

## **STAR 2000: McARTHUR WEEKLY REPORT**

13 September 2000

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### **SCIENCE SUMMARY: 7 - 13 September 2000**

For you must know that any craft who'd fain  
Cross the Great Sea Lord's Special Royal Domain,  
Must pay the tribute that King Neptune wishes,  
And be received by mermaids, bears, and fishes.  
we will see you on the morn,  
And any who resist will wish he had not been born.

This week, we continued to traverse along our southwestern trackline for three more days until waypoint 4, at the equator, where we turned due south and then due east, to 4S 118W, from where this report comes. We emerged little scathed from the ITCZ at the beginning of the week and enjoyed a few days of relative calm before running directly into the southeast trades. Just north of the equator, we crossed a second thermal front for the week and watched as sea surface temperatures rapidly dropped another 2 degrees C. Yielding not to wind, swell or glare, the steely-eyed mammal observers have recorded a increasing number and diversity of cetacean species in these cooler waters, including a number of offshore spotted dolphin and southwestern spinner dolphin schools. An exceptionally large group of killer whales not only brought crew, command and scientists alike to the bow, but also explain why there had been no sightings for the previous few hours -- they had eaten everything.

Bryde's whales are the most commonly encountered balaenopterid in these waters and we often find them coincident with the bright green glow of surface prey patches on the EQ50 (the ship's echosounder). Systematic relationships among the world's Bryde's whales are in question and samples from these pelagic animals are a valuable piece of the puzzle, yet they are not easy to obtain. We were happy this week to get both a tissue sample (this one's for you, Andy) and acoustic recordings. This particular animal was initially sighted by eagle-eye wog Kathy Hough. Richard Rowlett directed the chase on radio and Greg Hubner, Nicole Cabana and Danny Schaible expertly steered us alongside the whale. A dart flew with precision from Ernesto Vazquez's crossbow and Annie Douglas shot ID photos. Jim Cotton, arms toned by years of dipnetting, plucked the valuable sample back from the sea. Shannon Rankin and Megan Ferguson deployed a sonobuoy to get recordings; admirable coordination from bow to stern.

The unfortunate news this week is that we lost both our acoustic arrays to technical difficulties. As mentioned above, the unemployed acousticians now drop sonobouys with gusto. The good news is that all other operations continue to function smoothly and we have added ring tows to our nightly oceanography and dipnetting activities. Crossing the equator triggers the initiation of pollywogs (those who haven't "crossed the line") into the

solemn mysteries of the ancient order of the deep; the above poem sums up this week's extracurricular activities quite accurately.

We will continue on our easterly track for the next few days, before turning northeast toward Costa Rica.

**ACOUSTICS FAINTLY SQUEAKLY REPORT:** (Shannon Rankin and Megan Ferguson)

Let me take a moment to tell you all a story, an eery ghost story of the high seas. If you were tuned in last week you will know that we have had some equipment problems, and alas, the fun had only begun. We began the week with the deployment of our back-up hydrophone array, and in short time it began emitting the most vile pleas for help in the form of intense static screams and electronic moans. Megan and I rushed to the scene to pull in our beloved... but it was too late. The ghost that haunts the McArthur had attacked again, slicing the array and mortally wounding it. Our attempts to resurrect our primary array were unsuccessful; the symptoms of the mysterious illness which plagues it continues to baffle us. So here we sit, two depressed acousticians with a few sonobouys and a lot of time on our hands.

Despite the presence of an acoustician-loathing goblin, we have had a bit of sonobouy success (sonobouy success? Is that an oxymoron?). Don't worry, to keep with the theme, King Neptune's creatures did not bless us with songs or sonnets (although once or twice I distinctly heard a faint evil laugh from the depths...). We deployed six sonobouys on five sightings (read this: 5 of 6 is an 83% success rate, quite possibly an all-time high for sonobouys! Let us all rejoice!). Four of these sightings were of Bryde's whales (Friday, Sunday, and two sightings on Wednesday). No vocalizations were noted, as is typical of these tropical baleen whales. The third sonobouy deployment was on a fairly large killer whale sighting. Despite the popularity of their vocalizations in the Pacific Northwest, these animals do not appear to be very vocal in these tropical waters, and this sighting was no exception.

**BIRD SUMMARY** (Brett Jarrett and Chris Hofer):

It has been a predominantly Gadfly petrel week with zero Wedge-tailed Shearwaters and one Juan Fernandez petrel recorded. Sightings this week include over 200 White-winged Petrels and 80 Stejneger's Petrels, with the highlight being 3 White-throated Storm-petrels (a lifer or tick for Richard!) and 6 White-bellied Storm-petrels on 10, 11 and 12 September. Also of note were 3 white-faced storm petrels, one Murphy's Petrel and a juvenile Black-browed Albatross early on the morning of 13 September, winging its way north. This southern hemisphere species is not generally sighted north of 60°S except in the Humboldt current.

