

## Summary of Marine Mammal Visual Observations on the SCORE Range, 21-26 October 2007

Prepared by Cascadia Research, 12 November 2007

Daily surveys for marine mammals were conducted off the west side of San Clemente Island from 21-26 October 2007. These surveys represent the third in a series of collaborative, seasonal monitoring efforts at the SCORE Range by Cascadia Research, Scripps Institution of Oceanography (SIO), and the U.S. Navy (Naval Undersea Warfare Center, SCORE range, N-45). In addition to the two 18' RHIBs which conducted all previous visual surveys, current effort employed the 125' research vessel *Robert Gordon Sproul* (SIO). The *Sproul* was staffed with trained observers, and served as both on-site base of operations for the RHIBs and an additional, much higher observation platform (observer height of approximately 7m). It surveyed both cooperatively and independently of the smaller boats as sightings as conditions warranted. The RHIBs were deployed daily from the *Sproul*, which remained on or near the outer portion of the range throughout the night. This significantly reduced daily transit time to and from the range for the RHIBs, which maximized the available working time on the range, and also allowed considerably more effort in far western portion of the range than had been possible previously.

As with prior surveys, the RHIBs and the *Sproul* were outfitted with Intuicom tracking units and base station radios that allowed them to be monitored by, and communicate with, the acoustic team at the ROC on North Island. Tracking and communication functioned very well. The ROC directed the vessels to positions on the range where vocalizing marine mammals had been detected, with the goal of verifying species and sighting positions. When sighting conditions were suitable, priority was given to localizations believed to be beaked whales over other vocalizing species.

Both RHIBs transited to the range aboard the *Sproul* on 21 October 2007, after delaying departure due to high winds and swells in the study area. Survey effort began on 22 October 2007, however heavy smoke from fires in Southern California and offshore winds reduced visibility, at times significantly, for the first three days on the range. After the first day, calm winds and low swells prevailed until the last day of survey effort, which often allowed observers to locate groups of animals by the sound of their blows beyond a range where they could be easily sighted visually.

Daily survey effort for each vessel, including the number of groups sighted by species, is summarized in Table 1. In some cases sightings were worked by more than one vessel, and in these cases the sighting is only accounted for once in the table, generally under the vessel initiating the sighting. The species composition of this trip was considerably different than the previous two seasonal efforts (August 2006 and April 2007). Fin whales (*Balaenoptera physalus*) were by far the most frequently encountered species on the range, although they were not tracked acoustically or targeted by the survey vessels. The second most commonly encountered species was Cuvier's beaked whale (*Ziphius cavirostris*). There were two species sighted on the range that had not been sighted in our previous efforts: short-finned pilot whales (*Globicephala macrorhynchus*) and Dall's porpoise (*Phocoenoides dalli*). On all three occasions when pilot whales were encountered, they were in association with fin whales, and it was interesting to note that the fin whales appeared to circle the pilot whales rather than the reverse. These groups also occasionally contained small numbers of Risso's and bottle-nosed dolphins.

Previous survey efforts at San Clemente Island have been dominated by sightings of small delphinids, most notably short-beaked common dolphins (*Delphinus delphis*) which often occurred in groups of hundreds of

individuals. Risso's dolphins (*Grampus griseus*), bottle-nosed dolphins (*Tursiops truncatus*), and Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) were also commonly sighted in prior trips, however were nearly absent this time. Not only were groups of small delphinids encountered much less frequently, the total number of individuals identified and average group sizes appeared much lower as well (Table 2).

The shift in species composition observed during this effort is likely due at least in part to a shift in geographic distribution of effort (See Figures 1a-c for a comparison of survey track lines between trips), and to weather conditions favorable to sighting cryptic species like beaked whales. Previously, weather conditions, the need to transit daily to and from the east side of the island, and limited range availability concentrated effort in the northeast corner of the range and over the shelf extending from the west side of the island. The majority of surveys in October were conducted over the deep basin to the west of the shelf, which is habitat more suitable to beaked whales. Very calm weather allowed observers to focus a considerable amount of time in areas of beaked whale acoustic detections, thus consciously shifting effort away from other species that may have been vocalizing elsewhere on the range. Still, it is likely that the species composition on the range does vary seasonally, and this trend may be more accurately determined from array data, if vocalizations can be reliably classified to species.

