

# Weekly Summary of Humpback whale and Odontocete species survey along the Osa Peninsula, Costa Rica

Oceanic Society Research Expeditions and Cascadia Research

Dates: 19-25 January 2009

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## OPERATIONS

Participants of the Humpback whale Oceanic Society Expedition assisted in daily surveys for humpback whales and odontocete species out of Drake Bay on the northern end of the Osa Peninsula, Costa Rica (Table 1). Single boat surveys were conducted on three survey days, while two launches were used for broader coverage on the remaining two days. Opportunistic survey effort was conducted near the coast on the Corcovado Park tour day. Survey effort was designed to take advantage of calm seas in the morning, and allow for early afternoon return to the Drake Bay Resort for time to rest and enjoy the surrounding jungle. However, some days were a \*little\* longer than others due to marine mammal encounters.

While out on the boats Oceanic Society participants assisted with all parts of the research effort. Research duties included scanning for whales, dolphins, turtles and bird flocks, identify and make group size estimates of species encountered, recording data, and using hydrophones to detect and record whale song. OS participants also compared images of the fluke photographs obtained in the field to the existing Central America humpback identification catalog.

All proposed survey area was covered with effort concentrated along the coast near Drakes Bay and in the core area (between Drakes Bay and Isla Cano). Surveys farther north, south and offshore of the core area were conducted towards Quepos, Golfo Dulce and offshore of Isla Cano on different days (Figure 1).

Three different vessels were used for these surveys, *Sea Rod*, *Paraiso II*, and *Dyanne*. All vessels were in good working order, and quite comfortable despite a few rougher sea conditions on a few afternoons. We had three different boat drivers, with Jose GaGuardi as primary driver throughout our time at Drakes Bay. All drivers were conscious of their passengers, and the drivers with less experience made use of the opportunity to practice driving around marine mammals safely while out with our group. One reminder for next year, would be to always make sure that the swim ladder (for exiting the water when swimming off the boats) is the ladder with four rungs, the two rung ladder was a challenge for even the most agile among us.

All equipment worked fairly well, although we only had a recording device for one vessel, which meant that we were not able to record a sample of humpback song from each encounter. In future we should make sure that there is a recorder available for both boats if two

boats will be in use. The handheld radios for communication between boats never worked very well, however, the boat that was to travel farther each day was able to use an externally powered marine radio with a fixed antenna, which was capable of hailing the Drakes Bay Wilderness Resort if not the other boat. In future we should make sure that the radios onboard both boats are capable of calling the Resort and communicating with each other.

Presentations were given every night after dinner, with one evening saved for evaluations and another for practicing matching humpback flukes obtained over the project to the existing Central America catalog. The presentations were designed to provide background on marine mammal evolution and classification, outline current research projects being conducted in Costa Rica, as well as discuss the current status of humpback whales in the north Pacific.

## **RESEARCH**

### Humpback whales

Over the six days of survey effort including a few days of two vessel effort there was a total of 1,065.96 km covered over 54.10 hours. Over this time there were six encounters of seven humpback whales (table 1)(Figure 2). The encounter rate for this week of effort was 0.13 whales/per hour, however there were likely more animals in the area, since we heard a few whales using the hydrophone, but never found them. We obtained four fluke photographs of adult humpback whales and a single partial fluke of a calf, the adults were compared to the Central America humpback fluke catalog. None of the whales were found in the catalog, and will have to be compared to the catalog of north Pacific humpback whales later in the season. This finding is slightly unusual, since generally our resightings of humpback whales in Central America is fairly high. We observed all behaviors that indicate that this area of Central America continues to be an active breeding and calving grounds. We encountered a cow calf pair that traveled close to the coast, and we heard reports of a likely different cow calf pair near Isla Cano. Some of the behaviors exhibited by adults fast swimming (racing) indicating competitive behavior, animals in lead/follow roles and milling together exhibiting highly social behavior, and we heard singing on a few occasions.

### False killer whales

On our last survey day we encountered a group of false killer whales traveling south at high speed (Figure 3). The animals were scattered into little cluster while traveling, and came together a few times when one or more of the animals caught a fish. As they animals traveled south they angled towards the coast, and at one point came together so that we had nine animals at one time socializing or feeding very close to the boat. Once the animals had surfaced again, we were able to get a few photographs of a rooster fish in one of the whales' mouth. After the whales had milled about together and the fish had been shared with at least one additional animal, all animals changed direction and fast traveled back north. We estimated that there were 35 animals in the group, and we think that we got good identification photographs of about 20 animals. Over the coming months we will try to track down historical id photos of false killer whales from this area and compare them to the photos that we collected on our trip.

