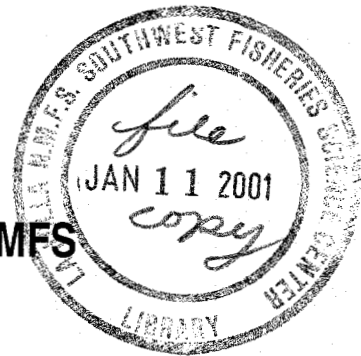


**NOAA Technical Memorandum NMFS**



**OCTOBER 1994**

**REPORT OF CETACEAN SIGHTINGS DURING A MARINE  
MAMMAL SURVEY IN THE EASTERN PACIFIC OCEAN  
AND THE GULF OF CALIFORNIA ABOARD THE NOAA  
SHIPS *McARTHUR* and *DAVID STARR JORDAN*  
JULY 28 - NOVEMBER 6, 1993**

Karl F. Mangels  
Tim Gerrodette

NOAA-TM-NMFS-SWFSC-211

U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southwest Fisheries Science Center

## NOAA Technical Memorandum NMFS

The National Oceanic and Atmospheric Administration (NOAA), organized in 1970, has evolved into an agency which establishes national policies and manages and conserves our oceanic, coastal, and atmospheric resources. An organizational element within NOAA, the Office of Fisheries is responsible for fisheries policy and the direction of the National Marine Fisheries Service (NMFS).

In addition to its formal publications, the NMFS uses the NOAA Technical Memorandum series to issue informal scientific and technical publications when complete formal review and editorial processing are not appropriate or feasible. Documents within this series, however, reflect sound professional work and may be referenced in the formal scientific and technical literature.



**NOAA Technical Memorandum NMFS**

This TM series is used for documentation and timely communication of preliminary results, interim reports, or special purpose information. The TMs have not received complete formal review, editorial control, or detailed editing.

**OCTOBER 1994**

**REPORT OF CETACEAN SIGHTINGS DURING A MARINE  
MAMMAL SURVEY IN THE EASTERN PACIFIC OCEAN  
AND THE GULF OF CALIFORNIA ABOARD THE NOAA  
SHIPS *McARTHUR* and *DAVID STARR JORDAN*  
JULY 28 - NOVEMBER 6, 1993**

Karl F. Mangels  
Tim Gerrodette

La Jolla Laboratory, SWFSC  
National Marine Fisheries Service, NOAA  
P.O. Box 271  
La Jolla, California 92038-0271

NOAA-TM-NMFS-SWFSC-211

**U.S. DEPARTMENT OF COMMERCE**

Ronald H. Brown, Secretary

**National Oceanic and Atmospheric Administration**

D. James Baker, Under Secretary for Oceans and Atmosphere

**National Marine Fisheries Service**

Rolland A. Schmitt, Assistant Administrator for Fisheries

## CONTENTS

	Page
List of Tables .....	ii
List of Figures .....	ii
List of Appendices .....	iv
Introduction .....	1
Survey Objectives .....	2
Materials and Methods .....	2
Study Area and Tracklines .....	2
Itinerary .....	3
Scientific Personnel .....	3
Equipment .....	4
Duty Stations .....	4
Data Collection Procedures .....	5
Helicopter Operations .....	7
Small Boat Operations .....	7
Results .....	7
Acknowledgments .....	9
Literature Cited .....	10
Tables .....	11
Figures .....	50
Appendices .....	82



## LIST OF TABLES

Table 1.	PODS 93 Study Area Boundary Points .....	11
Table 2.	PODS 93 Scientific Complement .....	12
Table 3.	PODS 93 Effort and Sighting Rates .....	13
Table 4.	PODS 93 On-effort Nautical Miles .....	14
Table 5.	PODS 93 Marine Mammal Sighting Record .....	15
Table 6.	PODS 93 Sighting Summary .....	46
Table 7.	PODS 93 Schools of Mixed Species Composition .....	47
Table 8.	PODS 93 Observer Sighting Rates .....	48
Table 9.	PODS 93 35mm Photographic Summary .....	49

## LIST OF FIGURES

Figure 1.	PODS 93 Study Area with Strata and On-Effort Tracklines .....	50
Figure 2.	PODS 93 Tracklines for <i>McArthur</i> .....	51
Figure 3.	PODS 93 Tracklines for <i>David Starr Jordan</i> .....	52
Figure 4.	PODS 93 Legs 1 & 2 Tracklines by Beaufort .....	53
Figure 5.	PODS 93 Legs 3 & 4 Tracklines by Beaufort .....	54
Figure 6.	PODS 93 Spotted dolphin sightings .....	55
Figure 7.	PODS 93 Striped dolphin sightings .....	56
Figure 8.	PODS 93 Spinner dolphin sightings .....	57
Figure 9.	PODS 93 Rough-toothed dolphin sightings .....	58
Figure 10.	PODS 93 Bottlenose dolphin sightings .....	59
Figure 11.	PODS 93 Risso's dolphin sightings .....	60
Figure 12.	PODS 93 Northern right whale dolphin sightings ..	61
Figure 13.	PODS 93 Pacific white-sided dolphin sightings ...	62

Figure 14.	PODS 93 Common dolphin sightings .....	63
Figure 15.	PODS 93 Pygmy killer whale, False killer whale and Killer whale sightings .....	64
Figure 16.	PODS 93 Pilot whale sightings .....	65
Figure 17.	PODS 93 Harbor porpoise and Vaquita sightings ...	66
Figure 18.	PODS 93 Dall's porpoise sightings .....	67
Figure 19.	PODS 93 Sperm whale sightings .....	68
Figure 20.	PODS 93 Dwarf and Pygmy sperm whale sightings ...	69
Figure 21.	PODS 93 Blaineville's beaked whale and unidentified <i>Mesoplodon</i> sightings .....	70
Figure 22.	PODS 93 Cuvier's beaked whale sightings .....	71
Figure 23.	PODS 93 Unidentified ziphiid sightings .....	72
Figure 24.	PODS 93 Baird's beaked whale sightings .....	73
Figure 25.	PODS 93 Minke whale sightings .....	74
Figure 26.	PODS 93 Bryde's and Sei whale sightings .....	75
Figure 27.	PODS 93 Fin whale sightings .....	76
Figure 28.	PODS 93 Blue whale sightings .....	77
Figure 29.	PODS 93 Humpback whale sightings .....	78
Figure 30.	PODS 93 Unidentified dolphin sightings .....	79
Figure 31.	PODS 93 Unidentified small whale and large whale sightings .....	80
Figure 32.	PODS 93 Unidentified whale and cetacean sightings	81

## LIST OF APPENDICES

Appendix A. CRUISE2 Data Entry .....	82
Appendix B. Sea State Conditions.....	84
Appendix C. Vertical and Horizontal Sun Positions .....	85
Appendix D. SWFSC Marine Mammal Sighting Form .....	86
Appendix E. SWFSC Marine Mammal Species Code List .....	87

REPORT OF CETACEAN SIGHTINGS DURING A MARINE MAMMAL SURVEY  
IN THE EASTERN PACIFIC OCEAN AND THE GULF OF CALIFORNIA  
ABOARD THE NOAA SHIPS *McARTHUR* AND *DAVID STARR JORDAN*  
JULY 28 - NOVEMBER 6, 1993

Karl F. Mangels  
and  
Tim Gerrodette

### INTRODUCTION

Over the past two decades the Southwest Fisheries Science Center (SWFSC) has been conducting a variety of marine mammal surveys in the eastern tropical Pacific (ETP) and other areas of the Pacific Ocean. The purpose of these surveys has been to estimate cetacean population sizes and to monitor the impact of incidental kill due to commercial fisheries, particularly the tropical purse-seine fishery for yellowfin and skipjack tuna.

The northern stock of common dolphin, *Delphinus delphis*, is taken in the purse-seine tuna fishery (Hall and Lennert 1994). The index of relative abundance for this stock computed from sightings on tuna vessels has declined substantially in the last decade (Anganuzzi and Buckland 1994). However, because tuna vessels cover only the southern portion of the stock's range, the declines in the index may be due to a northward shift in distribution, rather than an actual decline in abundance. There has been an increase in abundance of tropical delphinids and a decrease in abundance of temperate delphinids during this period in California waters, accompanied by a general warming trend in ocean temperature (Barlow, 1993). Previous research vessel surveys have covered either northern (Hill and Barlow 1992) or southern (Wade and Gerrodette 1993) parts of the range of the northern common dolphin, but neither of these surveys have covered the middle portion of the range off the coast of northern Baja California. The 1993 survey was designed to produce the first range-wide estimates of abundance for the northern common dolphin and its recently described congener, *Delphinus capensis* (Heyning and Perrin, 1994).

The 1993 survey was conducted by the NOAA Ships *McArthur* and *David Starr Jordan*. Both ships were scheduled for ninety sea days of marine mammal observation operations. Due to weather and mechanical breakdowns, operations were not conducted on all of the scheduled sea days. The cruise title was Population of *Delphinus* Stocks or PODS 93, with cruise numbers for each ship as follows:

AR-93-02: NOAA Ship <i>McArthur</i>	SWFSC Cruise Number 1508
DS-93-08: NOAA Ship <i>David Starr Jordan</i>	SWFSC Cruise Number 1509

In this report, we describe the experimental procedures and summarize the marine mammal sightings made during the survey. A separate report will be published which describes the oceanographic and other biological studies completed during this survey (Philbrick et al. 1994).

## SURVEY OBJECTIVES

The primary objective of the cruise was to survey the area inhabited by the northern stock of common dolphins, and to make an estimate of its absolute abundance. The specific objectives were:

1. to collect data for estimating the density, size, and species composition of dolphin and whale aggregations in order to make estimates of their population sizes;
2. to collect oceanographic and biological data regarding the habitat of marine mammals in order to better understand cetacean distribution patterns.

A variety of other studies, including aerial photogrammetry of cetacean schools and California sea lion rookeries, photo-identification of individual whales, plankton sampling, genetic sampling and recording of cetacean vocalizations were carried out on the cruise. The results of these other studies are not covered in this report.

## MATERIALS AND METHODS

### Study Area and Tracklines

The study area ranged from the California/Oregon border southward to Cabo Corrientes, Jalisco, Mexico, including the Gulf of California, and extended from the coast to approximately 300 nm offshore. Figure 1 diagrams the study area and Table 1 lists the survey boundary points. The survey was designed to cover nearly all of the range of the northern stock of common dolphins. In addition, the full California coast was added to the planned study area in order to duplicate a region surveyed during 1991 (Hill and Barlow 1992). The study area enclosed approximately 600,000 nm<sup>2</sup> (Figure 1).

A stratified systematic grid survey was conducted. The study area was divided into two strata, Pacific Ocean and Gulf of California, with the boundary between the two strata from Cabo San Lucas to Cabo Corrientes (Figure 1). Tracklines were designed to sample the Gulf of California stratum more intensively than the Pacific Ocean stratum. Because the survey took place over a three-month period, the tracklines were also designed to cover the study area equally during both halves of the survey, in order to minimize

possible effects of migration. Two sets of primary tracklines in the Pacific Ocean stratum were laid out on northeast/southwest diagonals. The lines were approximately 150 nm apart and were charted at 023°/203° T and at 068°/248° T. Secondary tracklines were laid out on a series of meridians approximately 130 nm apart and were charted at 000°/180° T. The NE/SW tracklines were to be completed first, followed by as much of the north/south lines as weather and other contingencies permitted. The Gulf of California stratum was sampled with primary lines laid out on the meridians approximately 26 nm apart, and secondary lines on the parallels approximately 60 nm apart.

### Itinerary

The survey was conducted from July 28 through November 6, 1993. The cruise consisted of four legs varying between 21 and 24 sea days per leg. Scheduled port calls were San Diego, Eureka, and San Francisco, California and Mazatlan, Mexico. The itinerary is listed below with the arrival and departure dates.

