

The Dolphin Gazette



MYSTIC AQUARIUM
INSTITUTE
FOR EXPLORATION



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November 2003

Newsletter
of the
Dolphin Communication Project

A Successful First Season in Roatan, Honduras Sept & Oct 2003

We had an EXTREMELY successful first field season in Roatan studying a group of dolphins in human care. Several of these dolphins were born at the Roatan Institute for Marine Sciences (RIMS). Both sexes and four age classes are represented in this study population. We are gathering data on this group of dolphins following the exact protocol for collecting data on the Atlantic spotted dolphins in the Bahamas and the Indo-Pacific bottlenose dolphins around Mikura Island. Follow along in our coming newsletters and on our web site for updates as we process and analyze our data. Check out the Field Reports section of the DCP web site (see below) for a daily record of our field work in each field site, since 2000.

At RIMS, observations and data collection began on 10 September & continued until 24 October 2003. Robin Paulos, Graduate Student in Psychology at the University of Southern Mississippi, joined me for our seven week field season. We spent 12 hours for initial general surface observations to acquaint ourselves with each dolphin's ID markings. Another 20 hours of surface observations were conducted throughout the study to assess surface activity and diurnal patterns of behavior. Surface observations were also conducted during in-water sessions to examine proximity between dolphins and MVA3 operator. From our 2 person team, one person was in the water while the other was stationed on the tower: we alternated posts.

www.dolphincommunicationproject.org
www.mysticaquarium.org

During beach encounters or training sessions, we randomly selected each dolphin ($n = 4$ for each dolphin) and documented physical contact between the trainer and dolphin pair. A total of 30 hours of video data (behavior and stereo sound) were recorded. A total of 30 hours of echolocation click detector data were gathered. Using an omni-directional hydrophone, 225 minutes of audio also were recorded from the dock at surface.

Data are currently being analyzed. Two specific topics are presented here and on the next page of this newsletter. The Research page of the DCP web site has more background information on both topics. We have also posted the DCP Field Summary from our work at RIMS to the Research page.

Behavioral Study - Pectoral Fin Rubs

Dolphins are exceptionally tactile mammals often seen in contact or close proximity to peers. Specifically, how dolphins use their pectoral fins to exchange touches or rubs yields different meanings depending on where and when the dolphins exchange contact. We have confirmed that dolphins choose partners preferentially when exchanging pectoral fin contact: same sex/same age pairs seem to touch/rub more frequently (Sakai 2002, Dudzinski et al. in preparation). *continued on page 2 ...*

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Pectoral fin rubs study continued ...

Preliminarily, we have documented similar pectoral fin contact among the dolphins in the RIMS community. Because the RIMS dolphins also have frequent, significant contact (rubs and touches) with their trainers, we randomly sampled the amount of contact between dolphins and their primary trainer during beach encounters or training sessions. First round analyses suggest no difference in dolphin-dolphin pectoral fin rubbing between the RIMS dolphins and individuals in both wild groups (Japan and Bahamas). Similarly, contact between a dolphin and a trainer was consistent with dolphin-dolphin contact within this dolphin group. Dolphins that were observed to engage in little intraspecific contact (e.g., Mrs.

Acoustical Study - Echolocation Directivity Testing

During our field season at RIMS, three trials were conducted to examine the directivity of dolphin echolocation clicks. These tests and data are important as baseline information for better understanding of the parameters of dolphin clicks during social activities and for communication. The three trials were:

- 1) Measurement of potential energy changes as range (distance) to target changes. Two adult male dolphins, Esteban and Paya, were requested to swim an "A to B" with the MVA3 stationed as "B". This trial had the dolphins swim directly at the MVA3 to examine how the amplitude or click energy changes as the distance to a target changes (decreases).
- 2) Measurement of the side energy of dolphin sonar. This trial served to examine the side band energy pattern of dolphin sonar when Esteban and Paya swam at a target (MVA3) and then veered away from that target at about 2-3 meters. The MVA3 operator (Kathleen) panned with the dolphins as they veered to the left or right. These recordings facilitate an examination and measurement of the side energy as well as the frequency content of dolphin sonar signals.
- 3) Directivity of Dolphin Sonar. A single dolphin was asked to station ~ 5 m from the MVA3. Seven dolphins (Bill, Tela, Maury, Gracie, Ronnie, Rita, Ceden) were recorded during this trial with each echolocating and head scanning at least once. Each dolphin was submerged at least 0.5 meters and faced the MVA3. This trial facilitates an examination of the directivity of dolphin sonar.



