

The Dolphin Gazette

Volume 11, issue 1 (February 2007)



From the Dolphin Communication Project,
Mystic Aquarium & Institute for Exploration
55 Coogan Boulevard, Mystic CT 06355

www.dolphincommunicationproject.org and www.thedolphinpod.com

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A Note From Kathleen:

Winter is upon us with force; at least, it is here in New England! The frigid temps and wind chill have me longing for the warm sunshine and temperatures of The Bahamas or Honduras, or even Mikura Island in summer. This issue of the *Gazette* is an update on recently conducted field work (new for DCP in the winter), as well as updates on some of our data processing and analyses. We conducted research in The Bahamas in January; Kelly Melillo found out that the sea conditions around Bimini in the winter are a bit less calm than in the summer. Additionally, Kristy and I were joined by colleagues from Sweden at DE during our studies. Drs. Amundin and Blomqvist joined us to implement the MOSART tag and their newly designed and built ELVIS system. Data collected with these devices could provide information for new interpretations of how dolphins use echolocation for foraging and communication. Research Associates Beard, Blanding, Gregg, and Melillo are nearing completion on their respective graduate degrees and share with you the stage to which their studies have progressed. The DCP team is certainly moving forward; we should have a few new publications detailing our results by this summer to share with you. On the Education front - the DCP Youth Program was a smashing success and we are several weeks into the Dolphin Research Trainee program which will finish with several Pine Point Students joining us on our trek to Mikura this June. Thank you for your continued support! I am sure you will enjoy this issue!

Cheers, Kathleen

www.thedolphinpod.com

On August 15, 2006, DCP launched an exciting new online media project: The Dolphin Pod. Similar to a traditional radio broadcast, but able to be downloaded and played on your computer or MP3 player, this 'podcast' is a weekly science program featuring news and information about dolphins in both audio and video formats. Produced by researchers at DCP, The Dolphin Pod has released over 25 episodes covering a variety of topics, from important scientific discoveries in dolphin behavior, intelligence, and anatomy, as well as episodes showcasing spectacular video from DCP's research sites in Japan, Honduras, and The Bahamas. With a steady and ever-increasing audience of regular subscribers, and an entertaining and understandable reporting style that appeals to dolphin enthusiasts of all ages and backgrounds, The Dolphin Pod has quickly become a success on the web. To listen or subscribe to The Dolphin Pod, visit www.thedolphinpod.com - you don't need an iPod in order to listen: you can play the episodes directly from the web, or download the episodes to any computer. There is an impressive lineup of topics for future episodes, including interviews with scientists and live recordings from the field. If you are a business, organization, or individual interested in sponsoring The Dolphin Pod, please visit the DCP website for more information on ways to donate to DCP, or email The Dolphin Pod directly at podcast@thedolphinpod.com.



Pec Packs and the MOSART tag

The combination of the Pec Pack, a silicone envelope that fits over a dolphin's right pectoral fin, and the MOSART (MOBile Submersible Acoustic Recording of Transients) tag, a recording device that fits inside the Pec Pack, is designed to record the possible exchange of pulsed signals between two animals engaged in a mutual social interaction. Combining this technology with video data collected using the MVA allows DCP and collaborating researchers from Sweden to compare audible signals collected from the senders using the MVA with the signals received by a dolphin wearing the Pec Pack.



In January 2007, this combination was used at Dolphin Encounters. Our goal for this data collection effort was to gather recordings of click sounds from any dolphin in the proximity of the tag wearer. These recordings are also valuable because they add to the database of sounds collected from dolphins in captivity, and allow for a comparison between animals living in pools with those in natural enclosures, previously scarcely recorded with the MOSART tag. Studies like these are important; data collection is dependent on the rare and occasional social interactions during which the tag carrier may be involved.

The MOSART study at DE was successful in several ways. Eleven recording sessions were obtained, with 2 dolphins wearing the tag for a total of 130 minutes. This resulted in a total of 45 min of recordings, as the MOSART tag does not record continuously, but only after being triggered by a pulsed sound above a set trig level being aimed at the tag. In 6 of these sessions, the animal carrying the tag was filmed by Kathleen using the MVA. In one session, one of the calves approached the female wearing the tag, and apparently made a sonar exploration of the tag, which was recorded on video. In another session, Jake carried the tag while engaged in the coral sand (ELVIS) experiment. He behaved roughly the same as without the tag, further demonstrating that habituation to the pec pack was successful.