Leg 1:	<u>David Starr Jordan</u>	<u>McArthur</u>
28 JUL	Depart San Diego, CA	San Diego, CA
18 AUG	Arrive Mazatlan, Mexico	Eureka, CA
Leg 2:		
21 AUG	Depart Mazatlan, Mexico	Eureka, CA
12 SEP	Arrive San Diego, CA	San Diego, CA
Leg 3:		
16 SEP	Depart	San Diego, CA
21 SEP	Depart San Diego, CA	
06 OCT	Arrive	San Francisco, CA
11 OCT	Arrive Mazatlan, Mexico	
Leg 4:		
10 OCT	Depart	San Francisco, CA
13 OCT	Depart Mazatlan, Mexico	
02 NOV	Arrive	Mazatlan, Mexico
06 NOV	Arrive San Diego, CA	

### Scientific Personnel

The survey was a joint research project between the United States and Mexico under the MEXUS-Pacifico agreements. Scientists from both countries participated in the survey. The scientific complements consisted of 15 scientists aboard *David Starr Jordan* and up to 10 scientists aboard *McArthur*. The observer teams changed ships between Legs 2 and 3, while both ships were in San Diego, to allow observers to be calibrated with the photogrammetric work conducted aboard *David Starr Jordan*. Table 2 lists the participating scientists and indicates the legs and the ships on which they participated.

## Equipment

NOAA Ship *McArthur*, commissioned in 1966, is 53.3 m in length, 11.6 m in breadth and 3.7 m in draft. NOAA Ship *David Starr Jordan*, commissioned in 1966, is 52.1 m in length, 11.2 m in breadth and 3.8 m in draft. During the surveys, the vessels maintained a cruising speed of approximately 18.5 km/hr (10 knots).

Marine mammals were detected with port and starboard pedestal-mounted 25x150 Fujinon<sup>1</sup> binoculars and hand-held 7x50 binoculars. The glasses were mounted on the upper deck approximately 10.7 m above the sea surface on each vessel. The bearing to each marine mammal was measured for animals sighted forward of the ship's beam using a 180° graduated ring attached to the base of the 25x150 binoculars. Distance was determined by utilizing graduated reticles enclosed in the right eyepiece of the 25x150 binoculars.

Sighting data were collected using laptop computers with the program CRUISE2. Codes and format for data entry are documented in Appendix A. The geographic position of the vessel was recorded whenever any "event" was recorded and at ten minute intervals using the vessel's Global Positioning System (GPS). The GPS was directly linked to the data entry program.

Several camera systems were employed for the stock, species and individual photo-identification. Two 35mm Canon<sup>1</sup> F-1's were used which included motor drives and 28mm, 50mm, 400mm, and 70-210mm zoom lenses. A Nikon<sup>1</sup> F-3 camera equipped with a 80-210mm zoom lens and a Canon<sup>1</sup> EOS Elan camera equipped with a 100-300mm autofocus zoom lens were also used during the survey.

A Cohu<sup>1</sup> 4915 monochrome video camera with 75mm lens plus 2X extender (doubler) was mounted on top of each of the two lateral 25x150 binoculars on *David Starr Jordan*. The field of view of the video camera matched that of the 25x150 binoculars. The video signal was fed to a dedicated computer with Data Translations<sup>1</sup> software, which allowed the capture, storage, and analysis of video images of cetaceans. The primary intent of this system was to capture images to permit more accurate and precise measurement of angle between horizon and sighting, and thus better distance measurements than were possible with the reticles in the 25x150 binoculars.

### Duty Stations

The marine mammal observers stood 2-hour watches, followed by a 2-hour off-duty period. The observers rotated through four duty stations at thirty minute intervals on *McArthur* and three duty stations at forty minute intervals on *David Starr Jordan*.

---

<sup>1</sup>Reference to trade name does not imply endorsement by the NMFS.

1. Left Binocular - The port-side observer used 25x150 binoculars, mounted on the port side of the vessel, to scan the ocean for marine mammal sighting cues. The area of responsibility for the left observer was from 10° right to 90° left and outward to the horizon or to the extent possible with prevailing environmental conditions.
2. Right Binocular - The starboard observer used 25x150 binoculars, mounted on the starboard side of the vessel, to scan the ocean for marine mammal sighting cues. The area of responsibility for the starboard observer was from 10° left to 90° right and outward to the horizon or to the extent possible with prevailing environmental conditions.
3. Recorder - The recorder's duties were to enter data on search effort, environmental conditions and sightings using the on-line data acquisition computer system, and to search the area adjacent to the vessel by naked eye and with hand held binoculars.
4. Independent Observer - The independent observer (IO) maintained watch in order to detect schools or individual animals missed by the regular watch observers. The IO was stationed near the ship's centerline on the flying bridge and searched with the naked eye or 7x50 binoculars. The third pair of 25x150 binoculars was occasionally used. Aboard *McArthur* observers regularly occupied the independent observer position as part of their rotation. Aboard *David Starr Jordan*, cruise leaders and occasionally other scientific personnel occupied the independent observer position on an irregular basis.

The six observers aboard *David Starr Jordan* or seven observers aboard *McArthur* rotated continually through the duty stations. An observer would assume a position at the binoculars, then rotate to the recorder, then to the other binoculars and finally to the IO position. During each shift, observers spent approximately equal time occupying each duty station. The rotation advanced by one observer at the start of each day. At least one identification specialist for marine mammals was on watch at all times. The ID specialist served as the team leader. Generally, observers rotated between duty stations without interrupting searching effort.

#### Data Collection Procedures

Marine mammal observations were conducted during all daylight hours when weather and sea conditions permitted. Searching effort was conducted during weather conditions of Beaufort 0 through 5. Effort was terminated once the seas and wind attained a force of Beaufort 6. Effort was terminated at the discretion of the team leader and the cruise leader. The observers recorded information on all species of whales and dolphins sighted throughout the cruise. Pinniped sightings encountered more than ten nautical



miles from the nearest point of land were also recorded. The recorder entered all the necessary data on the automated data entry system. Criteria for assigning sea state and sun position are given in Appendices B and C, respectively.

When marine mammals were detected, the date, time and geographical position of the ship were recorded on the computer. A sequential sighting number was assigned to the school, and the angle of the school from the trackline and the distance to the school were measured. Geographical position of the sighting was computed from the position of the ship and the angle and distance to the sighting. Typically, searching was suspended and the observer team would go off-effort to concentrate on the sighting. The vessel was directed to approach the school to identify the species, to estimate the size of the school, and to estimate species composition of mixed-species schools. All cetacean schools encountered within 3.0 nm (5.6 km) of the trackline were approached; more distant schools were occasionally approached.

For every sighting, each observer with a good view of the school independently recorded in his or her logbook the high, low, and best estimates of the school size. For mixed-species schools, each observer also recorded percentage estimates of species composition. The observers discussed which species were present in each school, but did not discuss how many animals were present nor the proportions of mixed-species schools. This procedure assured some independence of each observer's school size and composition estimates. All observers present discussed species identification, behavior and other notes. A consensus was entered on the Sighting Form (Appendix D) shortly after the time of the sighting, using the sighting categories and codes (Appendix E). After all information on the sighting was recorded, the on-effort searching mode was resumed. Normally the ship resumed effort from near the point of the last sighting on a bearing to the end point of the current trackline. If, as happened rarely, a chase had taken the ship more than 10.0 nm (18.5 km) off the original trackline, the ship altered its course by 20° in the direction of the trackline. Observations continued until operations were suspended at sunset. Each night the Cruise Leader collected the individual logbooks and transcribed observer estimates of school size and species composition to complete the daily sighting and effort file compiled by the automated data entry system.

After securing marine mammal sighting effort for the night, the vessel would conduct other project operations nearby. Biological and oceanographic sampling efforts were conducted for four to ten hours each night. A morning CTD station was occupied near the beginning-of-effort point each day. Searching effort typically began on the trackline near the geographic position where effort ended the previous day, but sometimes the ship moved during the night to a new location. Other projects were conducted during daylight hours concurrently with observations. Seabird

observations as well as sea turtle sightings and captures were made by other scientific personnel. Cetacean biopsies were performed on animals that closely approached the ships. Species identifications were validated when possible by photographing the school at close range using 35 mm cameras.

### Helicopter Operations

Photogrammetric missions were flown during the survey from the flight deck of *David Starr Jordan*. A Hughes 350P helicopter was used for flight operations. On calm days the helicopter flew approximately between 0900-1100 and 1300-1500. The sea state and sun glare determined if flight operations were conducted. Cetacean schools were photographed for individual length, school size and behavioral data. If the entire school could be photographed, it was classified as a calibration school. All observers, including off-duty ones, made estimates of the school size for calibration schools. The helicopter was also used to photograph California sea lion rookeries along the Baja California coast. Results from helicopter operations will be covered in a separate report.

### Small Boat Operations

The rigid hulled inflatable boat (RHIB) was occasionally used on both ships for cetacean biopsy sampling, sea turtle and seabird collections. On *McArthur*, the auxiliary vessel was launched on a regular basis, sea conditions permitting, to collect a photographic resampling of blue and humpback whales. Generally, the small boat operated independently from the ship while the line-transect survey continued. This work was conducted by Cascadia Research under contract to NMFS.

## RESULTS

All primary trackline and some secondary trackline was completed, resulting in nearly uniform coverage of each stratum (Figure 1). The combined on-effort trackline covered by both ships was 10,002 nm (18,504 km). In general, *McArthur* surveyed the northern part of the study area while *David Starr Jordan* covered the southern area (Figures 2 & 3). The study area was surveyed almost equally during the two halves of the survey (Figures 4 & 5). In total, 26% of effort took place in a Beaufort 0-2, 29% in Beaufort 3 and 45% in Beaufort 4-5 (Table 3, Figures 4 & 5). The mean distance surveyed each day was 58.5 nm (108 km) per sea day and 65.8 nm (122 km) per effort day. The daily record of on-effort nautical miles covered within the study area are listed in Table 4 and displayed in Figure 1. The geographic positions of all schools detected during the survey are presented for each species category code in Figures 6 through 32.

A total of 1555 sightings were made during the survey, 587 sightings from *McArthur* and 968 sightings from *David Starr Jordan*. The complete marine mammal sighting record is presented in Table 5. This table includes the time, position and estimated school size for all sightings listed by species. The sighting information is summarized in Table 6, which presents a breakdown of the pure and mixed schools and the average school size for each category sighted. There were 1449 pure species sightings and 106 mixed-school sightings. Table 7 presents the composition of the mixed-school sightings. There were 139 pinniped sightings made during the survey, three of which were associated with cetacean sightings. Forty-eight categories of marine mammals were recorded during the PODS 93 survey (Table 6). The most commonly sighted marine mammals were short-beaked common dolphin (177 sightings), bottlenose dolphins (157 sightings) and unidentified dolphins (141 sightings). Most unidentified dolphin sightings were of small groups of dolphins seen very briefly and at a distance greater than 3.0 nm. Other frequently sighted categories included striped dolphin (96), baleen whale (88), blue whale (82) and Risso's dolphin (82). A combined total of 1286 sightings were made on-effort in the study area. The overall rate of detecting marine mammals in the study area during on-effort searching was 128.6 schools/1000 nm or 6.95 schools/100 km. Sighting rates were negatively correlated with sea state and swell height (Table 3).

Thirty-one observers participated in the marine mammal searching effort throughout the survey. The seven ID specialists and the nine marine mammal observers occupied the observation stations for most of the survey. Additional effort was contributed by the seven cruise leaders and eight other scientific personnel. The primary observers occupied rotation positions unless a substitute was employed to cover for illness. The rate of schools detected by each primary observer ranged from 14.0 to 72.3 sightings per 1000 nm and averaged 36.9 sightings per 1000 nm (Table 8). Observer codes are listed with the scientific complement (Table 2).

Over 5000 photographs were taken during the survey for the purpose of stock and individual identification. Twenty-four species were photographed on 265 of the sightings. The most frequently photographed species were short-beaked common dolphin (1245 photographs taken on 92 sightings), long-beaked common dolphin (472 photographs taken on 30 sightings), and blue whale (519 photographs taken on 30 sightings). A complete list of the species, number of sightings and number of photographs taken of each species is listed in Table 9. The photographic record is available to other agencies and institutions by loan or duplication through the SWFSC.

## ACKNOWLEDGEMENTS

We would like to thank the officers and crew of NOAA Ships *McArthur* and *David Starr Jordan*, and their operational logistics support for providing able and efficient platforms from which we were able to conduct the research. A special thanks goes to all of the marine mammal observers who spent many long hours collecting the data. Their dedication to the project is greatly appreciated.

We also appreciate the contributions and efforts of those listed below for their support of the PODS 93 Survey.

Jay Barlow, Paul Fiedler, Karin Forney, Rand Rasmussen and Paul Wade for their participation as Cruise Leaders.

Alan Jackson and Rand Rasmussen for data editing and compilation.