Details of DCP Merger with MAIFE



The mission of Mystic Aquarium & Institute for Exploration (MAIFE) is to *inspire people everywhere to care about and protect our oceans by exploring and sharing their biological, ecological and cultural treasures*. By joining with MAIFE, DCP will be able to more successfully achieve our goals of promoting marine mammal conservation and increasing knowledge of dolphin communication and behavior. DCP officially joined with MAIFE in May 2003. We are finalizing the details of our merger. We will continue our research on at least three dolphin populations at Mikura Island, Japan; Bimini, The Bahamas; and Roatan, Honduras. In the future we hope to expand our research programs as well as our outreach through internships, volunteer opportunities and graduate student collaboration. Linking with MAIFE facilitates a larger, more long-term expansion of our vision. We will continue to produce our quarterly newsletter, *The Dolphin Gazette*. Our membership program is shifting to a sponsorship program. Members will now be direct Sponsors of our research and the education programming that grows from our studies into dolphin communication, behavior and acoustics. In this way, we hope to give our sponsors a more direct connection to our work.

Please visit our web sites: www.mysticaquarium.org and www.dolphincommunicationproject.org to follow along with our newest and most current details related to our research and other programs.

Education Programs

Mystic Aquarium & Institute for Exploration (MAIFE) programs have been a mainstay of marine science education in New England for more than 30 years. Since their inception, education programs and classes have served more than 1.5 million school children, college students, and families. These education programs build a connection with the natural world and foster an understanding of how organisms, habitats, and ecosystems work. Moreover, MAIFE is uniquely positioned to offer a fully integrated approach to education through both hands-on, inquiry-based programs and expedition-based adventures.

Volunteer Opportunities

Opportunities are available to volunteer with DCP researchers primarily in the office working on data processing and analyses. For more details, please see the Education page of the DCP web site. All DCP volunteers coordinate their time through Mystic Aquarium & Institute for Exploration (MAIFE) and Kathleen Dudzinski. MAIFE also offers volunteer opportunities on site at the aquarium facility. The Volunteer Coordinator is Tim Robbins. Tim can be reached by calling 1-860-572-5955 x209, or by email at trobbsin@mysticaquarium.org to inquire about volunteer opportunities at MAIFE.

Internships

We continue to offer internships to students for personal development and for college credit. Credit is arranged by each intern with respect to their school guidelines. DCP has merged the application process for internship requests with that of MAIFE. Internships are offered on a semester basis and typically run for 10-12 weeks. Please visit the Education page of the DCP web site, which is linked directly to the college internships section of the MAIFE web site, for details on applications and internships. Feel free to email Kathleen with specific questions related to internships. We are beginning to offer limited field internships beginning in Summer 2004.



**UPDATE on the
Dolphin Communication Project merger with Mystic Aquarium & Institute for Exploration**

In May 2003, DCP joined Mystic Aquarium & Institute for Exploration (MAIFE) to better facilitate our education programs and extension of our research results to an increased variety of education and public dissemination venues. Examples of some of our programs include research into dolphin communication (behavior and acoustics) at three field locations – Bimini, The Bahamas; Mikura Island, Japan; and Roatan, Honduras. We have both dolphin adoption and name-a-dolphin programs from which proceeds go directly to supporting our field research. DCP has merged our internship programs with those of MAIFE. We are now able to offer more spaces for interns during all three semesters (spring, fall and summer) while developing a limited field program for new interns. DCP continues to develop and offer educational workshops in the USA and Japan and has made available research results and content for the development of educational programs on dolphins for local and national school systems as well as after-school activities. Please see the Dolphin Communication Project (DCP) web site (www.dolphincommunicationproject.org) for more details on the specifics of our programs. Please visit the www.mysticaquarium.org web site for more details on the programs offered both on site and through our organization.