Oceanic Society and Cascadia Research encountered a small group of false killer whales off Drakes Bay January 2008, and they have been recorded on earlier surveys in 1996, 1998, 2000

and 2003. During the 1998 encounter one of the whales was observed sharing a red rockfish with a nearby animal from the group (Rasmussen et al. 2004).

False killer whales are typically found in the tropical to subtropical oceans and are generally observed in offshore waters, however they are observed frequently along the coast of Costa Rica. Interactions with tour boats are not uncommon and individual animals with distinct dorsal fins have been recorded returning to this area again and again. Despite the fact that they are sighted fairly regularly little study has focused on this group of animals. In other parts of the world, this species has been shown to interact with fisheries and there is a current concern that the fisheries around the Hawaiian Islands compounded with fairly high toxin loads and slow reproductive rate may be partly responsible for elevated mortality for this species over the last 20 years (Reeves et al. 2009).

#### Other species

Spotted dolphins were encountered throughout the study area; in all we encountered 20 groups with an estimated 142 animals. Bottlenose dolphins were encountered on four occasions and we estimated 17 animals. Although we did not encounter killer whales on this trip, there were reports of them being in the area, of Isla Cano as well as offshore where the offshore fishing boats work. For non marine mammals there were more turtles observed this year compared to last year, and on two days we encountered a high density of Olive Ridley turtles in a line offshore of Isla Cano. A few of the other non-marine mammal sightings that were of note was a single sea horse found associated with plastic offshore, as well as daily sightings of leaping bill fish. One species that we did not encounter this year was the yellow bellied sea snake.

#### Summary of two weeks survey work out of Drakes Bay, Costa Rica

We are thankful to the participants of both weeks working out of Drakes Bay with Oceanic Society, Elderhostel and Cascadia Research. Over that time period we covered 2107 km of trackline (Figure 4) and had eleven humpback whale encounters. Humpback whales were observed in all the areas that they have been encountered in past years (Figure 5). Cows and calves tended to be encountered closer to the coast and islands, except when they had male escorts. Whale song was recorded in Golfo Dulce as well as along the Osa Peninsula and between Drakes Bay and Isla Cano. All false killer whale encounters were near the coast, and seem to coincide with high density of bill fish and turtles (Figure 6). The photographs of both species will help document individual animal's migration movements and reproductive rates as well as help assess injuries that could be caused by fishery interactions or tourism.

