STAR-LITE 2007: NOAA Ship *David Starr Jordan*
Weekly Science Report

Eric Archer, Cruise Leader
11 November 2007

Science Summary: 04 – 10 November 2007

This week marks the first week of operations for the last leg of STAR-LITE. We've had a good run of weather in Beaufort 2-4 conditions and have been able to complete surveys in passing and closing modes on three transects of the first diamond. Sightings have been fairly regular throughout the week, with little noticeable variation between modes on the same transect or between transects.

Monday treated us to the first blue whale (*Balaenoptera musculus*) sighting for the cruise. Unfortunately, that was a passing mode day and we could only gaze at it wistfully as we continued steaming down the trackline. On Thursday, a closing mode day, we had some close looks at a school of rough-toothed dolphins (*Steno bredanensis*). Saturday brought several very active spotted and spinner schools, a couple of which were particularly friendly and readily came over for a bout of bowriding. Many photos were taken and our sharpshooter, Juan Carlos Salinas, scored a spotted dolphin biopsy. On Saturday we also spent some time trying to locate an entangled Olive Ridley turtle that was sighted the previous day in passing mode, but unfortunately were unable to find it again after an hour and a half with all hands searching.

Throughout the week, I've noticed an increase in seemingly random incidents of trash-talking among normally cordial scientists and crew. Challenges are being thrown down and picked up with reckless abandon. Pairs huddle in shadowy passageways plotting the demise of others. All signs point to the beginning of the final STAR-LITE team cribbage tournament. The cards are down and the claws are out. Good luck everyone.

Group of spotted dolphins photographed from the ship. Photo: S. Webb

Sightings and Effort Summary for Marine Mammals *(Richard Rowlett, Juan Carlos Salinas, Suzanne Yin, Ernesto Vázquez, Adam Ü, Dawn Breese)*

Date	Start/ Stop Time	Position	Total nm	Average Beaufort	Mode of Operations
110407	Transit to study area				
110507	0724	N16:04.73 W106:15.80	97.7	3.6	Passing
	1649	N14:42.79 W107:10.88			
110607	0708	N16:05.30 W106:15.40	85.1	2.6	Closing
	1720	N14:41.99 W107:12.48			
110707	0725	N14:48.92 W107:05.27	90.4	3.6	Passing
	1723	N13:33.13 W106:14.46			
110807	0714	N14:50.00 W107:06.12	78.7	3.5	Closing
	1719	N13:33.44 W106:23.02			
110907	0713	N13:33.99 W106:15.01	98.7	3.7	Passing
	1715	N14:56.79 W105:19.61			
111007	0727	N13:34.14 W106:14.95	52.9	2.7	Closing
	1709	N14:33.38 W105:36.79			

Code	Species	Number of Sightings
2	*Stenella attenuata* (offshore)	20
3	*Stenella longirostris* (unid. subsp.)	1
10	*Stenella longirostris orientalis*	5
13	*Stenella coeruleoalba*	1
15	*Steno bredanensis*	2
18	*Tursiops truncatus*	1
21	*Grampus griseus*	1
51	*Mesoplodon* sp.	2
75	*Balaenoptera musculus*	1
78	Unid. small whale	1
79	Unid. large whale	1
Total		36

Photography *(Adam Ü)*

This week started out a bit slow but, after an exorcism of Nick's spirit from the bow (remember, his presence on the last leg usually caused the animals to run screaming), we started having better luck. We were able to get our first images of rough-toothed dolphins and quite a few shots of spotters, including some high quality laser dot images. A smattering of spinner images rounded out the mix.

Species	Common Name	Weekly photographs		Total photographs	
		Individuals	Schools	Individuals	Schools
Stenella attenuata (offshore)	Offshore pantropical spotted dolphin	1	89	17	426
Stenella longirostris orientalis	Eastern spinner dolphin	1	8	5	158
Stenella coeruleoalba	Striped dolphin			2	20

Species	Common Name	Weekly photographs		Total photographs	
		Individuals	Schools	Individuals	Schools
Steno bredanensis	Rough-toothed dolphin	1	13	1	13
Tursiops truncatus	Bottlenose dolphin			3	76
Grampus griseus	Risso's dolphin			1	42
Feresa attenuata	Pygmy killer whale			6	327
Pseudorca crassidens	False killer whale			2	89
Total		3	110	37	952