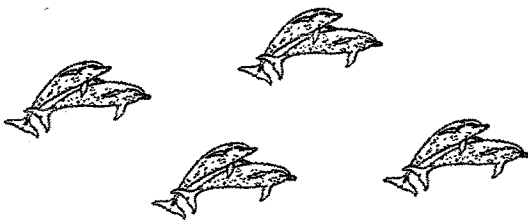
Categorization of whistles produced by two species of free-ranging dolphins: the Atlantic spotted dolphin, *Stenella frontalis*, and the Indo-Pacific bottlenose dolphin, *Tursiops aduncus*, at Mikura Island, Japan

Joana Ramos

MS Degree Abstract

Psychology, University of Southern Mississippi

Two contradictory hypotheses have been proposed about the communicative significance of whistles produced by dolphins: the signature whistle hypothesis and the whistle repertoire hypothesis. The signature whistle hypothesis suggests that each dolphin produces a stereotyped whistle that communicates primarily individual identity. The whistle repertoire hypothesis argues that dolphins share a varied repertoire of whistles, but that the exact communicative function of each different whistle type is not yet determined. The aim of this study was to classify whistles produced by two different species of dolphin - the Bahamas Atlantic spotted dolphins, *Stenella frontalis*, and the Indo-Pacific bottlenose dolphin, *Tursiops aduncus*, recorded in their natural habitats and to determine if their repertoires are in agreement with one of the proposed hypotheses. Categorization of whistles did not yield any conclusive result, however, even though several classification methods were employed. This lack of result was particularly relevant for the technique in which human observers formed whistle categories based on their perception, since this procedure is widely used in dolphin whistle research. The outcome of this study, thus, demotes the validity of using human observers as an accurate manner in which to classify dolphin whistles. Comparisons between different acoustic measurements and demographic information related to the identity and behavior of each whistling animal were also performed. These analyses indicated that dolphin whistles vary in several acoustic dimensions, and thus might compose a graded system of communication.



Bimini Season Update

As we sat down to write this, we realized that we have been back in the states for longer than we were on “the island.” We had been back to driving around on highways and shopping in malls for over two months, but we can still recall stepping onto Bimini that very first day ...

We had a lot of “firsts” this past summer—first time living on a small island, first undergraduate DCP interns and first time really meeting one another! But, the one thing we each remember most was the first time we swam with wild dolphins! Kathy’s first time was with “Nemo,” a new dolphin who is missing his right pectoral fin. We wound up seeing Nemo quite a bit over the summer. My first swim spoiled me for the rest of the season! The passengers and I were privileged enough to spend nearly an hour with five animals— mother/calf pair #56/#16, Swoosh, Underbite and #14—all of whom became regulars. The first time in the water was amazing, but we had to remember that we had a job to do and dolphins to identify. Our shaky camera skills throughout the first few trips illustrated our excitement, but as the summer progressed, so did our filming skills.

As with last summer, DCP must thank both Bimini Undersea and DolphinSwim for their generosity and friendship. Bill and Nowdla Keefe and their family were tremendous to us as were the team from Dolphin Swim. Also, a big thank you to the dolphin excursion guests who allowed us to share our research with them and in return shared their experiences with us.

By the end of August we had completed 33 trips totaling 139 hours, 36 minutes of effort and approximately 310 minutes of video. We “spotted” dolphins 82 times and had 50 water entries. During this time, we were able to identify 24 dolphins, but some of the tapes still have to be worked through—data, data, data! Some of the dolphins we saw most frequently included White Blotch, Big C, Cleopatra, Juliet and Underbite ... none of whom is camera shy! We also saw quite a bit of the local bottlenose dolphins, although they were rarely interested in us silly humans.

Bimini update continued on page 5



Bimini Update continued ...

Their interactions with the spotted, however, were fascinating. The spotted dolphins also shared quite a few exciting afternoons with us, from leaping calves to feeding frenzies. It is never a boring day when there are dolphins around!

But, as the summer wore down, we knew each swim could be our last. After we had said goodbye to the dolphins and were past north rock, who should join the bow, but good ol' White Blotch. She rode with us for a few minutes and we said our goodbyes ... till next season.