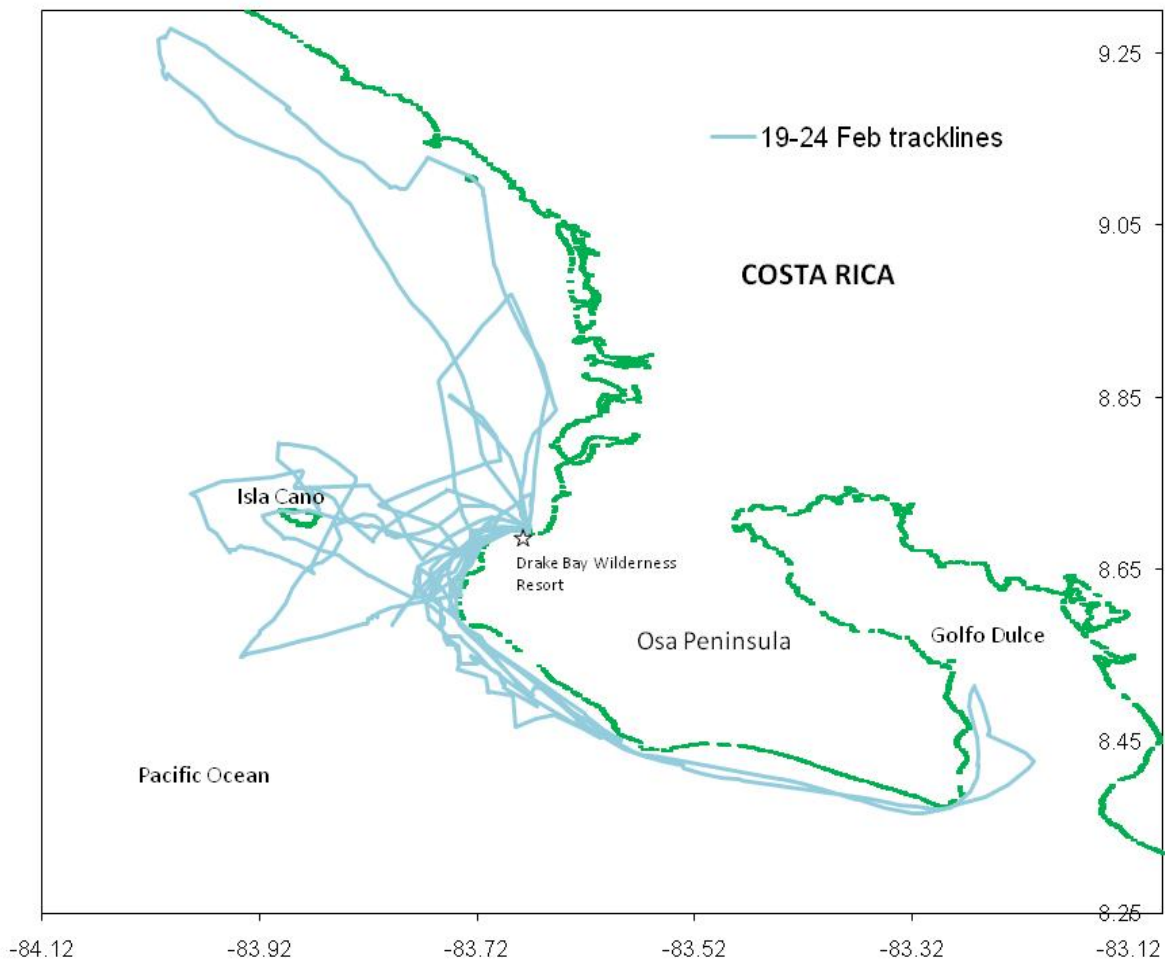
**Group leaders:** Frank Garita and Annie Douglas

**Elder hostel participants:** Lara Borgerson, Al Hermann, Joanna Hollis, Heidi