

**Behavior & Communication among Atlantic Spotted and Bottlenose Dolphins around  
Bimini, Bahamas  
Summary Report  
30 December 2006 – 26 January 2007  
30 April – 16 September 2007**

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1) LIVING/WORKING ON BIMINI

Arrival on **30 December 2006**. Departure on **26 January 2007**.

Arrival on **30 April 2007**. Departure on **16 September 2007**.

While on Bimini, we continued our collaboration with Bimini Undersea (BU). During the winter portion of our field work, we accompanied BU staff on 4 of their dolphin swim excursions. During the summer portion, we completed 57 dolphin swim excursions.

The duration of our field season this summer included:

- 4 boat trips in January
- 13 boat trips in May
- 8 boat trips in June
- 11 boat trips in July
- 18 boat trips in August
- 8 boat trips in September (Tables 1a & 1b).

We gathered data on dolphin movement patterns, sighting location, species, and group size whenever dolphins were encountered at sea. When underwater observations were possible, we collected video using the MVA or Top Dawg camera units. We confirmed individual dolphin identifications from video data when sea conditions pre-empted boat trips and when scheduling allowed.

We were glad to meet with Bimini Undersea passengers more formally once a week in addition to on-board conversations about the dolphins, our research, and their interests and concerns. We look forward to spending time and speaking with the groups again next summer. We were also able to visit with the student body at Holy Name Catholic School and hope that our visits to local classrooms will continue annually.

We confirmed the identification of 37 individual Atlantic spotted dolphins and 4 bottlenose dolphins from 20 of the 22 videotapes that were recorded (Tables 2a & 2b). The remaining two videotapes will be processed during fall months. All video data and still photographs will be analyzed for associations, behavioral interactions, and for data related to Melillo's specific research project during the coming winter and spring seasons. Atlantic spotted dolphin ID numbers with respective age categories and sex determination(s) are from the DCP database (Tables 2a & 2b).

2) PURPOSE OF 2007 DATA COLLECTION:

Each season represents a continuation of DCP's research on communication among Atlantic spotted and bottlenose dolphins around Bimini, The Bahamas. Dolphins are long-

lived social mammals: to best understand their social structure, the affect of kinship on interactions, and use of signals to communicate requires long-term studies. The data gathered this summer add to the information already possessed by DCP. Additionally, data collected from 2003 through 2007 will be used by Melillo for the completion of requirements for her Master's course of study as a graduate student at Alaska Pacific University. These data also support research projects of additional students working with DCP, from the undergraduate through Ph.D. levels.

This season marked the 7th year of the Bimini Dolphin Project for DCP: continued data collection was conducted using both the Mobile Video/Acoustic (MVA) Array and Top Dog camera housings. Data were gathered to continue our longitudinal study of photo-identification, as well as signal exchange and communication among dolphins. We focus on individual identification and behaviors exchanged in general, as well as examine how signals are related to individuals. We have many records of pectoral fin rubs and touches which will expand our dataset with respect to how dolphins use their pectoral fins to exchange information. We also have records of interactions between the Atlantic spotted and bottlenose dolphins, which is the focus of Kelly Melillo's Master's work. We continued to expand our photo-identification efforts to more formally include individual bottlenose dolphins. This will allow us to better assess population numbers, site fidelity, etc. of this species.

### 3) PRELIMINARY RESULTS

Data were collected on videotape while swimming among dolphins following a non-invasive protocol (Table 1). Where and when each group was sighted and recorded was documented for each video sequence. Preliminary details of the data gathered this summer are presented below. 9 individual Atlantic spotted dolphins already in DCP's photo-identification catalog were re-identified during the winter and at least 37 individuals were re-identified during the summer from the videotapes (Tables 2a & 2b). 3 individual spotted dolphins were added to the catalog. We also observed several new calves this year, as well as numerous 1-2 year old calves with no reliable markings for recognition. Thus, these young animals are not included in the DCP ID catalog for 2007. At least 1 individual bottlenose dolphin was re-identified during the winter and 4 individuals were re-identified during the summer and 8 new animals were added to the catalog (Table 3).

**Table 1a.** Summary of research effort, January 2007, studying dolphin behavior and communication at Bimini, Bahamas.

# Boat trips:	4 trips total
# minutes on effort:	16 hours, 34 minutes (994 minutes)
# sightings:	10
# water entries:	2

**Table 1b.** Summary of research effort, May – September 2007, studying dolphin behavior and communication at Bimini, Bahamas.

# Boat trips:	57 trips total (from 30 April – 16 September)
# minutes on effort:	240 hours, 57 minutes (14457 minutes)
# sightings:	96
# water entries:	57

**Table 2a.** Identification (ID) numbers of the Atlantic spotted dolphins observed around Bimini during January 2006. IDs confirmed from DCP videotapes.  
M = male. F = female. UID = unidentified sex.

Calf M	Calf F	Juvenile M	Juvenile F	Sub-adult M	Sub-adult F	Adult M	Adult F	Adult UID
81	N/A	64	N/A	04	10	N/A	15	N/A
							29	
							48	
							70	
							82	

**Table 2b.** Identification (ID) numbers of the Atlantic spotted dolphins observed around Bimini between May and September 2007. IDs confirmed from DCP videotapes.  
M = male. F = female. UID = unidentified sex.

Calf M	Calf F	Calf UID	Juvenile M	Juvenile F	Juv, UNID	Sub-adult M	Sub-adult F	Adult M	Adult F	Adult UID
81	87	84	64	14	90	04	09	11	07	18
		85	69	76		22	10	17	15	71
			78	80		24	12		29	
			79				25		48	
			88				35		56	
			89				36		57	
							38		70	
							41		72	
									75	
									82	
									86	

**Table 3.** Identification (ID) numbers of the bottlenose dolphins observed around Bimini in January 2006 and between May and September 2007. IDs confirmed from DCP videotapes.

January 2007	Tt15, Tt16, Tt17, Tt18, Tt19
Summer 2007	Tt01, Tt05, Tt06, Tt19, Tt20, Tt21, Tt22, Tt23

#### 4) FUTURE UPDATES

Questions on this summary report: Please let us know if you have any concerns or questions about the information in this report. Our mailing addresses are above. Thanks.

During the coming fall and winter months, Melillo will be analyzing these data for her Master's theses and related work. Once completed, these works will be sent to the Fisheries Department.

5) WINTER AND SUMMER 2008

Assuming it is acceptable to The Bahamas Government and to Bimini Undersea, we will return to Bimini during January 2008 for an abbreviated winter field season and then again in May 2008 for about 3-4 months. We will continue DCP's studies of association and site fidelity, communication, patterns of echolocation use, and changes in these and other behaviors with development in dolphins. We hope to continue development of education workshops for students on the island, as well as for ecotour passengers.

6) ACKNOWLEDGMENTS

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Bimini Undersea for the generous use of their boats and facilities for data collection and processing.

The Russell family for renting an apartment and helping in every way possible to make us feel welcome and comfortable.

The residents of Bimini for their generosity and kindness during our stay on Bimini.

Passengers from Bimini Undersea for their interest and enthusiasm with our studies of dolphin behavior and communication.

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Our research was sanctioned by a scientific permit from The Bahamian Ministry of Agriculture, Department of Fisheries for the year 2007 to the Dolphin Communication Project to observe and record dolphin behavior and sounds from around Bimini Islands, The Bahamas.