

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

Tim Gerrodette, Cruise Leader
16 September 2007

Science Summary: 9-15 September 2007

On the final 4 days of Leg 1 our good weather continued, and we were able to complete two pairs of passing/closing transects. The comparison of these two methods of conducting visual surveys for cetaceans is one of the primary objectives of the cruise. The variability in cetacean sightings, even in a small area like this, is high, but it is against this background that we are trying to discern differences between the two methods of surveying. One of the early indications, not unexpected, is that the number of sightings on passing mode days is higher than on closing mode days. The plots of cetacean sightings at the end of this report show this clearly. One of the obvious reasons for this difference is that on closing mode surveys, a certain percentage of the time we are “off-effort” while we are closing on a sighting, and not actively searching. But there may be other, more subtle factors that cause differences also.

Highlights for this week include the deployment of another ARGO buoy. We launched the small boat to get some pictures of the buoy and the *McArthur* together, and we were fortunate to have a beautiful rainbow appear just in time. Great photo ops thanks to our photographer Adam Ü. Visiting scientist Eric Lewallen took advantage of his final opportunities for full nights of marathon dipnetting for flyingfish. Last but not least, acoustician Shannon Rankin is the champion of the Leg 1 Cribbage Tournament. Congratulations to Shannon!

After the morning CTD on Sep 13, we ended scientific operations for leg 1 and headed for port. We arrived at Manzanillo, Mexico on the afternoon of Friday, Sep 14 for 3 days of R & R.



Argo buoy at the end of the rainbow. Photo: Adam Ü.

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

Date	Start/ Stop Time	Position	Total nm	Average Beaufort	Mode of Operations
090907	0909	N12:27.71 W104:29.34	87.6	2.6	Passing
	1939	N13:40.47 W105:21.21			
091007	1041	N12:34.72 W104:34.51	44.5	2.4	Closing
	1952	N13:33.81 W105:14.05			
091107	0929	N13:44.15 W105:20.90	90.7	2.5	passing
	1902	N15:03.84 W104:27.73			
091207	0850	N13:44.02 W105:21.95	75.1	3.6	closing
	1904	N15:02.14 W104:33.61			
091307	In transit				
091407	Arrived Manzanillo				
091507	In Port				

Code	Species	Number of Sightings
002	<i>Stenella attenuata</i> (offshore)	19
003	<i>Stenella longirostris</i> (unid. subsp.)	1
010	<i>Stenella longirostris orientalis</i>	5
013	<i>Stenella coeruleoalba</i>	5
015	<i>Steno bredanensis</i>	9
018	<i>Tursiops truncatus</i>	3
033	<i>Pseudorca crassidens</i>	1
048	<i>Kogia sima</i>	4
049	Ziphiid whale	1
051	<i>Mesoplodon</i> sp.	4
061	<i>Ziphius cavirostris</i>	2
077	Unid. dolphin	6
078	Unid. small whale	2
177	Unid. small delphinid	20
277	Unid. medium delphinid	2
Total		84

Photography (Adam Ü)

Our first in-port cut a few days off of our week of effort, but we were still able to add four more spotted dolphin sightings as well as the first images of *Tursiops* and *Pseudorca* to our photographic catalog. A handful of laser dot photographs of both spotted and *Tursiops* were collected as well.

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

Species	Common Name	Weekly		Total	
		Samples	Takes	Samples	Takes
<i>Pseudorca crassidens</i>	False killer whale	1	4	1	4
<i>Stenella attenuata</i>	Pantropical spotted dolphin	2	10	2	10
<i>Tursiops truncatus</i>	Bottlenose dolphin	1	7	1	7
Total		4	21	4	21

Squeakly Report (Shannon Rankin, Jay Barlow)

Our initial intentions for this cruise were to tow an extra-long hydrophone array, with two hydrophone nodes (each ‘node’ having 3 hydrophones), separated by 1000m of cable. We had hoped that this would allow us to find instantaneous locations of vocalizing animals. Unfortunately, the extra tension of the 1000m was too much for the cable and winch, and last week we were working with only the ‘tail’ out 300m. This week we spliced out 500m of the 1000, and this made all the difference in the world. We now have a full-functioning array, and we are finally testing out our instant localization. So far, so good.

Overall, the acoustics team had two full days of effort this week, on both passing-mode days. We had 18 detections on 09 September, of which 8 were detected by the visual team. The second passing-mode day was much busier, with 25 acoustic detections (15 also detected by the visual team).

