartphones, to train for this system Much more userfriendly, CHAT LITE and CHAT JUNIOR give us the ability to spend much more time in the water with the dolphins, and require less of a tech team to be onboard all the time. Still dependent on machine learning for the system, at least the hardware has been reduced in size, making it easier for the researcher to swim with our streamline dolphins.

Both of these research projects require Al aspects

to work. In our case, we use Semi-Supervised Learning since there are so many noisy signals underwater and the computer needs guidance to ignore them when helping us categorize the actual dolphin sounds. Who knows where this technology will lead us in the future.

References:

Dolphin Communication CHAT- https://www. wilddolphinproject.org/ dolphin-communication/

Scientific Publications:

Kohlsdorf, D., Herzing, D. L., & Starner, T. (2016). Method for discovering models of behavior: A case study with wild Atlantic spotted dolphins. Animal Behavior and Cognition - https://www.wilddolphinproject.org/wp-content/uploads/2016/01/Kohlsdorf-et-al.-2017-Pattern-Recog-reduced-size.pdf

Kohlsdorf, D., Herzing, D., & Starner, T. (2016a). Feature Learning and Automatic Segmentation for Dolphin Communication Analysis. In INTERSPEECH - https://www.wilddolphinproject.org/wp-content/uploads/2016/01/Interspeech-2016-final-copy.pdf

From the Archives:

Our first CHAT trip in 2016 CHAT (SENIOR) blog - https://www. wilddolphinproject.org/chatis-it-a-dolphin-translator-or-aninterface/

Support CHAT:

Become a CHAT Society Member - https://www. wilddolphinproject.org/ membership/the-chatsociety/

Media:

"How artificial intelligence could help us talk to animals" by Science News Explores - https://www.snexplores.org/article/artificial-intelligence-animal-language-technology

FIELD REPORT FROM THE RESEARCH ASSISTANT

2023 SUMMER SEASON HIGHLIGHTS

fter a challenging summer, I am pleased to report we had more than 20 dolphin encounters despite fewer trips than normal. As you would expect, every single one of those encounters was a wonderful opportunity to do what we do best: observe dozens of spotted dolphins "In Their World... On Their Terms." We had over 20 encounters, 3 of which were interspecies encounters with spotted and bottlenose dolphins.' We saw a total of 89 different spotted individuals, 48 Little Bahama Bank (LBB) individuals and 41 Great Bahama Bank (GBB) individuals. Of the LBB individuals, 17 were seen on LBB since we have finally returned to that sandbank. It was great to see them again!

Over the course of the summer, we saw 4 pregnant females and 8 new calves! Of the calves, 2 of them were seen on LBB. While we finished last summer with 16 pregnant females— which would suggest

16 new calves on GBB— we only saw 9 of those females this summer on GBB. Given the reported 25% calf mortality rate in their first year of life, seeing 6 of last year's pregnant females on GBB with new calves is exciting news. The

other 2 new calves this summer were seen on LBB, which is even more exciting because it indicates population growth on that sandbank. On GBB, three of the new calves are part of our fourth-generation families. Some of you may remember Nassau, daughter of Nippy, who has had several calves over the years. One of her daughters, Nereide, had her first calf Nesta a few years ago. This summer, Nereide had a new male calf with her! While we did not have an encounter with Nassau this summer, we did take a few dorsal fin pictures of her from afar, so we know she is still around. The



Hayley Knapp

other fourth-generation family consists of Bishu (fused daughter of Blotches) and her daughter Bijyo (mottled). Both Bishu and Bijyo had new calves this summer and were seen together in encounters! Bishu has a new male calf, who

is very friendly and inquisitive, while Bijyo has a female calf. Bijyo's female calf appears to be quite the fighter as she was seen with a ragged fluke and belly scars. However, those did not seem to deter the squeaky little calf from saying hello to all of us humans in the water!

Several of our encounters this summer were with juvenile groups. Three of these juvenile encounters included Nugget, Nassau's seventh calf who lost his eye in 2021. Nugget is doing quite well these days and has learned how to adapt to having a single eye. This summer he was seen swimming around with

Moorea and Leopard, as well as his older sister Nereide. We also saw Nugget's other sister, Nautica, this summer. Miss Nautica is one of the friendlier dolphins on GBB and loves to play with sargassum and seagrass. This field season, she was often seen with Oreo, Hickory, Birch, and Bonzai. In one encounter, she was with Bishu and Bishu's male calf and it seemed she was teaching the calf all her ornery habits. If that calf keeps learning from Nautica, he will have quite the life ahead of him.

As researchers, we take in-water and surface shots of the spotted dolphins so that we can track individuals through their lifetime without using invasive tagging techniques. Part of why this is so important is because it allows us to identify new dolphins on each sandbank with their spot patterns that are as unique and identifiable as human fingerprints. This summer, we had an inquisitive and friendly

(continued on page 4)







Top Left: Meridian (below), Bishu's male calf showing his belly, and Meridian's female calf (above) swimming around together. Top Right: Nautica playing with sargassum in her mouth. Bottom: The mysterious, unidentified mottled male dolphin.

(continued from page 3)

mottled male join us for some of our encounters. He was quite the camera hog, and good thing too because we have yet to match him to our photo database! If he is a new dolphin that we have never seen before, it will be exciting to observe his integration into the spotted groups on GBB. If he isn't new, then it will take some serious detective work to match him to our photo database.

