SARASOTA DOLPHIN RESEARCH PROGRAM



NICKS 'N' NOTCHES

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The Conservation Role of the Sarasota Dolphin Research Program Randall Wells, Ph.D.

The Sarasota Dolphin Research Program is dedicated to the conservation of marine mammals. We aim to accomplish this by conducting scientific research of the highest quality possible, by providing training and educational opportunities, and by disseminating the information we collect, through scientific and non-technical articles and reports, and by presentations at professional meetings and public lectures. Our primary contributions since the program's inception in 1970 have been toward understanding the biology, behavior, ecology, health, and population dynamics of coastal bottlenose dolphins. These dolphins are among those most impacted by human activities in U.S. waters and elsewhere around the world. Some of the threats of most concern are:

- Pollution from industrial, agricultural, and residential sources
- Loss and/or degradation of their habitat
- Interactions and competition with commercial fisheries
- Injury and mortality from recreational fishing activities
- Boat collisions and disturbance from increasing vessel activities
- Feeding of wild dolphins

These threats are also recognized by the National Marine Fisheries Service (NMFS), the federal agency charged with responsibility for managing and protecting the whales, dolphins, and porpoises in U.S. waters, under the Marine Mammal Protection Act. The Southeast Center of NMFS, with responsibility for the inshore and offshore waters from North Carolina through Texas, convened a Program Review Panel in Miami on December 11-13, 1996, to evaluate its progress in meeting the management needs of the animals in the Region, and to provide direction for the five years beginning in FY1998. We presented a summary of our research activities to date (some of which have been supported by the NMFS), as they relate to the conservation of bottlenose dolphins. As a result, the Panel ranked the continuation and operation of the Sarasota Dolphin Research Program among the top 12 marine mammal priorities for the Southeast Region out of more than 70 recommendations considered. Our work, as the longest-running study of wild dolphins in the world, was recognized as having provided much of the background information crucial to the management of bottlenose dolphins to date, and as having the potential to provide more information in the future. In particular, it is expected that we will play a significant role in the understanding of bottlenose dolphin population structure, and in the development and calibration of animal counts that will allow NMFS to estimate the size and distribution of stocks of these animals throughout the Southeast. It will then be possible to assess their status and to determine the appropriate wildlife management actions.

This important endorsement of our Program is the result of the efforts of many people and organizations working together to help insure that the dolphins continue to have a future in coastal waters as human activities increase. The staff, graduate students, and volunteer student interns of the Sarasota Dolphin Research Program are extremely pleased with our progress toward this goal during 1996, and we would like to take this opportunity to share with you some of our accomplishments, as well as our plans and hopes for next year. We do this also because many of you have had an important role in making this work possible, through your participation in the research, through your financial support, or through both. We offer you our sincere thanks for your help, and hope that you will consider our Program worthy of your continued support into the future.

Sarasota Dolphin Research Program Components

The Sarasota Dolphin Research Program (SDRP) is the result of the joint efforts of the Dolphin Biology Research Institute (DBRI), the Conservation Biology Department of the Chicago Zoological Society (CZS), Earthwatch, and Mote Marine Laboratory (MML). Together these groups insure the continuity of the dolphin research in Sarasota.

Earthwatch Update 1996

Sue Hofmann, DBRI Field Coordinator

Thanks to all of the Earthwatch team members who participated during 1996, we were able to continue our monthly observational monitoring of the resident Sarasota bottlenose dolphin community. Sixty-three Earthwatch volunteers from twenty states and six foreign countries as far away as Japan and Columbia donated over 3200 hours to our project.

During our census surveys this year, we were able to determine the presence or absence of existing community members as well as document the births of new calves. Each of the community members is indicated in the table on page 3. Beginning in early May and ending in late August, eleven new calves were born during the spring/summer of 1996. This is the most YOYs born since the thirteen of 1992. All of the YOYs were sighted within two weeks of their birth, and Merrily's first-born YOY was seen when it was less than a day old! Our first fourth generation dolphin was seen when FB 131 gave birth in May. This YOY is the grandcalf of Genie and would have been the great grandcalf of Granny. We are rooting for these two first born calves and hope that they can beat the odds! As of this writing, YOYs that are still with their Moms include the YOYs of Saida Beth, Killer, FB 25, and FB 54 in addition to the two mentioned previously. Females that also gave birth this year but have lost their calves include Ms. October, Lightning, FB 75, FB 29 and FB 57.

The assistance of Earthwatch volunteers gave us an opportunity to spend 89 survey days on the water. We sighted 565 groups of dolphins totaling 1807 individuals (including resights). We averaged six sightings per day with an average of three dolphins per sighting. As a result of our surveys, we accounted for all but six of the previously existing 103 members of the Sarasota Five of these missing animals were males, dolphin community. but it is not unusual for a lengthy period of time to pass between sightings of some of the Sarasota males. Six community members were lost during this year. Five of these animals were YOYs. The only calf that was recovered for examination and tissue analysis was that of Ms. October. This calf was a male that died at six weeks old primarily due to a blood clotting disorder. The other animal that died and was recovered was FB 57. She was 44 years old, had given birth two months earlier and still had her YOY with her just prior to her death. Her YOY was never sighted or recovered after her death. With the addition of six YOYs, our community size stands at 108 as of mid December 1996 (although if the dolphins not seen in 1996 are not found in 1997, this number will decrease).

