

**STAR 2006: NOAA Ship *McArthur II***  
**Weekly Science Report**

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30 November 2006

**Science Summary: 23-29 November, 2006**

This week our survey tracks took us well offshore and close to the southwestern corner of our core study area. The two dolphin stocks that are a primary focus of our research, the northeastern pantropical spotted dolphin and eastern spinner dolphin, live within the core area, which has a southern boundary at 5° N latitude and a western boundary at 120° W longitude. These two stocks are of interest to us, because they are the two stocks that have been most impacted by the yellowfin tuna purse-seine fishery. Essentially all of our survey effort this leg is near the outer boundaries of this area, and we will continue along the western edge (~700 nm offshore) of this core area next week as we travel northward to our next port: San Diego, CA.

This leg has been one of significant weather challenges. When I wrote last week, we were experiencing high winds and big swells associated with a large storm that originated in the Gulf of Tehuantepec. Fortunately as we headed west, we broke free from that storm's influence, but unfortunately, we traded it for ITCZ (Inter-Tropical Convergence Zone) weather. The ITCZ is a zone typically characterized by rain, wind and cloudy skies created by the meeting of the northern and southern hemisphere winds, and that's what we found. Our survey track first took us on one long track to the south through the ITCZ and then one long track to the north back through the ITCZ. So not unexpectedly but still rather disappointingly, our days along these tracks were days of rain, wind and cloudy skies. Only on Wednesday (the last day in our week) did we break free of the ITCZ's influence and find the sun. It was a welcome sight.

Sightings were relatively few this week in part because our weather hampered visibility, but also because animal densities are fairly low out here. Even so, we sighted numerous mixed spotted and spinner dolphin schools as well as a number of pure schools of each species. Several of the mixed species schools we sighted were large and predominantly made up of spinner dolphins. But the stock of spinner dolphin differed between sightings. We saw eastern, whitebelly and southwestern spinner dolphins during the course of this week.

One afternoon we unexpectedly had very calm winds and calm seas. During the few hours that these conditions lasted, we recorded several sightings of *Kogia* sp and *Mesoplodon* sp. We cannot help but wonder how many animals of these species there must be out here when we see so many on a single calm afternoon.

By the end of the week, we found ourselves back in a habitat occupied by baleen whales as well as spotted and spinner dolphins. This change in habitat was reflected in our net tows, which went from nearly empty to nearly full. Our baleen whale sightings included a particularly good look at a Bryde's whale. A beautiful and impressive sight.

Our Thanksgiving Day celebration was festive and memorable. The ship's stewards: Art Mercado, Ray Storm and Luke Staiger served up an excellent turkey dinner with all the trimmings, including homemade pumpkin pie. And the festivities continued after dinner with a raffle drawing and a piñata. Thanks to all on board who contributed to such a wonderful Thanksgiving celebration.

The fourth cribbage tournament also ended this week. Scott Tedmus and Lacey O'Neal won first and second place, respectively. Congratulations.

**Sightings and Effort Summary for Marine Mammals**

DATE	Start Stop Time	Position	Total Distance	Average Beaufort
112306	0701 1800	N08:22.90 W103:52.46 N08:05.46 W105:30.76	86.0 nmi	5.0
112406	0707 1831	N08:22.94 W106:57.08 N08:33.55 W108:37.50	87.2 nmi	4.6
112506	0807 1852	N08:36.86 W110:09.92 N08:43.70 W111:48.42	80.0 nmi	4.4
112606	0851 1756	N08:32.37 W113:31.91 N07:38.27 W114:31.99	47.7 nmi	2.8
112706	1242 1731	N08:30.77 W116:35.76 N08:59.55 W117:01.86	37.0 nmi	4.4
112806	0702 1813	N09:56.26 W118:07.19 N10:55.47 W119:15.65	82.7 nmi	5.1
112906	0654 1748	N12:13.01 W118:45.82 N13:20.43 W117:46.89	77.6 nmi	4.5

CODE	SPECIES	TOT#
002	Stenella attenuata (offshore)	11
003	Stenella longirostris (unid. subsp.)	2
010	Stenella longirostris orientalis	2
011	Stenella longirostris (whitebelly)	5
013	Stenella coeruleoalba	2
018	Tursiops truncatus	1
036	Globicephala macrorhynchus	4
048	Kogia sima	4
051	Mesoplodon sp.	1
070	Balaenoptera sp.	2
072	Balaenoptera edeni	1
080	Kogia sp.	1
098	unid. whale	1
101	Stenella longirostris (southwestern)	1
177	unid. small delphinid	11
TOTAL		49