Jay Barlow for writing and providing the CRUISE2 program used for data collection.

Daniel Fink, Tim Lee and Matt Bones for putting together the video system in an incredibly short time.

Bobbi Watkins and Barbara Engstrand, SWFSC procurement.

Ginny Hostler, personnel and staffing.

Gaye Holder, travel and office communications.

Dr. Michael Tillman and Dr. Richard Neal for their support from the Director's office during the preparation and execution of the cruise.

Stephen Reilly and Paul Fiedler for their review of this manuscript.

#### LITERATURE CITED

- Anganuzzi, A. A. and S. T. Buckland. 1994. Relative Abundance of Dolphins Associated With Tuna in the Eastern Pacific Ocean: Analysis of 1992 Data. Rep. Int. Whal. Commn 44: 361-366.
- Barlow, Jay. 1993. Changes in Cetacean Abundance in California Coastal Waters: A Comparison of Ship Surveys in 1979/80 and in 1991. Unpublished manuscript.
- Bowditch, N. 1966. American Practical Navigator, an epitome of navigation. U. S. Naval Oceanographic Office. H. O. Pub. No. 9. Washington, DC. 1524 pp.
- Hall, Martin A. and Cleridy Lennert. 1994. Incidental Mortality of Dolphins in the Eastern Pacific Ocean Tuna Fishery in 1992. Rep. Int. Whal Commn 44: 349-351.
- Heyning, John E. and William F. Perrin. 1994. Evidence for Two Species of Common Dolphin (Genus *Delphinus*) from the Eastern North Pacific. Contributions in Science, Number 442, pp. 1-35, 27 April 1994.
- Hill, P. Scott and Jay Barlow. 1992. Report of a Marine Mammal Survey of the California Coast Aboard the Research Vessel *McArthur* July 28 - November 5, 1991. NOAA-TM-SWFSC-169.
- Philbrick, Valerie A., Paul C. Fiedler, Stephen B. Reilly, Robert Pitman and Lisa T. Ballance. 1994. Report of Ecosystem Studies Conducted during a Marine Mammal Survey in the Eastern Pacific Ocean and the Gulf of California Aboard the NOAA Ships *McArthur* and *David Starr Jordan*, July 28 - November 6, 1993 (in prep).
- Wade, Paul and Tim Gerrodette. 1993. Estimates of Cetacean Abundance and Distribution in the Eastern Tropical Pacific. Rep. Int. Whal. Commn 43: 477-493.

Table 1. PODS 93 Study Area Boundary Points. Boundary begins at the coastline at Cabo Corrientes, Jalisco, Mexico and ends at the Oregon-California border.

1) 20° 22.0' N	105° 40.3' W	4) 40° 00.0' N	131° 00.0' W
2) 18° 00.0' N	112° 00.0' W	5) 42° 00.0' N	131° 00.0' W
3) 32° 00.0' N	126° 00.0' W	6) 42° 00.0' N	124° 11.3' W

End points of the stratum separation line:

Cabo Corrientes, Jalisco

1) 20° 22.0' N 105° 40.3' W

Cabo San Lucas, Baja California Sur

2) 22° 52.2' N 109° 58.6' W

Table 2. PODS 93 Scientific Complement. The name, affiliation, observer number and position title for each participating scientist is listed. The X indicates participation on the leg.

Name	Affil.	Obs. no.	Position	D. S. Jordan				McArthur					
				Leg 1	2	3	4	Leg 1	2	3	4		
Dr. Tim Gerrodette	SWFSC	84	Chief Scientist	X	X								
Dr. Paul Fiedler	SWFSC	81	Cruise Leader		X								
Rand Rasmussen	SWFSC	50	Cruise Leader				X						
Dr. Jay Barlow	SWFSC	15	Cruise Leader						X				
LTJG Karl Mangels	SWFSC	90	Cruise Leader							X			
Karin Forney	SWFSC	86	Cruise Leader								X		
Dr. Paul Wade	SWFSC	83	Cruise Leader									X	
Jim Cotton	SWFSC	7	I.D. Specialist	X									
Diane Gendron	CICIMAR	109	I.D. Specialist	X									
Wes Armstrong	SWFSC	76	I.D. Specialist		X						X	X	
Brian Smith	SWFSC	74	I.D. Specialist		X					X	X	X	X
Scott Benson	SWFSC	55	I.D. Specialist			X	X		X	X			
Gary Friedrichsen	SWFSC	1	I.D. Specialist			X				X			
Richard Rowlett	SWFSC	73	I.D. Specialist				X						
Doug Kinzey	SWFSC	91	M.M. Observer	X	X						X	X	
Paula Olson	SWFSC	92	M.M. Observer	X	X						X	X	
Julie Rivers	SWFSC	97	M.M. Observer	X	X						X	X	
Gabriel Aldana	PNAAPD	108	M.M. Observer	X	X						X	X	
Liz Mitchell	SWFSC	94	M.M. Observer			X	X		X	X			
Jennifer Quan	SWFSC	95	M.M. Observer			X	X		X	X			
Scott Miller	SWFSC	96	M.M. Observer			X	X		X	X			
Hector Lira	PNAAPD	107	M.M. Observer			X	X		X	X			
Camille Speck	SWFSC	104	M.M. Observer						X	X	X	X	
Valerie Philbrick	SWFSC	89	Oceanographer	X	X	X	X						
Lynne Butler	SWFSC	---	Oceanographer	X	X	X	X						
Robert Pitman	SWFSC	4	Bird Observer	X	X	X	X						
Michael Force	UBC	98	Bird Observer	X	X	X	X						
Tom Gates	AOC	---	Helo Pilot	X			X						
LT Steven Pape	AOC	---	Helo Pilot		X	X							
Ron Helgeson	AOC	---	Helo Mechanic	X	X	X	X						
Wayne Perryman	SWFSC	110	Photogrammetrist				X						
Robin Westlake	SWFSC	100	Photogrammetrist	X	X	X							
Morgan Lynn	SWFSC	57	Photogrammetrist		X	X	X						
Jim Gilpatrick	SWFSC	80	Photogrammetrist	X									
Renate Sponer	UVA	102	Guest Scientist						X	X	X	X	
John Calambokidis	C.R.	105	Guest Scientist						X				
Todd Chandler	C.R.	106	Guest Scientist							X			
Diane Gendron	CICIMAR	109	Guest Scientist								X		
ENS J. Paúl Murad	SEMAM	---	Foreign Observer	X	X							X	X

UBC: University of British Columbia, Canada  
AOC: Aircraft Operations Center, NOAA  
UVA: University of Vienna, Austria  
C.R.: Cascadia Research  
CICIMAR: Centro Interdisciplinario de Ciencias Marinas, La Paz;  
Instituto Politécnico Nacional  
PNAAPD: Programa Nacional de Aprovechamiento del Atún y  
Protección de los Delfines, Instituto Nacional de la Pesca  
SEMAM: Secretaría de Marina Armada de Mexico

Table 3. PODS 93 Effort and Sighting Rates. The sighting rates for on-effort sightings by sea state and swell height are presented in this table for the complete study area, the Gulf of California stratum and the Pacific Ocean stratum. Three on-effort sightings were made with no recorded swell height, and do not appear in the swell height table.

A. Complete study area.

Sea state (Beaufort)				Swell height (ft)			
Bft.	Nm of effort	Number of Sightings	Sightings per 1000 nm	Height	Nm of effort	Number of Sightings	Sightings per 1000 nm
0	70.8	33	465.96	0	533.6	186	348.60
1	786.2	223	283.64	1	378.0	87	230.16
2	1751.1	321	183.31	2	1349.8	246	182.25
3	2902.8	322	110.93	3	3361.2	392	116.62
4	2958.6	249	83.82	4	2168.7	182	83.92
5	1532.1	139	90.72	5	1237.9	117	94.51
6	0.1	0	0.00	6	651.6	39	59.86
				7	194.6	28	143.90
				8	63.7	7	109.89
Total	10001.7	1287	128.58				

B. Gulf of California stratum.

Sea state (Beaufort)				Swell height (ft)			
Bft.	Nm of effort	Number of Sightings	Sightings per 1000 nm	Height	Nm of effort	Number of Sightings	Sightings per 1000 nm
0	56.2	28	498.58	0	523.3	184	351.59
1	476.3	165	346.42	1	359.1	83	231.14
2	742.5	170	228.94	2	827.6	154	186.08
3	522.1	92	176.22	3	463.9	70	150.89
4	370.0	25	67.56	4	29.8	4	134.05
5	202.0	28	138.62	5	48.9	4	81.72
6	.1	0	.00	6	60.2	1	16.62
				7	32.0	7	218.55
				8	18.0	1	55.46
Total	2369.2	508	214.42				

C. Pacific Ocean stratum.

Sea state (Beaufort)				Swell height (ft)			
Bft.	Nm of effort	Number of Sightings	Sightings per 1000 nm	Height	Nm of effort	Number of Sightings	Sightings per 1000 nm
0	14.6	5	342.46	0	10.3	2	194.17
1	309.9	58	187.20	1	18.9	4	211.64
2	1008.6	151	149.70	2	522.2	92	176.17
3	2380.7	230	96.61	3	2897.3	322	111.14
4	2588.6	224	86.53	4	2138.9	178	83.22
5	1330.1	111	83.45	5	1189.0	113	95.04
				6	591.4	38	64.25
				7	162.6	21	129.15
				8	45.7	6	131.29
Total	7632.5	779	102.06				



Table 4: PODS 93 Daily On-effort Nautical Miles. McArthur conducted 70 days of on-effort observations during 85 sea days. David Starr Jordan conducted 82 days of on-effort observations during 86 sea days.

Date	McArthur	D. S. Jordan	Date	McArthur	D. S. Jordan
28 Jul 93	3.0	0.0	17 Sep 93	96.3	In port
29 Jul 93	73.3	93.2	18 Sep 93	97.8	In port
30 Jul 93	67.0	27.1	19 Sep 93	12.7	In port
31 Jul 93	40.4	29.8	20 Sep 93	65.4	In port
1 Aug 93	99.0	0.0	21 Sep 93	0.0	59.4
2 Aug 93	47.2	54.8	22 Sep 93	0.0	77.5
3 Aug 93	46.3	76.6	23 Sep 93	0.0	80.9
4 Aug 93	47.2	59.0	24 Sep 93	0.0	34.1
5 Aug 93	38.0	61.8	25 Sep 93	12.8	54.8
6 Aug 93	88.1	56.5	26 Sep 93	79.1	17.3
7 Aug 93	90.9	46.0	27 Sep 93	54.5	55.2
8 Aug 93	72.5	64.9	28 Sep 93	99.2	60.0
9 Aug 93	76.6	87.2	29 Sep 93	0.0	55.0
10 Aug 93	104.4	96.7	30 Sep 93	0.0	70.8
11 Aug 93	93.5	79.0	1 Oct 93	72.3	71.5
12 Aug 93	8.2	82.5	2 Oct 93	82.5	52.3
13 Aug 93	36.8	51.4	3 Oct 93	91.7	39.8
14 Aug 93	60.8	70.9	4 Oct 93	71.7	56.5
15 Aug 93	61.3	71.9	5 Oct 93	64.2	86.7
16 Aug 93	70.3	86.1	6 Oct 93	In port	75.5
17 Aug 93	16.3	55.0	7 Oct 93	In port	50.7
18 Aug 93	In port	In port	8 Oct 93	In port	68.3
19 Aug 93	In port	In port	9 Oct 93	In port	51.0
20 Aug 93	In port	In port	10 Oct 93	In port	75.6
21 Aug 93	22.0	47.6	11 Oct 93	58.2	In port
22 Aug 93	101.7	34.1	12 Oct 93	58.9	In port
23 Aug 93	0.0	0.0	13 Oct 93	53.1	In port
24 Aug 93	0.0	51.6	14 Oct 93	72.8	26.7
25 Aug 93	0.0	18.6	15 Oct 93	94.8	56.8
26 Aug 93	0.0	44.5	16 Oct 93	101.7	70.0
27 Aug 93	11.1	100.7	17 Oct 93	0.0	69.7
28 Aug 93	0.0	28.4	18 Oct 93	14.8	61.7
29 Aug 93	0.0	66.3	19 Oct 93	79.5	77.0
30 Aug 93	0.0	63.8	20 Oct 93	91.0	72.7
31 Aug 93	72.9	83.3	21 Oct 93	82.7	52.8
1 Sep 93	54.8	88.0	22 Oct 93	0.0	78.7
2 Sep 93	82.6	63.9	23 Oct 93	98.4	85.4
3 Sep 93	107.6	106.4	24 Oct 93	90.9	83.3
4 Sep 93	98.8	91.9	25 Oct 93	97.6	63.7
5 Sep 93	98.9	99.4	26 Oct 93	73.3	75.5
6 Sep 93	100.5	84.9	27 Oct 93	70.2	47.8
7 Sep 93	54.3	110.7	28 Oct 93	76.6	96.8
8 Sep 93	30.8	104.3	29 Oct 93	86.9	88.9
9 Sep 93	7.9	52.7	30 Oct 93	86.8	79.7
10 Sep 93	38.9	75.4	31 Oct 93	36.0	59.3
11 Sep 93	87.5	54.1	1 Nov 93	35.7	65.4
12 Sep 93	In port	In port	2 Nov 93	17.8	0.0
13 Sep 93	In port	In port	3 Nov 93	In port	80.7
14 Sep 93	In port	In port	4 Nov 93	In port	63.9
15 Sep 93	In port	In port	5 Nov 93	In port	41.8
16 Sep 93	In port	In port	6 Nov 93	In port	In port
Leg 1 total	1241.1	1250.4	Leg 3 total	900.2	1192.9
Leg 2 total	970.3	1470.6	Leg 4 total	1477.7	1498.3
			Cruise total	4589.3	5412.2
Mean Distance per sea day	54.0	62.9	Mean Distance per effort day	65.6	66.0