Seabirds (Michael Force Sophie Webb)

It was another busy week for the seabird team, counting Juan Fernandez Petrels and Wedge-tailed Shearwaters swarming over schools of Spotted and Spinner Dolphins. Practically every school, no matter how small, had an attendant flock of seabirds, presumably taking advantage of subsurface prey made available to them by the dolphins. Over 90% of the total seabirds counted this week were Juans and Wedgies, much as it was last week. And, come to think of it, the week before that. Not surprisingly, almost every flock was essentially Juans and Wedgies, with a scattering of boobies, Pink-footed Shearwater, and the occasional Leach’s Storm-Petrel, Tahiti Petrel, and Arctic Tern. As we continue to survey this area over the next couple of months, it will be interesting to record any changes in diversity and abundance as the majority of the Juan Fernandez Petrels soon will be heading south to their nesting islands off Chile. Wedge-tailed Shearwaters, being tropical nesters, breed throughout the year, so we eagerly await what changes will occur, if any, among this widespread tropical seabird. Dark morph Wedgies continue to outnumber light morph by a huge margin. Reflecting the uniformity of species diversity in the study area are the number of species seen this week as well as the daily average remaining essentially comparable to last week, both up by one, to 25 and 14, respectively.

Oceanography (Candace Hall, Ryan Driscoll, Eric Lewallen)

The oceanography team has not rested on its laurels from last week’s excitement. In order to capture the event on camera, we successfully deployed our third Argo float from the small boat. Adam captured some amazing photos of the send off for the Argo website, which will be celebrating its 3000th deployment soon. Stay tuned, it may just be ours! Thanks goes out to the crew for accommodating our early morning photo shoot.

Meanwhile, we completed 11 CTD casts and 16 XBT/surface chlorophyll samples, continuing to gather information on the physical properties of the study area. Sea surface temperatures this week

averaged 28.72 °C and salinity averaged 33.73 psu.

Four Bongo and Manta tows completed this week’s oceanography schedule. The trial voluming has been successful this leg with little trouble heard from the plankton. No samples were looked at this week while the team recovered from last week’s Yo-Yo’s and assisted Eric and his marathon dipnet sessions. Thanks to everyone for a very successful oceanographic first leg. Eric, thank you for all of your help this cruise, best of luck with your PhD programme. Tim, thank you for all of your support as we’ve played around with our operational schedule. We will miss you out here. Here’s to a relaxing import and super-charged leg 2.

Day	CTD	XBT	Surface chlorophylls	Bongo Tows	Manta Tows	Other
Monday, 10th	2	4	4	1	1	
Tuesday, 11th	2	4	4	1	1	
Wednesday, 12th	2	4	4	1	1	
Thursday, 13th	1	0	0	0	0	Start Transit
Total: Leg 1	42.5	63	65	15	15	

Dipnetting (Eric Lewallen, Jim Cotton, Juan Carlos Salinas, Ernesto Vázquez, Adam Ü, Ryan Driscoll, Candy Hall)