Irvin and Ruth Merchant

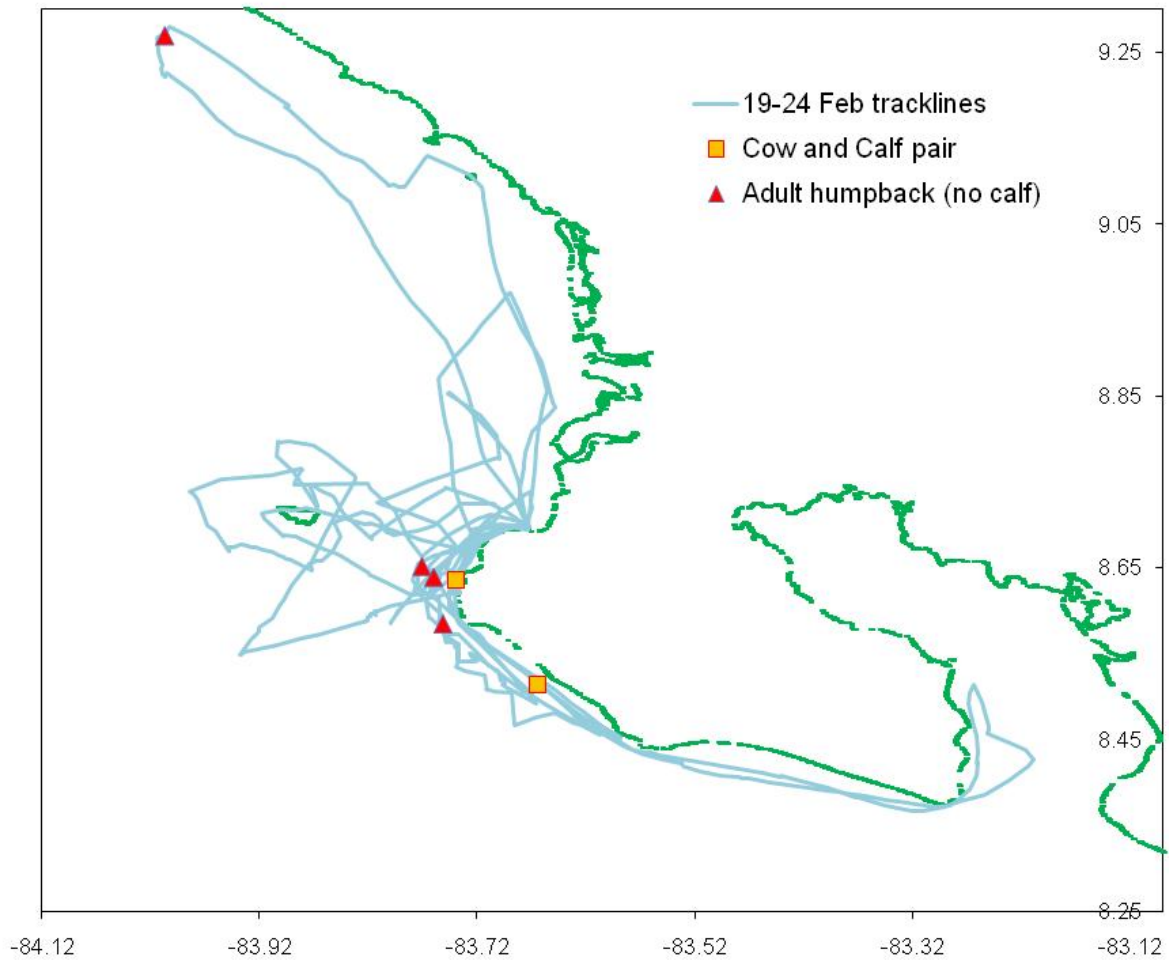
**Primary Boat drivers:** Jose GaGuardi (Chino/Jose), Arnolito Samudio Quintero, Freddy & William