Biopsy *(Juan Carlos Salinas, Ernesto Vásquez, Suzanne Yin)*

This week we had our first bowriding big school of spotted dolphins…we survived the Nick effect, finally…

Species	Common Name	Weekly		Total	
		Samples	Takes	Samples	Takes
Pseudorca crassidens	False killer whale	0	0	3	11
Stenella attenuata	Pantropical spotted dolphin	1	7	5	19
Tursiops truncatus	Bottlenose dolphin	0	0	2	8
Total		7	7	10	38

Acoustic Squeakly Report *(Eric Archer with assistance from Suzanne Yin and Sophie Webb)*

The acoustic array has functioned as advertised this week, being deployed on all passing mode days. Our real acousticians back at the lab have thankfully set up a simple (seemingly fool-proof) system for recording in their absence and we're glad to be able to collect more data for them to work with.

Seabird Report *(Michael Force and Sophie Webb)*

Our theme this week was high diversity and low abundance. A week of laggards, lost waifs and displaced migrants boosted our weekly species total to 31, well above average and our highest ever this cruise. Even though our 300 metre strip transect appeared to be practically empty thanks to the departure of Juan Fernandez Petrels and Wedge-tailed Shearwaters, our days were diverse: we recorded our highest daily average since leaving San Diego - 16 species - —and two days this week we saw 18 species, one less than the record. Those who live in higher northern latitudes have grown accustomed to the seasonal cycle as summer fades into fall and with it the diminishing hours of daylight and dropping temperatures coinciding with the departure of a diverse breeding avifauna. The net result is the low diversity and abundance of winter. Here in our study area the opposite appears to be true, at least for fall. Lost migrants accounted for about 25% of the total seen this week. This group included four species of swallows (Barn, Northern Rough-winged, Violet-green and Purple Martin), a tailless Palm Warbler, Sanderling and Peregrine Falcon. Cattle Egrets were seen every day, with flocks up to 50. New this week were Least Tern, Magnificent Frigatebird and, perhaps related to "fall migration", Sooty Terns and Sooty and Christmas Shearwaters were seen with increasing frequency.

Cattle Egrets were seen everyday. Photo: S. Webb.

Oceanographic Operations *(Candice Hall and Ryan Driscoll with assistance from Siri Hakala and Heather Judkins)*

Oceanography ends its first week of the final leg smoothly with seasoned veterans at the helm and two enthusiastic new visiting scientists. Siri has been documenting our procedures for the NOAA website and Heather has been challenging her high school class back home with questions about oceanography. Her class even took up the charge and helped us to identify a larval Spiny Lobster.

Ocean surface temperature's averaged a comfortable 28.65°C with salinity averaging 33.77 psu over the first diamond. Even the plankton were out enjoying the weather: Friday and Saturday's tows captured some of the largest volumes of the cruise.

Vertical visibility is such here at the moment that we were able to watch the CTD descend past 24m depth over the last few casts. That is almost as deep as sports scuba diving allows and we were sorely tempted to test that depth visibility physically. To summarize, its leg four and all is well, both organic and non-organic.

Date	CTD	XBT	Surface Chlorophylls	Bongo tow	Manta tow
110407	Transit to study area				
110507*	2	4	4	1	1
110607**	2	5	4	1	1
110707*	3	4	4	1	1

Date	CTD	XBT	Surface Chlorophylls	Bongo tow	Manta tow
110807	2	4	4	1	1
110907*	2	4	4	1	1
111007	2	4	4	1	1
Total	13	25	24	6	6

* Second cod end fixed in Ethanol for M. Ohman, Scripps Institute of Oceanography.
** Comparison XBTs

Dipnet Report *(Juan Carlos Salinas, Ernesto Vázquez, Adam Ü, Ryan Driscoll, Sophie Webb, Heather Judkins)*