If you read our trip 2 blog, (https://www.wilddolphinproject.org/2023-trips-1-2/) you will have heard that a group of spotted dolphins approached a few snorkelers at the Hens and Chicks reef on GBB. This was a unique experience and special treat! Dr. Herzing happened to be in the water at the time and had a nice encounter with LittlePrawn, Deni, Akita, Lava, and Duke. LittlePrawn was one of the pregnant females last summer and while she did not have a new calf with her this summer, we noticed she was very curious and playful during our encounters. She, Pointless, and Sycamore were very interested in Dr. Herzing while she was in the water. At the end of Trip 7, we were lucky enough to have an

encounter on the last day just before we left Bimini to cross back to Florida. This group included several juveniles as well as two older males—Toad and Baelish.

Despite a shortened summer season, we observed a variety of different behaviors. We had several playful encounters which included sargassum play, seagrass play, chasing, surfing, and aerial jumping. In one of our encounters on GBB, we witnessed a ton of pec-rubbing, which you can read about in our Trip 7 (https://www.wilddolblog! phinproject.org/2023-trip-7/) We also observed courtship and mating between the males and females, including the juveniles who were learning the specific courtship techniques. Ever since the 2013 exodus of some LBB dolphins to GBB, we have been studying their interactions with the residential GBB dolphins. Earlier this year, the WDP published a paper (https://www. wilddolphinproject.org/wp-content/uploads/2022/12/ Elliser-et-al-2022-Integration-ofa-social-cluster-of-Atlantic-spotted-dolphins-Stenella-frontalis. pdf) looking at the social interactions, group dynamics, and coefficients of association between the immigrant and resident spotted dolphins on GBB. This paper demonstrated the two groups are socially merging and changing their associations, especially the males! Now we are wondering: what are the genetic implications of the move? Hopefully, we will learn the answer soon!

We also had 21 bottlenose dolphin sightings in which we saw over 100 total Bottlenose for the summer. That is a lot of bottlenose! One of the interspecies encounters, we observed from the bow of the Stenella and took surface photographs. It looked like a group of bottlenose dolphins were chasing some spotted dolphin moms and calves. We could see a calf with a very pink belly leap out of the water every so often, followed by lots of tail slapping and thrashing at the surface. We then noticed a group of male spotted dolphins, come in and engage the bottlenose. This allowed the moms and calves to swim away, although one of the calves kept going back to the action. In another aggressive interspecies encounter, the spotted dolphins were outnumbered almost 4:1. Previous research has indicated that approximately 6 spotted dolphins are needed to fend off 1 bottlenose, so the spotted dolphins in this encounter were very outnumbered! In this particular encounter, we got out of the water because one of the bottlenose dolphins signaled it was time for us to leave. Since we strive to respect these dolphins in their home, we are always paying close attention to potential warning signals that are directed at us.

We typically don't get in the water with just bottlenose dolphins as they are a little more skittish and less tolerant of people. However, we did have 2 calm bottlenose dolphin encounters this summer. One was a really long crater-feeding encounter. Crater-feeding occurs when the Bottlenose dolphins dig for their prey in the harder, compact sand. Sometimes, they dig up to their pectoral fins! When they pull out of the sand, they leave behind holes or craters that can be seen from above if the water is clear. We are excited for next summer, which will hopefully be one full of dolphin encounters!

Until next summer!
Hayley Knapp







Top Left: Oreo (top) and Nautica (inverted) pec-to-genital rub. Top Right: Bottlenose Dolphin crater feeding. Bottom: Bijyo doing beak to genital on her female calf

CREW CORNER

y first trip of the summer is always my favorite. There's nothing quite like returning to the brilliant blue water of the Bahamian banks and being greeted by the dolphins we've come to know so well. It feels like coming home. One of my favorite encounters occurred when we had anchored the boat to snorkel at Hens & Chicks. When we finished our snorkel and headed back to the boat, five spotted dolphins approached us. Deni, Lava, Duke, Akita, & Littleprawn came up from the bottom and circled around our group. They stayed for a few minutes and then swam off. It was special to have the dolphins approach us while we weren't out actively surveying for them. It reminds me that they may be as curious about us as we are about them.

Brittini Hill

began the 2023 season slightly intimidated with little to no knowledge of what to expect or who anyone was. By the end of the season I had gained a wealth of knowledge, and now have life long relationships, and had some of the most memorable experiences. Many thanks to the Wild Dolphin Project for taking a chance on me.

Andrew Symonds

It makes me so happy when we have passengers whose bucket list includes being in the water with dolphins and they go in for the first time. Their faces reflect how I feel when I get in the water. It's very rewarding when the passengers have such a great experience that they want to come back, even to become an intern.

This year I am thrilled that I have begun recognizing individual animals, either by their behavior, their spots or both. It's always great to see familiar animals, and watching some of them grow up and develop unique personalities.

It was interesting having Cindy onboard and hearing about her experiences when she was a research assistant. I was surprised to learn some things haven't changed much, but as they say, "if it ain't broke, don't fix it."

Theresa Carlsen

t has been over 10 years since I was on a trip aboard Stenella. Prior to that I had spent 10 years as Research Assistant and most of my summers were out on research trips. Being back was like a time warp - although some of the crew and technology were new, the work and the routines of the day were very much the same. It was so much fun to settle back into that familiar cadence of life on the water, and with the dolphins. It meant so much for me to be able to visit some of our old spots on Little Bahama Bank, remembering the days we spent there with the dolphins. And it was equally exciting to visit places I have never been on Great Bahama Bank and seeing how friends both old and new were leading new lives in this now integrated society.

I got to see some of my old friends - oh my how they have grown! Dolphins that I last saw as speckled youngsters are now fused adults, a stark reminder how quickly time flies on land and sea. Working with WDP I have documented their old and new associations in published papers, but getting to see those relationships in person was beyond words

We had some rough weather, lots of rainbows, an amazing group of people and some equally amazing encounters with the dolphins. My trip back in time was so wonderful, and I hope I can take a trip back again soon. Thank you to everyone at WDP, the dolphins and of course, trusty Stenella for a trip to remember!