The Mote Marine Lab Stranding program would like to extend their thanks to those of you that helped with Belle and Mark during July and September respectively. Unfortunately, we lost both animals. Belle was stabilized enough for transport to Clearwater Aquarium approximately two weeks after her arrival at Mote. She continued to improve while at Clearwater- gaining weight, swimming on her own and playing with toys. She died very unexpectedly on December 3. Preliminary necropsy results revealed a bone infection and some lung abnormalities. Failing to show any improvement in his health since his arrival at Mote, Mark was euthanized approximately two weeks after his arrival. This decision was not an easy one to make but was supported by the subsequent necropsy results which indicated terminal septicemia and hepatic failure. Our Earthwatch surveys will continue through 1997, with 15 two-week teams scheduled. One emphasis will be on the relative distributions of boats and dolphins, to begin to assess possible disturbance responses. For more information on participating on these teams, please call Earthwatch at (617) 926-8200.

Again, many thanks to all! You have significantly helped to make another year a success.

Computer Databases

Kim Urian, CZS/DBRI Data Manager

The Dolphin Sighting Database dates back to 1975 and is current through October 1996, with 13,500 group sighting records. This database includes all information from the sighting data forms collected during the Earthwatch surveys, during our photo-identification surveys to other areas, and by our graduate students and interns during their behavioral observations. This is as current as we've ever been thanks to the help of all the folks working in the lab to follow through on the fun field work part of things! This includes the considerable time put into labeling the 10,000 or more slides that come back fast and furious, and entering the data after the photo-analysis is complete. The Photo-ID Catalog Database includes 2,354 individual dolphins that have been identified since 1970, as well as information regarding their sex, age, familial relationships, birth date, stranding date (if known), their initial sighting date from the Sighting Database, and the dorsal fin category in our Photo-ID catalog. Other databases include blood values, measurements, and body condition. The databases reside in our Macintosh computer systems, and are in a Foxbase relational database format.

Bottlenose Dolphin Photo-Identification Workshop, March, 1996, Charleston, SC Kim Urian

DBRI/CZS was contracted by NMFS to conduct a workshop for researchers involved in photo-identification studies along the Atlantic coast. Thirteen researchers participated, from Cape May, NJ through Biscayne Bay, FL, and shared their methodologies and findings. The participants discussed opportunities to enhance knowledge of the movements and residency patterns of bottlenose dolphins on the east coast of the U.S. One accomplishment of the workshop was to establish common definitions for terms used by researchers to make comparisons more meaningful between research sites. The primary recommendation from the workshop was the need to establish a centralized photo-ID catalog and database of the dolphins along the Atlantic coast. As part of the workshop, SDRP provided the "SDRP Field Techniques and Photoidentification Handbook" that describes our methods that have been developed over the last 26 years. This handbook is particularly useful as a standard reference for new students, interns, and volunteers, but especially for researchers initiating dolphin photo-ID studies in other areas. The utilization of common methods and terminology increases our ability to make comparisons and share information on wild dolphins with other researchers. The report from the workshop will be published as a NOAA Technical Memorandum.

Many of you who have participated in our field work have come to know and appreciate the resident Sarasota dolphins as individuals. The following list indicates which of these dolphins were observed during 1996, and some of their major happenings - it's a chance to get caught up on old friends...