The data files will be analyzed for number of clicks, pulse repetition rate (pulses per second), click power spectrum, and received sound pressure level. Together with previous datasets, these parameters will make it possible to find out whether specific sound types are correlated with certain behaviors or social situations. Also, it is important to find out to what extent the animals use their pulsed sound directionality (as indicated by higher frequency peaks in the click power spectrum) to address social signals to a specific animal, i.e. the tag carrier.

ELVIS system

The objective of this study is to shed new light on a feeding method first observed in wild dolphins on the Little Bahamas banks known as "crater feeding" or benthic feeding. During this foraging activity, dolphins apparently detect fish buried deep in the coral sand, and then plunge head first into the sand to catch it. The ELVIS (Echo-Location Visualization Integration System) system, including a 4-by-4 hydrophone matrix mounted on fabric, is well suited to study the possible use of sonar in this behavior. Custom-made software makes it possible to trace the sonar beam axis of a dolphin exploring the area covered by the hydrophone matrix. A controlled, simulated foraging arena was set up in one of the DE pools. The ELVIS system was buried under a layer of about 5 cm of fine coral sand, and three identical objects (targets) were made from PVC tubing. Each target was filled with 3 iron nails to enhance their sonar target strength (the target strength of PVC is very weak). When buried, the PVC tubes filled with water, making a hollow in the sand. This allowed two hypotheses concerning what cues the dolphins might use to find the buried fish in the wild to be tested: the echo of the fish/object itself and the echo of the hollow in the sand created by the fish's body.

In total, 25 sessions were carried out with the three animals (all male) allocated to participate: Jake, Stormy, and Shawn. Although no thorough analysis has yet been done, the preliminary conclusions are that all three dolphins used their sonar intensively when they tried to find the objects, whether they were partly or completely buried in the sand, and that they had obvious problems finding them even under only 5-10 mm of sand. We cannot exclude the possibility that this was due to these dolphins being inexperienced with sonar seabed exploration. They had never been asked to perform such a task before; instead they have been trained to pick up objects on the surface of the seabed, which is an easy task compared to locating buried objects. There was an evident difference in the body posture of these dolphins and the wild dolphins engaged in crater feeding; the body of the latter pointed at an angle in reference to the seabed, whereas the former were almost vertical. This means that the wild dolphins avoid the strong seabed surface echo that may mask the much weaker echo from the buried object. The acoustic attenuation in coral sand seems to be considerable, so any echo returning from an object buried in the sand will be severely weakened.



DCP at Pine Point School

4th & 5th grade Stonington students:

Twelve local 4th & 5th grade students in the Stonington school district participated in DCP's *Youth Program*. Students learned about dolphin behavior, communication, and how DCP collects video and audio data. This very popular program will continue in the future, but for this semester, DCP is focusing on the *Dolphin Research Trainee* program at Pine Point.

Dolphin Research Trainees:

The Dolphin Research Trainee program, a coordination between DCP and Pine Point School, continues this semester with students in 6th-8th grade. Students will learn about DCP, dolphin behavior, how dolphins communicate with each other, and Japanese language, food, and culture. The program culminates in June with the opportunity for 10 students to travel to Tokyo and Mikura Island, Japan, to participate in the first part of an exchange program with Mikura students.

Volunteering

DCP accepts local volunteers for data analyses anytime during the year at our office in CT. We **DO NOT** accept volunteers for field work at any of our field sites. If you are interested in joining us in the field, check out our ecotours (www.dolphincommunicationproject.org/ecotours.asp). For more information on volunteering, contact the Volunteer Coordinator at MAIFE at 860-572-5955 x209.

Internships:

Internships are available with DCP for Spring and Summer 2007. These internships are based at our office in Stonington, CT, and **do not** include field work. Applications can be found at: <http://www.mysticaquarium.org/index.cgi/788>.