Dr. Cindy Elliser









Top Left: Cindy Elliser, Denise Herzing, Pete Roberts. Top Right: Andrew Symonds and Cindy Elliser. Bottom: Right: Hayley Knapp, Brittini Hill, Allison Sanchez. Bottom: Right: Theresa Carlsen

am so grateful for the opportunity to be part of this incredible team! Everything about our experience on the boat is unique, and we never quite know what the day will hold! The best part of the day is hearing it's time to gear up and jump in! My favorite encounters happen when the Dolphins are relaxed and just playing around while we observe! On one of these jumps Dr. Herzing decided to "get in for a chat" where she planned to use the chat system to communicate with the pod. As soon as she dove in and played the frequency for sargassum all of the Dolphins immediately focused their attention to Dr. Herzing. It seemed as if they understood because soon we were playing "keep away" with the sargassum! I always hear about the amazing technology but it was truly impressive to see it in action!

Allison Sanchez

s the project celebrates almost 40 years, Stenella is quickly approaching 50! The ol' girl had a bit of work done in the spring when Andrew and a friend of the project tackled many improvements to the interior. I'm thankful for the helping hands and just as importantly, their willing attitudes and jovial spirit. As I checked off the long list of yearly pre-season prep work, they did a deep clean, putting in new floors and fresh paint to spruce up the port head and a thorough restoration with new plumbing work in the galley so the cooks would have an easier time. Stenella insisted on a new transmission and now the only thing left to do is a haul out this fall for routine maintenance and hull checks. Some of the big projects we'll need to address soon would be streamlining the aging fuel system which has turned into a hodgepodge of tanks over the years and the air conditioning system which is pushed to it's limits every single day during these hot-hot summers. I'm glad we had a safe season and I'm looking forward to next year!

Stenella's wishlist: www.wilddolphinproject.org/donate/wish-list

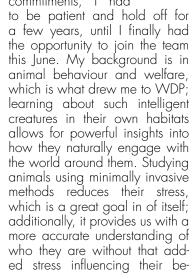
Captain Pete Roberts

PASSENGER HIGHLIGHTS

Emily Hill

A passenger on trip 3

Since first reading about the Wild Dolphin Project five years back in 2018, I was set on getting involved as an intern on their summer research trips as soon as I possibly could. Due to a mix of the pandemic and my studying commitments, I had





Emily Hill

haviours. WDP's vision is not only admirable, but very sensible, and something I wanted to be a part of.

As an intern onboard the vessel, my responsibilities included being on dolphin-watch and observing for any signs of activity above the water surface (mainly

breaching as they'd come up for air). We'd record environmental data to help build a fuller picture of where the dolphins were, as well as when and why. We also worked on identifying individuals from their particular markings; for Atlantic spotted dolphins, this is no small task but made markedly easier by the shifts seen in their spots as they age, spotting to speckling to mottling as they mature. There are around 100 Atlantic spotted dolphins across the field site of the Bahamas with new calves born every year, so trying to keep tabs on everyone means capturing and IDing as

much footage as possible over the field season. Any underwater videography would be reviewed each evening as a group - we would huddle around the screen and chat about the fascinating and varied behaviours that they would display during our interactions. Downtime included eating wonderful cooked meals (a shout-out to Theresa's amazing cooking), and soaking up the incredible scenery both above water and below (I was lucky enough to come across sea creatures such as pufferfish, rays, sharks and lobsters during our time snorkelling).

The most incredible part of the experience was of course being in the water with the dolphins. Once nearby dolphin activity was spotted, there'd be a manic minute as we slipped our snorkelling fins and masks on before hopping overboard and capturing photos and videos. What I found the most fascinating was how our interactions with the dolphins were not at all one-sided; it was amazing to see how interested they were in us, as well as just how comfortable they appeared

to be in our presence. Adults let calves swim right up to us, clicking and whistling as they conducted their own investigations that mirrored our own, albeit in their own ways and using their own tools. Dolphins' ability to echolocate allows them to gain a rich and complex impression of us using sound; in the water they were able to sense our heartbeats, our breathing. It's possible they could recognise just how elated we were to be in the water with them, though we're still learning so much about how they perceive us and each other. They even initiated interspecies play using sargassum seaweed, which was one of the most incredible interactions I've had with another animal.

We still have so much to learn about dolphins and their fascinating minds. I believe the more we understand them, the more we can connect with another intelligent species that we share the planet with and appreciate the complexity of their lives, so different to our own and so worth protecting.

Una Harrington

A passenger on trip 7 and Founder of the Chesapeake Dolphin Project www.thechesapeakedolphinproject.org

How do I describe my experience with The Wild Dolphin Project? In a word, indescribable. This trip was one of the best things that has ever happened to me, and I am so grateful to be a part of it.

I came to this trip for many reasons, the main reason being the way

the dolphins make people feel. You never forget your first dolphin encounter, the curiosity, the magic, the soul. As Susan Casy put it in her book Voices In The Deep, "When I saw the pod, I felt joy. I felt awe. And I felt the slightest bit frightened, though the dolphins were not scary. I felt their beguiling mix of mystery and reality; I felt a sense of bottomless wonder. The one thing I didn't



Una Harrington

feel was alone." I have now been blessed to encounter many beautiful dolphins souls, but that feeling somehow never disappears. You look into their eyes, and the world stops. Some people just don't care to look long enough. Feeling your intelligence, humor,

pain, and joy so seen by another creature feels weirdly vulnerable. But oddly beautiful. I might be anthropomorphising here, but anyone who has experienced it can't deny that you have never felt the same as when you were with dolphins. The work done by the Wild Dolphin Project brings that knowledge, understanding, and wonder to all who care to listen.