Garas	ota Doipinn Coi	munity Members. Stat	13 111	1770	
FEMAL	ES	MAJOR EVENTS	MALES	<u></u>	MAJOR EVENTS
1	Daughter of FB43		2	Son of FB59	
3	Daughter of FB19		6	Son of FB71	
5	FB5		10	Petev	
7	Lightning	Gave birth to a calf	12	N	
à	Pumpkin	Survived host strike	11	Inck	
9 11	Mamilu	Gaug high to a calf	20	Dame	
11		Gave birth to a call	20	Perry	
15	4/LA		24	Son of Squiggy	
15	NICKIO		26	Norman	
17	FB1/		28	FB28	
23	Daughter of FB15		32	Son of FB5	
25	FB25	Gave birth to a calf	34	Wee Willy	Not seen in 1996
27	Moonfin Look-alike		36	B-8	
29	FB29	Gave birth to a calf	38	0-2	
33	Saida Beth	Gave birth to a calf	44	R	
35	Souiggy		46	FB46	
43	Cathy		48	limmy Durante	
54	FB54	Gave birth to a calf	58		
55	Daughter of FR5	Gave birth to a can	60	A 2	
55	Tag 52	Course highly to a salfy diad	60	A-Z	
51	Tag 55	Gave birth to a call; died	02	Ine Kid	
59	Genie		66	Otter	
03	Ms. Mayhem		68	Phoenix	Not seen in 1996
65	Tramp		76	Racing Stripe	
71	Ms. October	Gave birth to a calf	78	Riptorn	
73	Tag 51		92	Lasagna	
75	Pup	Gave birth to a calf	94	Sparks	
79	FB79		96	ਸੰ	
83	Jagged Mama		100	Scythe Fin	
84	Mama Mia		102	Scoopnick	
87	Squarenotch		106	3NIK3	
90	Killer	Gave hirth to a calf	100	2011	Not soon in 1006
03	Daughter of EB35	Gave birth to a call	110		Not seen in 1990
101	Base		110		
101	KUSE AN	N	114	FB114	
105	43LA	Not seen in 1996	116	Nipalone Low Notch	
131	Claire	Gave birth to 4th generation calf!	118	Son of FB54	
153	Blacktip Doubledip		122	Son of FB90	
155	Murphy Brown		128	Son of FB153	
175	Daughter of FB75		130	FB130	
183	TRIA		132	FB132	
191	FB191		134	Mr. Natural	
	Bobby Jo		136	Sawblade	
	Clown Look-alike		138	Son of FB63	
	Dr Strangenotch		150	Son of FB153	Not seen in 1996
UNKNO	WN GENDER		154	PT-3	Not seen in 1770
	Eatten Nichteen		154	R1-5	Net see in 1000
	Fallop, Nightcap		130	FB130	Not seen in 1996
			182	Son of FB183	
	1992 call of FB83			Blackstripe Leadcrease	
	1992 calf of FB35		BIRTHS	<u>S DURING 1996</u>	
	1992? calf of F183		C71-7,	1996 calf of FB71	Passed away June 24
	1993 calf of FB25		C33-4,	1996 calf of FB33	
	1994 calf of FB39		C07-3,	1996 calf of FB07	Disappeared Aug. 26-27
	1994 calf of FB59		C11-1.	1996 calf of FB11	
	1994 calf of FB99		C25-3.	1996 calf of FB25	
	1994 calf of FB65		C29-5	1996 calf of FB29	Disappeared Aug 8-19
	1995 calf of FB09		C54-4	1996 calf of FB54	
	1995 calf of FR79		C75_5	1996 calf of FB75	Disappeared June 14 17
	1995 calf of FR12		C00 4	1996 calf of FB00	is supported some 14-17
	1005 call of ED152		121 1	1770 Call OF FD30	
	1775 Call OF CETA		131-1,	1970 Call OF FB151	Discoursed
	1995 call of ULLA		C37-3,	1990 Call OL LR21	Disappeared

Sarasota Dolphin Community Members: Status in 1996

How Many Dolphins Live in Paradise? Pine Island Sound Census Survey 1996 Kim Bassos-Hull, M.Sc., DBRI Lab Manager

Cabbage Key, the home of Jimmy Buffett's famous "Cheeseburger in Paradise", was our island field base for a National Marine Fisheries Service (NMFS) sponsored Pine Island Sound dolphin census survey from August 7th to August 20th. Each day, three boats from the DBRI fleet with a team of three to four researchers on each boat covered as much of the 450 square kilometer study area as weather conditions permitted. The study area included the southern Charlotte Harbor waters from Boca Grande Pass south, all of Pine Island Sound, including Captiva and Redfish Passes, down to the northern portion of San Carlos Bay and Estero Bay. The study area also included the shallow waters on the east side of Pine Island down to the mouth of the Caloosahatchee River. Overall we had 376 sightings with a cumulative total of 1397 dolphins (which includes resights), and took 7352 photos. With photo-analysis about halfway complete, we have added 95 dolphins to our existing Charlotte Harbor catalog with 585 dolphins. Of those 95 dolphins, 28 are resightings of dolphins identified by Dr. Suse Shane during her Pine Island Sound surveys in the 1980's. Upon completion of the remaining photo-analysis we will apply population estimation techniques used in both our 1988-1993 Tampa Bay and 1990-1994 Charlotte Harbor census surveys to derive a population estimate for the Pine Island Sound area. While this was just a one year project sponsored by NMFS, we hope to receive more funding to continue yearly surveys in Pine Island Sound and also in Tampa Bay and Charlotte Harbor.

Return to the Wild: Echo and Misha Update Kim Bassos-Hull

It's hard to believe it's been six years since Echo and Misha were released back to the wild. For those of you who don't know these two special dolphins, they were part of a planned reintroduction experiment. Both dolphins were captured in Tampa Bay, Florida in July 1988, used for echolocation research in California at Long Marine Laboratory, and then two years later in October 1990, reintroduced back into Tampa Bay after a brief acclimation period in a scapen at Mote Marine Lab. Six years later they appear to have successfully reacclimated to life in the wild. Both have displayed typical behavioral, ranging, and social association patterns similar to other wild dolphins in the Tampa Bay area. To date we have sighted Echo on 32 days since release (5 of these since 1991 near his original capture site in Old Tampa Bay) and Misha on 64 days in the Southeast Tampa Bay area near his original capture site. If you would like to read more about Echo and Misha, one of our fellow dolphin researchers, Carol Howard, wrote an excellent account of this project in a book called "Dolphin Chronicles" (This book would make an excellent Christmas gift! Hint! Hint!). Also, keep your eyes open for a recently accepted scientific publication on this project in an upcoming Marine Mammal Science issue.