Until next summer.
KatherineDeStefano and Kelly Melillo
DCP Summer Bimini Project Interns

Research Projects for Bimini Project Interns

*Katherine DeStefano, Research Intern,
Northeastern University*
Katherine's project is for her senior honors thesis at Northeastern University, and is focusing on the nature of Atlantic spotted dolphin play behavior and its occurrence in the wild. The following questions will be addressed in her thesis: how often play behavior occurs, based on our observations; if and how environmental factors, such as time of day, weather and water quality, influence the instance of dolphin play behaviors; if play behavior correlates with the age, sex, or relationship among dolphins in a particular group; if the presence of a particular individual dolphin influences the probability of play behavior occurring. In addition, a comprehensive definition of dolphin play and the behaviors involved is being developed to assist with future research on this topic.

*Kelly Melillo, Research Intern, Connecticut
College*

At Connecticut College, Kelly has been completing an independent study based on some of the observations from this season studying Atlantic spotted dolphins around Bimini, The Bahamas. Her query focuses on

the interactions, including mating, between the two species of dolphins found in the waters of Bimini, the bottlenose and Atlantic spotted dolphins. More specifically, Kelly's paper is a review of interspecific interactions, mating and hybridization and its application to such witnessed mating between bottlenose (*Tursiops truncatus*) and Atlantic spotted (*Stenella frontalis*) dolphins. It includes an overview of how species are defined and an analysis of known hybridization, both in wild and captive settings.



Changes in Latitude, Part 2: The Winter Season

Technically speaking it's still fall, though winter seems to be upon us with a recent "Noreaster" destowing a foot of snow in our driveway and on our yard. I have had many inquiries as to how I am handling the culture shock of the cold New England weather since we moved here last spring. Those of you who know me, in person and through my writing, may remember that I am a fledgling Nutmegger (what residents of Connecticut call themselves). It's only been eight months since I drove across the California border towards the other coast.

Let me tell you my thoughts on the matter of snow and winter ... I can see the stars through the trees in my forest. I can call it "my forest" because my next-door neighbor lives farther away than the next city block by Southern California standards. No matter how hard I try, I can't seem to smell the air like I did in California. I still BBQ in the cold weather, gives me a good reason to be outside. And, my vintage convertible muscle car, that I have owned for 25 years, arrived piggy-back on a big truck from California last week. Within 20 minutes of the tires hitting the ground, I was rumbling through the streets of Stonington and Mystic with the top down. Nope, I didn't care that it was 35

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2004 Ecotour Updates

DCP has arranged our schedule for the 2004 season to continue our research on the dolphins at RIMS, Anthony's Key Resort in Honduras. Details are available on DCP's web site on the ecotour page.

One-week trips are available: **11-18 September & 25 September - 2 October.**

Darlene Allen & Bill Sperling are handling details.

You can reach Darlene at MAIFE's reservations office: 860-572-5955 x215.

You can reach Bill at bsperling@idyllwild.com or at P.O. Box 2400, Idyllwild, CA 92549.

www.dolphincommunicationproject.org/ecotours

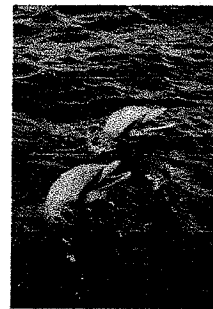
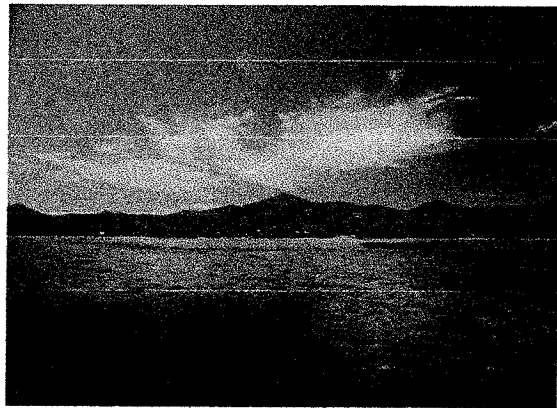
Changes in Latitude, Part 2: The Winter Season continued ...

degrees out!! A school bus returning children to their homes led me through town for part of my drive. I'm still unsure as to whether the kids, gawking at me through the bus rear window, were laughing and oogling at the car or at the knuckle-head driving with the top down in such cold temps. Probably the latter!