Table 5. PODS 93 Marine Mammal Sighting Record. Table is ordered by species code (see Appendix E) and sighting number. "Other Codes" are the codes of other species in a mixed-species school. Time is local time, and latitude and longitude are the location of the school at the time of the sighting. School size is the average of all observers' best estimates; if no best estimate was made, the average of the low estimates is given and marked with '\*'. All sightings made aboard *McArthur* are designated with the letter "M" and range between 1-594. All sightings made aboard *David Starr Jordan* are designated with the letter "J" and range between 1001-1976.

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School size	Effort
<i>Stenella attenuata</i> (offshore)										
02		M 539	29 Oct 93	1337	N21:19.00	W114:52.76	2	108	25	Off
02	10	M 562	31 Oct 93	1419	N22:56.57	W110:39.04	2	76	50	Off
02	70 10	M 581	1 Nov 93	1021	N22:04.12	W108:35.78	2	76	145	Off
02		J 1065	3 Aug 93	1044	N24:32.36	W109:01.39	4	92	477	On
02		J 1334	16 Aug 93	0612	N25:39.36	W109:59.20	2	92	98	On
02		J 1335	16 Aug 93	0636	N25:33.07	W109:58.02	3	7	48	On
02	10	J 1357	22 Aug 93	0850	N22:31.28	W107:32.01	4	74	383	On
02	10	J 1364	26 Aug 93	1213	N21:39.41	W108:41.10	1	108	173	On
02		J 1384	27 Aug 93	1145	N20:09.60	W109:26.83	3	74	36	On
02	10	J 1399	29 Aug 93	0619	N19:34.49	W109:58.08	2	76	175	On
02		J 1404	29 Aug 93	1053	N20:09.72	W109:58.87	2	91	44	On
02		J 1420	30 Aug 93	0738	N22:27.16	W110:37.63	4	74	30	On
02		J 1421	30 Aug 93	0738	N22:24.97	W110:39.49	4	92	97	On
02		J 1462	4 Sep 93	1046	N25:41.58	W117:01.08	2	108	260	On
02	46	J 1532	26 Sep 93	1208	N23:15.14	W111:11.05	2	55	86	Off
02	10	J 1535	26 Sep 93	1348	N23:22.90	W110:58.03	3	94	116	Off
02	10	J 1544	27 Sep 93	0955	N23:01.41	W109:28.50	1	1	190	On
02		J 1579	28 Sep 93	1643	N25:32.92	W110:32.90	1	95	183	On
02		J 1596	29 Sep 93	1025	N27:04.62	W111:24.61	3	55	375	On
02		J 1622	30 Sep 93	1040	N26:33.71	W110:27.16	2	1	33	On
02		J 1636	1 Oct 93	0732	N25:17.80	W109:31.82	2	94	212	On
02	10	J 1665	3 Oct 93	0611	N21:47.86	W107:59.65	0	55	148	On
02		J 1668	3 Oct 93	0712	N21:49.14	W107:57.02	2	96	28	On
02	10	J 1672	3 Oct 93	0800	N21:57.93	W107:55.42	1	96	201	On
02	10	J 1688	3 Oct 93	1240	N22:21.33	W107:59.16	1	96	132	On
02		J 1695	3 Oct 93	1620	N22:46.76	W108:03.21	1	1	136	On
02	10	J 1701	4 Oct 93	0654	N22:10.90	W108:26.89	2	55	189	On
02		J 1702	4 Oct 93	0755	N22:15.00	W108:29.45	2	1	81	On
02		J 1704	4 Oct 93	1054	N22:37.73	W108:25.89	3	55	283	On
02	10	J 1705	4 Oct 93	1227	N22:47.22	W108:26.86	2	94	198	On
02		J 1706	4 Oct 93	1313	N22:54.47	W108:27.22	3	1	108	On
02		J 1715	5 Oct 93	0753	N23:35.99	W108:26.05	1	107	43	On
02	10	J 1749	6 Oct 93	1740	N22:56.21	W108:00.88	2	94	77	On
02		J 1752	7 Oct 93	0631	N22:21.21	W107:29.28	2	94	31	On
02		J 1753	7 Oct 93	0634	N22:19.70	W107:27.77	2	94	45	On
02		J 1761	8 Oct 93	0834	N20:20.14	W106:24.61	4	55	22	On
02		J 1766	9 Oct 93	0634	N20:37.01	W105:30.03	2	55	18	On
02		J 1774	10 Oct 93	1511	N21:01.48	W106:28.84	4	55	37	On
02	18 06 99	J 1779	15 Oct 93	0726	N23:56.01	W107:31.28	0	55	2233	On
02	10	J 1787	15 Oct 93	1102	N23:45.60	W107:38.61	1	95	328	On
02	10	J 1794	15 Oct 93	1458	N23:16.06	W107:30.96	3	96	137	On
02		J 1795	15 Oct 93	1545	N23:13.89	W107:30.11	3	55	37	On
02		J 1796	15 Oct 93	1545	N23:13.20	W107:29.40	3	107	138	On
02		J 1806	16 Oct 93	0937	N22:46.67	W107:00.58	2	55	70	On
02	10	J 1827	18 Oct 93	1610	N21:23.74	W107:00.06	2	94	417	On
02		J 1834	19 Oct 93	0754	N20:58.55	W106:54.67	1	55	227	On
02	10	J 1842	20 Oct 93	1159	N20:27.70	W108:57.46	5	107	97	On
02		J 1845	20 Oct 93	1646	N20:10.89	W109:32.77	5	73	62	On
02		J 1875	23 Oct 93	1558	N19:26.43	W112:46.66	2	107	29	On
02		J 1905	25 Oct 93	1729	N22:25.02	W111:16.74	4	94	163	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School size	Ef- fort
<i>Stenella longirostris</i> (unidentified subspecies)										
03		J 1355	21 Aug 93	1349	N22:39.27	W106:26.78	3	92	830	On
03		J 1356	21 Aug 93	1653	N22:14.73	W106:27.63	3	74	368	On
03		J 1708	4 Oct 93	1445	N23:01.08	W108:24.49	1	107	130	On
03 90		J 1762	8 Oct 93	0925	N20:21.10	W106:20.53	4	107	12	On
<i>Delphinus</i> sp.										
05	M	3	28 Jul 93	1459	N32:40.36	W117:34.47	3	94	425	Off
05	M	4	28 Jul 93	1526	N32:39.48	W117:34.30	3	94	145	Off
05	M	5	28 Jul 93	1540	N32:37.65	W117:31.91	3	94	70	Off
05	M	6	28 Jul 93	1648	N32:30.79	W117:21.91	4	107	200*	Off
05	M	8	28 Jul 93	1700	N32:31.49	W117:25.04	4	74	60	Off
05	M	9	28 Jul 93	1714	N32:29.07	W117:26.28	4	74	100	Off
05	M	43	31 Jul 93	0729	N33:05.43	W118:47.45	2	74	1	On
05	M	73	1 Aug 93	0636	N32:43.38	W119:57.27	4	94	25	On
05	M	107	3 Aug 93	1238	N34:05.62	W120:36.90	4	55	75	On
05	M	191	7 Aug 93	1809	N36:00.44	W126:05.33	4	95	8	On
05	M	567	31 Oct 93	1627	N22:57.81	W110:23.04	3	97	60	Off
05	J	1017	30 Jul 93	1804	N27:57.48	W114:59.45	3	7	18*	Off
05	J	1020	30 Jul 93	1834	N28:01.23	W114:59.84	3	91	3	Off
05	J	1024	31 Jul 93	1811	N26:42.11	W113:51.35	4	108	80	Off
05	J	1115	6 Aug 93	0649	N27:49.61	W112:30.05	1	108	44	On
05	J	1145	7 Aug 93	0752	N29:06.97	W113:27.91	2	92	400	Off
05	J	1150	7 Aug 93	1143	N29:33.20	W113:39.13	5	108	150	Off
05	J	1209	10 Aug 93	1110	N30:32.87	W113:56.51	1	92	80*	On
05	J	1232	10 Aug 93	1404	N30:50.28	W114:00.87	1	92	150	On
05	J	1237	10 Aug 93	1435	N30:56.50	W114:02.19	0	7	80*	On
05	J	1439	31 Aug 93	0742	N21:59.96	W112:04.92	3	92	16	On
05	J	1793	15 Oct 93	1433	N23:21.69	W107:30.91	3	57	75	Off
<i>Stenella attenuata graffmani</i>										
06 90	J	1072	3 Aug 93	1508	N25:01.92	W108:58.19	3	97	361	On
06 90	J	1076	3 Aug 93	1758	N25:22.01	W109:04.99	3	97	376	On
06	J	1085	4 Aug 93	1416	N26:48.51	W110:01.98	2	109	229	On
06 90	J	1350	17 Aug 93	1522	N24:01.62	W107:46.02	2	108	223	On
06	J	1352	17 Aug 93	1749	N23:59.92	W107:23.87	2	7	133	On
06	J	1353	21 Aug 93	1050	N23:03.41	W106:28.48	2	76	141	On
06	J	1354	21 Aug 93	1120	N23:02.10	W106:26.79	2	91	35	On
06 18 10	J	1361	26 Aug 93	1026	N21:52.06	W108:34.72	2	76	121	On
06 90	J	1767	9 Oct 93	0658	N20:42.53	W105:28.87	3	95	30	On
06	J	1768	9 Oct 93	1319	N20:59.82	W105:26.41	3	107	50	On
06	J	1769	9 Oct 93	1404	N21:08.90	W105:30.62	3	55	184	On
06 02 18 99	J	1779	15 Oct 93	0726	N23:56.01	W107:31.28	0	55	2233	On
<i>Stenella longirostris orientalis</i>										
10 02	M	562	31 Oct 93	1419	N22:56.57	W110:39.04	2	76	50	Off
10	M	568	1 Nov 93	0716	N22:17.39	W109:01.36	2	104	11	On
10 70 02	M	581	1 Nov 93	1021	N22:04.12	W108:35.78	2	76	145	Off
10	M	583	1 Nov 93	1151	N22:00.46	W108:24.14	2	108	113	On
10	M	587	1 Nov 93	1612	N22:03.74	W107:52.36	1	76	300	On
10	M	594	2 Nov 93	0828	N23:17.61	W106:59.19	4	74	48	On
10 02	J	1357	22 Aug 93	0850	N22:31.28	W107:32.01	4	74	383	On
10 18 06	J	1361	26 Aug 93	1026	N21:52.06	W108:34.72	2	76	121	On
10 02	J	1364	26 Aug 93	1213	N21:39.41	W108:41.10	1	108	173	On
10	J	1379	27 Aug 93	0856	N20:29.88	W109:16.32	3	97	114	On
10	J	1380	27 Aug 93	0916	N20:29.34	W109:17.60	3	108	70	Off
10	J	1388	28 Aug 93	0634	N19:10.02	W109:58.73	2	76	50	On
10	J	1390	28 Aug 93	0710	N19:07.55	W109:59.89	2	74	30	On
10 02	J	1399	29 Aug 93	0619	N19:34.49	W109:58.08	2	76	175	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
10		J 1400	29 Aug 93	0748	N19:49.02	W109:57.45	3	74	110	On
10		J 1401	29 Aug 93	0914	N19:55.76	W109:57.42	3	92	69	On
10		J 1413	29 Aug 93	1655	N20:49.43	W109:59.40	2	97	48	On
10	02	J 1535	26 Sep 93	1348	N23:22.90	W110:58.03	3	94	116	Off
10	02	J 1544	27 Sep 93	0955	N23:01.41	W109:28.50	1	1	190	On
10	02	J 1665	3 Oct 93	0611	N21:47.86	W107:59.65	0	55	148	On
10	02	J 1672	3 Oct 93	0800	N21:57.93	W107:55.42	1	96	201	On
10	02	J 1688	3 Oct 93	1240	N22:21.33	W107:59.16	1	96	132	On
10	02	J 1701	4 Oct 93	0654	N22:10.90	W108:26.89	2	55	189	On
10	02	J 1705	4 Oct 93	1227	N22:47.22	W108:26.86	2	94	198	On
10		J 1726	5 Oct 93	1459	N24:42.63	W108:29.22	2	96	428	On
10		J 1732	6 Oct 93	0927	N23:58.18	W108:02.08	1	55	763	On
10		J 1734	6 Oct 93	1040	N23:48.34	W108:04.64	1	96	103	On
10	02	J 1749	6 Oct 93	1740	N22:56.21	W108:00.88	2	94	77	On
10		J 1782	15 Oct 93	0902	N23:54.54	W107:36.03	0	107	512	On
10	02	J 1787	15 Oct 93	1102	N23:45.60	W107:38.61	1	95	328	On
10	02	J 1794	15 Oct 93	1458	N23:16.06	W107:30.96	3	96	137	On
10		J 1799	16 Oct 93	0630	N23:00.05	W107:25.63	1	95	21	On
10		J 1815	17 Oct 93	0609	N21:30.80	W106:00.42	3	107	4	On
10		J 1816	17 Oct 93	0617	N21:32.83	W105:58.55	3	55	50	On
10	02	J 1827	18 Oct 93	1610	N21:23.74	W107:00.06	2	94	417	On
10		J 1835	19 Oct 93	0835	N20:53.74	W106:58.39	2	96	210	On
10		J 1836	19 Oct 93	0837	N20:53.50	W106:57.70	2	96	283	On
10	02	J 1842	20 Oct 93	1159	N20:27.70	W108:57.46	5	107	97	On
10		J 1872	22 Oct 93	1741	N19:10.13	W112:13.71	3	55	83	On