Dolphin Health Assessment Randall Wells

Perhaps the most serious problem facing coastal populations of bottlenose dolphins in many areas is environmental contamination that has entered the ecosystem from industrial, agricultural, or residential sources. For the last six years we have been working to develop the means to pro-actively

assess the health of dolphin populations while they are alive -until now, indications of health problems have come simply from increased numbers of carcasses appearing on beaches when it is too late for effective mitigation. Our dolphin health assessment work during 1996 involved sample analyses, and the preparation of manuscripts from the data resulting from our previous field Working with Larry Hansen of the National Marine efforts. Fisheries Service, we are preparing a special volume of the Bulletin of Marine Science including a compilation of contributed papers on health assessment of wild bottlenose dolphins. This volume is based on a NMFS-sponsored workshop which convened in Sarasota, and on a symposium we presented at the 11th Biennial Conference on the Biology of Marine Mammals, held in Orlando. Florida in December 1995. We have received most of the contributed chapters, and expect to publish this volume in 1997.

UCSC Master's student Jocelyn Vedder completed her thesis on environmental contaminants in the milk of Sarasota mothers, finding that older females appear to develop an equilibrium situation with intake of contaminants being balanced by transfer to their offspring through milk. She also noted that the levels of contaminants such as DDT metabolites and PCBs in Sarasota Bay dolphins appear to be low compared to regions such as the U.S. Atlantic seaboard, where the dolphin die-off occurred in 1987-88, and the Mediterranean Sea, where another die-off occurred in recent years. Preliminary work conducted by Garet Lahvis has suggested, however, that even these low levels of contaminants may be enough to deleteriously affect the dolphins' immune system. Analyses of 14 blood samples collected during an Environmental Protection Agency-sponsored project during 1995 are complete, following development and refinement of the analytical technique by Jocelyn Vedder and Dr. Wally Jarman of UCSC. These samples provide a first indication of circulating levels of contaminants -- contaminants in a form where they can have the greatest effects on the animals. These values are being examined relative to a suite of other biological data collected from these dolphins and stranded dolphins during 1995-1996 as part of an EPA Gulf of Mexico Program project coordinated by Mote Marine Laboratory. This project is trying to identify bio-markers for dolphin health relative to pollution. We are currently seeking support to analyze another 75 existing blood samples (about \$15,000 is needed) in order to improve our ability to understand the effects of contaminants on dolphin health.

Blimp Based Observations: The Role of Echolocation in Feeding

Douglas Nowacek, Ph.D. Student, WHOI

How do bottlenose dolphins find, chase, and capture their prey? Do they use their sophisticated system of echolocation, or do they rely more on vision? My thesis research is focused on the role of sound, specifically echolocation, in foraging bottlenose dolphins. We know from studies of captive animals how the dolphin sonar system operates and that it is excellent for target detection and discrimination. How and to what extent the animals use their echolocation system in the wild, however, is not well understood. A model for dolphin echolocation use during foraging comes from research on another echolocating mammal, the bat. For example, a searching bat produces echolocation signals that are more widely spaced in time than those produced while pursuing a prey item. Dolphins display this same pattern as they approach artificial targets in captive studies, so we would expect them to use this strategy when pursuing prey in the wild. The first step for my research is to identify and catalog the specific behaviors that characterize dolphin search, pursuit, and capture. Some of these behaviors have been documented previously as 'feeding associated' behaviors, but a systematic description of their role in the different stages of foraging has not been completed. I will observe these behaviors via a video system suspended from a small helium filled blimp.. Next, I will record the acoustic activity of individuals as they feed. While I expect the animals to use echolocation during feeding, they may produce or use other sounds to find or capture prey. Some of the fish, for example, produce sounds which the dolphins may use as cues to locate their prey. Finally, matching the acoustic with the behavioral data will allow me to reconstruct how the dolphins use sounds as they feed.

(It's a Girl! It's a Boy!)¹¹

Tristen Moors (Graduate Research Assistant)

In 1995, we embarked upon a 6-year study of the mating system of the Sarasota community dolphins. After 2 years, and over 890 field hours, we obtained results far better than we had envisioned. Through behavioral observations, we were able to watch sexually receptive females interact with males during the summer of 1995. Based on our observations, we predicted the birth of 8 calves at various times during the summer. In 1996, we were pleasantly surprised with the birth of 11 new calves, 8 of which we correctly predicted. The 3 births we didn't predict were to females that we did not see during our observational period, and may have been impregnated by males outside the Sarasota Bay study area.