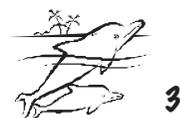
EcoTours

Roatan Institute for Marine Sciences, Honduras:

Dates for DCP's 2007 ecotour to RIMS have been set! Kathleen's trip to RIMS includes 9-16 September 2007. The trip cost of \$1,600 per person per week includes lodging and three meals a day at Anthony's Key Resort. Airfare & Honduran departure taxes are NOT included. Also included in the trip fee are: airport transfers, horseback riding, hiking, canoeing, kayaking, Bailey's Key Wildlife Sanctuary, 2 dolphin swims and 2 dolphin encounters per person. SCUBA divers receive: 3 single tank boat dives daily, 2 single tank night dives weekly, tanks, weights, and belt. Snorkelers receive: 2 daily boat trips. Each participant also has the opportunity to assist with research on dolphin behavior and acoustics. Information is available at: www.dolphincommunicationproject.org/ecotours.asp. Contact Bill at bsperling@idyllwild.com for more information or to sign up.

Dolphin Encounters, Nassau, The Bahamas:

We are currently planning a new ecotour joining DCP at Dolphin Encounters during January 2008. This trip will be a long weekend, arriving on Thursday and departing on Monday, and joining DCP researchers in data collection Friday-Sunday. Stay tuned to the *Gazette* and the DCP website for more details!



Dolphin Encounters, Nassau, The Bahamas:

DCP's January trip to Dolphin Encounters (DE) was incredibly productive. This was our first trip to DE in 2007 and included not only our normal protocol for data collection on dolphin signal exchange, but we were also joined by colleagues from Sweden - Drs. Mats Amundin and Christer Blomqvist, and two of Mats' students, Josefin Starkhammer and Sofia Dahl. Kristy was joined by MaryEllen Mateleska, from the Education Department at Mystic Aquarium & Institute for Exploration, on a fact-finding mission to collect details to create teen trips for the Aquarium and a new adult ecotour for DCP. Five days of exploring left us with more things to do that we had time for! John Anderson joined the DCP research team to collect video footage and interviews - keep an eye on The Dolphin Pod and DCP's website for upcoming podcasts! Kristy collected data for the first half of the session, while Kathleen oversaw the second half of DCP's work at DE. Christer brought the MOSART tag to use with the dolphins at DE while Kathleen recorded with the MVA (see page 2 for details). Mats brought with him an entirely new system, known as ELVIS, to study a dolphin foraging strategy known as "crater" feeding. Data from the ELVIS system will be used by Josefin and Sofia for their graduate degrees.

Educational Programming

Via web camera and the internet, Kathleen linked back to Pine Point School and Mystic Aquarium for about 30 minutes each day during our last week at DE. Previously, DCP researchers have linked to the aquarium from the field by telephone. Access to broadband connection now lets us chat by camera to update visitors and students about our ongoing research and data collection. For the summer 2007 season, we will be linking to each field site from the aquarium via web feeds. Keep an eye posted to our web site and for the next issue of the *Gazette* for scheduling.

Adopt-a-Dolphins

At the end of 2006, DCP created 16 new adoption kits, representing dolphins at Dolphin Encounters. This portion of DCP's Adopt-a-Dolphin program is exclusive to DE, and the sale of these kits through the DE gift shop helps to fund DCP's research trips and educational programs. Visit www.DolphinEncounters.com for more information on their programs.

DE Dolphin Calves!

The three calves born to Nina, Chippy, and Dot in the autumn are thriving! We were able to collect data from all three calves and their mothers on this trip. Chippy's calf, Gussie Mae, was born on September 2, 2006, so Kel and Kristy were able to collect video data of her on our September trip. For Nina's male calf, Cacique, born in September, and Dot's female calf, Laguna, born in October, this was their first experience with the MVA, and our first experience with them. Kim Terrell, Marine Mammal Director at Dolphin Encounters, tells us: "Having three babies born around the same time is a wonderful accomplishment for a planned breeding program. When dolphins successfully breed under human care, it is a scientific indicator that they are completely adapted to the environment in which they live. The fact that eleven of our nineteen dolphin family members were born at Dolphin Encounters makes us proud that the all natural environment we have provided is ultimately ideal for the Atlantic bottlenose dolphin." Congratulations to DE on these new additions to their family!

Thank you!

DCP would like to say "thank you" to Robert and Kelly Meister, Annette Dempsey, and Kim Terrell for their support of DCP's research programs. A big thank you to the entire staff at Dolphin Encounters as well - without your assistance, we wouldn't be able to collect our data! We look forward to seeing you all again in May.