**Biopsies (Suzanne Yin and Erin LaBrecque)**

Species	Common Name	Weekly		Total	
		Samples	Takes	Samples	Takes
<i>Balaenoptera edeni</i>	Bryde's whale			1	1
<i>Balaenoptera musculus</i>	Blue whale			9	10
<i>Delphinus delphis</i>	Short-beaked common dolphin			2	3
<i>G. macrorhynchus</i>	Short-finned pilot whale			18	21
<i>Pseudorca crassidens</i>	False killer whale			3	5
<i>Stenella attenuata</i>	Pantropical spotted dolphin			8	17
<i>S. attenuata graffmani</i>	Coastal spotted dolphin			1	2
<i>S. attenuata subsp.</i>	Unidentified spotted dolphin subspecies			8	12
<i>S. longirostris orientalis</i>	Eastern spinner dolphin			3	5
<i>Tursiops truncatus</i>	Bottlenose dolphin			24	47
<b>Total</b>				77	123

**Photo-id Report (Isabel Beasley and Jim Cotton)**

Two pilot whale groups and one lonely Bryde's whale were selected as top prize winners to be included in our photography database this week. A rather poor showing – once again - from the small delphinids, where after last week's fiesta of bow-riding dolphins, we could not even manage to photograph one group this week.

Species Code	Species	This week	Total
002	<i>Stenella attenuata</i> (offshore)		17
003	<i>Stenella longirostris</i> (unid. subsp.)		3
006	<i>Stenella attenuata graffmani</i>		1
010	<i>Stenella longirostris orientalis</i>		9
011	<i>Stenella longirostris</i> (whitebelly)		6
088	<i>Stenella longirostris centroamericana</i>		3
103	<i>Stenella l. centroamericana/orientalis</i>		1
090	<i>Stenella attenuata</i> (unid. subsp.)		2
101	<i>Stenella longirostris</i> (southwestern)		4
013	<i>Stenella coeruleoalba</i>		13
015	<i>Steno bredanensis</i>		2
017	<i>Delphinus delphis</i>		17
018	<i>Tursiops truncatus</i>		16
021	<i>Grampus griseus</i>		1
026	<i>Lagenodelphis hosei</i>		2
031	<i>Peponocephala electra</i>		1
032	<i>Feresa attenuata</i>		2
033	<i>Pseudorca crassidens</i>		6*
036	<i>Globicephala macrorhynchus</i>	2	31*
037	<i>Orcinus orca</i>		4*
046	<i>Physeter macrocephalus</i>		4

Species Code	Species	This week	Total
072	<i>Balaenoptera edeni</i>	1	10*
075	<i>Balaenoptera musculus</i>		17*
076	<i>Megaptera novaeangliae</i>		1
<b>TOTAL</b>		<b>3</b>	<b>174</b>

\* Individual whales photographed

### **Seabird and Marine Debris (Michael Force and Sophie Webb)**

We had a fascinating week in the outer fringe of the ETP core study area: dozens of feeding flocks over fish and Spotted and Spinner Dolphins; interesting seabirds; dodging successfully, and not so successfully, rain squalls; and several lost migrants thanks to the abundance of dark and dull, gray rainy days characteristic of the ITCZ. Several seabirds missing from our sights for weeks or months put in cameo appearances, helping to keep our identification skills up to scratch and preventing us from getting complacent on a steady diet of Wedge-tailed Shearwaters and Leach’s Storm-Petrels. A Black-winged Petrel, commoner in the central and western Pacific, was only the second one since 8 September, the only other since then being a single on Leg 3; Buller’s Shearwater, last seen on 14 September; and Cook’s Petrel, 19 October. Of course, the absence of these species is primarily due to the eastern and southeastern trajectories of our tracklines during the past six to eight weeks.

