

**Behavior & Communication among Atlantic Spotted and Bottlenose Dolphins around
Bimini, Bahamas
Summary Report – 16 March – 16 September 2008**

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1) LIVING/WORKING ON BIMINI

Arrival on **16 March 2008**. Departure on **16 September 2008**.

While on Bimini, we continued our collaboration with Bimini Undersea (BU) and Sea Crest Hotel & Marina. We accompanied staff on a total of 53 of dolphin swim excursions.

The duration of our field season this summer included:

- 1 boat trips in March
- 5 boat trips in April
- 9 boat trips in May
- 6 boat trips in June
- 18 boat trips in July
- 14 boat trips in August
- 0 boat trips in September (Table 1).

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 camera system and digital still cameras. Surface photographs were collected when bottlenose dolphins (*Tursiops truncatus*) were in view. We confirmed individual dolphin identifications from video data when sea conditions pre-empted boat trips and when scheduling allowed.

We met with Bimini Undersea and Sea Crest passengers formally once a week in addition to on-board conversations about the dolphins, our research, and their interests and concerns. One week's passengers included those participating in a DCP sponsored eco-tour. We look forward to spending time and speaking with the eco-tour groups again next summer and planning another DCP sponsored week. We have offered our services, at no charge, as guest speakers to each of the local schools and hope that our visits to local classrooms will continue.

2) PURPOSE OF 2008 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 was used by Melillo for the completion of requirements for her Master's course of study as a graduate student at Alaska Pacific University. Data were also used in support of a second DCP student's Master's work (Beard 2008). Both works were presented at the 2008 Biennial Conference on the Biology of Marine Mammals (Cape Town, South Africa) and Melillo's has been submitted to the peer-reviewed *Journal of Mammalogy*.

This season marked the 8th year of the Bimini Dolphin Project for DCP: continued data collection was conducted using both the Mobile Video/Acoustic (MVA) System. 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 was the focus of Kelly Melillo's Master's Degree work and will continue to be a research project of interest in the future for DCP. Our photo-identification efforts have been expanded to more formally include individual bottlenose dolphins. This will allow us to better assess population numbers, site fidelity, etc. of this lesser-understood species.

3) PRELIMINARY RESULTS

Data were collected on videotape while swimming among dolphins following a non-invasive protocol. 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 (Table 1 and Table 2). We collected 13 videotapes of data with the MVA2 and many digital still photographs. We confirmed the identification of 33 individual Atlantic spotted dolphins (Table 2). We also observed several new calves this season and several 1-2 year old calves with no reliable markings for recognition. Thus, these young animals were not included in the DCP ID catalog for 2008.

Bottlenose still photographs will be processed during fall (2008) and winter (2009) months. All video data and still photographs will be analyzed for individual associations, behavioral interactions, and for data related to ongoing research studies by DCP. Dolphin ID numbers with respective age categories and sex determination(s) are from the DCP database (Table 2).

Table 1. Summary of research effort, March – September 2008, studying dolphin behavior and communication at Bimini, The Bahamas.

# Boat trips:	53 trips total (from 16 March – 16 September)
# minutes on effort:	236 hours, 47 minutes
# sightings:	103
Average length of sighting:	29 minutes 45 seconds
Ratio of spotted:bottlenose: mixed:unknown species sightings:	68:25:6:4
# water entries (encounters):	52
Average length of encounter:	15 minutes 52 seconds
Ratio of spotted:bottlenose: mixed:unknown species encounters:	46:6:4:0
Total video recorded:	9 hours, 40 minutes, 47 seconds
Amount of time dolphin(s) in view:	4 hours, 46 minutes, 7 seconds

Table 2. Identification (ID) numbers of the dolphins observed repeatedly around Bimini. IDs confirmed from DCP videotapes. M = male. F = female. UID = unidentified sex.

Calf M	Calf F	Juvenile M	Juvenile F	Juvenile UID	Sub-adult M	Sub-adult F	Adult M	Adult F	Adult UID
N/A	87	64	14	85	04	09	17	12	01
		69	76		22	10	75	29	31
		78	80			25		48	43
		79	84			35		56	
		88				36		57	
						38		70	
								73	
								82	
								86	

4) FUTURE UPDATES

Please stay tuned to the DCP website for information regarding future field seasons, educational and eco-tour opportunities and other research updates.

5) 2009 FIELD SEASON

Assuming it is acceptable to The Bahamas Government, Bimini Undersea and Sea Crest Hotel & Marina, DCP will return to Bimini as time and funding allow throughout 2009. This flexibility will allow DCP the opportunity to opportunistically join excursions with Bimini Undersea and Sea Crest. Our goal is to increase the library of data during all seasons to allow for a better understanding of these dolphin populations across seasons. 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 will continue to develop education workshops for students on the island and for eco-tour passengers.

6) ACKNOWLEDGMENTS

We gratefully thank the following individuals for their support of DCP's research program as well as more immediate and direct support to Melillo during her field season:

Bimini Undersea and Sea Crest Hotel & Marina for the generous use of their boats and facilities for data collection and processing.

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

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

The Dolphin Communication Project thanks the individual supporters of DCP and Cetacean Society International (awarded to K. Melillo) for their financial support of our 2008 field season research.

Our research was sanctioned by a scientific permit from The Bahamian Ministry of Agriculture, Department of Fisheries for the year 2008 to the Dolphin Communication Project to observe and record dolphin behavior and sounds from around Bimini Islands, The Bahamas.