Until Summer,

Kristy @ Kathleen

Kristy Beard
DCP Project Assistant
& Research Associate
Kathleen Dudzinski
DCP Director



Bimini, The Bahamas

DCP in Bimini in January? Since when?

Since 2007, folks! DCP research associate, Kel Melillo, was able to visit Bimini this past January. This was the first time a DCP researcher was able to observe this population of Atlantic spotted and bottlenose dolphins during the winter. Local boat operators previously told us of the dolphins' year-round presence, but it was great to confirm this for ourselves. Being on Bimini in January was quite different than my summer experiences, but well worth the effort. The sea condition was consistently rougher than it is in the summer, but the nice days were *really* nice, with warm temperatures and calm seas. The tourist flow was much slower (nearly non-existent), so our boat time was much more limited, and was funded by a grant received through Alaska Pacific University. I did make it out on 4 boat trips, each of which was very successful. We saw bottlenose dolphins each day, Atlantic spotted dolphins on two trips, and the two species together - the focus of my Master's thesis - on the final day! It was great to see White Blotch (#29) with her calf, Buster (#04), Romeo (#10), Niecey (#48), Billy (#64), and un-named #70 and her calf, #81. We also re-identified one bottlenose (Tt#05), added 4 bottlenose to the photo-ID catalog, and have lots of photographs still to review. Touching base with the Bimini Undersea staff was also nice and we are all looking forward to the summer 2007 season, which begins 1 May! As always, keep tabs on our research sites with our field reports, found on the DCP website at:



www.dolphincommunicationproject.org/fieldreports/FieldReportsBimini2007.asp

Until May,

Kel

Kelly Melillo

DCP Research Associate

Adopt-a-Dolphin

DCP currently has 25 dolphins from our catalog of Atlantic spotted dolphins residing around Bimini, The Bahamas available for adoption. While adoptive parents do not get to take their dolphins home, they will receive a certificate of adoption, a photo of their adopted dolphin, some facts about Atlantic spotted dolphins, information about DCP and our research around Bimini, and a dolphin video. They will also receive the most recent edition of the *Dolphin Gazette*, DCP's quarterly newsletter, with three more issues to be mailed or emailed over the one-year adoption period.

All dolphin adoptions through DCP help support our dolphin research throughout the world, as well as the creation and implementation of local, national, and international education programs for students of all ages.

Biographies of the 25 dolphins available for adoption can be read on the DCP website at: <http://www.dolphincommunicationproject.org/Adopt.asp>. Adoptions can be purchased via the website or by using the form at the end of this newsletter.



Graduate Student Updates

Interspecific Interactions and Hybridization in Cetaceans

Kel Melillo, Master's Candidate, Environmental Science, Alaska Pacific University, Anchorage, AK

I am currently mid-way through the Master's program at APU. I've finished all of my formal coursework and will spend the next 8 months continuing to research, analyze data, and write about my findings. The focus of my work is the interactions between the Atlantic spotted and bottlenose dolphins off the coast of Bimini, The Bahamas. Since 2003, and including this past January, the two species have been observed together 28 times, both from the surface and under water. The focus of my analyses will be their behaviors when interacting, taken from video records. Preliminary video data were shown at the 2005 Conference on the Biology of Marine Mammals. Early video analyses show sexual behaviors/mating as the primary group behavior in over 50% of the mixed species encounters. DCP's research in Bimini represents the baseline data for these populations; prior to DCP there were no researchers recording these dolphins. Therefore, I cannot answer whether or not this behavior is new; however, DCP's studies of both species through photo-identification will allow me to address the hypothesis that population stress of one species is a possible mechanism driving these interactions. At this time, it appears that the populations of both species are stable, so additional hypotheses regarding interactions between these species will also be considered. I look forward to completing this work around Thanksgiving, after another field season in Bimini (where we'll continue to keep our eyes out for potential hybrid dolphins!).

Joint attention and eavesdropping in wild bottlenose dolphins (Tursiops aduncus)

Justin Gregg, PhD Candidate, School of Psychology, Trinity College Dublin, Ireland

I am currently in the final year of research for my doctorate. My research project investigates dolphin behavior in relation to echolocation use - to find out if dolphins might eavesdrop on the echolocation signals of other dolphins. After many months of analyzing video clips, I am now working with the data in order to answer my research questions. Detailed analyses of the video allows me to follow subtle changes in the swimming positions of the dolphins as they echolocate on the MVA. As one dolphin begins to echolocate, I can see if other dolphins position themselves to listen to the echo reflections. Stay tuned for the results!