In short, I have settled in to life in Connecticut very nicely. I very much enjoy my new, New England home. True, I have garnished it with a bit of California lifestyle, but the two are not as dissimilar as you might think.

Happy Holidays to you and I hope your are enjoying the season wherever you might call home.

*John Anderson
Stonington, CT*



Adopt-A-Dolphin

We all love dolphins. We love their grace, their speed, their playful natures. We are drawn to them. DCP offers Bimini Atlantic spotted dolphin Adopt-A-Dolphin and Name-A-Dolphin Programs. These programs will help fund our Bahamas dolphin research and education programs.

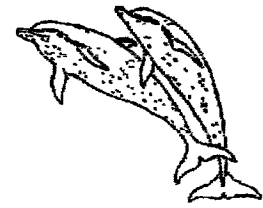
Each adoption costs \$30 and lasts for one year. Each name purchased for a dolphin goes into DCP's permanent database and costs \$200.00. The adoption & naming packet includes a certificate, a photo of your adopted dolphin, a spotted dolphin fact sheet, biographies of our named dolphins, a DCP flyer, & a copy of our most recent issue of the *Dolphin Gazette*.

Become a spotted dolphin parent today & support valuable scientific research!

For more information about adopting a spotted dolphin, look to the back page of this issue of the Gazette OR contact DCP at www.dolphincommunicationproject.org



DCP members are now considered *sponsors* of our research and education programs.
See story on page 2.



DCP Sponsorship Levels

The following list defines the benefits for each level of sponsorship in DCP:

- **\$15 Student:** welcome packet
- **\$25 Individual:** welcome packet
- **\$35 Foreign:** welcome packet
- **\$45 Family:** 3 notecards, 3 postcards, & welcome packet
- Note: Family sponsors consist of 2 or more individuals living in the same household.
- **\$75 Supporting:** 3 notecards, 3 postcards, copy of *Dolphins* video (while supplies last, then the *DCP Season Summary* or *Dolphin Spirit*) & welcome packet
- **\$250 Contributing:** 1 DCP t-shirt, 3 notecards, 3 postcards, copy of *Dolphins* video (while supplies last, then other) & welcome packet
- **\$500 Patron:** Limited edition matted print suitable for framing, 1 DCP t-shirt, 3 notecards, 3 postcards, copy of *Dolphins* video (while supplies last, then other) & welcome packet
- **\$1000 Benefactor:** 25% discount for individual sponsors on a DCP Ecotour trip, Limited edition matted print suitable for framing, 1 DCP t-shirt, 3 notecards, 3 postcards, copy of *Dolphins* video (while supplies last, then other) & welcome packet

Welcome Packet

1 packet of 5 bookmarks, welcome letter, DCP flyer, one-year subscription to the *Dolphin Gazette* (DCP's newsletter), and a 10% discount on DCP-related merchandise.



Support DCP's research and education programs
with your purchases of ...

2001 or 2002 Bahamas Summary Videos,
Dolphin Spirit, or *Dolphins* (the film)
cost varies depending on video.

notecards & postcards

notecards: \$2.50 each postcards: \$1.00 each
packet discounts available

bookmarks -

remember us each time you sit down with a good book
cost per bookmark packet: \$1.25



Shipping fees not included in price.
for shipping arrangements,
contact DCP.



*Check out our website for views of
items, ordering options,
membership information, &
details on our ecotours.*

Yes! I want to sponsor the work of the Dolphin Communication Project.
Please enroll me at the level checked.

- New Sponsor Renewing Sponsor Gift sponsorship
- Student \$15 Supporting \$75 **I would like to offer an additional gift of \$ _____.**
- Individual \$25 Contributing \$250
- Foreign Individual \$35 (outside USA) Patron \$500
- Family \$45 Benefactor \$1,000

Sponsorships to the Dolphin Communication Project are for one year.

- My check made out to DCP/MAIFE is enclosed.

Name: _____ if a gift, note gift recipient at left & your name, address here:
Address: _____
City: _____ State: _____ Zip: _____

Yes! I want to adopt a dolphin.

Freckles	Split Jaw	Swoosh	Juliette
Cleopatra	Nemo	Teardrops	White Blotch

Circle your choice, fill out the information above & send \$30.00 per adoption.

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