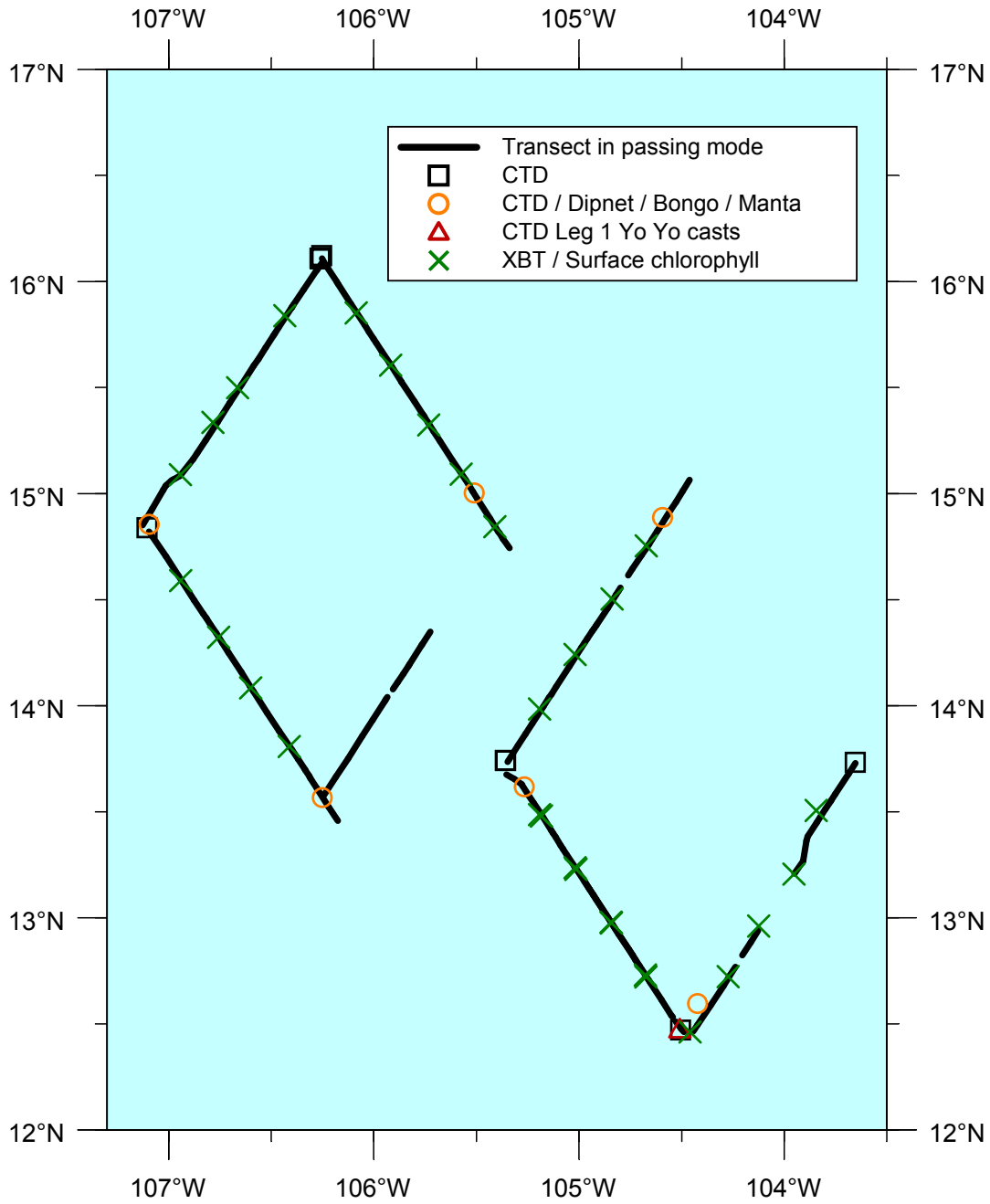
Four-winged flyingfish over calm seas. Photo: Eric Lewallen.

Flyingfish stomach content analyses were the focus of dipnetting efforts this week. Our second and third overnight dipnetting efforts were conducted to continue testing for temporal variability in feeding behavior among different species. In total on leg 1 of this cruise, we collected 73 flyingfish stomachs for later analysis of prey composition and abundance. Species diversity for flyingfish stomach removals has been considerably high including species of the following genera: *Exocoetus*, *Hirundichthys*, *Cheilopogon*, *Cypselurus* and *Prognichthys*). Individuals of various genera have been caught regularly throughout the course of the overnight sessions. However, there appears to be variability in the amount and condition of digested material in stomachs

depending on species and time of night. Juvenile flyingfish stomachs were not analyzed.