Bubble emissions as visual communication in dolphins: A field study

Kristy L. Beard, Master's Candidate, Animal Science Department University of Connecticut

I have completed my coursework at UConn, and will continue to process underwater dolphin video and analyze data for the next few months. Video-ID logs from Dolphin Encounters are complete; I have moved on to pulling data on individual bubble streams produced from the dolphins' blowholes from 2006 videos recorded at all four field sites. A very time-consuming process, but it is well worth it! Analyses of the data will include possible differences in bubble production between males and females, in different age classes, between wild dolphins and those in human care, and in differing species and habitats. I hope to have more results for you soon - keep an eye on the website for updates!

Association patterns: Measuring frequency, duration and proximity between dolphin calves and their mothers or other conspecifics in Roatan, Honduras and Bimini, The Bahamas

Darcie C. Blanding, Master's Candidate, Animal Science Department, University of Rhode Island

My coursework has been completed at the University of Rhode Island. The video data from RIMS and Bimini have been processed and statistical analyses have been run on my findings. Now, it's just a matter of getting all of the information on paper as I draft my thesis, and spreading it to the public! This has been an amazing challenge but I have learned so much in the process. Only a few of the many calf interactions studied were seen as significantly different and I'm excited to delve into why these circumstances might be occurring. One thing's for sure, there is a significant difference between the two field sites in the time calves spend with adult males, lending more to the idea that Bimini acts as a nursing ground for dolphin females and their calves.



Ways to Support DCP

DVDs

Bridging the Ocean Divide ~~\$30~~ \$19.95 + \$4.95 S&H
Dolphin Spirit VHS ~~\$25~~ \$9.95 + Free Shipping!

Note cards \$2.50 each/ 3 for \$6

Postcards \$1.00 each/ 3 for \$2

DCP T-Shirts \$15 + \$4.95 S&H

DCP Long Sleeve Shirt \$20 + \$4.95 S&H

Eco-Tours at Roatan Institute for Marine Sciences (RIMS) in Roatan, Honduras, and at Dolphin Encounters, Nassau, The Bahamas.

Please send check or money order to DCP at 55 Coogan Blvd, Mystic, CT 06355. Products can be purchased online through PayPal at www.dolphincommunicationproject.org/support.asp.



Yes! I want to Adopt a Dolphin!



Buster	Juliette	Niecey	Swoosh
Cerra	Leslie	Padre	Stefran
Cleopatra	Lil' Jess	Picky	Teardrops
Dolphin Dandy	Lone Star	Prince William Joseph	Tim
Finn Cusimano	Lumpy	of Wyckoff	Tina
Freckles	Nemo	Romeo	Vincent
		SplitJaw	White Blotch



Circle your choice, fill out the information below & send \$30.00 per adoption. Learn more about these dolphins at www.dolphincommunicationproject.org!



I would like to adopt a dolphin: \$30 for one year. Dolphin name: _____
Please mail your order form, with check, to DCP at 55 Coogan Blvd, Mystic, CT 06355. Credit card payment is available online through PayPal, or by phone at (860) 535-8031 x156.

Please **send** my sponsorship package to:
Name: _____
Address: _____
City: _____ State: ____ Zip: ____
Email: _____

If this is a gift, please note gift GIVER address:
Name: _____
Address: _____
City: _____ State: ____ Zip: ____
Email: _____

Thank you to DCP Volunteers!!

Without your effort and assistance, DCP's office could not run so smoothly throughout the year. You all do a great job processing data and keeping things organized. Well done!
If you'd like to become a DCP volunteer, opportunities may be available for processing data and working with DCP's video and sound files in our office. For more details, see the Education page on the DCP web site, or contact Cherly Lemay Volunteer Coordinator at MAIFE at: 860-572-5955 x209. All DCP volunteers coordinate their schedule through the Volunteer Coordinator and Kristy Beard, DCP Project Assistant.



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To:



The *Dolphin Gazette* is now printed on 100% recycled paper!