The work done aboard the

Stenella is nothing short of incredible. The dedicated team are not only wonderfully knowledgeable but kind and very funny. Never before have I seen so many laughs at all the marine mammal puns told. Never before have I seen someone enjoy hours of monotonous dolphin ID as much as I have. And never have I seen a community so very devoted to un-derstanding these beautiful creatures. I'll say it again: this team is truly remarkable. Whether we were moaning at the deliciousness of T's cooking, listing to Hayley's and Cindy's beautiful Broadway duets, reviewing footage, getting sunburned on watch, or listening to Captain Peet's unforgettable rendition of "Margaritaville," this group of researchers was a joy to work, swim, and laugh with.

Trip 7 was lucky enough to have dolphins every day except the first, with two encounters lasting over 45 minutes. We were fortunate to witness nursing, sar-

gassum play, and many (MANY) pec rubs. We were blessed to meet many unique dolphins and had many meaningful experiences with all of them, but two, in particular, made a real effort to connect with everyone deeply, so shout out to Moose and Toad for making our worlds stop.

I have been involved with my fair share of incredible, unreleaseable captive dolphins, but there is a certain kind of magic to wild dolphins. They have a whole ocean (let's be honest, an entire travelling range in the warm water of the Bahamas) to swim in, and yet they are here with you. Looking at you, connecting with you, and making you feel the kind of joy that only dolphins can make you feel. So if you have the chance to take part in one of these trips, go. I think we all need our worlds to stop for a moment. So, as we on our trip 7 group chat like to sign off,

Pec pec pec...

NEW RESEARCH

ur team analyzed drone video footage to help document the first-known case, to our knowledge, of two species of dolphins interacting off the Southeast coast of Florida, which highlights the value of drones in helping scientists collect previously-unavailable data, including habitat details, body size and health information.

dolphins, Whales and known as cetaceans, often form mixed-species groups, for benefits that include defense from predators, better success when hunting fish, and social interactions. Mixed-species groups are common around the world, yet gaps remain in why and how they form, said Denise Herzing, Ph.D., research director of the Wild Dolphin Project (WDP). She has studied the interactions between two species of dolphins - Atlantic spotted dolphins and common bottlenose dolphins that coexist in the Bahamas.

Dueling Dolphins

For more than 35 years, gaining a deeper understanding of the two species' aggressive encounters and why they occur has been the subject of many of WDP's studies. For instance, it's hypothesized by Herzing that fighting between the two males of each species is a means to prevent hybridization, since they do not need to fight over food or space.

"During our Florida surveys we have seen spotted dolphins, and bottlenose dolphins, but never together," she said.

Dolphins and Drones

But, that all changed when local manta ray research, Jessica Pate, lead scientist of the Florida Manta Project, found both species interacting together when surveying for mantas along the Florida coast. From the footage, it looked like social behavior, courtship or play (which can be hard to distinguish). Jessica shared the footage with us, which we then analyzed. In that way, this paper highlights the value and importance of collaborative work among scientists, said Herzing.

Initially, Jessica found 23 bottlenose dolphins and 1 spotted dolphin via drone. The bottlenose were chasing and hunting fish at the surface. The spotted dolphin tried to engage the bottlenose dolphins by swimming ahead in an inverted position, thought to often indicate a solicitation and by occasionally tail-slapping the water surface, which is often interpreted as an attention-getting signal. The spotted dolphin was never seen feeding.

Thus, Herzing and the co-authors, suspect this interaction was for social reasons. More data on mixed-species groups in Florida are needed to answer why these groups form and their functions, she said, especially considering the impact on cetaceans with changing environmental conditions. "It's important, as it is in all field studies, to have a baseline of information from which we can compare new observations."

Research Associate & Science Writer Bethany Augliere





Left: The Atlantic Spotted Dolphin tail-slapping the water surface in front of the 3 Common Bottlenose Dolphins. Images captured from drone footage off Florida coast on 11 September 2020. **Right:** Aggression between spotted dolphin and bottlenose dolphin males.

Scan to Read Full Research Article

Drones Assist in the First Report of a Mixed-Species Group ofTursiops truncatus (Common Bottlenose Dolphin) and a Stenellafrontalis (Atlantic Spotted Dolphin) Along the Southeast Florida Coast.





SUMMER FIELD RESEARCH

2024 BAHAMAS TRIPS



e are looking forward to continuing our work observing Atlantic spotted and bottlenose dolphins n'ext summer, which will be our 40th consecutive year in the field! We invite you to join us aboard Vessel Stenella and learn about the natural behavior and lives of dolphins in the wild. All trips leave from West Palm Beach, Florida on a Tuesday morning and return 9 days later Wednesday afternoon. A full-time cook is aboard ensuring everyone is well fed and hydrated as some dolphin encounters can be lengthy and can happen multiple times throughout the day.

As a perk of maintaining a membership with the Wild Dolphin Project, members receive the first chance to sign-up. Be on the lookout in December for an email from our trip coordinator with sign-up instructions. In January, those on the inquiry list will be notified of the remaining availability and the updated schedule will also be posted online for the general public to sign up. To be added to the 2024 trip inquiry list, email your contact information along with what state/country you are traveling from and which trip(s) you prefer.

Internship Program: Students currently enrolled in high school or college with an interest in marine biology can participate as an intern. Include

documentation that you are currently a student (i.e. current class schedule, student ID card, unofficial transcript, etc.) with your initial email. Intern responsibilities are to conduct daily dolphin watches on the bridge, assist the team with logging data, underwater photography and photo identification processing. An assignment needs to be completed prior to joining us in the field. Interns must be at least 18 years of age at the time of the trip.