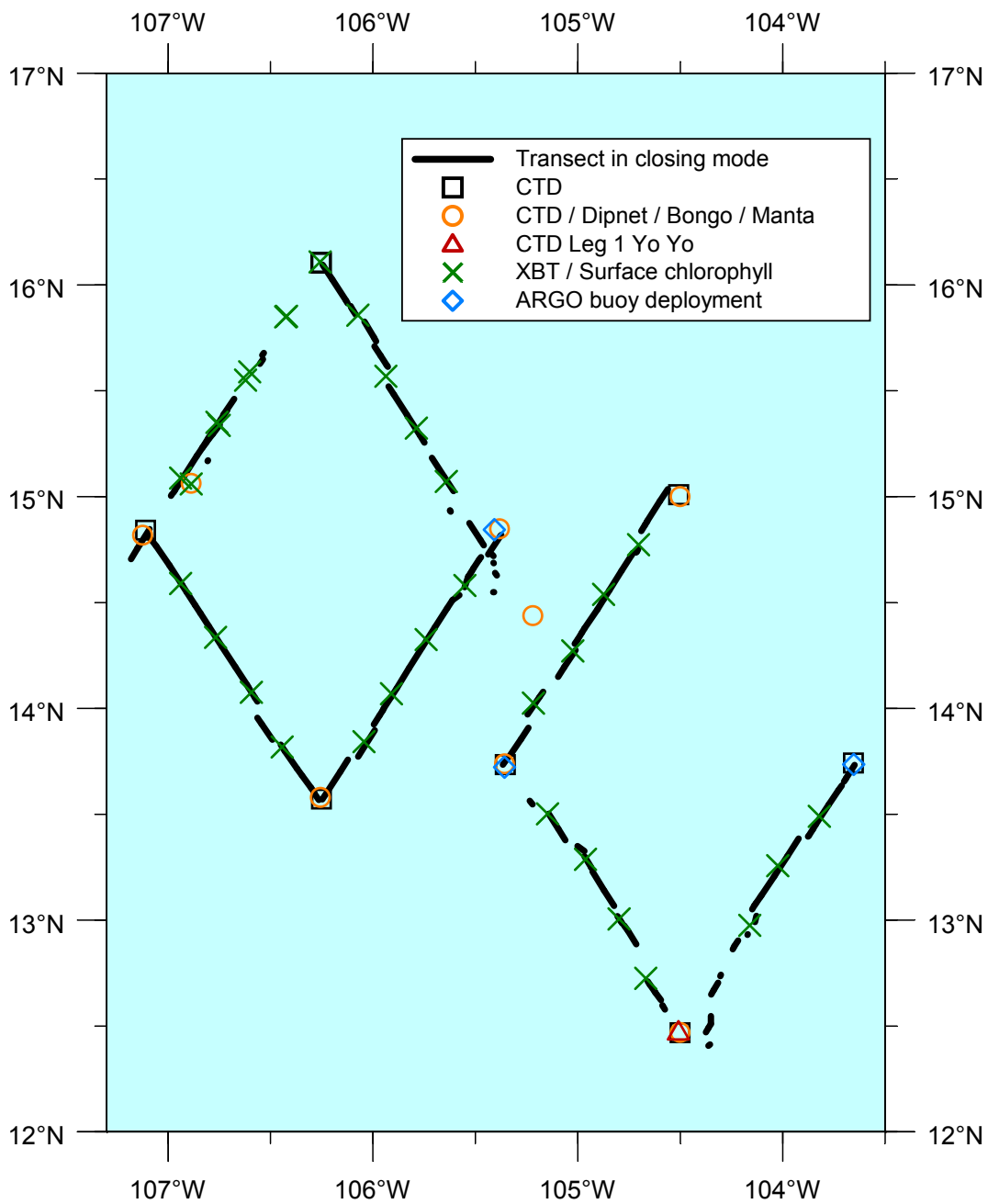
Several notable pelagic fish species were encountered during dipnetting efforts this week. For example, a small school of four triplespines (Tetraodontiformes: Triacanthodidae), three large dolphinfish (Coryphaenidae) (two female and one male (~1m TL)), were also observed circling the ship. One medium sized (~3m) Carcharhinid shark and a school of 20-25 stingrays passed near the ship but could not be identified due to their depth. Also present were lanternfishes (Myctophidae and Neoscopelidae), snake mackerels (*Gempylus serpens*), bullet tunas (*Auxis rochei eudorax*), puffer fish (Tetraodontiformes: Tetraodontidae) and porcupine fish (Tetraodontiformes: Diodontidae).

