STAR-LITE 2007
Weekly Science Report

Tim Gerrodette, Cruise Leader
26 August 2007

Science Summary: 20-26 August, 2007

The purposes of the 2007 STAR-LITE cruise in the eastern tropical Pacific (ETP) are twofold: (1) to improve estimates of cetacean (whale and dolphin) abundance by conducting line-transect surveys in both passing and closing modes, and by using an extended acoustic array to pinpoint animals missed visually; and (2) to investigate variation in dolphin abundance and habitat on smaller spatial and temporal scales than we normally do during large-area ETP cruises. To accomplish these goals, we plan to conduct repeated transects and oceanographic sampling in a small area in international waters off the coast of northern Mexico, roughly in an area between 12-16ºN and 104-107ºW.

Most of this first week was spent in transit to the study area. From San Diego, we sailed along the coast of Baja California about 50nm offshore. On Saturday morning, August 25, we had a safety stand down to practice launching nets, CTD and the small boat, which was beneficial for both scientists and crew. All went smoothly except testing the acoustic cable (details below). On Sunday, August 26, we conducted the first transect in passing mode, so this report summarizes data from this single day. There were no photographs or biopsies this week.

We'd like to thank all the crew and officers, in particular Chief Boatswain Brad Delinski and ET Clay Norfleet, for their help in the final stages of setup during our transit to the study area.

Sightings and Effort Summary for Marine Mammals

Date	Start/ Stop Time	Position	Total nm	Average Beaufort
082607	0901	N16:05.48 W106:15.01	90.6	3.5
	1834	N14:51.03 W107:07.59		

Code	Species	Number of Sightings
002	Stenella attenuata (offshore)	1
177	Unid. small dolphin	7
Total		8

Seabirds (Sophie Webb, Michael Force)

Given that the area we are working is 200-300 nautical miles off the coast of Manzanillo, Mexico, the birds encountered are much as expected; Juan Fernandez Petrels and Wedge-tailed Shearwaters are the major component of the scattered feeding flocks, fair numbers of Leaches Storm-Petrels wandered about singly and in small groups, an occasional Tahiti Petrel glided by and the first Red-billed Tropicbird of the trip lifted off the water in front the ship. And of course, one can't forget the usual squadron of boobies following the ship, chasing flying fish, and perching wherever they can in squabbling groups, generally making a good deal more work for the deck department. Yup, we must be in the ETP. It should be

interesting to see over the months as we transit over the same track lines a number of times what, if any, changes occur in the species we see.

A few land bird migrants have made their appearance: Cliff and Barn swallows zoomed by on their way to South America and one lone Brown-headed Cowbird flew and hopped about the ship.

Squeakly Report (Shannon Rankin, Jay Barlow, Liz Zele)

This year we will be towing an extra-long acoustic array, built in sections and spliced together on the ship. The extra length provides us with two sets of hydrophones, separated by 1000m, which will allow us to obtain an immediate location of each vocalization. This is an improvement upon our typical system, where successive bearing angles obtained from a single set of hydrophones 300m behind the ship are plotted, with eventual convergence of bearing angles indicating the approximate location of the dolphin school. The improved accuracy and decreased time necessary to determine the location of a group of animals comes at a price: Tension. The type of tension that over-the-counter drugs cannot cure. The 1000+m of cable creates a lot of drag, and this drag puts a lot of tension on the cable. And the splices. And the winch. Nonetheless, we are slowly working through our problems, one by one, and we hope to have the array in the water by our second passing-mode day. Wish us luck. We need it.

Another thing we have needed was help, and this we have received in abundance. The deck crew and engineers have been an incredible help with everything from splices to securing our winch when it was threatening a swim call. ET extraordinaire Clay is always there when we need his advice. The other scientists joined us for a few cable spooling parties on the fantail. Oh! The memories! Thanks to one and all.