Are you ready to join us? For more information please visit:



wilddolphinproject.org/participatebahamas-trip



wild dolph in project.org/participate/student-internship-opportunities



Melissa Infante
WDP Trip Coordinator
561.575.5660
wdptrips@wilddolphinproject.org

2024 FIELD SEASON SCHEDULE

TRIP 1 — May 7 - May 15

TRIP 2 — May 21- May 29

TRIP 3 — June 4 - June 12

TRIP 4 — June 18 - June 26

TRIP 5 — July 2 - July 10

TRIP 6 — July 16 - July 24

TRIP 7 — July 30 - August 7

TRIP 8 — August 13 - August 21

TRIP 9 — August 27 - September 4
TRIP 10 — September 10 - September 18



Vessel Stenella

MEET THE DOLPHINS

MEET MOOSE!

Moose is a juvenile male Atlantic spotted dolphin in the speckled color phase. He was first seen as a new calf in 2017 and we also saw him in 2023, so he is now six years old. His mother is Mira, and he has an older brother named Monkey. Moose is a curious and rambunctious juvenile and is very noticeable because of his unique dorsal fin!







Left: Moose, observed in 2022, notice he has just begun to gained spots. Center: Moose, observed in 2023, notice the spots are more numerous and distinguishable. Right: Moose's unique dorsal fin.

LAMDA UPDATE!

After his rehabilitation and release in 2018, we saw him again in May of 2019 and every field season since then. He is interacting normally with his group and seems to be doing great!

For those of you who don't know Lamda's story, here is a recap of his adventures in 2018:

We first observed this individual in 2013. He was frequently seen with a large group and had been observed engaging in court-ship and mating behavior.

In September of 2018 we were notified that a male spotted dolphin had stranded and he was flown rapidly to an Animal Rescue Center in Nassau, Bahamas. Thanks to fast-acting groups this dolphin received critical medical treatment and made a full recovery. WDP provided early identification of the individual and his sighting history which led to gaining support from the Bahamas Government, which was necessary to return Lamda to the wild.

We rallied our team to do reconnaissance for Lamdas' group and to serve as an assisting vessel.

We spent two days locating Lamda's group and on the morning of Monday, October 29th a seaplane brought Lamda from Nassau to Bimini then he was ferried to a small boat.

Lamda was launched into the water nearby where his group was last seen by our team. WDP Research Assistant, Cassie Volker, documented his first moments back in the water, and WDP Field Assistant Liah McPherson kept visuals on him from the air using a drone. Later that afternoon satellite data showed Lamda continued to move south on the edge of the sandbank.

After his rehabilitation and release in 2018, we saw him again in May of 2019 and every field season since then," said research assistant Cassie Volker-Rusche. "He's been interacting normally with his group and seems to be doing great!"

"He is still being sighted with some of his regular associates, such as Atlas, Evren, Zeke, from before stranding throughout, as well as in encounters with both the residents as well as immigrants from Little Bahama Bank off Grand Bahama Island." Cassie continued, "Based on our encounter notes, he's been in encounters that have had aggression, courtship, foraging, and play."

Sightings since 2018:

2019 - more than 13 times

2020 - 2 times

2021 - 5 times

2022 - 1 time

2023 - 4 times

In this summer's four encounters with Lamda, he was most often seen with Roo, a female in the mottled age class, and Lettice, a male in the mottled age class.

We are glad Lamda is back in the ocean and we are happy to have helped him along the way. Lamda's story illustrates the vital role long-term research provides dolphins in the wild. Your support helps us learn more about dolphins and the environment in which they live. The more we learn, the better equipped we are to help protect them "In Their World... On Their Terms..."





Top: Lamda in an interspecies aggressive encounter. Bottom: Lamda observed in 2019

Watch Lamda's full story on our YouTube channel: https://www.youtube.com/watch?v=bAcuW9tN-9vM





WILD OCEAN SCIENCE HIGHLIGHTS...

2023 Wild Ocean Science featured Carl Safina

https://www.youtube.com/watch?v=rb1L2tRqb3s

arl Safina presented "Animal Minds. Animal Cultures" at Wild Ocean Science on Saturday, February 25th. The Wild Dolphin Project's 6th annual signature event, Wild Ocean Science, took place at Eissey Campus Theatre in Palm Beach Gardens, Florida. Carl is a New York Times best-selling author and host of PBS' "Saving the Ocean". You might have read his books, "Becoming Wild", "Beyond Words", or "Song for the Blue Ocean". Journalist and PBS Newshour Correspondent, Miles O'Brien, was the special guest host and master of ceremonies. All proceeds from Wild Ocean Science benefit The Wild Dolphin Project's efforts to learn more about the dolphins and the environment in which they live. The more we learn, the better equipped we are to help protect them "In Their World... On Their Terms."

In 2024, Wild Ocean Science will take a brief hiatus as The Wild Dolphin Project celebrates their 40th anniversary. Mark your calendars to join us on March 15th at the Pelican Club in Jupiter, Florida. Sponsorship opportunities and tickets are available now.

Melissa Infante

Event Coordinator media@wilddolphinproject.org















THANK YOU TO OUR VOLUNTEERS

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MEET THE TEAM



Ruth Petzold

Ruth Petzold

Ruth Petzold always loved the ocean. She grew up in Michigan, but spent her summers in New Hampshire, snorkeling and searching in tidal pools for clams, snails and sea stars. She even collected critters from the beach and sneaked them back to her grandfather's house. "I was a real joy." she jokes

grandfather's house. "I was a real joy," she jokes.

Since then, Ruth never stopped exploring the sea. She's a long-time scuba diver and professional underwater photographer, and even played a major role in the research of Eugenie Clarke, Ph.D., traveling with her on over 50 expeditions and serving as her research photographer. Ruth attended the University of Michigan Hospital and Rockefeller University to do immunology research. She turned to full-time underwater photography and dive travel in 1985 and has made diving her life ever since. In 2016, she was inducted into the Women Divers Hall of Fame.