Typically, sea birds court and mate on the breeding colonies and are not thought to engage in breeding behavior at sea. Thus, despite the relatively barren nature of the ocean in the last week, the birders and their mammalian companions, were graced with two

adult Red-tailed Tropicbirds performing a "courtship" flight. While flying several loops around each other, the bird on the bottom (i.e., the one being observed by the other) would hold his/her pinkish tail streamer cocked to one side for a few seconds. It would then swing it around to the other side for a few seconds. All the while both birds produced the raucous vocalizations typical of this genus. One can only guess how they were gauging each other. But to the delight of this biologist at least, they went flying off together toward the horizon. One can also only guess the significance that this at-sea breeding behavior has back at the nest was this a chance amorous encounter at sea? or a mated pair? Both would be surprising findings.

**SIGHTINGS AND EFFORT SUMMARY FOR MARINE MAMMALS: 7 - 13  
September 2000**

090700 0802 N04:59.82 W132:32.54 107.2nmi 4.2  
1847 N03:50.11 W131:08.80

090800 0639 N02:58.16 W130:09.18 76.5nmi 3.8  
1837 N02:07.69 W129:04.79

090900 0631 N01:15.70 W128:04.12 90.2nmi 4.3  
1729 N00:12.62 W126:45.00

091000 0623 S01:07.93 W126:16.96 75.7nmi 4.9  
1824 S03:01.21 W126:13.48

091100 0621 S04:35.53 W126:10.60 83.4nmi 4.3  
1818 S04:45.13 W124:50.51

091200 0612 S04:38.68 W123:19.70 93.2nmi 5.0  
1800 S04:32.64 W121:28.65

091300 0557 S04:28.20 W120:14.91 89.2nmi 5.0  
1747 S04:20.69 W118:46.28

Code	Species	Tot#
99	Balaenoptera borealis/edeni	3
72	Balaenoptera edeni	5
21	Grampus griseus	3
101	Stenella longirostris (SW)	5
37	Orcinus orca	1
02	Stenella attenuata (offshore)	6
13	Stenella coeruleoalba	3
15	Steno bredanensis	1

49	unid. ziphiid	1
61	Ziphius cavirostris	1
77	Unid. dolphin/porpoise	5
79	Unid. large whale	1
78	Unid. small whale	3
98	Unid. whale	1
TOTAL		39

Note: apparently, the data summary program only takes two-digit species codes. Thus, southwestern spinner dolphins (101) get recorded as M. peruvianus (01) ...evolution before our very eyes! I corrected this above. Below, I believe the numbers should read as indicated to include our three mixed-species sightings (SW spinner/offshore spotted dolphin) and one single-species sighting of SW spinners, but I was unsure of what "other delphinids" holds.

Output from summary program:

Common dolphins 0  
 Spotted/spinner 0  
 Blue/humback wh. 0  
 Other delphinids 3  
 Other cetaceans 5

with SW spinner included:

Common dolphins 0  
 Spotted/spinner 4  
 Blue/humback wh. 0  
 Other delphinids 4  
 Other cetaceans 5

**BIOPSY SUMMARY: 7 - 13 September 2000**

Species	Number of Samples	Cumulative Total
Balaenoptera edeni	1	1
Globicephala macrorhynchus	0	7
Stenella attenuata subsp.	0	1
Tursiops truncatus	0	3
Grand Total		12

### 35 mm PHOTO SUMMARY: 7 - 13 September 2000

Species	Number of Schools/Individuals	Cumulative Total
<i>Stenella attenuata</i>	0	6
<i>Stenella longirostris</i> (SW)	1	7
<i>Stenella coeruleoalba</i>	0	1
<i>Tursiops truncatus</i>	0	2
<i>Grampus griseus</i>	0	1
<i>Globicephala macrorhynchus</i>	0	3
<i>Indopacetus pacificus</i>	0	1
<i>Orcinus orca</i>	1	2
<i>Balaenoptera edeni</i>	2	2
Grand Total		25

### OCEANOGRAPHIC SUMMARY: 7 - 13 September 2000 (Pierre Malan)

During the past week we have entered the equatorial realm of cool (comparatively speaking), saline water. Surface temperatures have been in the 24 - 25 degree range and surface salinities above 35 ppt. The thermocline structure is more relaxed, but at some stations we found several distinct thermoclines stepping down to 200 meters. Chlorophyll values are generally low, and almost uniform until the chlorophyll maximum is reached. Net tows have proceeded smoothly. Catches have generally been small and have contained a significant percentage of gelatinous organisms. Small *Physalia* make concentrating the Manta samples an interesting task. The trade winds have favoured us with their presence all the way across the equator, the answer to a windjammer's prayer. Unfortunately it makes things lumpy for us and difficult for the mammal observers. Who ever thought a sailor would pray for the Doldrums?

Operation	This Week	Total
CTDs	14	69
XBTs	20	124
Manta Tows	7	35
Ring Net Tows	2	11
Bongo Tows	7	35