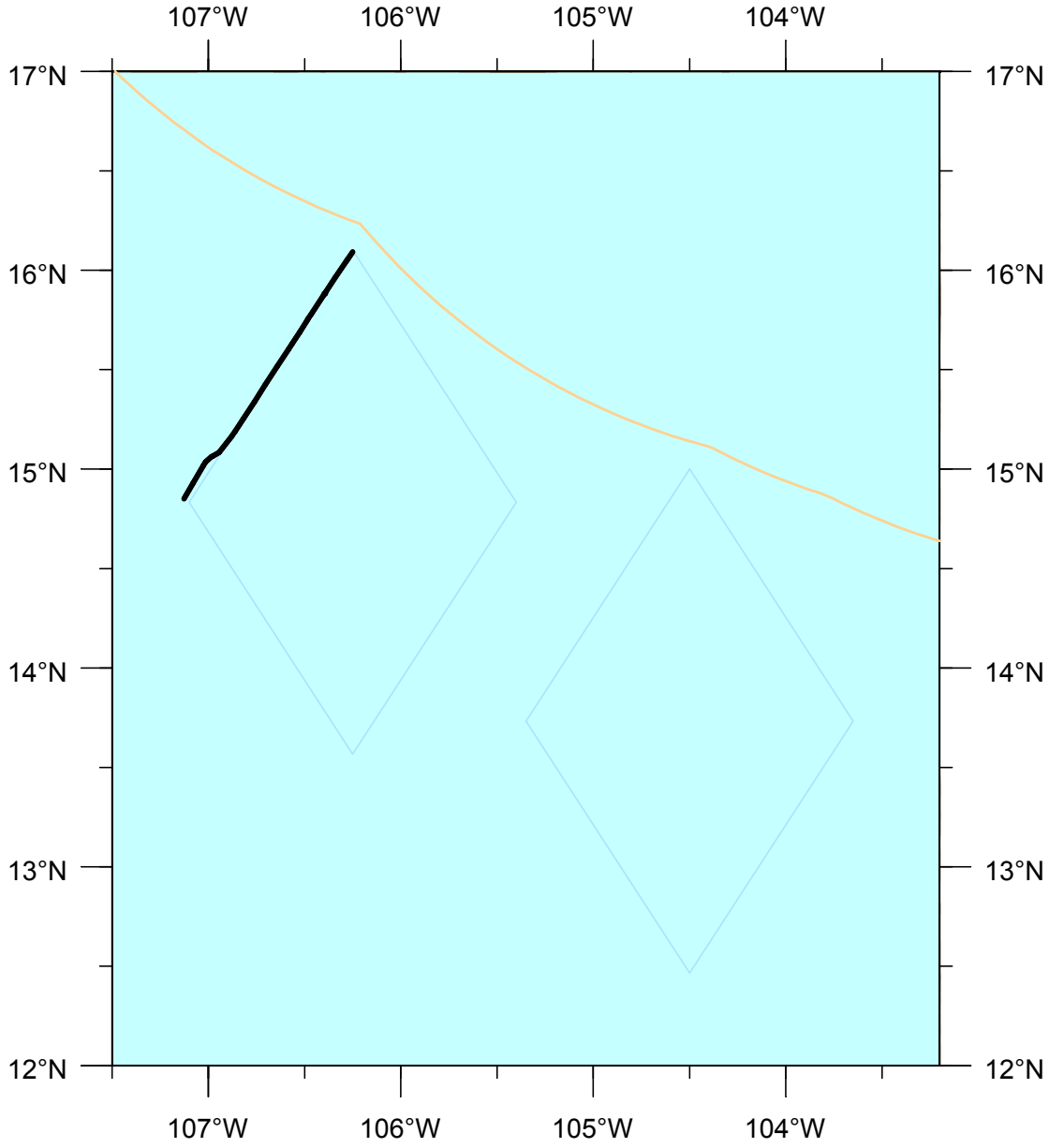
Oceanographic Operations (Candice Hall and Ryan Driscoll)