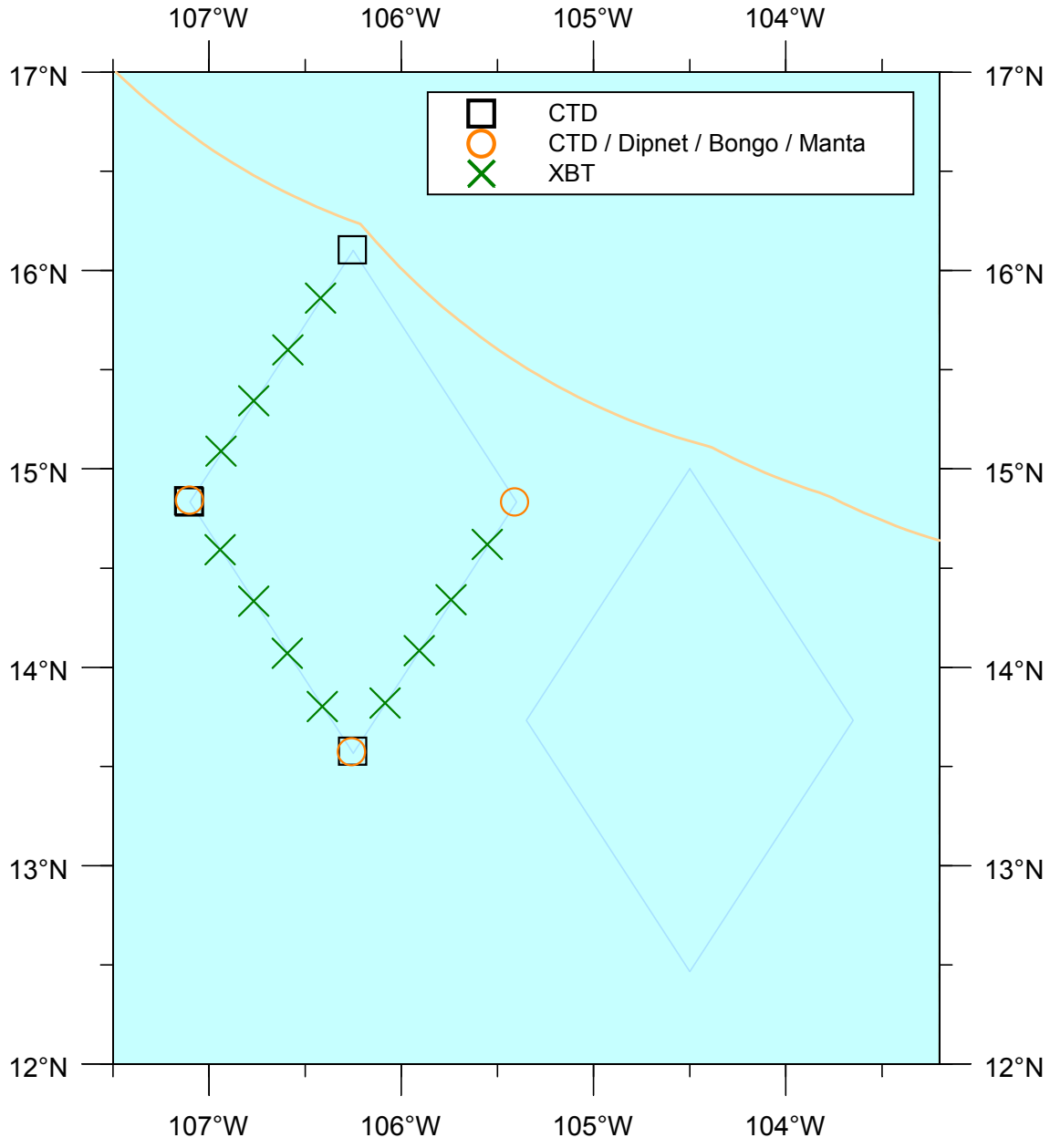
This week we began the last leg of STAR-LITE with two new additions to the dipnet team: Heather Judkins the teacher-at-sea and Sophie Webb, our professional seabird watcher (don't worry Jim we have the fishing lines and grappling hooks ready, just in case); thanks in advance for your enthusiastic help.