Although our next field season will focus on the observation of adult males, the following 3 years will be spent defining the paternity of the calves born from this study. With the use of DNA fingerprinting, we hope to link the genetic composition of calves with behaviors observed in the wild. No other cetacean population in the world has been able to combine genetic histories with behavioral observations to address issues of behavioral patterns in relation to reproductive success. This study will not only increase the knowledge of behavior and ecology of wild dolphins but also pave the way for future cetacean DNA fingerprinting and paternity testing. By combining the above information, it will be possible, for the first time, to define the social organization and mating system of a community of wild dolphins.

This project has formed the basis of a Master's thesis for Tristen Moors, through the Ocean Sciences Department of the University of California, Santa Cruz. We would like to thank the Henry Foundation, the Chicago Zoological Society, Ronnie and John Enander, Earthwatch, Randy Puckett, Seaspace Underwater Club of Houston, American Museum of Natural History, the Earl and Ethel Myers Oceanographic and Marine Biology Trust, and Mote Marine Laboratory's Art for Conservation Program for the support that has made this project possible.

Potential Responses to Boat Disturbance

Stephanie Smathers (Graduate Research Assistant)

There are more than 27,000 boats in the Sarasota Bay area. If the results of studies involving killer whales, bowhead whales, gray whales, and others are any indication, the presence and activities of so many boats could be having an adverse effect on the resident dolphin community. Most of these boaters enjoy watching the dolphins as they play, feed, and raise their young in these waters; few of them, however, would want to disturb or cause the dolphins any distress through the use of watercraft. We have found that boats occasionally strike dolphins, and such collisions are most likely to occur when boating activity is heaviest, around such holidays as the Fourth of July (Wells and Scott, in press). Reliable behavioral indicators must be identified in order to determine whether the dolphins are indeed affected by vessels in less obvious ways, and, if so how and to what extent.

Through our ongoing Earthwatch-sponsored surveys, we have initiated a 2-year study of the relative distributions of boats and dolphins through the bay. More specific behavioral changes in response to the presence or approach by conventional boats or personal watercraft remain to be documented. To assess the affects of varying types and activities of watercraft, we plan to systematically watch and record the behavior of the animals. This assessment will elucidate the way in which boating activity may change the behavioral and distribution patterns as watercraft usage increases in the area. Behavioral observations will begin in the summer of 1997 and continue for a year. Year-round observations will allow us to measure disturbance effects on all age classes and distributions of animals.

This project will serve as the basis for a Master's thesis for Stephanie Smathers, through the Ocean Sciences Department of the University of California, Santa Cruz. We are still seeking support for the observational component of the project.

Gulf of Mexico Surveys

Kristi Brockway (Graduate Research Assistant)

As recently noted by the NMFS Program Review Panel, one of the most important questions facing the management agency regarding bottlenose dolphins is the issue of stock identification. It is necessary to determine which dolphins belong to distinct population units in order to evaluate their abundance and status relative to specific threats. This is a difficult issue, but one to which our program is poised to contribute significantly. Our findings of long-term local residency of identifiable individual dolphins has helped to establish a geographical basis to managing inshore bottlenose dolphins. Many questions remain. however. Some individuals are more mobile than are others, moving from one community range to another, and presumably providing genetic exchange. Some inshore regions, such as Tampa Bay and Charlotte Harbor, have been reported to show seasonal variations in abundance. Where do the additional dolphins originate from? Do movements of the dolphins residing in the Gulf coastal waters offshore of these inshore areas explain How far do these coastal dolphins range? these changes? Together with the inshore waters, do the adjacent coastal waters form a complex that might serve as a more biologicallymeaningful management unit than the bays alone? We plan to investigate these questions by initiating a multi-year photographic identification project in the Gulf coastal waters between Egmont Key, in Tampa Bay, and Stump Pass, off Lemon Bay.

Part of this project, scheduled to start in July, will form the basis of UCSC Master's student Kristi Brockway's thesis research. To date, however, we have been unable to secure the funding support necessary to conduct this project.

Educational Opportunities

Randall Wells

Effective conservation action requires trained personnel to gather the information needed for management decisions, and an informed public to be able to encourage implementation of conservation programs. In recognition of this fact, the Sarasota Dolphin Research Program offers educational and training opportunities for established scientists from the U.S. and other countries, for graduate students through several university programs, for undergraduate student interns through Mote Marine Laboratory, and for the interested public through Earthwatch. We conducted a workshop for the National Marine Fisheries Service during March 1996 to try to standardize the photographic identification efforts of more than a dozen independent researchers working along the U.S. Atlantic seaboard. One product of this workshop was a handbook summarizing our methodology; this handbook is now available for any interested parties. Scientists from Brazil and Guatemala came to Sarasota to work with our program during 1996, and learned techniques that they are able to apply to their own research programs. We are continuing our arrangement with the Ocean Sciences Department of the University of California, Santa Cruz, where I serve as an Adjunct Associate Professor. Students from the UCSC Master's program who have or are conducting their thesis research in Sarasota include:

- Kim Bassos-Hull (Misha/Echo reintroduction project, graduated in 1993)
- Danielle Waples (Time/energy budgets and habitat use, graduated in 1996)
- Jocelyn Vedder (Environmental contaminants in dolphin milk, grad. in 1996)
- Tristen Moors (Mating system, will graduate in 1997)
- Kristi Brockway (Gulf dolphin population structure, to be initiated in 1997)
- Stephanie Smathers (Boat disturbance responses, to be initiated in 1997)

Outside of the UCSC program, Master's student Kim Urian is using data collected during our Tampa Bay monitoring study for her thesis through the University of North Carolina, Wilmington (Kim's sponsor, Dr. Laela Savigh, conducted her dissertation research with the Sarasota dolphins, too), and doctoral student Doug Nowacek of Woods Hole Oceanographic Institution is conducting his dissertation research in Sarasota, on the use of echolocation in dolphin feeding. I also serve on the graduate committees of doctoral student Marthajane Caldwell, at the University of Miami, and Master's student Ester Quintana, of the University of Florida; they are studying bottlenose dolphins in Jacksonville and Cedar Key, Florida, respectively, and Kim Urian at University of North Carolina, Wilmington. A total of 14 volunteer student interns worked with our program during 1996, as did 63 Earthwatch volunteers.

Interns' Perspective

Edward Owen & Caryn Weiss (MML interns)

Being an intern at DBRI has certainly been a rewarding educational experience. Arriving in mid-June, we spent the summer assisting in all aspects of ongoing projects. both in the field and in the lab. Field work consisted primarily of data collection, behavioral observation, and learning and applying boating skills. As members of the survey team in Pine Island, we were fortunate enough to work directly with Randy Wells in the field. As the field season drew to a close in mid-September, our efforts shifted notably to two projects. Firstly. in conjunction with Barbara Piel, we are continuing to create a computer database of scientific papers in the DBRI lab. It is an interesting project which has exposed us to a wide range of primary literature in dolphin biology. We have also been concentrating on assisting Kim Bassos-Hull with the photo-identification of the animals sighted during the Pine Island Surveys, which has given us an opportunity to learn photo-identification techniques first-hand. Getting to know the dolphins of the Sarasota community has continued throughout our internship, by assisting in photo analysis and observations in the field. In addition, we worked with the stranding team (helping with both of the live bottlenose dolphin strandings this summer), learned animal care techniques and methods, and assisted with several necropsies. We also have a weekly shift with Hugh and Buffett. the resident manatees, which involves their daily care and facility maintenance. As interns, we have been intimately involved with several projects, and perhaps most importantly, learned and experienced the rewards and frustrations of being a field scientist.

The following people have been interns at DBRI in 1996:

Mark Allen - Eckerd College Kristi Brockway - Texas A&M University Paulo Flores - Universidade Federal de Santa Catarina Jen Goodman - Tufts University Lindy Gross - Purdue University Heather Hass - Flagler College Nicole Hackenthal - University of Miami Edward Owen - Duke University Barbara Piel - Bates College Ester Quintana - University of Florida Aaron Rundus - University of South Florida Jen Santoro - University of Illinois Stephanie Smathers - Santa Clara University Caryn Weiss - University of California, Santa Barbara

Mote Marine Lab has an extensive internship program. To apply to the program, contact Andrea Davis at (941) 388-4441.

The staff of DBRI would like to thank Caryn Weiss and Edward Owen for their efforts in producing this newsletter.

Publications and Presentations during 1995-1996

One accepted measure of the productivity of a research program is its record of achievement for providing information to the scientific community, wildlife management agencies, and the public. The following list includes our program's products for the last two years. Copies of papers can be obtained upon request for the cost of copies and postage.

<u>Peer-Reviewed Scientific Journal Articles and Book</u> <u>Chapters</u>

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- Bassos-Hull, K., K. Urian, and R.S. Wells. 1996. Low-level monitoring of bottlenose dolphins, *Tursiops truncatus*, in Tampa Bay, Florida. Tampa Bay Area Scientific Information Symposium, 21-23 October 1996, Clearwater, FL. (presented by Bassos-Hull)
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- Waples, D.M., R.S. Wells, D.P. Costa, and G.A.J. Worthy. 1995. Seasonal changes in activity and habitat use by bottlenose dolphins (Tursiops truncatus) in Sarasota Bay, Florida. 11th Biennial Conference on the Biology of Marine Mammals, 14-18 December, Orlando, FL. (presented by Waples, Best Master's Student Presentation Award)
- Wells, R.S., H.L. Rhinehart, J. Sweeney, F. Townsend, D. Casper, and L.J. Hansen. 1995. Assessment of the health of

bottlenose dolphin populations in Sarasota Bay, Florida, and Matagorda Bay, Texas. 11th Biennial Conference on the Biology of Marine Mammals, 14-18 December, Orlando, FL.