SAMPLING EFFORT



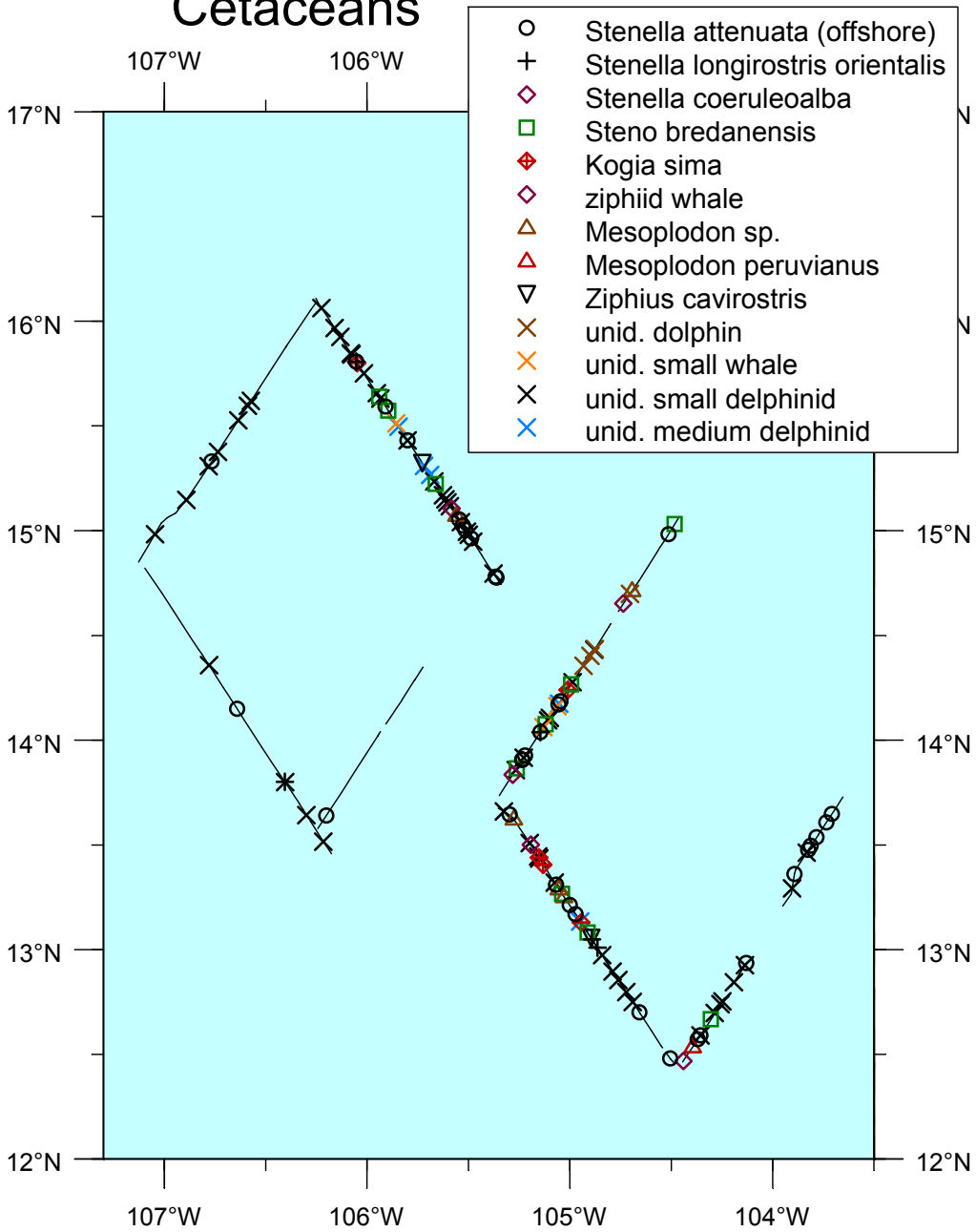
Transect effort and oceanography on passing mode days.

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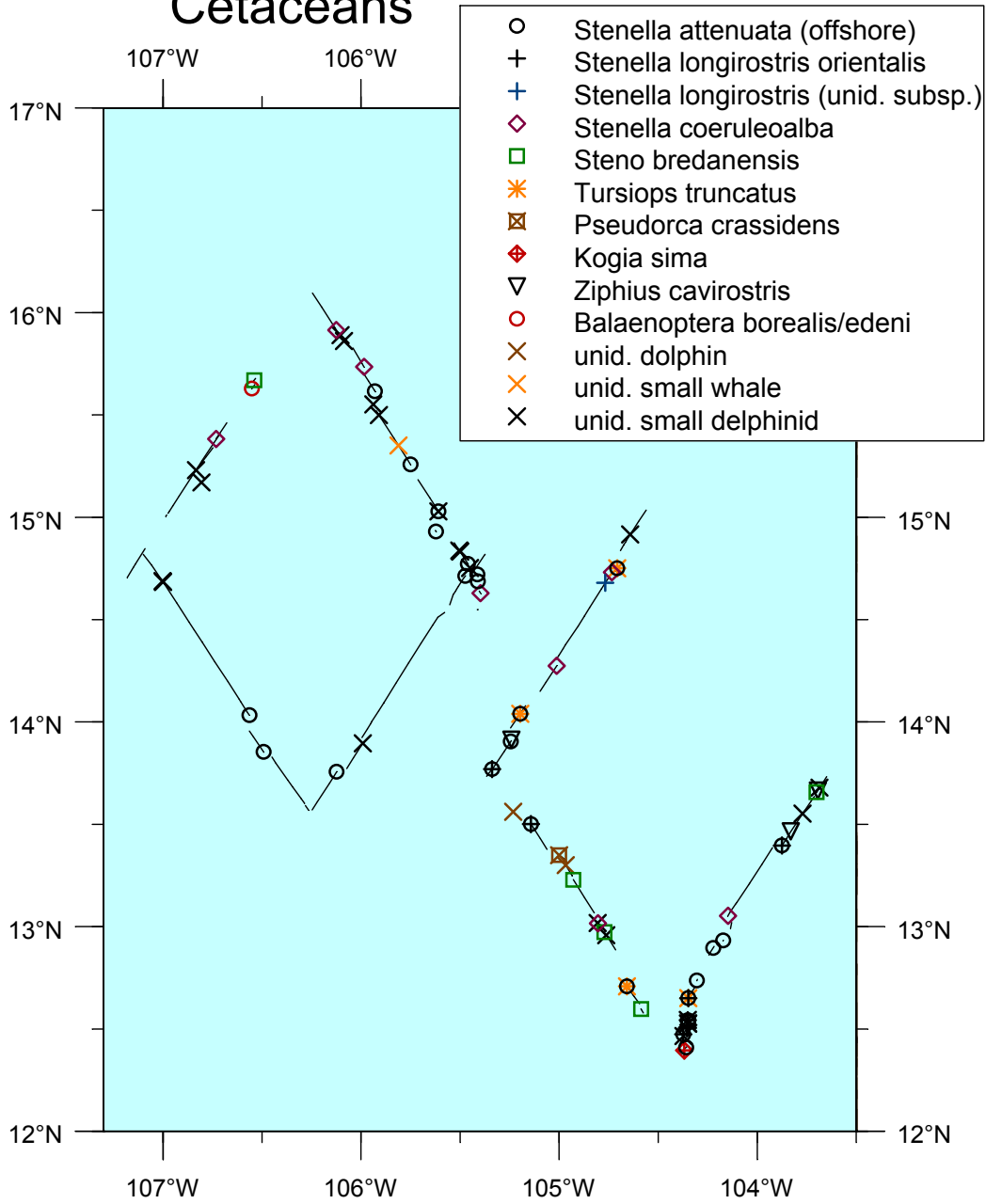
Transect effort and oceanography on closing mode days.