A member of the Explorers Club, Ruth has been recognized as a Champion of the Sea due to her philanthropic work in seeking to promote the welfare of the seas and the protection of the marine environment through her donations. Her philanthropic actions have reached a number of marine-oriented organizations, including The Wild Dolphin Project. We are so lucky to have her on board in various roles over the years.

How did Ruth first hear about the Wild Dolphin Project?

She first met Dr. Herzing at a fundraising event in South Florida but it took a couple of years before they connected again. Ruth was cross country skiing up north in the winter and would come down to Florida in the summer to dive. Of course Dr. Herzing is gone all summer doing work in the field but they finally connected in 1989 and Ruth joined the first trip of the season.

What was that first trip like?

A spotted dolphin mother came over with her new baby and it felt like she was showing it off saying, "look what I did while you were gone!" To see a wild animal have that much faith or trust in a human, and in Dr. Herzing, she thought, "I want to be a part of this". She was hooked and came out every year.

What does she most admire about the project?

She likes Dr. Herzing's approach to her project and thinks "in their world, on their terms" is perfect because so many people interfere with nature. They are not touched or tagged, not even a skin sample. Dr. Herzing gets the DNA from catching their poop and her work is non-invasive, and it really is so much more genteel and kind to the animals.

"And then of course, they are trying to break the code of dolphin communication. If we could communicate with the

dolphins, think of what they could tell us and know and you know, the history of underwater and what they've seen. I mean, they'd probably say please stop trashing the seas. And to see somebody that dedicated, like Denise, she has dedicated her life to this work and it deserves respect, and accolades for what she's done."

Hayley Knapp

Hayley first heard about WDP in 2012 after her mom saw Dr. Herzing's TED Talk "Could we Speak the Language of Dolphins?" In 2019, Hayley was awarded a journey grant from her undergraduate college, William Jewell College, which covered the cost of her first intern trip that summer then she returned as an intern in 2021 and then again as a field assistant in 2022. During Wild Ocean Science's virtual event in 2021, Dr. Green was asked what her one wish would be in terms of dolphin genetics research and she replied, "to have a student willing to study poop." Hayley had recently finished volunteering with penguins at a zoo and getting pooped on was an hourly occurrence, so studying poop was not a deterrent. In conjunction with Dr. John Baldwin, Dr. Green took her on as a graduate student.

What is Hayley's education path?

For her undergraduate degree, she attended William Jewell College in Missouri, majoring in biology, and currently, she is working on my master's degree through Florida Atlantic University. Her thesis research is the "Post-exodus Paternity and Genetic Assessment of Dynamic Atlantic Spotted Dolphins on Great Bahama Bank." It is a genetic assessment of the social interactions and merging that has been observed in the last five years according to Elliser, Volker, and Herzing 2022.

Given that the two groups of spotteds dolphins — those who moved and those who were already there — are socially integrating, we want to see if they are genetically integrating as well. In order to do this, we have to match fathers and mothers with the calves born after 2013, which is where Hayley comes in.

What are her favorite experiences with WDP?

Her favorite are the playful encounters with juveniles but aside from dolphins, she loves the different passengers on the boat saying, "There are so many unique and talented people that join us for research trips and they always make the trips even better. This past trip, we did a talent show one night and it was so much fun to learn about everyone's various talents. Back in 2021, we did the Stenella Olympics and that was a hilarious way to end the trip. In both cases, the passengers encouraged the goofy interactions."

What does Hayley want people to know about WDP and dolphins in the Bahamas?

"WDP is a great way to learn about wild dolphins and the trips are the perfect way to learn about field work. The method of studying and observing the spotted dolphins is a perfect way to develop respect for wild animals in their natural habitat. My advice to aspiring marine mammal scientists would be to never give up on your dreams. Becoming a marine mammal scientist is a long road, and it can look very different for each individual. Being from Kansas, I had to start by studying marine invertebrate fossils while walking dogs at a shelter, volunteering at a vet clinic, or working with penguins at a zoo. Just because your journey looks different from someone else's doesn't mean it's the wrong one. Just because you're living in a landlocked

state, doesn't mean you will never work in or near the ocean. All it takes is determination, passion, and the right opportunities."

Hayley's favorite dolphin is one of Nassau's offspring named Nugget. He was first seen in 2019 on her first intern trip and at the end of that trip they were able to suggest and vote for names for the new calves. Hayley suggested "Nugget". He had a rough couple of early years which resulted in him losing an eye (reason still unknown); however, Nugget is still around and finally has his first spot!

Dr. Cindy Elliser

This summer Dr. Cindy Elliser returned after 13 years of being away. She was with us for 10 years as a research assistant as well as both a master's student and doctoral student at Florida Atlantic University with Dr. Denise Herzing.

In 2014, Cindy moved to the Pacific Northwest and founded Pacific Mammal Research to study marine mammals in the Salish Sea, particularly harbor porpoises and harbor seals. She is the author of numerous papers in peer-reviewed scientific journals and has presented at international scientific conferences. Now, Cindy is also associate director at the Salish Sea Institute, part of Western Washington University.

Cindy shares a little more about the Salish Sea Institute: "We share science, policy, and ecosystem learning across the Salish Sea. We produce white papers and hold webinars and workshops to enhance the sharing of science beyond the scientific community and to promote awareness about the transboundary nature of the Salish Sea. We engage with policy makers, government agencies and nonprofits with this work so that we can better help the conservation of this ecosystem. In this role I am also the academic program director, overseeing the Salish Sea Studies Minor, where students get experiential, place based, transboundary and interdisciplinary learning about the Salish Sea. I enjoy getting to make a difference in the conservation of the Salish Sea beyond my own research interests, and learning about all the amazing work being done!"