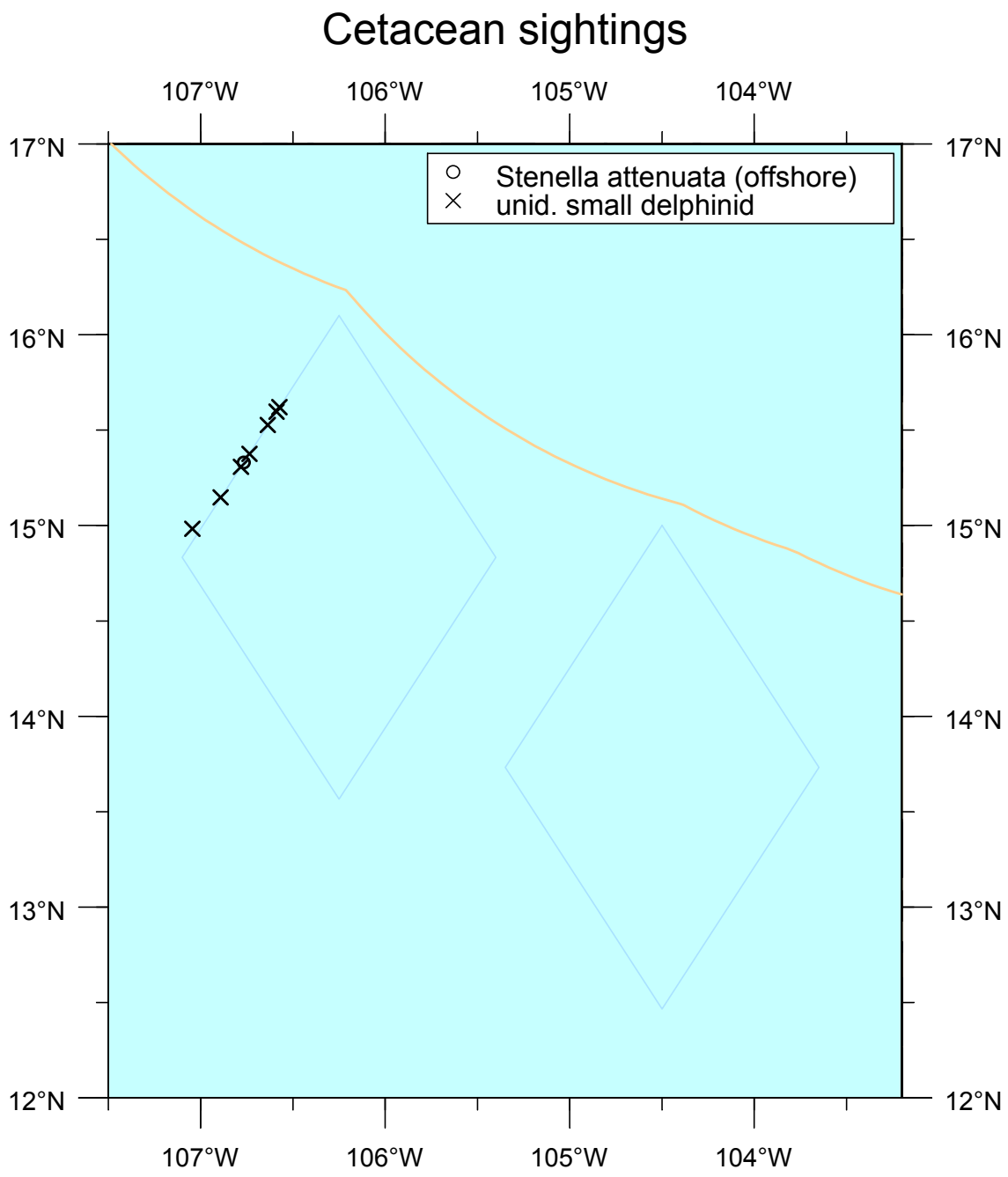
May every cruise begin like this! An entire week of set up, whilst steaming towards our survey area, provided Ryan and me with ample time to meet and greet those we would be working with for the next three months, both organic and inorganic. Yesterday's beatific Beaufort 2 provided the perfect setting to conduct test CTD and net tow deployments and retrievals, familiarising both crew and scientists with procedures on the *McArthur II*. This day of testing ensured that our first day of survey produced seamless oceanographic sampling.

Our sampling tally to date includes one test CTD cast to confirm the integrity of the CTD Niskin bottles; two full CTD casts to 1000m; four surface chlorophylls samples and concurrent XBT drops. During our standard CTDs, salinity samples were collected from the 500 and 1000 m depths and chlorophyll samples were collected at 20m intervals to a depth of 200m.

On average we have noticed a sea surface temperature and salinity average of 29.2ºC and 33.7 psu respectively. The mixed layer appears to end at approximately 50m before a text book thermocline is revealed. Our next weekly report will provide more information on our survey area.

Effort




Cetacean sightings
107°W
106°W
105°W
104°W
17°N
16°N
15°N
14°N
13°N
12°N
Stenella attenuata (offshore)
unid. small delphinid