Table 1. Summary of vessel effort for cetaceans out of Drakes Bay, Costa Rica. 19-25 January 2009. Oceanic Society and Cascadia Research.

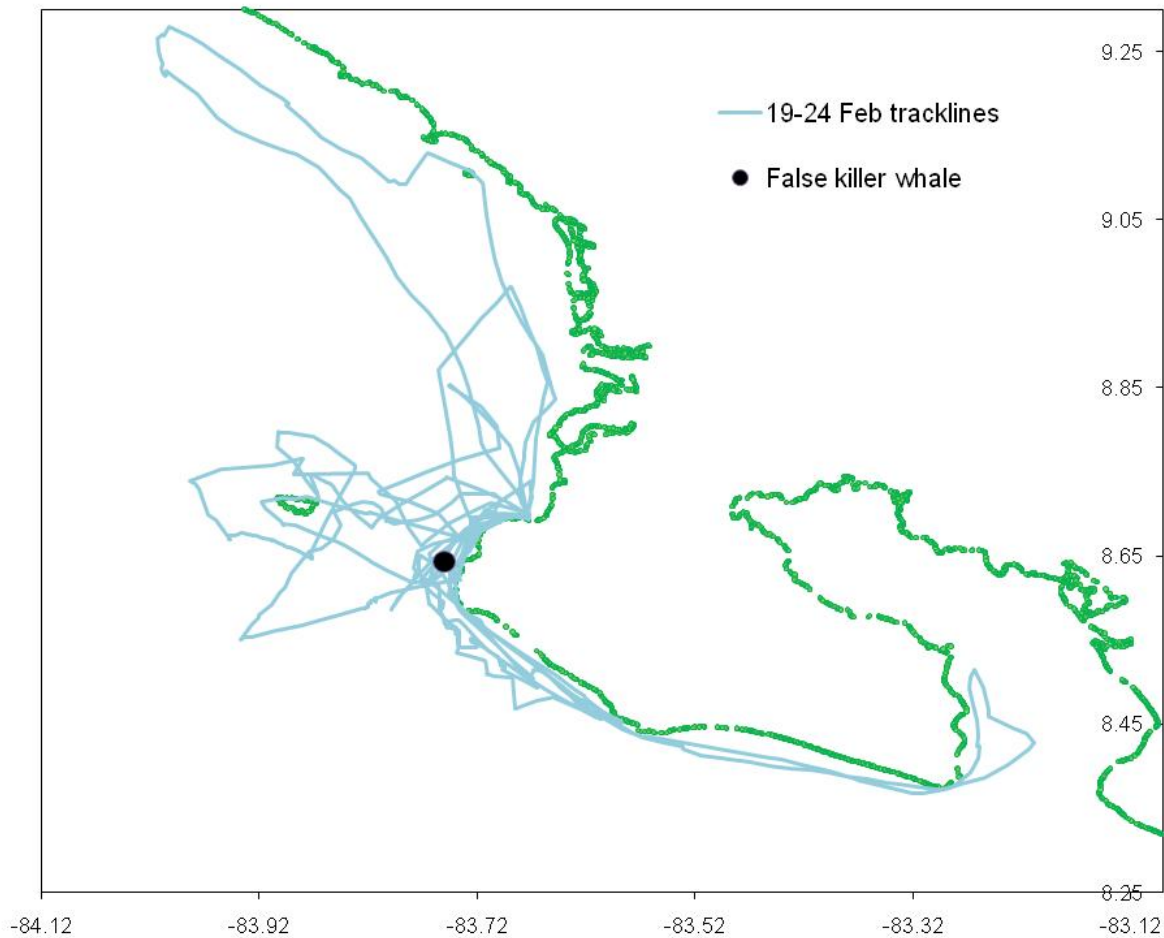
Date	Vessel	Start time	End time	Off effort hrs	Total search hrs	Tot # sight	# of humpbacks encount.	Other species encountered	Notes on survey effort
01/19/2009	<i>Sea Rod</i>	13:21	16:26	0:00	3:05	3	0	Spotted dolphin	Half day. Search south to follow up on reports of killer whales.
1/20/2009	<i>Sea Rod</i>	7:14	16:28	0:51	8:23	4	1	Spotted dolphin	Full day. Travel north to Isla Ballena and Quepos.
1/21/2009	<i>Paraiso II</i>	7:17	13:24	0:30	5:37	3	0	Bottlenose dolphin	Half day. Survey around Island.
1/21/2009	<i>Sea Rod</i>	7:14	13:16	0:35	5:27	4	2	Spotted dolphin	Half day. Survey south along coast.
1/22/2009	<i>Dyanne</i>	7:24	16:11	1:20	7:27	4	0	Spotted dolphin	Full day. Survey around Isla Cano.
1/22/2009	<i>Paraiso II</i>	6:28	17:04	0:54	9:42	9	2	Spotted and bottlenose dolphin	Full day. Survey south to Golfo Dulce.
1/23/2009	<i>Sea Rod</i>	6:48	14:50	1:03	6:59	3	0	Spotted and bottlenose dolphin	Half day. Whale survey & tour of Corcovado Park.
1/24/2009	<i>Sea Rod</i>	7:10	15:31	0:54	7:27	3	2	False killer whales and spotted dolphins	Full day. Survey south.
					54:07:00	33	7		



**Figure 1. Study area and vessel tracklines for 19-24 January, 2009**



**Figure 2. Humpback whale encounters for survey effort 19-24 February**



**Figure 3. False killer whale encounter on 24 February 2009. South of Drakes Bay, Costa Rica.**

## Part II

### Summary of Survey effort of Cascadia Research and Oceanic Society with Elderhostel 19 February to 1 January 2009 out of Drakes Bay, Costa Rica