Dipnetting this week was very successful due to stable weather, dark nights, and abundant flyingfish on three out of six stations. This past week we preserved more stomach samples than the total on leg I and III. On the most abundant stations, the species diversity was quite remarkable: one night the four-winged flyingfish (*Cheilopogon, Hirundichthys, Prognichthys*) was predominant, the next night the two-winged flyingfish (*Exocoetus* sp.) dominated, and the following night, it was the short-winged flyingfish (*Oxyporhamphus*). In two consecutive stations we collected one species of four-winged flyingfish (*Cypselurus callopterus*) with a normally coastal (epipelagic) distribution. Other animals collected were; Lantern fish (Myctophidae), juvenile mahi mahi (Coryphaenidae) juvenile purple back squids (*Sthenoteuthis*) and juvenile tuna (Scombridae).

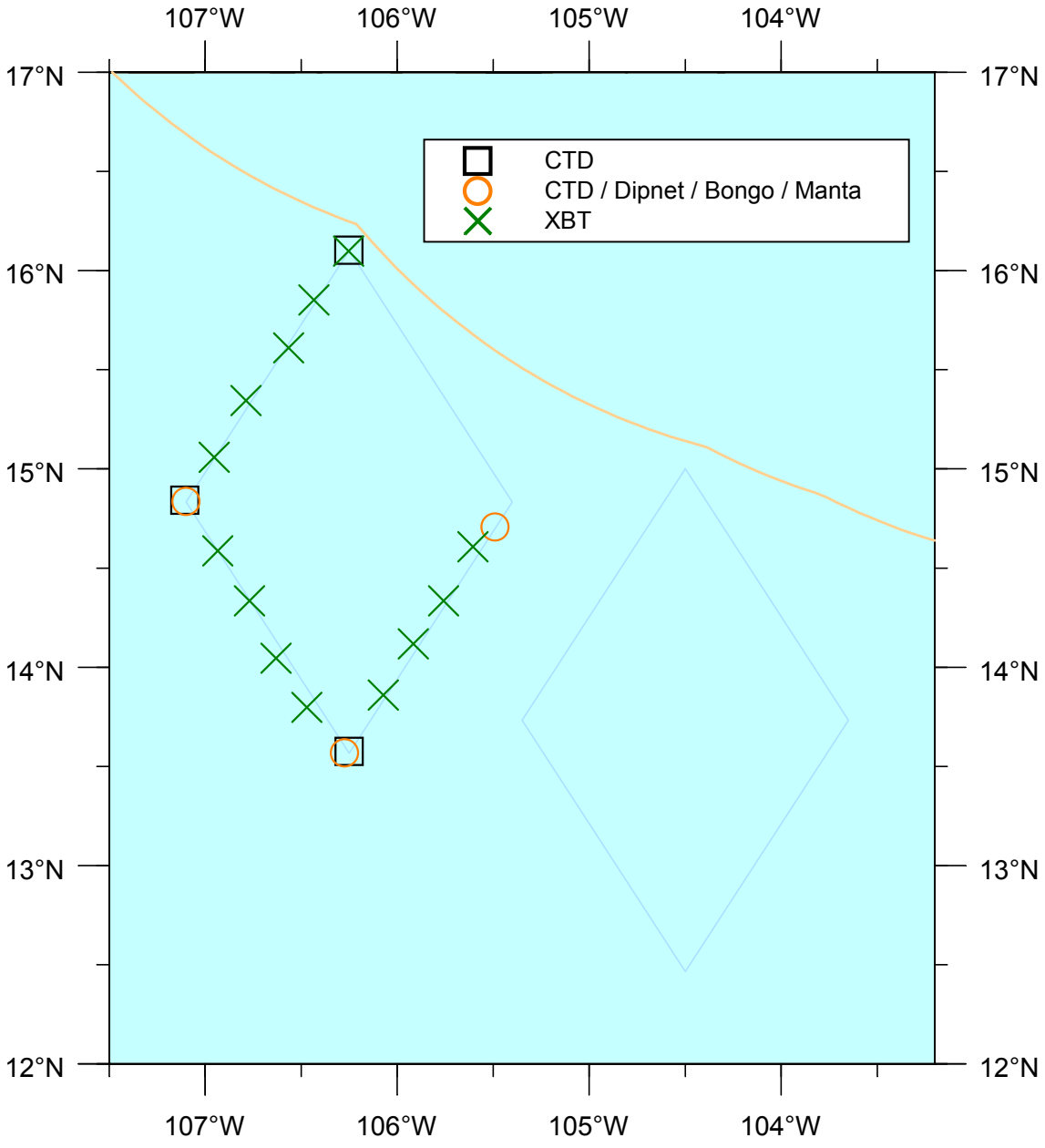
Fish collected	Weekly total	Grand total
Two-winged flyingfish (*Exocoetus* sp.)	42	262
Four-winged flyingfish (*Cheilopogon, Hirundichthys, Prognichthys*)	20	156
Short-winged flyingfish (*Oxyporhamphus*)	27	121
Lantern fish (Myctophidae)	2	10
Unidentified fish	4	8
Total	**95**	**557**