For seabirds, particularly storm-petrels, the potentially lethal combination of wet stormy nights and a conspicuously lit research vessel was, regrettably, again a serious problem this week. The birds, already stressed by the poor weather, are attracted to the ship’s lights and in the case of the McArthur II, invariably end up in the coffer dams—deep catchment basins surrounding tank vents. Sloshing around in cold oily water results in a slow hypothermic death unless they can be quickly retrieved. Seven Leach’s Storm-Petrels were picked up one night, several so water-logged as to be hardly recognizable as a bird, let alone a Leach’s Storm-Petrel. Thankfully, all survived once dried, instilling one with a renewed appreciation and sense of wonder of what remarkable structures feathers are—nothing humans manufacture comes even close. Some of the storm-petrels, the luckier ones, end up on the deck and, unable to get airborne, simply sit there, waiting to be picked up. One of these birds, after resting and drying in a box with the others for an hour or so, reached the end of its lucky streak. Once released it eagerly flew off, covering about 10 metres of airspace before being immediately caught and eaten by a Peregrine Falcon, whose presence was unknown, lurking out of sight of the incredulous storm-petrel rehabilitators.

It’s not very often one has in the same binocular view a Wedge-tailed Shearwater and Lesser Nighthawk. Needless to say, the two hardly ever occur together. The nighthawk, far out of range (and habitat!), visited the ship for a few hours 300 NM southwest of Clipperton Atoll. Barn Swallows and Cattle Egrets were other non-pelagic species in the “Which way do I go?” category of migrants.

Marine debris was mostly ubiquitous plastic bottles, of all shapes and sizes, and various bits and pieces of styrofoam. A fancy high-heel dress shoe was unexpected, leading one

to the obvious conclusion that tuna fishermen are taking advantage of increased profit margins and shopping for their evening wear at Salvatore Ferragamo.

Happy Birthday Sophie!

### Oceanographic Operations (Melinda Kelley)

Date Range	Day	CTD	XBT	Bongo	Manta
Leg 4	Thursday	1	4	0	0
	Friday	2	3	1	1
	Saturday	2	3	0**	0
<u>11/23</u>	Sunday	3*	3	0	1
<b>To</b>	Monday	2	3	1	1
<u>11/29</u>	Tuesday	2	3	1	1
	Wednesday	2	3	1	1
	<b>Totals</b>	14	22	4	5

\* Salinity test cast

\*\* Lost Bongo Net

For the past few weeks we have been pulling through difficult moments with regard to oceanographic equipment. To recap the past weeks, we have relocated (lost in October) a CTD, replaced the CTD (Manzanillo), damaged a main component of the CTD, replaced it (Acapulco), and broke and replaced our XBT computer (Acapulco). This report would not be complete without an oceanographic equipment failure to report. This week, and for the grand finale, we decided to relocate the Bongo frame (winch wire broke). It's now resides on the ocean floor, neighbor to our relocated CTD package. Luckily, we have spare net tow equipment on board (Thanks to Amy Hays); it was set up and bongo tows carried on as usual. Thank you to all who helped getting the bongo back in the water.

For the final week, sea surface temperatures averaged 27.47° Celsius. The thermocline showed variability throughout the week. The first few observed thermocline depths were noted around 8.5° N and 103.81° W and averaged 30 meters. As we continued to move west, the observed thermocline depth fell to 55 meters and held steady until we headed north. Moving north for the remainder of the week brought us back to thermocline depths that averaged 30 meters.

As we head toward San Diego and wrap up the last of our oceanographic operations for STAR 2006, I would like to express my thanks and gratitude to all who have been involved in operations during the past several months. From assisting with sampling and deploying net tows to getting replacement parts to the ship, you are all greatly appreciated! My many thanks also go to the crew of the *McArthur II*. Without their talented skills there would be much trouble. From repairing leaking sensors in a 90° F engine room compartment to fashioning brackets for our CTD package, you never fail to come through and your hard work is continually appreciated. Thank you!

### **Squeakly Report (Shannon Rankin and Liz Zele)**

Avid readers may remember the passing of a beloved hydrophone in the previous week. After a day of rest due to high seas, we deployed the array on Friday, with this hydrophone still attached. The swells must have awakened the beast, and Steven King has taught us that those brought back from the dead are never quite the same. This is true for inanimate objects, as well. The screeching and crackling obliterated all channels, and by late morning, we brought in the array for surgery. The exorcism consisted of amputation of the troubled hydrophone, and the array was back in the water the following morning. Despite a day and a half down, we still managed to detect 80 cetacean groups, of which 59 were not sighted. Recordings included spotted, spinner, and striped dolphins, as well as pilot whales. The highlight for the week was the return of our beloved "boings". The "boing" sound is produced by minke whales in the winter, and November marks the beginning of their southward migration. While we had been expecting the minkes to begin singing, we had not expected them so far south so early in the season. Every year we learn something new.