#### Humpback whales

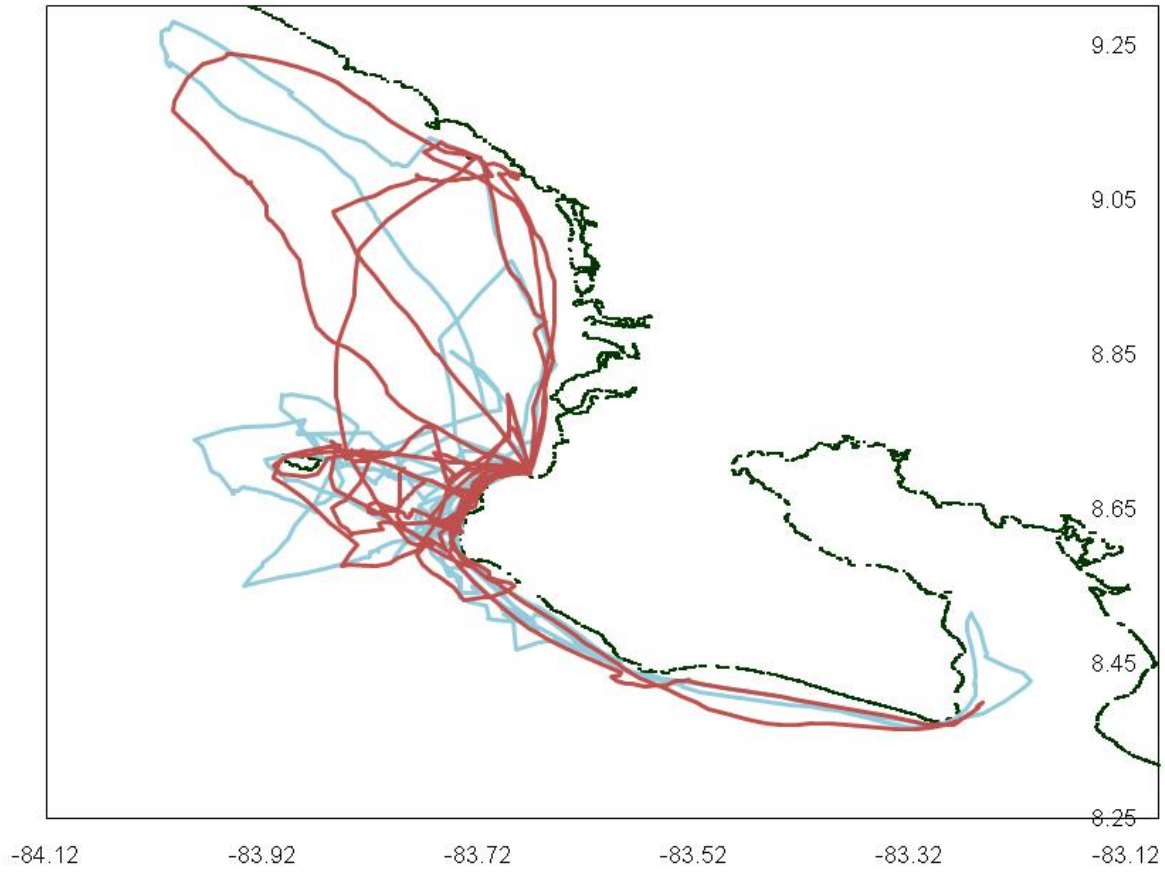
Over the second week working out of Drakes Bay we had five additional humpback whale encounters and a total of 13 whales, however we encountered the same cow/calf pair with at first one male escort and then two on at least three occasions. We observed intense competitive behavior

from the escorts of the cow/calf pair, with loud blowing upon surfacing, jostleing, and splashing. It appeared that the animals had been making physical contact with their rostrums, for both animals were missing tubercules that had clearly been rubbed off recently. The whales also had shallow scrape wounds on their dorsal fins, where they had probably hit against eachother. Overall, it seemed as if there were quite a few males around, because we could hear them on the hydrophones, but we did not see many animals that were likely to be females without a calf.

### False killer whales

We had an additional four encounters with false killer whales and obtained many photos to use for photo id. Sadly, on the last day that we observed false killer whales one of the animals stranded alive south of Drakes Bay. The observers of the animal were unable to assist it back into the water, and the animal died. The following day we were notified of the animal, and we obtained permission from the Stranding coordinator in Costa Rica to perform a necropsy on the carcass. The animal was a male and from total length measurements we estimated that it was a juvenile, about three years old. Despite the fact that the whale had only been on the beach for 24 hours or so, we were surprised at how decomposed it was by the time that we responded. We tried to take good photographs of the entire body, in hopes that we would be able to compare photographs of the dorsal fin to animals that we had seen on the days previously, but this endeavor was complicated by the fact that all the skin had already sloughed off the animal and it was difficult to tell if we were seeing the animals natural markings, or if we were seeing injuries that the animal incurred when it stranded on the beach. As with all strandings, hopefully something good can come out of this. Frank collected the teeth so that they can be used for aging, and we collected the entire head of the animal and put it in a hole near the resort where it will hopefully be cleaned by ants and other insects. Frank and others will return in a few months, dig up the head and transport it to a lab where it can be studied and used for education, perhaps at the University in San Jose.