- Wells, R.S. 1995. Community structure of bottlenose dolphins near Sarasota, Florida. International Ethological Conference, 10-17 August, Honolulu, HI. (invited plenary presentation)
- Wells, R.S. 1995. Dolphin feeding interactions with humans near Sarasota, Florida. Invited presentation at National Marine Fisheries Service informal workshop on human interactions with marine mammals, at the 11th Biennial Conference on the Biology of Marine Mammals, 14-18 December, Orlando, FL.
- Wells, R.S. 1996. Site-specific monitoring. National Marine Fisheries Service Program Review, 11-13 December 1996, Miami, FL.
- Wells, R.S. and S. Hofmann. 1996. Management measures for wild bottlenose dolphins in the Gulf Coast, Florida. Earthwatch Annual Conference, 25-27 October 1996, Cambridge, MA.
- Wells, R.S. 1996. Biology and conservation of bottlenose dolphins. Dolphin Watching Symposium, 13 October 1996, Amakusa, Japan.
- Wells, R.S. 1996. The life history and social organization of Sarasota Bay's bottlenose dolphins: perspectives from 25 years of research. 24th Annual Meeting of the European Association for Aquatic Mammals, 15-18 March 1996, Albufeira, Portugal.
- Wells, R.S., M.M. Wells, and K.B. Hull. 1996. Return to the wild of two bottlenose dolphins after two years in captivity. 24th Annual Meeting of the European Association for Aquatic Mammals, 15-18 March 1996, Albufeira, Portugal.
- Wells, R.S. 1996. Summary of photo-identification workshop. 4th Annual Atlantic Coast Dolphin Conference, 23 March 1996, Charleston, SC.
- Wells, R.S. 1996. The social lives of Sarasota's bottlenose dolphins. Earthwatch Europe Convention Day, 16 March 1996, Oxford, England.

Invited Public and University Lectures

- 15 Nov 96 Biology Dept. Seminar, Humboldt State Univ., Arcata, CA.
- 14 Nov 96 Marine Mammals Class, Humboldt State Univ., Arcata, CA.
- 03 Nov 96 Marjorie Lynn Bank Lecture Series, National Aquarium in Baltimore.
- 18 Oct 96 Conservation Matters, Brookfield Zoo, Brookfield, IL.
- Oct 96 Osaka Aquarium, Osaka, Japan.
 Oct 96 Ryuku University, Okinawa, Japan.
 Oct 96 Okinawa Marine Research Center, Okinawa, Japan.

- 09 Oct 96 Sigma Xi Lecture, Eckerd College, St. Petersburg, FL. 22 Jun 96 Conservation Matters, Brookfield Zoo, Brookfield, IL.
- 28 Apr 96 Florida Marine Science Educators Association Annual Conference, Tampa, FL. (keynote speaker)
- 22 Apr 96 Audubon Naturalist Lecture Series, Smithsonian Institution, Washington, DC
- 20 Apr 96 Conservation Matters, Brookfield Zoo, Brookfield, IL. 14 Mar 96 Life history and social structure of the bottlenose dolphins of Sarasota Bay. Animal Behavior Group, Zoology Dept, Oxford, University, Oxford, England.
- 08 Oct 95 Conservation Matters, Brookfield Zoo, Brookfield, IL.
- 24 Jun 95 Conservation Matters, Brookfield Zoo, Brookfield, IL
- 10 Apr 95 Biology and behavior of the bottlenose dolphins of
- Sarasola Bay. University of Miami, Miami, FL. 27 Mar 95 40 Years in Sarasola: A dolphin's perspective. Monday Night at Mote, Mote Marine Laboratory,
- Sarasota, FL.
- 18 Mar 95 Conservation Matters, Brookfield Zoo, Brookfield, IL. 04 Mar 95 - The dolphins of Charlotte Harbor. Keynote Address,
 - Third Annual Charlotte Harbor Symposium, Punta Gorda, FL.

DBRI Needs Your Help for 1997!

The staff and volunteers of DBRI's Sarasota Dolphin Research Program would like to be able to maintain our current ambitious level of field work, analyses, publishing, and presenting, but cutbacks in the availability of government research funds has made this difficult. We are looking for help in funding several of our research projects, replacing engines on three of our six boats, obtaining other much-needed items of field and lab equipment, and some of the basic staffing costs for operating our laboratory. Your help towards meeting the expenses listed below would be most appreciated. Dolphin Biology Research Institute is a 501{c}3 not-for-profit corporation (IRS-EI#59:2288387); thus donations of funds and/or equipment are