Cetaceans



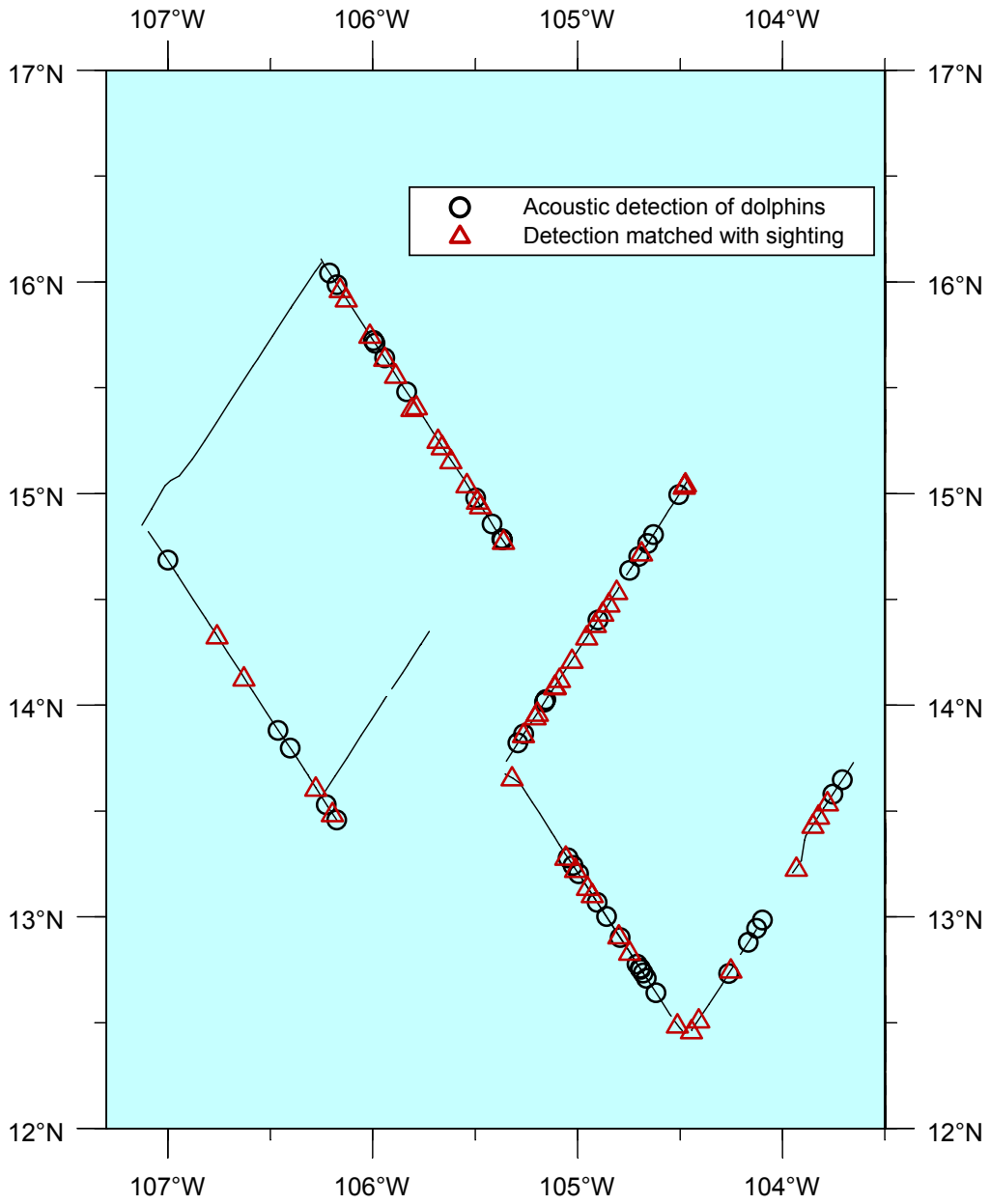
Cetacean sightings on passing mode days.

