

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

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**Science Summary: 10-16 August 2006**

We've spent this week working our way North and West through the outer portion of the eastern tropical Pacific (ETP) study area. It was easy to identify the days we spent crossing the Inter-tropical convergence zone (ITCZ) by the dripping wet marine mammal and seabird observers in the corridors! They are intrepid and continue observations from the flying bridge as long as they possibly can; this week, it took downpours of rain, which collect in the canopy covering the flying bridge and release in one large rush, to drive them inside.

While it was easy to identify the days spent in the ITCZ, the marine mammals have proved somewhat more difficult. In fact, I think I'd call it a "unid" week. "Unid" is short for unidentified and is a code we give to dolphins or whales that we cannot positively identify to the species level. The rough weather has definitely contributed to the difficulty in obtaining positive identifications; as you can see in the effort summary, we spent the majority of the week in Beaufort 5 conditions. Several longtime observers have also commented that it seems particularly difficult to approach many of the dolphin groups this year. In these situations, we are particularly grateful to have the acoustics team on board. They frequently provide us with possible locations of a group by determining the angle and distance at which they are hearing whistles and clicks; they are also pretty amazing at characterizing the whistles of different dolphin species.

On our first full day of Beaufort 6 conditions, the dedication of the birders and oceanographers was truly highlighted. Throughout the day, the birders could be found on the flying bridge. They had to brace against the wind and the swell, but they were quite excited about the number of birds they were seeing (check out their section and you'll know exactly what I mean). Our valiant oceanographers, with the help of the bridge and deck crews, also pulled off full operations throughout the day.

Our brief periods of calmer weather did yield some phenomenal sightings. We saw the rare Longman's beaked whale (*Indopacetus pacificus*) – check out the Flying Bridge Spotlight for all of the details. We were also able to obtain exceptional looks at the silent Bryde's whale mentioned in the Squeakly Report by acoustics. Keep reading. . .

## Sightings and Effort Summary for Marine Mammals

Date	Start/ Stop Time	Position	Total nm	Average Beaufort
081006	0646	N05:26.61 W116:54.51	119.1	5
	1858	N03:59.65 W117:33.00		
081106	0654	N02:51.91 W118:34.55	97.7	5
	1911	N03:10.14 W119:55.67		
081206	0701	N04:06.04 W120:58.48	90.5	4.5
	1917	N05:16.59 W122:13.95		
081306	0730	N06:09.17 W123:17.48	88.2	5
	1911	N07:17.35 W124:32.98		
081406			0	6
081506	0625	N10:19.85 W128:02.47	67.3	4.5
	1834	N11:27.74 W129:20.99		
081606	0631	N12:14.04 W130:14.25	92.9	3.8
	0646	N05:26.61 W116:54.51	119.1	5

Code	Species	Number of Sightings
2	<i>Stenella attenuata</i> (offshore)	4
3	<i>Stenella longirostris</i> (unid. subsp.)	1
11	<i>Stenella longirostris</i> (whitebelly)	2
13	<i>Stenella coeruleoalba</i>	5
17	<i>Delphinus delphis</i>	1
18	<i>Tursiops truncatus</i>	1
36	<i>Globicephala macrorhynchus</i>	1
49	Ziphiid whale	1
65	<i>Indopacetus pacificus</i>	1
70	<i>Balaenoptera</i> sp.	1
72	<i>Balaenoptera edeni</i>	1
77	Unid. Dolphin	4
99	<i>Balaenoptera borealis/edeni</i>	1
<b>Total</b>		24

## Flying Bridge Report (Richard Rowlett)

About 600 miles west of Clarion Island on 06 August, we started our day in calm seas with an unusually accommodating group of killer whales (*Orcinus orca*) that we were able to track for a prolonged period. This was unusual in our experience in these tropical waters because most encounters involve animals that just simply disappear after a few initial sightings. Shortly after that and in the same area, a much less accommodating group of false killer whales (*Pseudorca crassidens*) was sighted. It took some time to relocate these animals after the initial sighting and even more to establish a positive identification. Throughout the search, we became aware that those dozen or so Tahiti Petrels seemed focused on following something in particular, which led to thoughts of false killer whales. We just kept watching and following the Tahiti Petrels to see

what popped up, until lo and behold, *Pseudorca*! There were several in the area and scattered over a few miles. For most surfacings, there was one or several Tahiti Petrels right there in close attendance. This just goes to prove that seabirds often provide subtle cues leading to sightings and even suspected identifications. Tahiti Petrels are largely scavengers in search of any casualty from the depths left floating at the surface, which could easily include scraps left behind by blackfish. Interestingly, this same Tahiti Petrel/false killer whale association was repeated again with another sighting two days later, 735 miles west of Clipperton Island.