Localization of beaked whales has been an important goal of this research from the project's inception. Despite this, previous effort (134 hours in August 2006 and 96 hours in April 2007) resulted in only two visual detections of beaked whales on the range: a pair of Cuvier's beaked whales on 17 August 2006, and a pair of Baird's beaked whales (*Berardius bairdii*) on 17 April 2007. Our recent success at localizing and sequentially resighting groups of Cuvier's beaked whales with the assistance of the acoustics team has greatly increased our knowledge of the distribution and behavior of this species on the range, and will further refine our ability to accurately localize beaked whales there. Most groups were sighted on multiple occasions after their initial surfacing, allowing us to collect data on dive rates and durations, the relationship between vocalizations and surfacing series, as well as to track movements between dives.

Many groups of Cuvier's beaked whales were photographed extensively. Scarring patterns and variable dorsal fin shape can be used to individually identify whales within each group. These photos may form the basis of a catalog, which in the short term can be used to determine the minimum number of unique animals in the area, the degree of interchange between the groups sighted, and may also help to determine the sex/age class structure of the groups encountered. Although some groups appeared to avoid vessels at a considerable distance, others were relatively approachable. Several groups were approached to within tissue sampling range (using crossbow biopsy), although no tissue samples were collected. Individuals from one group passed within 10m of one of the RHIBs. These close encounters suggest that potential for successful tag deployments does exist for this species on the range. Use of satellite tags would allow the movements of individual whales to be monitored for days, weeks, or even months, depending on the technology employed.

In addition to photographing Cuvier's beaked whales, pilot whales encountered during this effort were also photographed extensively for individual identification. Although Risso's dolphins and bottle-nosed dolphins were not encountered regularly in this most recent effort, identification photographs have been collected during our previous encounters with these species, but have not been analyzed. It is not a stated goal of this project, however photo-identification may prove valuable in determining the stock identity, site fidelity, and population size of these three range species, particularly if visual monitoring of marine mammals will be continued or expanded in the future.

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Table 1. Summary of daily effort, including number of groups sighted by species, for all three survey vessels at SCORE range, October 2007.

Date	Vessel	Survey Hours	Daily Effort Comments	Number of groups sighted daily, by species*															
				Ba	Bp	Dc	Dd	Gg	Gm	Lb	Lo	Mn	Pd	Tt	UD	UnLgCet	Zica		
22-Oct-2007	N1	8:37	Significantly reduced visibility throughout day due to smoke		2		1		1										
	N2	8:24		7			2						1						
	Sproul	8:46		2									1				4		
23-Oct-2007	N1	9:52	Calm seas, reduced visibility due to smoke	1	4				1					2				1	
	N2	9:38		6				2					1					1	
	Sproul	10:09		4							1						2		1
24-Oct-2007	N1	10:57	N2 personnel transfer to Wilson Cove, then resume normal effort on range. Very calm seas, reduced visibility due to smoke/haze		4	1	1					1						2	
	N2	9:20		2	2		1												2
	Sproul	10:52		2											1		1		2
25-Oct-2007	N1	9:23	Visibility improved, slight increase wind/swell, heavy fog at end of day				1							2				2	
	N2	9:29		1	2		1												2
	Sproul	8:47		1			2									2		4	
26-Oct-2007	N1	9:46	Significant increase swell/sea state		2		2												
	N2	9:40		1															1
	Sproul	9:38		5									1					5	
<b>Total Survey Effort, 21-26 Oct 2007: 143.2 hours</b>				<b>4</b>	<b>44</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>16</b>	<b>14</b>		

\*Groups worked simultaneously by multiple vessels are only accounted for once

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Table 2. Total number of groups sighted, estimated number of individuals sighted, and average group size for cetacean species encountered at SCORE range, October 2007.