The identification photographs of the live animals that we colloeeted over the two weeks will be compared to eachother, and then we will compare them to id photos of false killer whales from other years in the same area.



**Figure 4. Vessel tracklines for both survey weeks out of Drakes Bay, Costa Rica. Total of 2100 km traveled.**



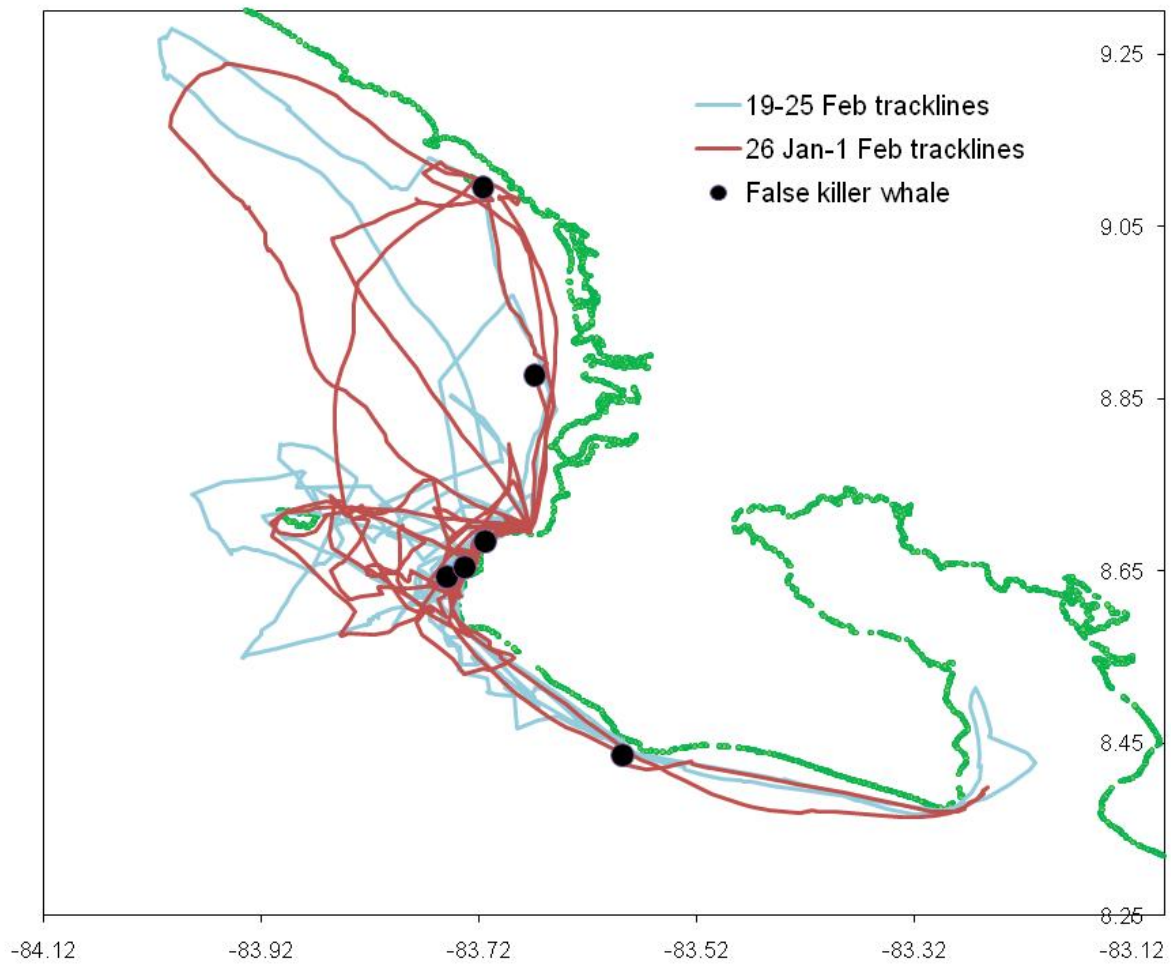


Figure 6. Vessel tracklines for 19 January -1 February with positions of false killer whale encounters.