### **Biopsies (Susanne Yin and Erin LaBrecque)**

Species	Common Name	Weekly		Total	
		Samples	Takes	Samples	Takes
<i>Delphinus delphis</i>	Short-beaked common	0	0	2	3
<i>Tursiops truncatus</i>	Bottlenose dolphin	0	0	3	3
<b>Total</b>		0	0	5	3

### **Photo Project (Isabel Beasley and Jim Cotton)**

Species	Weekly		Total	
	Sightings	Photos	Sightings	Photo
<i>Stenella longirostris</i>	2	7	4	
<i>Globicephala</i>	1	1		
<i>Tursiops truncatus</i>			3	38
<i>Globicephala</i>			1	6
<i>Orcinus orca</i>			1	146
<i>Balaenoptera musculus</i>			1	37
<i>Physeter macrocephalus</i>			1	4
<i>Stenella coeruleoalba</i>			2	22
<i>Delphinus delphis</i>			4	32
<b>Total</b>				

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

It was a blockbuster week with daily avian diversity exceeding anything we've seen so far on STAR 2006. Seabird enthusiasts everywhere can only dream of having days like what we experienced this week. The pelagic ecosystem tends to be thought of as an area of low diversity, but our exciting transects through the North Equatorial Countercurrent produced daily totals of 13 to 15 species; one day we saw a phenomenal 19 different kinds of seabirds! Our weekly species total of 27 includes 12 petrel species of three genera, and four different kinds of shearwaters. Avian diversity was relatively low early in the week, but there were hundreds of Juan Fernandez Petrels everywhere, frequently in flocks, taking advantage of the thousands of flyingfish present in the area. It was interesting to note that flyingfish abundance decreased as avian diversity increased. Without the insight provided by physical and biological oceanography, it's impossible to draw any conclusions on what could be nothing more than a coincidence. As we moved northwestward, sightings of dark morph Wedge-tailed Shearwaters decreased, while

light morphs increased, the expected pattern for this widespread polymorphic tropical shearwater. Cruise firsts stand out among the many highlights this week: Buller's and Christmas Shearwaters, Pycroft's, Collared, Murphy's, "Dark-rumped" and White-necked Petrels, and South Polar Skua. If only we could have gotten our hands on that second skua. Just think of the story that little silver band on its right leg could tell us! We do know that it was banded in Antarctica, where this species nests, but when, the exact location, and by who remains unknown. Pink-footed Shearwaters continue to surprise us this far west with six being seen this week, four of them in a single day. Other than one small piece of styrofoam, we had an eight-day trash-free streak. However, the transition from pristine to junk was very abrupt—from none one day, only to wake up the next to find plenty of fishing debris, plastic bottles, and other human discards. Had we crossed some sort of boundary during the night?

### **Oceanographic Operations (Melinda Kelley)**

This week there is more of the same good news to report for oceanography. CTD profiles are looking great, and, as we travel along the track line, the XBT profiles continue to update us on the changes in the mixed layer. The sea surface temperature has fluctuated between 27-28°C while surface salinity had dropped to 33 (PSU) due to all the rain this past week. Net tow operations remain smooth and every evening continues to provide us with plenty of entertainment as we examine life through the glass jars.

<b>Date</b>	<b>CTD</b>	<b>XBT</b>	<b>Bongo tow</b>	<b>Manta tow</b>
Thursday	2	3	1	1
Friday	2	3	1	1
Saturday	2	3	1	1
Sunday	2	3	1	1
Monday	2	2	1	1
Tuesday	2	3	1	1
Wednesday*	2	3	0	0
<b>Total</b>	14	20	6	6

\* Winch problems – no net tows

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

It's been a rather typical week for acoustics, with whistles from most of the sighted animals, as well as 3 dozen sneaky dolphins (two-thirds were out of visual range). The weather day allowed us the opportunity to fix the remainder of our dysfunctional equipment, as well as catch up in data editing. And we finally had the opportunity to test our sonobuoy equipment on a silent Bryde's whale (everything is working well, and the McArthur sounds great!). It may appear that all is well on the acoustics front, but such periods of calm present a greater unforeseen danger: Shannon has survived the double-double cappuccino event of Star'06 and Liz has taken up reading the news.

### **Dipnetter's Delight (Jim Cotton)**

This past week dipping stations were typified by challenging weather conditions, relatively few flyingfish, and increasing numbers of *Oxyporhamphus* (short-winged flyingfish) as we continued NW along the track line towards Hawaii. Other noteworthy events this week were the replacement of *Dosidicus* by *Sthenoteuthis* as the dominate squid under our lights and the addition of a pelagic triggerfish and one puffer fish to the aquarium.

Specimens collected this week are as follows:

- 3 Two-winged flyingfish
- 7 Four-winged flyingfish
- 8 Short-winged flyingfish
- 25 Lantern fish