Abbreviation	Common Name	Number of Groups	Number of Animals*	Avg Group Size
Ba	Minke Whale	4	4	1
Bp	Fin Whale	44	103	2
Dc	Long-beaked Common Dolphin	1	12	12
Dd	Short-beaked Common Dolphin	9	623	55
Gg	Risso's Dolphin	2	3	2
Gm	Short-finned Pilot Whale	4	150	38
Lb	Northern Right Whale Dolphin	1	170	170
Lo	Pacific White-sided Dolphin	1	14	14
Mn	Humpback Whale	2	2	1
Pd	Dall's Porpoise	2	6	3
Tt	Bottle-nosed Dolphin	4	22	6
UD	Unidentified delphinid	3	215	72
UnLgCet	Unidentified Large Cetacean	16	28	2
Zica	Cuvier's Beaked Whale	14	68	4

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Figure 1a. Survey effort August 2006

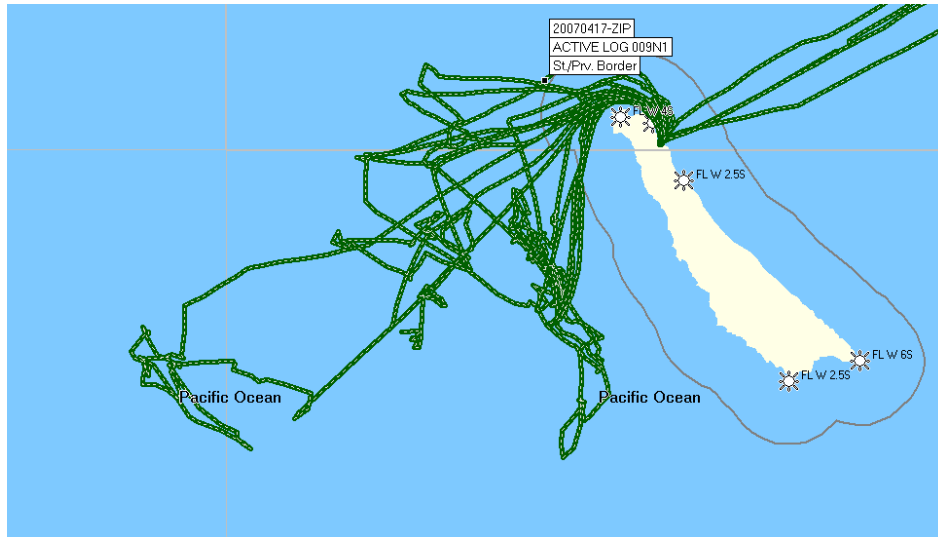


Figure 1b. Survey Effort April 2007

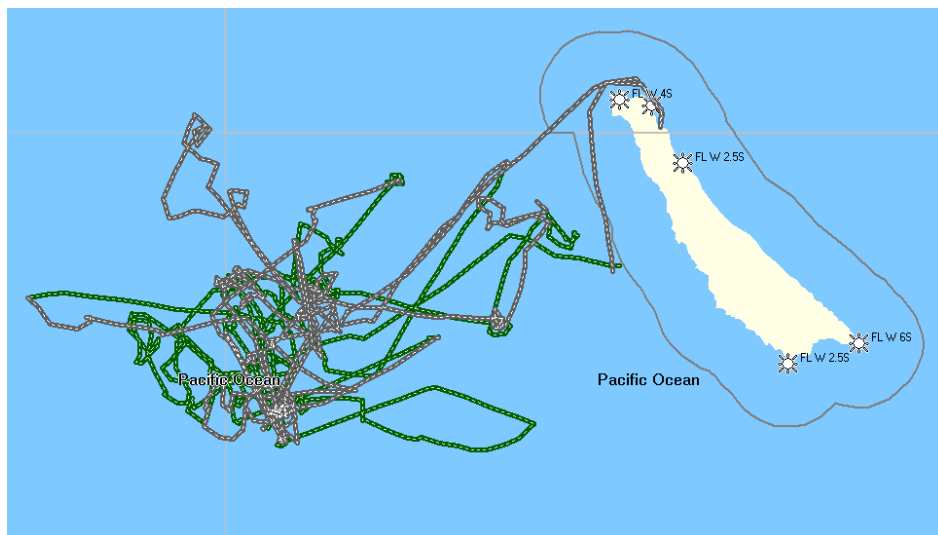


Figure 1c. Survey effort October 2007 (RHIBs only)

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