*Stenella coeruleoalba*

13	17	M 78	1 Aug 93	1512	N32:16.22	W121:12.74	4	96	57	On	
13	17	M 200	8 Aug 93	1431	N35:31.65	W127:23.86	2	74	103	On	
13	17	M 209	9 Aug 93	0951	N36:26.00	W128:18.78	1	94	218	On	
13	17	M 210	9 Aug 93	1029	N36:26.81	W128:15.87	1	95	214	On	
13	17	M 219	10 Aug 93	0817	N37:45.76	W127:41.22	1	96	87	On	
13	17	M 329	2 Sep 93	0725	N34:34.86	W123:14.28	5	107	74	On	
13	17	M 331	2 Sep 93	0751	N34:31.22	W123:16.11	5	95	225	On	
13	17	M 377	11 Sep 93	0856	N30:21.62	W119:05.08	5	1	56	On	
13	17	M 378	11 Sep 93	0926	N30:23.46	W119:02.88	4	1	62	On	
13		M 380	17 Sep 93	1426	N29:51.90	W120:27.43	5	97	73	On	
13		M 382	18 Sep 93	1417	N30:02.23	W122:28.24	5	76	25	On	
13	17	21	M 392	26 Sep 93	1517	N38:36.00	W126:30.38	4	91	192	On
13	17		M 413	28 Sep 93	1651	N40:05.96	W129:26.51	3	76	697	On
13	17		M 414	29 Sep 93	0945	N40:21.25	W129:24.29	4	76		Off
13	17		M 424	1 Oct 93	1318	N40:38.17	W127:56.06	0	92	48	On
13	17		M 425	1 Oct 93	1421	N40:34.06	W128:05.60	1	76	1057	On
13	17		M 429	1 Oct 93	1830	N40:21.44	W128:50.45	3	97	125	On
13	17		M 432	2 Oct 93	1010	N41:25.70	W128:46.94	2	76	1450	On
13	17		M 448	4 Oct 93	0930	N38:22.70	W127:35.25	3	108	905	On
13		M 505	14 Oct 93	1128	N33:56.47	W126:37.62	3	108	15	On	
13		M 508	15 Oct 93	1134	N33:22.58	W125:47.16	2	76	218	On	
13		M 509	15 Oct 93	1345	N33:23.72	W125:25.80	2	74	349	On	
13		M 517	21 Oct 93	1103	N29:04.93	W119:58.54	5	97	73	On	
13		M 518	21 Oct 93	1327	N29:25.91	W119:49.65	3	74	73	On	
13		M 521	23 Oct 93	1735	N30:02.99	W119:25.16	3	104	80	On	
13		M 524	25 Oct 93	0837	N27:35.95	W119:11.25	3	74	120	On	
13		M 588	1 Nov 93	1656	N22:04.50	W107:47.01	1	74	65	On	
13	18	J 1366	26 Aug 93	1441	N21:20.97	W108:52.83	2	76	23	On	
13		J 1369	26 Aug 93	1614	N21:08.54	W108:57.53	1	76	18	On	
13		J 1372	26 Aug 93	1650	N21:03.86	W108:59.72	1	91	13	On	
13		J 1386	27 Aug 93	1510	N19:35.97	W109:43.72	3	76	14	On	
13		J 1391	28 Aug 93	0720	N19:04.64	W110:00.60	2	91	47	On	
13		J 1393	28 Aug 93	0827	N18:56.07	W110:03.99	2	74	10	On	