Cetaceans



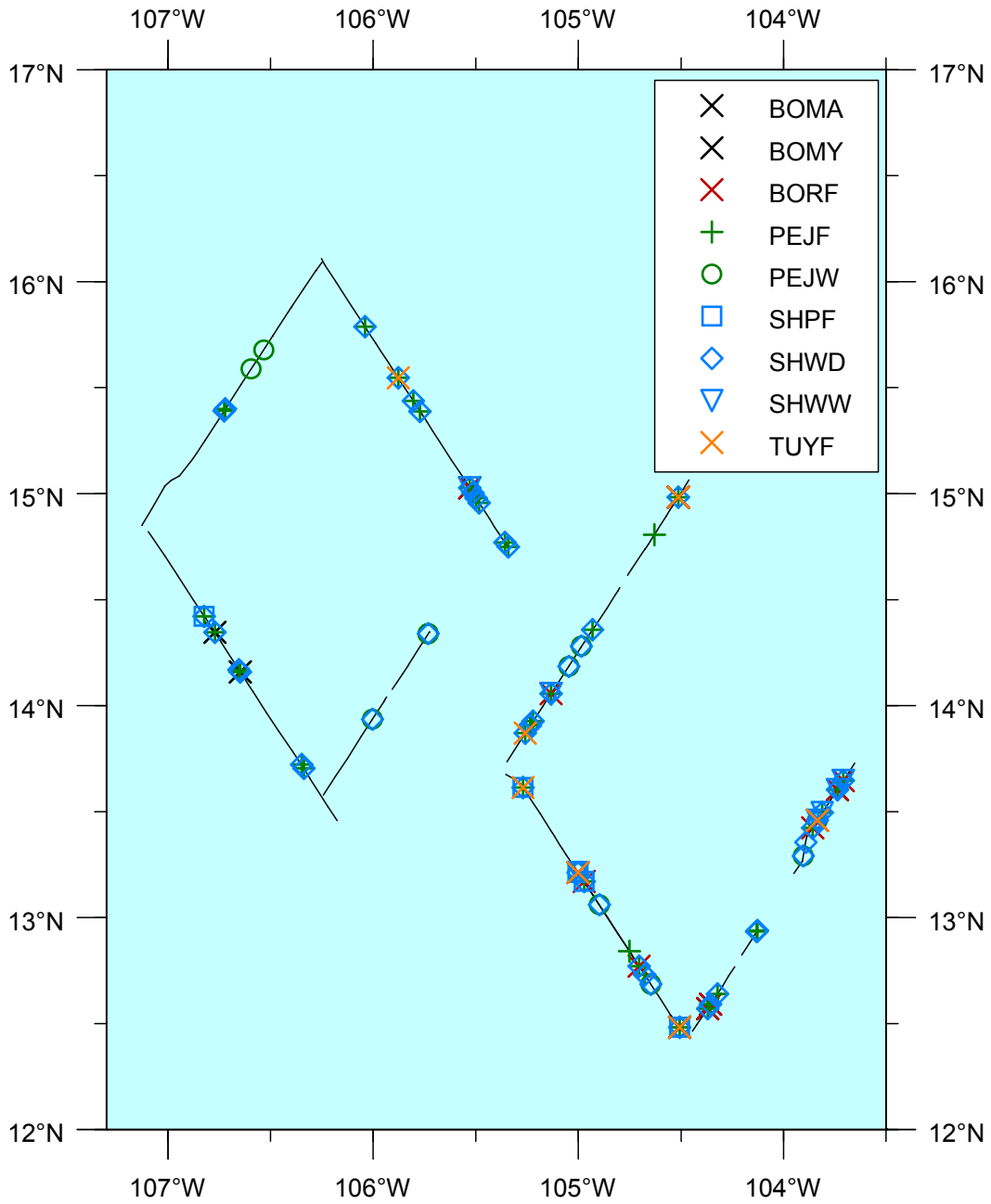
Cetacean sightings on closing mode days.