Stomach samples collected	Weekly total	Grand total
Two-winged flyingfish (*Exocoetus* sp.)	41	283
Four-winged flyingfish (*Cheilopogon, Hirundichthys, Prognichthys*)	18	102
Short-winged flyingfish (*Oxyporhamphus*)	16	29
Total	75	**414**

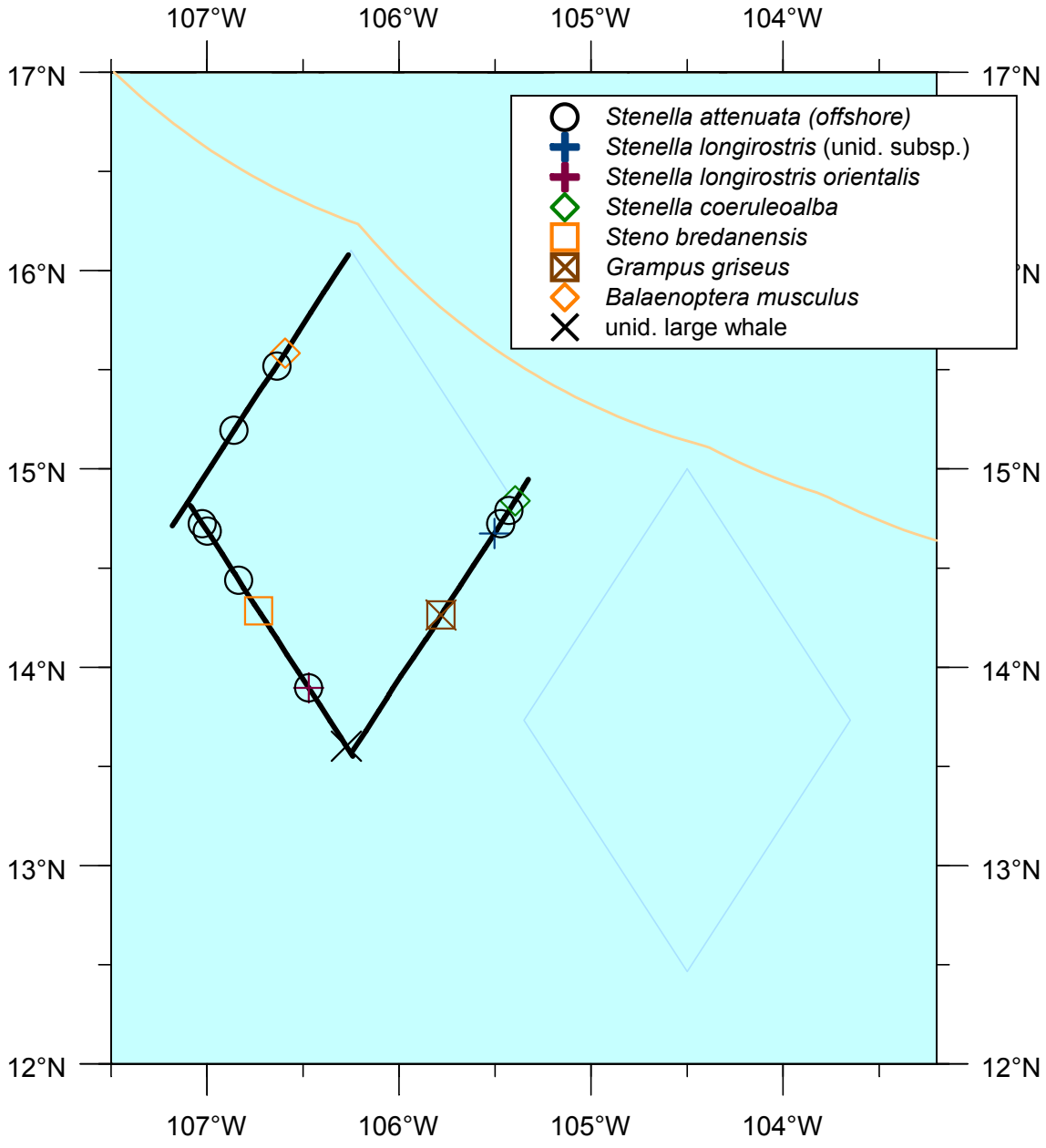
Sampling Effort: Passing Mode