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
13		J 1395	28 Aug 93	0912	N18:52.87	W110:05.43	2	92	6	On
13		J 1397	28 Aug 93	1024	N18:41.54	W110:14.54	3	76	51	On
13		J 1414	29 Aug 93	1744	N20:58.56	W110:00.04	3	76	26	On
13		J 1415	29 Aug 93	1817	N21:00.57	W109:59.81	3	76	22	On
13		J 1416	29 Aug 93	1828	N21:03.23	W109:59.76	3	74	39	On
13		J 1419	30 Aug 93	0715	N22:27.12	W110:34.09	4	74	42	On
13		J 1422	30 Aug 93	0738	N22:26.74	W110:37.57	4	92	21	On
13		J 1431	30 Aug 93	1452	N22:08.89	W111:31.00	4	97	93	On
13		J 1432	30 Aug 93	1623	N21:59.66	W111:40.34	3	91	33	On
13		J 1438	31 Aug 93	0742	N21:59.10	W112:06.00	3	91	25	On
13		J 1440	31 Aug 93	1034	N21:49.14	W112:28.14	4	92	50	On
13		J 1442	31 Aug 93	1235	N21:45.50	W112:43.54	5	76	53	On
13		J 1443	31 Aug 93	1402	N21:40.69	W112:57.60	5	97	43	On
13		J 1447	1 Sep 93	1455	N23:34.61	W113:41.84	4	76	123	On
13		J 1459	3 Sep 93	1607	N25:59.66	W115:55.59	4	97	118	On
13		J 1460	4 Sep 93	0805	N25:47.50	W116:40.98	2	92	75	On
13	36	J 1461	4 Sep 93	0842	N25:41.40	W116:42.48	3	76	119	Off
13		J 1463	4 Sep 93	1410	N25:32.76	W117:30.48	2	76	103	On
13		J 1464	4 Sep 93	1811	N25:18.59	W118:05.90	4	76	60	On
13		J 1479	8 Sep 93	1105	N26:07.74	W117:30.34	4	76	352	On
13		J 1482	8 Sep 93	1621	N25:17.39	W117:29.05	4	74	33	On
13		J 1646	2 Oct 93	0958	N23:20.78	W108:56.47	0	100	35	Off
13		J 1658	2 Oct 93	1438	N22:50.43	W109:00.30	2	1	33	On
13		J 1662	2 Oct 93	1743	N22:30.23	W109:00.73	1	107	24	On
13		J 1664	2 Oct 93	1803	N22:28.72	W108:59.64	1	1	25	Off
13		J 1669	3 Oct 93	0712	N21:51.46	W107:56.47	2	95	30	On
13		J 1673	3 Oct 93	0806	N21:54.99	W107:57.42	1	96	22	On
13		J 1677	3 Oct 93	1013	N22:07.16	W107:58.06	0	55	49	On
13		J 1679	3 Oct 93	1035	N22:09.08	W107:58.20	0	94	34	On
13		J 1682	3 Oct 93	1100	N22:12.61	W108:01.29	0	96	44	On
13		J 1697	3 Oct 93	1703	N22:50.35	W108:03.63	1	107	19	On
13		J 1700	4 Oct 93	0619	N22:04.04	W108:29.73	2	96	30	On
13		J 1703	4 Oct 93	0929	N22:22.82	W108:27.26	3	94	5	On
13		J 1707	4 Oct 93	1317	N22:53.76	W108:28.32	3	95	16	On
13		J 1751	7 Oct 93	0616	N22:24.04	W107:31.09	2	107	9	On
13		J 1758	7 Oct 93	1657	N21:32.06	W107:28.28	3	107	38	On
13		J 1759	8 Oct 93	0628	N20:01.30	W106:32.36	3	1	5	On
13		J 1773	10 Oct 93	1120	N21:02.71	W106:16.87	3	55	33	On
13		J 1814	16 Oct 93	1456	N22:09.24	W107:01.44	2	55	32	On
13		J 1840	20 Oct 93	0739	N20:31.75	W108:26.04	3	95	30	On
13	77	J 1848	21 Oct 93	0813	N19:58.94	W110:00.72	4	73	24	On
13		J 1849	21 Oct 93	0954	N19:55.08	W110:11.57	4	95	87	On
13		J 1865	22 Oct 93	1120	N19:31.13	W111:23.74	3	57	25	Off
13		J 1869	22 Oct 93	1351	N19:20.68	W111:46.60	3	55	50	On
13		J 1873	23 Oct 93	1201	N19:00.15	W112:59.35	4	55	51	On
13		J 1876	23 Oct 93	1629	N19:33.72	W112:43.60	2	95	172	On
13		J 1881	24 Oct 93	1546	N20:54.32	W111:59.73	3	73	175	On
13		J 1882	24 Oct 93	1645	N21:01.39	W111:55.89	3	95	18	On
13		J 1884	24 Oct 93	1727	N21:06.92	W111:53.61	2	94	52	On
13		J 1889	25 Oct 93	0832	N21:26.81	W111:49.19	3	4	40	Off
13		J 1892	25 Oct 93	0949	N21:33.56	W111:43.91	4	73	50	On
13		J 1895	25 Oct 93	1018	N21:35.00	W111:39.09	4	107	40	On
13		J 1898	25 Oct 93	1336	N21:56.30	W111:31.91	3	73	64	On
13		J 1901	25 Oct 93	1458	N22:06.84	W111:24.99	4	73	148	On
13		J 1902	25 Oct 93	1531	N22:06.16	W111:24.48	3	95	104	On
13		J 1926	27 Oct 93	1535	N24:26.81	W113:00.87	4	55	72	On
13		J 1966	2 Nov 93	0925	N26:16.45	W117:53.71	5	107	113	Off
13		J 1969	3 Nov 93	1549	N27:28.31	W119:29.62	3	96	138	On
13		J 1972	4 Nov 93	1348	N28:19.15	W120:05.86	2	96	91	On
13	17	J 1976	5 Nov 93	1350	N32:06.44	W119:59.86	3	107	83	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
<i>Steno bredanensis</i>										
15		M 576	1 Nov 93	0902	N22:12.14	W108:47.45	2	102	2	Off
15		M 586	1 Nov 93	1529	N22:01.25	W107:53.46	1	108	11	On
15	18	J 1104	5 Aug 93	1439	N28:00.52	W111:16.16	3	92	9	Off
15		J 1412	29 Aug 93	1602	N20:44.40	W109:58.82	2	92	14	On
15	18	J 1428	30 Aug 93	1130	N22:18.79	W111:04.54	4	81	14	On
15		J 1531	26 Sep 93	1158	N23:15.86	W111:16.39	2	55	2	Off
15		J 1553	27 Sep 93	1650	N23:49.58	W109:32.29	2	94	6	On
15		J 1554	27 Sep 93	1714	N23:51.11	W109:32.29	2	94	3	On
15		J 1555	27 Sep 93	1719	N23:52.91	W109:33.13	2	94	4	On
15		J 1556	27 Sep 93	1722	N23:51.97	W109:31.38	2	107	8	On
15		J 1627	30 Sep 93	1334	N26:13.29	W110:28.84	1	107	15	On
15		J 1647	2 Oct 93	1010	N23:14.64	W108:57.30	0	55	13	On
15		J 1666	3 Oct 93	0615	N21:48.45	W107:57.34	0	94	9	On
15		J 1683	3 Oct 93	1104	N22:12.25	W107:59.43	0	96	5	On
15		J 1692	3 Oct 93	1458	N22:34.72	W108:01.66	1	55	7	On
15		J 1711	4 Oct 93	1704	N23:14.55	W108:27.61	1	1	4	On
15		J 1742	6 Oct 93	1339	N23:29.76	W108:04.20	1	55	10	On
15		J 1757	7 Oct 93	1402	N21:40.67	W107:31.50	3	96	4	On
15		J 1765	8 Oct 93	1634	N20:54.76	W105:59.70	4	55	6	On
15		J 1807	16 Oct 93	1107	N22:37.30	W107:00.13	2	55	6	On
15	18 21 70	J 1844	20 Oct 93	1449	N20:10.40	W109:16.29	5	55	58	On
15		J 1945	30 Oct 93	1419	N23:40.56	W116:44.59	4	73	16	On
<i>Delphinus capensis</i>										
16		M 113	3 Aug 93	1450	N34:22.26	W120:22.46	5	55	301	On
16		M 114	3 Aug 93	1756	N34:21.48	W120:29.25	5	96	787	Off
16		M 115	3 Aug 93	1922	N34:27.33	W120:41.47	4	55	277	Off
16		M 121	4 Aug 93	0812	N35:03.30	W120:56.75	2	55	140	On
16		J 1008	30 Jul 93	1139	N28:12.43	W115:24.49	3	7	77	Off
16		J 1010	30 Jul 93	1541	N27:59.10	W115:21.52	5	7	6	Off
16		J 1013	30 Jul 93	1740	N27:57.63	W115:03.44	3	7	80	Off
16		J 1014	30 Jul 93	1759	N27:57.73	W115:01.92	3	7	25	Off
16		J 1015	30 Jul 93	1801	N27:57.21	W115:00.57	3	97	25*	Off
16		J 1016	30 Jul 93	1803	N27:57.31	W115:00.73	3	92	25	Off
16		J 1018	30 Jul 93	1811	N27:57.40	W114:59.54	3	97	20	Off
16		J 1023	31 Jul 93	1810	N26:40.17	W113:50.52	4	7	1088	On
16		J 1025	31 Jul 93	1819	N26:40.93	W113:50.33	4	98	600	Off
16		J 1026	31 Jul 93	1844	N26:40.97	W113:46.04	3	91	292	On
16		J 1049	1 Aug 93	1417	N24:19.96	W112:05.33	4	7	1025	Off
16		J 1102	5 Aug 93	1330	N27:55.81	W111:07.51	3	109	148	Off
16		J 1123	6 Aug 93	1026	N28:18.06	W112:28.28	2	108	38	On
16		J 1124	6 Aug 93	1048	N28:18.58	W112:31.71	2	7	253	On
16		J 1127	6 Aug 93	1350	N28:36.84	W112:33.62	3	91	213	On
16		J 1128	6 Aug 93	1445	N28:37.02	W112:27.57	3	108	273	On
16		J 1129	6 Aug 93	1529	N28:38.28	W112:30.39	2	109	55	On
16		J 1139	6 Aug 93	1745	N28:53.96	W112:38.11	2	91	1675	On
16		J 1142	7 Aug 93	0639	N29:00.20	W113:21.09	3	91	228	On
16		J 1144	7 Aug 93	0712	N29:00.70	W113:23.94	3	108	186	On
16		J 1147	7 Aug 93	0831	N29:08.44	W113:30.66	2	7	120	On
16		J 1161	7 Aug 93	1525	N29:47.61	W113:31.23	4	97	213	On
16		J 1162	7 Aug 93	1636	N29:59.85	W113:31.98	4	97	583	On
16		J 1192	10 Aug 93	0613	N29:45.81	W114:02.28	1	92	24	On
16		J 1211	10 Aug 93	1121	N30:33.73	W113:59.98	1	97	480	On
16		J 1238	10 Aug 93	1438	N30:58.86	W113:56.05	0	97	50	On
16		J 1241	10 Aug 93	1512	N31:03.11	W114:03.42	0	91	175	On
16		J 1300	13 Aug 93	1815	N29:15.92	W112:30.53	5	108	200	On
16		J 1307	14 Aug 93	1547	N27:21.55	W112:03.00	2	97	89	On