ACOUSTICS



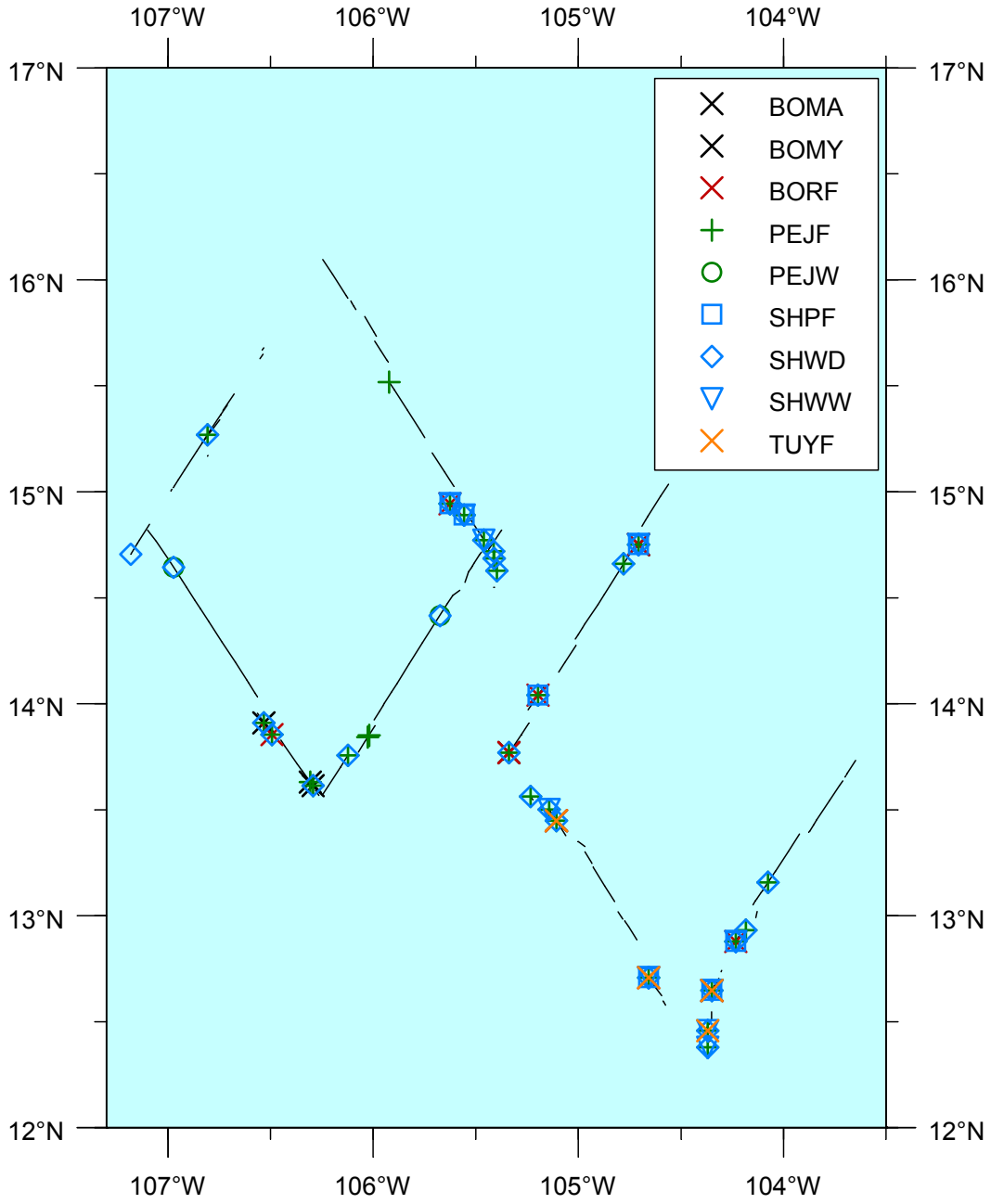
Acoustic detections on passing mode days.

SEABIRD FLOCKS



Seabird sightings on passing mode days.

SEABIRD FLOCKS



Seabird sightings on closing mode days.