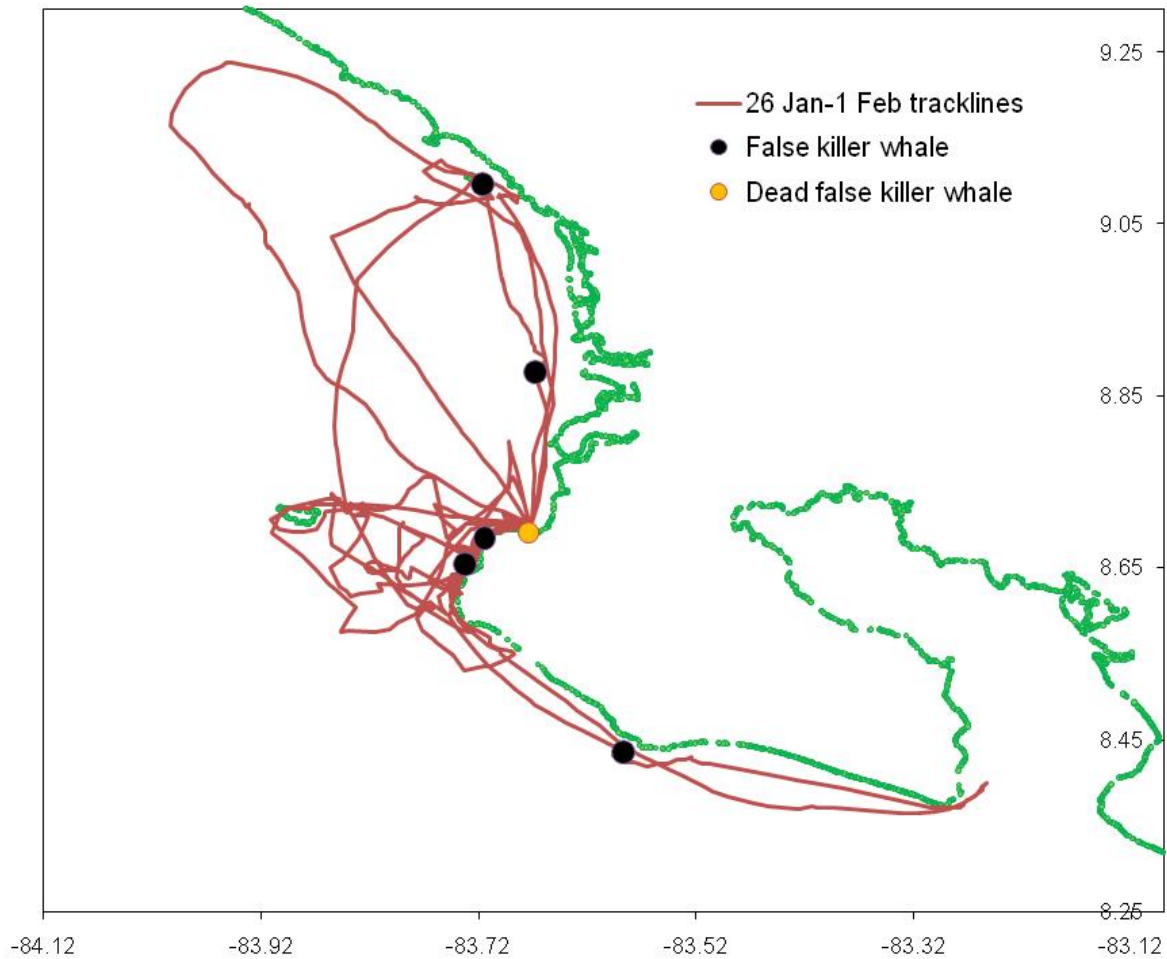


Figure 7. Vessel trackline for second week survey effort out of Drakes Bay, Costa Rica. False killer whale encounter positions as well as site of dead false killer whale

## REFERENCES

Rasmussen, K., Calambokidis, J., and G.H. Steiger. 2004. Humpback whales and other marine mammals off Costa Rica and surrounding waters, 1996-2003. Report of the Oceanic Society 2003 field season in cooperation with elderhostel volunteers. (available as a pdf on the Cascadia website <http://www.cascadiaresearch.org/reports/REP-OSE-03.pdf>)

Reeves, R.R., S. Leatherwood and R.W. Baird. 2009. **Evidence of a possible decline since 1989 in false killer whales (*Pseudorca crassidens*) around the main Hawaiian Islands.** Pacific Science 63: in press.