After 13 years Cindy was most looking forward to...

"The dolphins!! I was hoping to see some of the dolphins I knew as youngsters and had spent so many years watching grow up. It was just crazy to get to see them as fused adults. I was also interested in meeting some of the new animals in Bimini that I only know by names from my research on their associations. Seeing them in person and their personalities was very cool. Toad and Baelish are an alliance I am familiar with from my work on their associations, so it was super cool seeing them together!"

"I got to see Linus and Bonito on Grand Bahama Bank (GBB), off Bimini, and Naia — who had a new baby — on Little Bahama Bank (LBB) off Grand Bahama Island. All of these were



Left: Dr. Cindy Elliser and Dana Hunter. Right: Dr. Cindy Elliser

young juveniles when I left. What was very cool was getting to see both sandbanks-LBB and GBB. I was so excited to get to stop at all the old areas on LBB that we would see the dolphins, and where we spent so much of the 10 years I was there. Although we didn't see any spotted dolphins in the Northern areas (we did see some in the Southern area), I did get to get in the water with some bottlenose dolphins at a place we call the nursery. Anyone who knows me would understand why that was so special. My master's thesis was on the bottlenose dolphin social structure, and part of my doctorate documented the changes after the hurricane losses. I maintained the catalog (and was the only one who knew all the animals). The bottlenose are more shy, and most people prefer the spotteds, for obvious reasons. So, I was always the cheerleader for the bottlenose, and excited to see them and even more so when we could get in the water. Getting in the water with a couple curious bottlenose back on my old stomping grounds was extra special, particularly with the dolphins not being around as much on LBB."

"I stepped onto Stenella and it was like no time had passed.

"I stepped onto Stenella and it was like no time had passed. The daily routines and how the boat works and the way we do things haven't changed. It was so comforting slipping back into my old routines and living the boat life again. What did change was the cameras! All the cameras! The new underwater still cameras weren't too crazy different, but the video camera and associated high frequency recording equipment were! When I left it was a bigger video camera in a large underwater housing, and strapped below it, the same size as the housing about it, was a computer in an underwater housing. It was large and unwieldy- I remember putting it in my front seat with a seatbelt when loading and unloading the boat! The new equipment was very small and compact with a new fancier (and much easier to swim with) housing. It was cool seeing that new updated technology, juxtaposed with all that hadn't changed."

Are there any new research questions or ideas?

"Having documented their integration, and seeing that first hand now was super cool. Most interesting is that from the association work it seems like males are the ones that are making those cross community associations more. Indeed, when we saw Linus and Bonito, they were the only 2 LBB individuals, all the rest were GBB. I am intrigued to continue monitoring and see how their associations and social structure continue to evolve. I would love to dive more into the female associations in this new community. Are there any cross community female bonds, and do they relate to reproductive status like previously? The previous papers have been overviews of the community structure, so going into more detail on the individual associations and how sex, age class, reproductive status and community status influence their choices would be super interesting to tease apart. As with any good science, answering one question should lead to many more questions to be answered, I look forward to trying to answer some of those as well."



OTHER NEWS - EVENTS

CAREER DAY AT ED-VENTURE MICROSCHOOL IN WAIPAHU, HI.



On Wednesday, October 26th, Brittini Hill attended career day at Ed-Venture microschool in Waipahu, Hawaii. Over 100 students from kindergarten through eighth grade attended this event. Students rotated through career stations, hearing presentations from professionals including a submariner, an archaeologist, an artist, a surgeon, and our own marine biologist.

WILD & SCENIC FILM FESTIVAL

On Saturday, April 8th, the Wild Dolphin Project attended the uniquely popular Wild & Scenic Film Festival- on tour, which took place at the Jupiter Inlet Lighthouse & Museum. This event was hosted by The Loxahatchee River Historical Society. This is one of the nation's premiere environmental and adventure film festivals and approximately 500 guests attended the evening. Left to Right: Heather Oblaczynski, Melissa Infante.

NATIONAL DOLPHIN DAY

To celebrate National Dolphin Day, on Saturday, April 15th, Marine Biologist Brittini Hill discussed her life and work as a dolphin scientist at Joint Base Pearl Harbor-Hickam Library in Hawaii. This presentation was perfect for families and young people interested in dolphins and/or ocean conservation.



TURTLEFEST







On Saturday, March 18th, The Wild Dolphin Project had a table in the conservation village at Turtlefest where approximately 7,000 guests joined together for a free-admission event that focused on promoting ocean conservation. This year's TurtleFest theme was "Respect the Locals". **Top**: Left to Right: Hayley Knapp, Melissa Infante, Rita Gohlke. **Left:** Research team member, Hayley Knapp, was invited to give a talk in the auditorium that afternoon. **Right:** Left to Right: Theresa Carlsen, Hayley Knapp.

THE AQUARIUM OF THE PACIFIC



On Wednesday, November 1st, Dr. Herzing gave an illustrated presentation in Long Beach, California for 260 guests. The Aquarium of the Pacific's First Wednesdays series focuses on animals, nature and conservation efforts and their mission is to instill a sense of wonder, respect, and stewardship for the Pacific Ocean, its inhabitants, and ecosystems.

Science News Explores

How artificial intelligence could help us talk to animals

In August, Dr. Herzing's two-way communication and machine learning work was featured in an article "How artificial intelligence could help us talk to animals" by Science News Explores, an educational magazine for kids in middle school and high school. This story expounds on how Al can help us translate animal communication, exploring machine learning's role in helping researcher's endeavors to learn more about animal talk. The article takes a deep dive into current research being conducted with different animals such as sperm whales, prairie dogs, bats, naked mole rats, and -our favorite- dolphins.