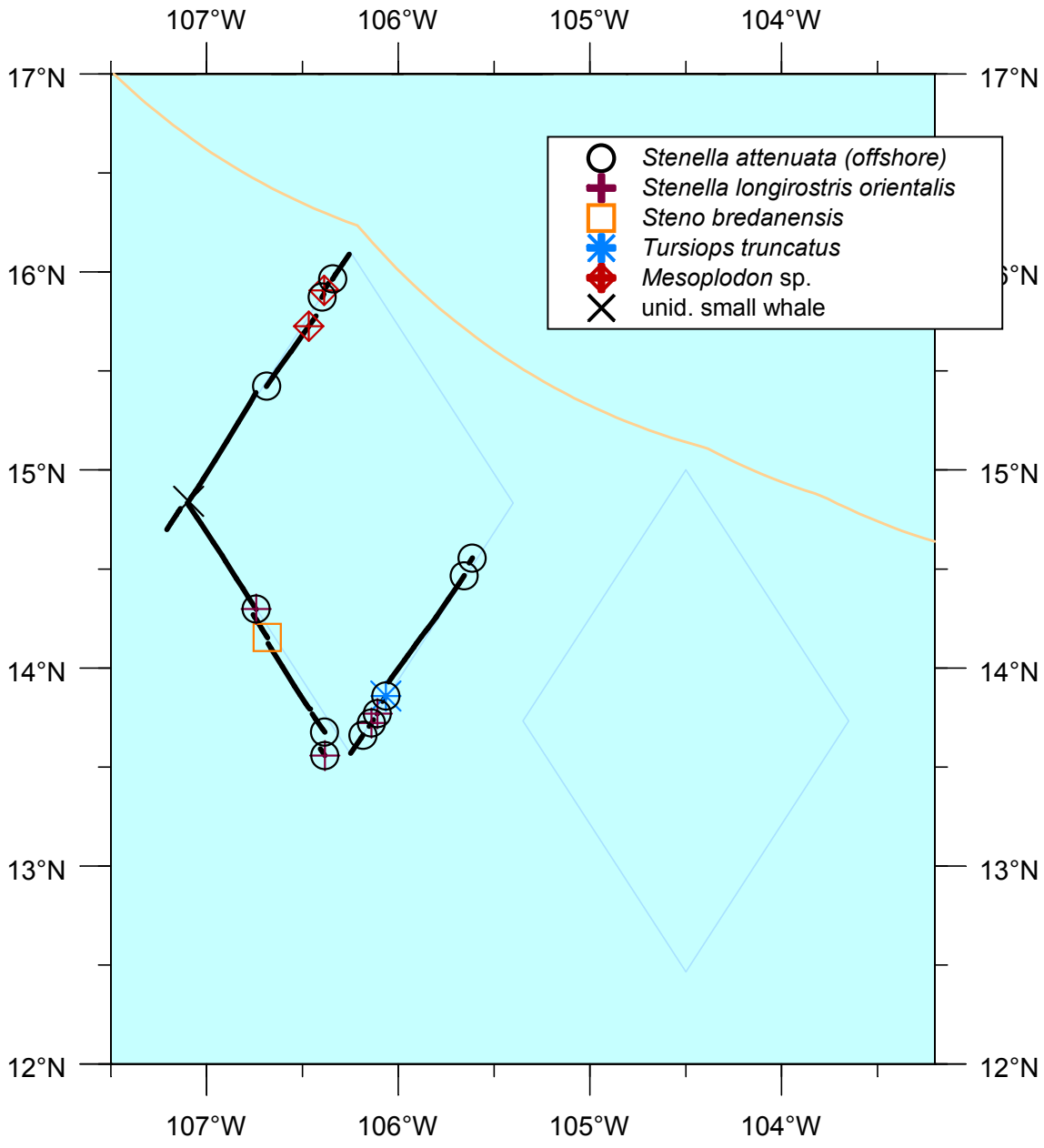
Sampling Effort: Closing Mode



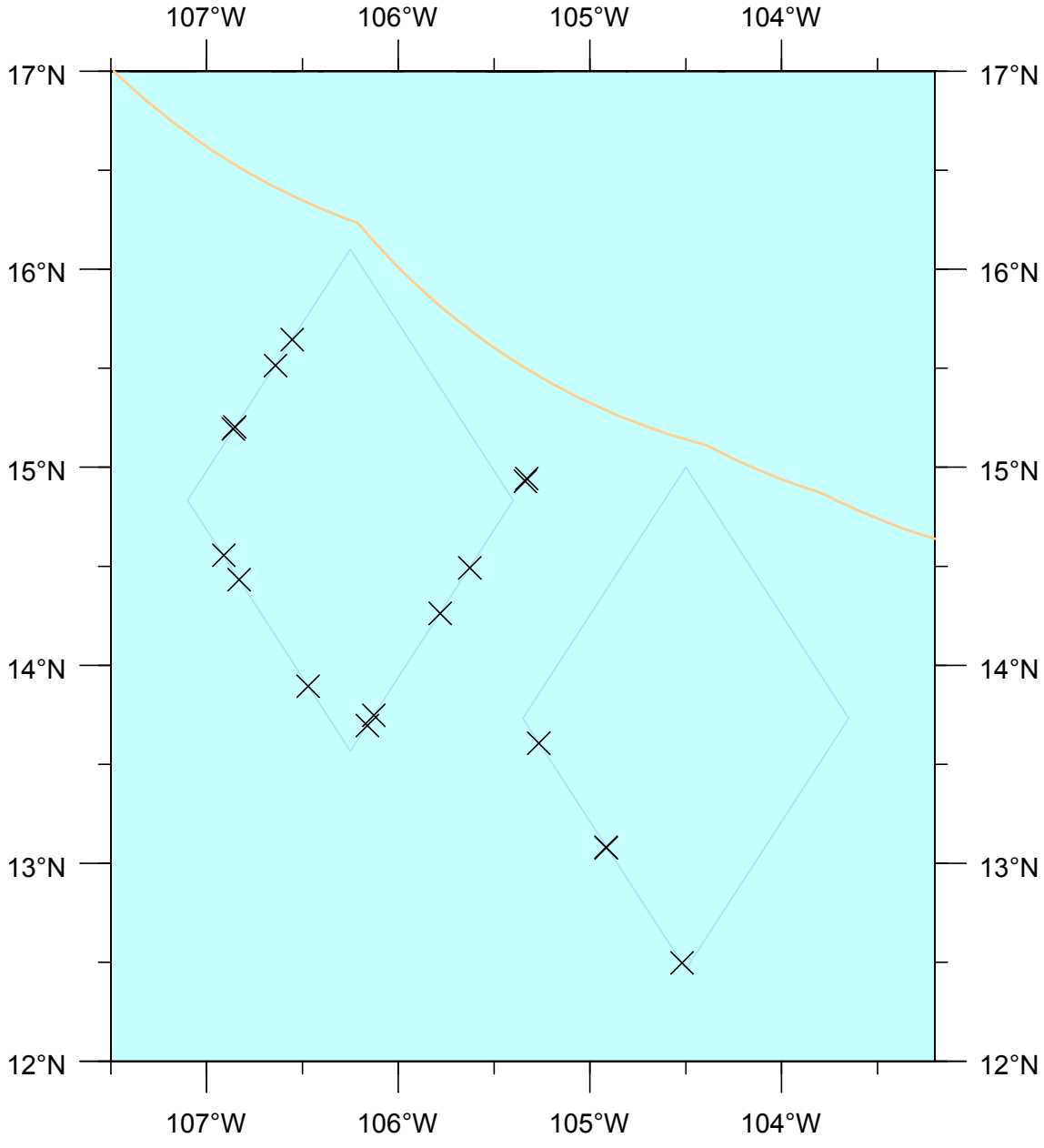
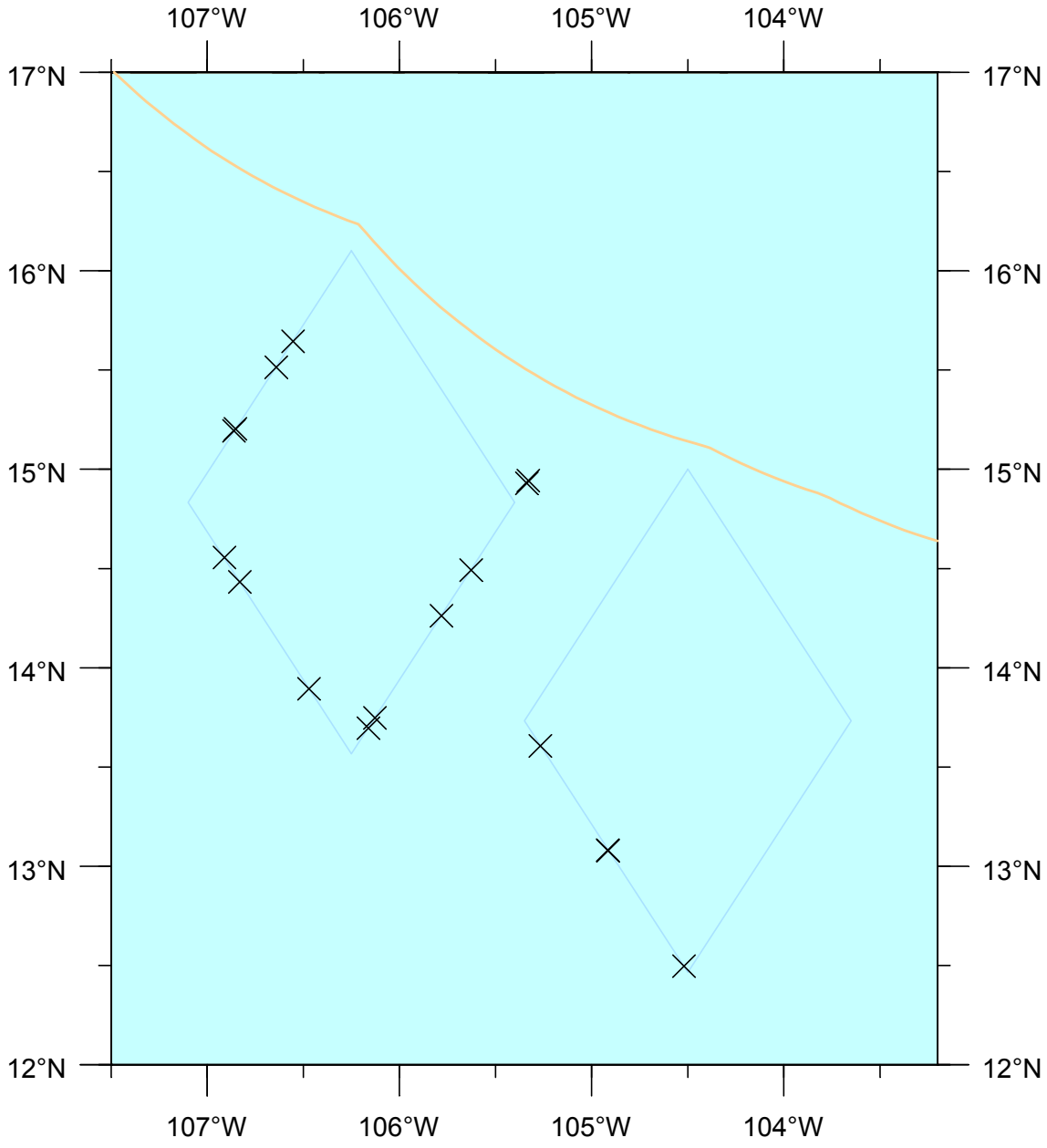
Cetacean Sightings: Passing Mode



Cetacean Sightings: Closing Mode



Seabird Flocks: Passing Mode



Seabird Flocks: Passing Mode