Wish List for 1997

Operating Expenses	Cost
Staff time for data analysis, lab operations	8,400
Field Expenses, Gulf Photo-ID Project	12,484
Field Expenses, Boat Disturbance Response Study	10,690
Analysis of Environmental Contaminants in Blood	10,000
Field expenses, Mating System Project	<u>3.000</u>
Subtotal	44,574
Equipment	
150 hp Yamaha outboard engine for BobMako	6,500
115 hp Yamaha outboard engine for Makila	5,000
90 hp 4-cycle outboard engine for Hobo	7,500
Conversion of Hobo to tracking/vet lab boat	2,000
Power Macintosh computer and accessories	3,000
Slide box for figure preparation	5,000
PC computer system	2,400
(2) Nikon camera systems	3,000
Balance of payments on Ford Explorer	12,480
Subtotal	46,880

Sarasota Dolphin Research Program: The First 26 Years Randall Wells

Entering its 27th year, the SDRP is the longest-running wild dolphin research program in the world. Such long-term continuity is essential for understanding the basic processes and survival needs for long-lived animals such as the Sarasota dolphins. In the course of this unique longitudinal study we have collected a phenomenal quantity of background information on individual dolphins. Some individuals, such as Killer, have been observed on more than 600 occasions over more than two decades. Two-thirds of the dolphins we initially identified in 1970-1971 are still seen in Sarasota on a regular basis, as are their calves, and grand-calves. We reached a milestone this summer with the birth of our first great-grand-calf -- we have now been observing these animals through four generations. The depth of knowledge that comes from this kind of rigorous scientific research supports a high level of confidence in the patterns that are described and the resulting interpretations. The federal wildlife management agencies responsible for these animals require the best information possible in order to develop sound conservation plans, and we continue to serve as one of their primary resources for bottlenose dolphin information.

tax-deductible.

We would like to take this opportunity to acknowledge the generous contributions during 1996 by:

-Chicago Zoological Society

-Edward McCormick Blair, Jr.

-The Henry Foundation

-Ronnie and John Enander

-Don and Lee Hamilton

-Doris Lovell

-Randy and Gail Puckett

-Bill and Sandra Scott, in memory of William T. Currier, Jr.

-Casey Silvey

-Cannons Marina

-Mote Marine Laboratory's Art for Conservation Program

The longitudinal nature of the SDRP has been a result of our initial findings of local residency for Sarasota dolphins. During 1970-1971, Mote Marine Laboratory researcher Blair Irvine and his high school volunteer research assistant (RW) began tagging local dolphins to examine their movements and social patterns. The MML Director, Dr. Perry Gilbert, allowed us to take time away from our other responsibilities to initiate this pilot study. We marked about 30 animals in the waters from Charlotte Harbor to southern Tampa Bay, and resighted many of them. Because of the lab's location on Siesta Key, most of our efforts were centered in Sarasota Bay.

Building on the idea of residency suggested by the pilot study, the U.S. Marine Mammal Commission supported our return to Sarasota during 1974-1976. Working through the University of Florida and based at New College in Sarasota, we were joined by Michael Scott. Our intensive efforts with tagging, radiotelemetry, and observations of naturally-marked individuals confirmed our earlier findings, and allowed us to describe the structure of the dolphin community and its home range. The local residency findings have been the basis for much of the NMFS' management strategy for coastal bottlenose dolphins since that time.

We continued our monitoring of the resident dolphins on an opportunistic basis through the 1970's. In 1980-1981 we were supported by NMFS to initiate systematic photographic identification surveys in Sarasota. The high level of long-term residency that we found led to the development of our long-term relationship with Earthwatch beginning in 1982, allowing us the continuity that could not be afforded by government support. In the same year we also formed Dolphin Biology Research Institute as the financial and logistical vehicle to support our field efforts. This not-for-profit Sarasota-based corporation allowed us to receive grants, contracts and donations, and it also owns and maintains our boats, computer systems, a vehicle, and other field equipment.

The SDRP expanded its efforts through the 1980's, especially through the support of Earthwatch and the National Marine Fisheries Service. In 1989, Wells joined the Chicago Zoological Society. CZS has had a long-standing interest in the processes of small populations -- understanding such populations is one key to avoiding extinctions. The long-term nature of the SDRP was consistent with their interests, and they continue to support a significant portion of staff salaries and field expenses. As the program initiated year-round projects, I moved to Sarasota in 1992 and established a base of operations at Mote Marine Laboratory. The facilities provided by MML, as well as the opportunities to interact with researchers in other disciplines and established public education programs, greatly enhance our program's ability to meet its goals for the conservation of these marine mammals.

Greetings From the Sarasota Dolphin Research Program

DBRI Officers

A. Blair Irvine, Ph.D., President Randall S. Wells, Ph.D., Vice-President Michael D. Scott, Ph.D., Secretary/Treasurer

<u>Staff</u>

Kim W. Urian, M.Sc. Candidate, Data Manager Kim Bassos- Hull, M.Sc., Lab Manager Sue Hofmann, B.S., Field Operations Coordinator

Graduate Research Assistants

Tristen Moors Kristi Brockway Stephanie Smathers

Student Interns

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