Concluding with this excerpt: When you protect an animal that has some version of language or culture, you're not merely conserving nature. You're also saving a way of life. Herzing says that dolphins deserve a healthy environment so their cultures can thrive.

Indeed.

Read the full article here: https://www.snexplores.org/ article/artificial-intelligence-animal-language-technology



INDO BOARD BALANCE BOARD



Indo Board, whose mission is bringing the fun and benefits of balance board training to everyone, from kids to senior adults to professional athletes, who can enjoy the benefits of balance training and balance board exercises. Indo Board is kindly donating a portion of the proceeds from their wild and free dolphin balance board to The Wild Dolphin Project. Check out their Ocean Conservation Series here:

indoboard. com/oceanconservation-



Do you have an upcoming event?

If your club, school, or community group is interested in having WDP attend or speak at your event, local talk or community engagement, please call our event coordinator, Melissa Infante 561-575-5660 or email media@wilddolphinproject.org.

WPTV.com's "Today on 5"





Top: Dr. Denise Herzing, Dr. Cindy Elliser, Trip Coordinator Melissa Infante, Captain Pete Roberts, First Mate Andrew Symonds. Left: WPTV Anchor Ashley Glass and cameraman Eric Pasquarelli on the bridge of Vessel, Stenella.

On Thursday, August 24th Ashley Glass, news anchor for WPTV.com's "Today on 5", jumped on Vessel *Stenella* for a boat ride while talking to the WDP team that had just returned from the last trip of the 2023 season. Sitting down with Hayley Knapp and Dr. Cindy Elliser, Ashley learned that new research shows resident and migrant dolphins are mixing well. As they watched an underwater video from the latest expedition showing a pod of ten Atlantic spotted dolphins, Hayley rattled off their names and described some of their quirks; it seems she recognizes them pretty easily after observing them in their natural habitat for the past few months. In the video, a pair of dolphins display vigorous "pec rubs", a dolphin's version of a friendly handshake. This behavior is described in one of WDP's scientific published articles as "One dolphin's pectoral fin is in contact with the other dolphin's genitals, pectoral fin, flank, fluke, head and may involve rubbing or sustained contact while swimming."

Hayley shared one memorable moment, although perhaps a

disappointing observation, from this past trip, "We were motoring around looking for dolphins and I was like - hey, there's a piece of trash, and there. It was everywhere, like something had dumped a bunch of trash in the ocean.

Dr. Elliser explains that dolphins are top predators and are good indicators of the health of the ocean. The health of dolphins might indicate there is something happening in the environment that we need to take care of. When asked why this work matters to everyone, Dr. Herzing shares, "It matters that we learn to re-love things in the ocean

and find strategies to mitigate what we've done."

To read the Scientific published article analyzing the underwater behavioural development of free-ranging Atlantic spotted dolphin calves (birth to 4 years of age) you can download the

https://www.wilddolphinproject.org/wp-content/uploads/2011/11/Underwater-analysis-of-thebehaviors-_milesHerzing.pdf



Watch the news segment as it aired

https://www.wptv.com/news/region-c-palm-beachcounty/riviera-beach/dolphin-research-team-returnsfrom-latest-mission



Ways to Support our Research



Giving Tuesday

- 1. Give the Gift of Membership Membership packets can be sent around the globe. Who are you thiking of this holiday season?
- 2. Give your voice, share our mission what does our motto "In Their World...On Their Terms" mean to you?
- 3. Give A Share Share a cherished memory from a dolphin trip or check it off your bucket list and join us in 2024.
- 4. Give Monthly It's easy to set up recurring giving. Just a small amount each month can really add up. Every bit makes a difference.

Text to Give

Support WDP by giving easily from your smartphone. Send a text or scan to donate.



Venmo - Use Venmo as your digital wallet to safely and securely support The Wild Dolphin Project. Scan the QR code or search "Wild Dolphin Project" in the app to make a contribution using your mobile device





Benevity - Employees can make a one-time or recurring donation to the causes they care most about. Employers can increase impact with a corporate match. Rest assured your donations will get where they're supposed to go — in the most efficient, cost-effective way possible.



Facebook Fundraising - Facebook fundraisers make it easy to support causes that are important to you and they charge no fees for donations made to nonprofits.

FIDELITY Charitable

Stock - Make a bigger impact by donating long-term appreciated securities, including stock, bonds, and mutual funds, directly to WDP. Compared with donating cash, or selling your appreciated securities and contributing the after-tax proceeds, you may be able to automatically increase your gift and your tax deduction. Call our office for account information.

Membership and Corporate Giving

Membership Perks

Neonate \$35 – all members receive name recognition in our annual newsletter, subscription* to our monthly e-news updates and first notification* of upcoming field season trip dates and opportunity to sign up prior to to the public.

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For higher levels of support, we urge you to consider joining our CHAT society to help us "Crack the Code" of dolphin communication: www.wilddolphinproject.org/membership/the-chat-society.

Corporate logos will be uploaded to our webpage: wilddolphinproject.org/about-us/our-supporters.

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IN THIS ISSUE

RESEARCH DIRECTOR UPDATE	Page 1
LETTER FROM THE PRESIDENT	Page 2
RESEARCH ASSISTANT REPORT.	Page 3
CREW CORNER	Page 5
FIELD REPORT	Page 6
NEW RESEARCH	
2024 BAHAMAS TRIP	
MEET THE DOLPHINS	
WILD OCEAN SCIENCE	Page 9
MEET THE TEAM	
OTHER NEWS - EVENTS	Page 12
WAYS TO SUPPORT WDP	Page 14
MEMBERSHIPS	Page 14
SUPPORTERS	Page 1 <i>5</i>



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