16		J 1329	15 Aug 93	1525	N25:48.85	W111:02.36	3	97	66	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
16		J 1493	23 Sep 93	1705	N29:09.81	W114:47.90	3	94	223	On
16		J 1496	24 Sep 93	0921	N28:03.05	W114:25.24	3	107	25	On
16		J 1497	24 Sep 93	0938	N28:01.85	W114:26.99	3	57	221	Off
16		J 1500	24 Sep 93	1507	N27:45.59	W115:06.42	3	94	417	Off
16		J 1501	24 Sep 93	1555	N27:40.65	W115:06.91	3	94	773	Off
16	76 22	J 1504	24 Sep 93	1816	N27:27.08	W114:49.30	3	4	30	Off
16	22	J 1507	25 Sep 93	1222	N25:49.71	W112:34.16	1	96	867	On
16		J 1513	25 Sep 93	1359	N25:35.18	W112:41.40	1	96	376	On
16		J 1546	27 Sep 93	1243	N23:11.66	W109:21.51	3	94	18	On
16		J 1560	28 Sep 93	0644	N24:22.99	W110:29.08	3	55	107	On
16		J 1562	28 Sep 93	0726	N24:28.91	W110:32.02	3	1	20	On
16		J 1563	28 Sep 93	0742	N24:29.67	W110:32.12	3	1	21	On
16	17	J 1566	28 Sep 93	0935	N24:39.61	W110:31.20	2	55	39	On
16		J 1572	28 Sep 93	1343	N25:08.08	W110:30.29	3	55	147	On
16		J 1588	29 Sep 93	0632	N26:40.94	W111:30.28	2	107	93	On
16	22	J 1918	27 Oct 93	0943	N24:35.67	W112:15.05	4	73	1245	On

*Delphinus delphis*

17		M 1	28 Jul 93	1314	N32:39.26	W117:30.02	3	55	775	On
17		M 2	28 Jul 93	1357	N32:43.27	W117:28.97	3	96	173	On
17		M 7	28 Jul 93	1658	N32:31.27	W117:22.82	4	55	400	Off
17		M 13	29 Jul 93	1120	N31:59.68	W118:33.18	4	55	263	On
17		M 17	29 Jul 93	1723	N32:42.03	W118:08.43	4	104	146	On
17		M 18	29 Jul 93	1839	N32:46.95	W118:05.17	4	94	46	On
17		M 21	30 Jul 93	0625	N33:00.22	W118:00.02	2	55	155	On
17		M 22	30 Jul 93	0647	N33:00.66	W118:00.51	2	15	55	Off
17		M 23	30 Jul 93	0709	N33:06.04	W118:00.69	2	95	211	On
17		M 24	30 Jul 93	0740	N33:05.88	W117:59.44	2	107	180	On
17		M 25	30 Jul 93	0805	N33:09.44	W117:57.91	2	74	598	On
17		M 29	30 Jul 93	1301	N33:21.98	W117:53.56	3	55	768	On
17		M 37	31 Jul 93	0614	N33:09.23	W118:38.39	2	55	160	On
17		M 38	31 Jul 93	0626	N33:08.25	W118:40.19	2	55	15	Off
17		M 39	31 Jul 93	0628	N33:08.10	W118:41.16	2	55	35	On
17		M 40	31 Jul 93	0629	N33:08.03	W118:40.90	2	96	7	On
17		M 42	31 Jul 93	0710	N33:07.30	W118:46.21	2	107	70	On
17		M 45	31 Jul 93	0814	N33:02.62	W118:53.85	2	104	276	On
17		M 48	31 Jul 93	0904	N32:56.60	W118:52.68	2	55	103	On
17		M 51	31 Jul 93	0928	N32:59.38	W118:54.57	2	96	656	On
17		M 58	31 Jul 93	1420	N32:50.43	W119:18.72	3	74	784	On
17		M 59	31 Jul 93	1514	N32:51.45	W119:24.79	3	104	303	On
17		M 63	31 Jul 93	1624	N32:53.07	W119:31.39	4	55	13	On
17		M 65	31 Jul 93	1643	N32:52.08	W119:36.36	3	96	25	On
17	13	M 78	1 Aug 93	1512	N32:16.22	W121:12.74	4	96	57	On
17		M 82	2 Aug 93	1337	N33:02.46	W120:56.03	4	94	116	On
17		M 83	2 Aug 93	1358	N33:05.84	W120:54.94	4	94	43	On
17		M 88	2 Aug 93	1638	N33:12.80	W120:44.59	4	107	87	On
17		M 90	2 Aug 93	1729	N33:18.33	W120:39.69	4	96	46	On
17		M 91	2 Aug 93	1828	N33:24.22	W120:34.65	3	74	71	On
17		M 92	2 Aug 93	1850	N33:26.07	W120:34.48	4	104	140	On
17		M 100	3 Aug 93	0929	N33:51.93	W120:33.60	4	94	17	On
17		M 124	4 Aug 93	0838	N34:58.60	W120:59.36	2	94	91	On
17		M 125	4 Aug 93	0923	N34:58.52	W120:58.28	2	95	36	On
17		M 126	4 Aug 93	0947	N34:57.33	W121:00.76	2	94	423	On
17		M 131	4 Aug 93	1124	N34:54.44	W121:07.86	3	55	13	On
17		M 144	4 Aug 93	1817	N34:41.35	W121:54.50	4	94	41	On
17		M 147	5 Aug 93	0720	N36:04.27	W122:24.98	4	55	8	On
17	27	M 175	6 Aug 93	1715	N36:36.56	W124:02.13	5	95	10	On
17		M 176	6 Aug 93	1733	N36:36.25	W124:05.69	5	96	22	On
17		M 177	6 Aug 93	1815	N36:37.14	W124:13.58	4	107	122	On
17		M 178	6 Aug 93	1840	N36:37.84	W124:14.39	4	74	344	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
17		M 181	7 Aug 93	0935	N36:27.78	W124:52.97	5	107	17	On
17		M 182	7 Aug 93	0945	N36:27.10	W124:55.51	5	96	188	On
17		M 183	7 Aug 93	1015	N36:28.41	W124:57.83	4	55	37	On
17		M 184	7 Aug 93	1220	N36:18.35	W125:16.45	3	96	32	On
17		M 185	7 Aug 93	1329	N36:12.47	W125:28.12	4	107	33	On
17		M 187	7 Aug 93	1353	N36:12.15	W125:31.36	4	95	185	On
17		M 188	7 Aug 93	1413	N36:11.66	W125:34.51	4	94	59	On
17		M 190	7 Aug 93	1752	N36:01.90	W126:03.01	4	95	32	On
17		M 193	8 Aug 93	0818	N35:47.23	W126:43.25	3	96	98	On
17		M 199	8 Aug 93	1401	N35:32.32	W127:17.31	2	74	32	On
17	13	M 200	8 Aug 93	1431	N35:31.65	W127:23.86	2	74	103	On
17		M 203	8 Aug 93	1843	N35:21.65	W127:56.45	1	96	19	On
17		M 208	9 Aug 93	0703	N36:02.85	W128:29.47	3	104	98	On
17	13	M 209	9 Aug 93	0951	N36:26.00	W128:18.78	1	94	218	On
17	13	M 210	9 Aug 93	1029	N36:26.81	W128:15.87	1	95	214	On
17		M 211	9 Aug 93	1104	N36:33.51	W128:10.67	1	74	253	On
17		M 215	9 Aug 93	1656	N37:11.29	W127:52.56	1	107	58	On
17		M 216	9 Aug 93	1729	N37:15.04	W127:52.85	1	74	49	On
17		M 218	10 Aug 93	0750	N37:41.48	W127:41.29	1	55	65	On
17	13	M 219	10 Aug 93	0817	N37:45.76	W127:41.22	1	96	87	On
17		M 220	10 Aug 93	1137	N38:09.82	W127:28.19	1	107	21	On
17		M 221	10 Aug 93	1337	N38:25.31	W127:20.31	2	94	20	On
17		M 223	10 Aug 93	1642	N38:51.85	W127:05.37	2	95	29	On
17		M 258	15 Aug 93	1127	N39:06.04	W124:44.24	3	94	63	On
17		M 307	1 Sep 93	0922	N35:42.25	W122:40.51	4	95	188	On
17		M 310	1 Sep 93	1325	N35:12.73	W122:54.91	5	94	115	On
17		M 311	1 Sep 93	1409	N35:07.28	W122:55.76	5	104	38	On
17		M 312	1 Sep 93	1417	N35:05.84	W122:56.08	5	96	5	On
17	74	M 317	1 Sep 93	1542	N34:49.03	W122:57.07	4	94	33	On
17	74	M 320	1 Sep 93	1646	N34:45.74	W122:58.61	4	94	81	On
17		M 321	1 Sep 93	1710	N34:44.33	W123:01.03	4	1	215	On
17		M 323	1 Sep 93	1843	N34:43.13	W123:00.22	4	55	26	On
17	13	M 329	2 Sep 93	0725	N34:34.86	W123:14.28	5	107	74	On
17	13	M 331	2 Sep 93	0751	N34:31.22	W123:16.11	5	95	225	On
17		M 334	2 Sep 93	0920	N34:24.94	W123:19.12	5	94	271	On
17		M 341	2 Sep 93	1410	N34:06.65	W123:44.40	4	55	32	On
17		M 343	3 Sep 93	0830	N33:57.46	W123:29.40	4	1	101	On
17		M 344	3 Sep 93	0920	N33:55.65	W123:30.46	4	94	6	On
17		M 356	7 Sep 93	0836	N34:14.41	W123:10.93	3	55	103	On
17		M 358	7 Sep 93	0939	N34:18.61	W123:02.95	3	95	49	On
17		M 364	7 Sep 93	1259	N34:31.57	W122:31.01	3	95	32	On
17		M 369	7 Sep 93	1553	N34:40.66	W122:05.92	4	95	17	On
17	13	M 377	11 Sep 93	0856	N30:21.62	W119:05.08	5	1	56	On
17	13	M 378	11 Sep 93	0926	N30:23.46	W119:02.88	4	1	62	On
17		M 386	20 Sep 93	1339	N35:06.76	W122:28.34	2	76	112	On
17	77	M 388	20 Sep 93	1525	N35:15.90	W122:27.52	1	108	26	On
17		M 391	26 Sep 93	1424	N38:36.02	W126:21.50	4	104	7	Off
17	21 13	M 392	26 Sep 93	1517	N38:36.00	W126:30.38	4	91	192	On
17		M 402	27 Sep 93	1238	N37:56.29	W128:21.95	3	76	140	On
17		M 403	27 Sep 93	1321	N37:56.67	W128:30.81	3	97	224	On
17		M 404	27 Sep 93	1434	N37:56.14	W128:39.33	2	91	32	On
17		M 407	27 Sep 93	1535	N37:54.11	W128:43.32	2	97	11	On
17		M 408	27 Sep 93	1613	N37:49.37	W128:47.49	2	76	28	On
17		M 409	27 Sep 93	1629	N37:46.61	W128:48.76	2	76	98	On
17		M 410	27 Sep 93	1759	N37:43.11	W129:02.30	3	92	16	On
17		M 411	27 Sep 93	1833	N37:39.54	W128:57.84	3	108	15	On
17	13	M 413	28 Sep 93	1651	N40:05.96	W129:26.51	3	76	697	On
17	13	M 414	29 Sep 93	0945	N40:21.25	W129:24.29	4	76		Off
17		M 416	1 Oct 93	0819	N40:52.04	W127:15.16	1	91	2	On
17		M 417	1 Oct 93	0839	N40:51.50	W127:17.27	1	92	24	Off



Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
17	13	M 424	1 Oct 93	1318	N40:38.17	W127:56.06	0	92	48	On
17	13	M 425	1 Oct 93	1421	N40:34.06	W128:05.60	1	76	1057	On
17		M 426	1 Oct 93	1558	N40:28.88	W128:17.95	2	92	27	On
17	13	M 429	1 Oct 93	1830	N40:21.44	W128:50.45	3	97	125	On
17	13	M 432	2 Oct 93	1010	N41:25.70	W128:46.94	2	76	1450	On
17	13	M 448	4 Oct 93	0930	N38:22.70	W127:35.25	3	108	905	On
17		M 490	11 Oct 93	1641	N36:54.46	W124:51.87	3	76	8	On
17		M 491	11 Oct 93	1717	N36:51.31	W124:54.11	3	83	12	On
17		M 492	12 Oct 93	0729	N36:40.38	W125:09.41	2	108	155	On
17		M 493	12 Oct 93	0759	N36:35.25	W125:14.01	2	92	593	On
17		M 496	12 Oct 93	0951	N36:29.82	W125:24.74	2	91	38	On
17		M 498	12 Oct 93	1327	N35:58.36	W125:33.89	3	91	23	On
17		M 499	12 Oct 93	1336	N35:55.61	W125:34.76	3	104	353	On
17		M 501	12 Oct 93	1613	N35:46.72	W125:39.75	3	76	63	On
17		M 520	23 Oct 93	0927	N31:18.99	W118:53.57	2	74	43	On
17		M 525	26 Oct 93	1235	N28:29.44	W116:45.05	4	76	70	On
17		M 526	27 Oct 93	0814	N27:12.40	W114:47.35	4	76	525	On
17		M 531	28 Oct 93	0809	N24:33.15	W114:59.23	3	76	260	On
17		M 534	28 Oct 93	1507	N23:24.45	W114:57.38	3	104	465	On
17	70	M 536	29 Oct 93	0748	N22:04.70	W114:29.37	3	97	141	On
17		M 538	29 Oct 93	1249	N21:23.66	W114:48.74	3	91	79	On
17		M 547	30 Oct 93	1633	N21:36.62	W113:10.21	2	97	133	On
17		M 548	30 Oct 93	1726	N21:35.60	W113:03.85	2	91	262	On
17		M 550	31 Oct 93	0802	N22:30.99	W111:13.85	4	91	656	On
17		J 1001	29 Jul 93	0733	N30:32.83	W116:15.82	3	92	873	On
17		J 1002	29 Jul 93	0829	N30:28.58	W116:19.49	3	109	1350	On
17		J 1052	1 Aug 93	1851	N24:05.08	W111:33.67	5	91	1313	Off
17		J 1429	30 Aug 93	1235	N22:17.92	W111:10.39	5	92	43	On
17		J 1434	30 Aug 93	1812	N22:05.91	W111:51.57	3	92	44	On
17		J 1435	31 Aug 93	0615	N22:02.29	W111:53.43	4	97	70	On
17		J 1436	31 Aug 93	0637	N22:02.98	W111:55.52	4	74	83	On
17		J 1437	31 Aug 93	0649	N22:02.73	W111:55.94	4	92	21	On
17		J 1441	31 Aug 93	1053	N21:50.46	W112:30.03	4	74	340	On
17		J 1444	31 Aug 93	1501	N21:33.90	W113:08.03	5	92	431	On
17		J 1445	31 Aug 93	1501	N21:34.98	W113:07.34	5	74	555	On
17		J 1446	1 Sep 93	1401	N23:27.28	W113:44.81	5	74	520	On
17		J 1449	1 Sep 93	1735	N23:50.58	W113:32.87	5	97	278	On
17		J 1450	2 Sep 93	0832	N24:18.03	W113:20.12	5	108	237	On
17		J 1458	3 Sep 93	0719	N26:27.84	W114:27.90	4	74	253	On
17	77	J 1474	7 Sep 93	1402	N27:40.81	W117:30.15	5	92	54	On
17		J 1485	11 Sep 93	0954	N31:02.31	W116:51.75	1	74	10	On
17		J 1486	11 Sep 93	1529	N30:49.19	W117:40.05	3	74	127	On
17		J 1489	23 Sep 93	0709	N28:34.65	W116:16.29	4	96	134	On
17		J 1515	25 Sep 93	1637	N25:13.81	W112:53.24	3	96	367	On
17	16	J 1566	28 Sep 93	0935	N24:39.61	W110:31.20	2	55	39	On
17		J 1571	28 Sep 93	1301	N25:01.53	W110:28.46	3	1	35	On
17		J 1639	1 Oct 93	1037	N24:55.41	W109:30.96	2	96	53	Off
17		J 1649	2 Oct 93	1051	N23:11.46	W108:57.34	1	95	94	On
17		J 1650	2 Oct 93	1213	N23:07.39	W108:58.37	2	96	52	On
17		J 1686	3 Oct 93	1144	N22:15.93	W108:01.07	1	55	83	On
17		J 1764	8 Oct 93	1523	N20:48.29	W106:00.68	4	96	36	On
17		J 1797	15 Oct 93	1608	N23:08.76	W107:32.39	3	96	203	On
17		J 1804	16 Oct 93	0844	N22:56.79	W107:01.20	2	95	105	On
17		J 1810	16 Oct 93	1136	N22:32.85	W106:59.92	1	73	79	On
17		J 1811	16 Oct 93	1229	N22:29.29	W106:59.78	2	94	61	On
17		J 1812	16 Oct 93	1234	N22:28.66	W106:58.16	2	94	88	On
17		J 1813	16 Oct 93	1405	N22:15.14	W107:00.99	2	95	174	On
17		J 1825	18 Oct 93	1520	N21:32.60	W106:59.40	2	94	138	On
17		J 1826	18 Oct 93	1535	N21:30.98	W106:58.23	2	95	295	On
17		J 1838	19 Oct 93	1433	N20:36.87	W107:53.29	5	94	46	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Ef-fort
17		J 1888	25 Oct 93	0740	N21:22.62	W111:48.61	3	55	127	On
17		J 1896	25 Oct 93	1028	N21:39.51	W111:39.47	4	94	642	On
17		J 1921	27 Oct 93	1221	N24:30.10	W112:37.72	3	96	650	On
17		J 1923	27 Oct 93	1309	N24:28.52	W112:41.61	3	94	66	On
17		J 1937	28 Oct 93	1447	N23:49.10	W114:28.89	4	110	405	Off
17		J 1938	29 Oct 93	0919	N23:35.79	W115:25.12	3	94	359	On
17		J 1939	29 Oct 93	1020	N23:33.18	W115:31.78	3	55	20	On
17		J 1941	29 Oct 93	1432	N23:17.06	W116:04.97	1	73	15	On
17		J 1946	30 Oct 93	1428	N23:41.45	W116:42.01	4	73	95	On
17		J 1952	31 Oct 93	0813	N24:20.63	W116:15.63	2	95	275	On
17		J 1955	31 Oct 93	1153	N24:46.79	W116:02.63	1	96	220	On
17		J 1958	1 Nov 93	0653	N25:13.13	W115:51.98	3	55	140	On
17		J 1959	1 Nov 93	0759	N25:17.62	W115:48.05	3	95	90	On
17		J 1970	4 Nov 93	0643	N27:34.83	W119:57.46	3	55	39	On
17 13		J 1976	5 Nov 93	1350	N32:06.44	W119:59.86	3	107	83	On
<i>Tursiops truncatus</i>										
18 21		M 351	6 Sep 93	0922	N32:03.05	W121:51.49	3	95	33	On
18		M 372	8 Sep 93	1416	N33:51.01	W119:56.78	5	55	42	On
18 21		M 450	4 Oct 93	1631	N38:25.34	W126:52.38	4	108	9	On
18 21		M 489	11 Oct 93	1551	N36:56.01	W124:51.66	3	97	45	On
18 21 27		M 495	12 Oct 93	0855	N36:35.33	W125:22.10	2	108	52	On
18		M 515	20 Oct 93	1341	N29:28.06	W121:55.12	3	74	7	On
18 36		M 529	27 Oct 93	1357	N26:42.44	W115:03.98	4	74	6	On
18		M 546	30 Oct 93	1553	N21:32.84	W113:21.20	2	91	1	On
18		M 559	31 Oct 93	1338	N22:56.12	W110:44.00	2	97	11	Off
18 21		M 589	2 Nov 93	0647	N23:04.27	W106:58.68	3	104	52	On
18		M 590	2 Nov 93	0749	N23:14.41	W106:57.57	4	92	16	On
18		M 591	2 Nov 93	0809	N23:14.78	W106:58.44	4	97	5	On
18		M 592	2 Nov 93	0810	N23:16.17	W106:58.35	4	74	3	On
18		M 593	2 Nov 93	0815	N23:18.07	W106:57.73	4	74	1	On
18		J 1027	1 Aug 93	0708	N25:05.53	W112:44.90	3	91	7	Off
18		J 1028	1 Aug 93	0735	N25:02.06	W112:42.08	3	97	22	Off
18		J 1029	1 Aug 93	0804	N24:57.70	W112:39.46	3	108	25	Off
18		J 1030	1 Aug 93	0809	N24:57.48	W112:39.29	3	98	15	Off
18		J 1031	1 Aug 93	0822	N24:54.23	W112:39.19	3	97	14	Off
18		J 1033	1 Aug 93	0840	N24:51.16	W112:37.16	3	97	9	Off
18		J 1035	1 Aug 93	0856	N24:51.37	W112:34.96	3	7	73	Off
18		J 1036	1 Aug 93	0935	N24:51.42	W112:34.73	3	91	30	Off
18		J 1037	1 Aug 93	0936	N24:49.78	W112:32.89	3	92	8	Off
18		J 1038	1 Aug 93	0942	N24:49.61	W112:33.41	3	92	9	Off
18		J 1039	1 Aug 93	1001	N24:47.47	W112:32.50	3	91	5	Off
18		J 1040	1 Aug 93	1005	N24:46.88	W112:31.15	3	108	4	Off
18		J 1041	1 Aug 93	1007	N24:46.92	W112:31.71	3	91	3	Off
18		J 1042	1 Aug 93	1017	N24:45.59	W112:30.30	3	91	3	Off
18		J 1044	1 Aug 93	1033	N24:43.76	W112:27.84	3	7	14	Off
18		J 1045	1 Aug 93	1045	N24:41.90	W112:26.19	3	91	10	Off
18		J 1046	1 Aug 93	1059	N24:39.48	W112:25.01	3	91	6	Off
18		J 1050	1 Aug 93	1425	N24:22.46	W112:05.44	4	91	17	Off
18		J 1051	1 Aug 93	1828	N24:10.63	W111:38.57	5	91	6	Off
18		J 1053	2 Aug 93	0713	N23:20.15	W110:38.90	4	92	2	On
18		J 1054	2 Aug 93	0718	N23:20.08	W110:39.94	4	97		On
18		J 1055	2 Aug 93	0813	N23:09.48	W110:48.84	4	92	12	On
18		J 1056	2 Aug 93	0846	N23:08.88	W110:51.51	4	92	4	On
18		J 1061	2 Aug 93	1131	N22:54.29	W110:52.24	4	84	4	Off
18		J 1069	3 Aug 93	1345	N24:51.65	W108:59.21	3	4	5	Off
18		J 1071	3 Aug 93	1456	N25:03.49	W108:57.95	3	109	45	On
18		J 1074	3 Aug 93	1642	N25:10.28	W108:59.12	3	91	5	On
18		J 1075	3 Aug 93	1711	N25:18.26	W109:01.11	3	108	93	On
18 21		J 1079	4 Aug 93	0815	N26:02.35	W109:58.30	5	7	14	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
18		J 1081	4 Aug 93	1109	N26:30.28	W109:57.58	3	80	3	On
18		J 1086	4 Aug 93	1525	N26:56.39	W110:03.97	3	91	3	On
18		J 1087	4 Aug 93	1558	N26:57.87	W110:04.80	3	108	4	On
18		J 1088	4 Aug 93	1626	N26:59.08	W110:07.36	3	91	7	Off
18		J 1091	5 Aug 93	0826	N27:03.36	W111:01.17	2	91	19	On
18		J 1095	5 Aug 93	0745	N27:11.16	W111:00.43	2	109	16	On
18		J 1096	5 Aug 93	0802	N27:11.82	W111:00.00	2	108	22	On
18		J 1097	5 Aug 93	0815	N27:14.61	W110:58.97	2	91	18	On
18		J 1101	5 Aug 93	1241	N27:49.55	W111:00.65	2	97	5	On
18	15	J 1104	5 Aug 93	1439	N28:00.52	W111:16.16	3	92	9	Off
18		J 1105	5 Aug 93	1529	N28:02.85	W111:24.97	3	7	36	On
18		J 1107	5 Aug 93	1627	N28:03.74	W111:26.77	3	108	37	On
18		J 1108	5 Aug 93	1711	N28:06.35	W111:27.25	2	108	2	On
18		J 1111	6 Aug 93	0601	N27:41.19	W112:29.74	1	91	3	On
18		J 1117	6 Aug 93	0910	N28:07.62	W112:29.03	2	97	11	On
18	36	J 1118	6 Aug 93	0920	N28:10.63	W112:31.02	2	97	31	On
18		J 1119	6 Aug 93	0945	N28:11.33	W112:29.96	2	92	18	On
18		J 1120	6 Aug 93	1009	N28:15.38	W112:31.00	2	91	12	On
18		J 1121	6 Aug 93	1020	N28:17.06	W112:29.97	2	92	10	On
18		J 1132	6 Aug 93	1552	N28:42.50	W112:29.97	2	109	2	On
18		J 1170	8 Aug 93	1812	N31:11.52	W113:29.89	4	109	23	On
18		J 1231	10 Aug 93	1358	N30:52.79	W114:01.19	1	92	12	On
18		J 1233	10 Aug 93	1405	N30:50.72	W114:00.01	1	109	6	On
18		J 1243	10 Aug 93	1722	N31:24.00	W113:58.67	0	97	2	On
18		J 1255	11 Aug 93	0849	N30:51.72	W114:33.84	1	97	15	Off
18		J 1260	11 Aug 93	0942	N30:45.69	W114:25.15	1	97	10	Off
18		J 1268	11 Aug 93	1539	N31:25.45	W114:13.86	1	7	16	On
18		J 1301	14 Aug 93	0756	N28:23.24	W112:02.14	3	92	5	On
18		J 1303	14 Aug 93	1026	N28:05.84	W112:03.58	5	108	49	On
18	36	J 1305	14 Aug 93	1346	N27:36.49	W112:03.48	2	91	32	On
18		J 1309	14 Aug 93	1705	N27:14.22	W111:59.65	2	92	81	On
18		J 1310	15 Aug 93	0712	N26:44.39	W110:58.02	2	7	1*	On
18		J 1318	15 Aug 93	0845	N26:35.11	W111:01.91	2	91	1	On
18		J 1320	15 Aug 93	0908	N26:33.51	W111:01.48	2	109	15	On
18		J 1328	15 Aug 93	1354	N25:59.49	W110:58.60	3	108	63	On
18		J 1351	17 Aug 93	1658	N24:01.68	W107:34.35	2	97	16	On
18	06 10	J 1361	26 Aug 93	1026	N21:52.06	W108:34.72	2	76	121	On
18	13	J 1366	26 Aug 93	1441	N21:20.97	W108:52.83	2	76	23	On
18		J 1375	26 Aug 93	1813	N20:54.69	W109:00.90	2	74	14	On
18		J 1394	28 Aug 93	0904	N18:53.72	W110:04.98	2	97	6	On
18	99	J 1398	28 Aug 93	1029	N18:39.06	W110:12.52	3	76	8	Off
18		J 1405	29 Aug 93	1144	N20:13.67	W109:59.50	1	92	6	On
18	15	J 1428	30 Aug 93	1130	N22:18.79	W111:04.54	4	81	14	On
18	33 79	J 1469	6 Sep 93	1420	N26:57.70	W118:05.19	3	97	353	On
18		J 1470	6 Sep 93	1558	N26:58.22	W118:04.51	3	92	37	On
18		J 1487	21 Sep 93	1844	N31:38.11	W117:29.99	4	55	3	On
18		J 1526	26 Sep 93	1037	N23:23.22	W111:24.45	1	98	1	Off
18	46	J 1527	26 Sep 93	1039	N23:19.61	W111:25.71	1	1	2	Off
18		J 1528	26 Sep 93	1045	N23:22.20	W111:23.39	1	95	10	Off
18		J 1538	26 Sep 93	1533	N23:26.97	W110:44.65	4	95	9	On
18		J 1539	26 Sep 93	1607	N23:33.94	W110:43.18	4	107	30	On
18		J 1545	27 Sep 93	1222	N23:10.87	W109:22.97	3	1	6	Off
18		J 1547	27 Sep 93	1416	N23:29.93	W109:22.64	2	55	9	On
18		J 1564	28 Sep 93	0843	N24:40.43	W110:27.88	3	107	49	On
18		J 1587	29 Sep 93	0629	N26:39.80	W111:28.79	2	55	24	On
18	36	J 1589	29 Sep 93	0801	N26:46.00	W111:31.41	2	1	36	On
18		J 1603	29 Sep 93	1325	N27:24.43	W111:29.78	2	96	12	On
18		J 1604	29 Sep 93	1333	N27:25.74	W111:32.63	2	96	20	On
18		J 1605	29 Sep 93	1341	N27:27.79	W111:29.18	2	95	13	On
18		J 1606	29 Sep 93	1355	N27:30.27	W111:32.10	2	96	60	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
18		J 1607	29 Sep 93	1358	N27:31.50	W111:31.09	2	96	35	On
18		J 1608	29 Sep 93	1401	N27:32.90	W111:28.84	2	95	18	On
18		J 1615	29 Sep 93	1804	N28:00.33	W111:29.62	1	55	7	On
18		J 1617	30 Sep 93	0729	N26:59.77	W110:31.91	2	95	208	On
18	21	J 1621	30 Sep 93	0959	N26:38.60	W110:28.25	2	107	44	On
18		J 1630	30 Sep 93	1602	N25:51.39	W110:31.42	1	94	30	On
18	36	J 1631	30 Sep 93	1638	N25:45.64	W110:31.22	1	55	21	On
18	21	J 1635	1 Oct 93	0630	N25:23.32	W109:29.96	2	94	332	On
18		J 1652	2 Oct 93	1307	N23:04.60	W108:59.32	2	1	7	On
18		J 1653	2 Oct 93	1318	N23:00.92	W108:58.64	2	1	93	On
18		J 1654	2 Oct 93	1337	N23:00.59	W108:58.39	2	100	6	Off
18		J 1671	3 Oct 93	0748	N21:53.57	W107:57.28	2	55	21	On
18		J 1674	3 Oct 93	0922	N22:00.12	W107:58.27	1	1	13	On
18		J 1676	3 Oct 93	1001	N22:02.84	W107:57.82	0	55	13	On
18		J 1690	3 Oct 93	1443	N22:33.29	W108:01.62	1	96	4	On
18	21	J 1693	3 Oct 93	1542	N22:43.95	W108:00.79	1	55	13	On
18		J 1696	3 Oct 93	1653	N22:49.15	W108:05.16	1	94	16	On
18	21	J 1714	5 Oct 93	0731	N23:33.84	W108:28.98	1	107	26	On
18	21	J 1716	5 Oct 93	0820	N23:39.33	W108:28.93	1	94	155	On
18	21	J 1727	5 Oct 93	1551	N24:47.96	W108:31.71	2	94	228	On
18		J 1728	5 Oct 93	1658	N24:51.43	W108:31.73	2	55	2	On
18		J 1730	6 Oct 93	0803	N24:10.93	W108:00.72	2	94	10	On
18		J 1736	6 Oct 93	1121	N23:45.61	W108:04.43	1	107	4	On
18		J 1772	10 Oct 93	1017	N21:02.94	W106:09.89	4	100	103	Off
18		J 1775	14 Oct 93	1226	N23:19.12	W106:55.79	4	50	20	Off
18	21	J 1776	14 Oct 93	1306	N23:21.39	W106:58.39	2	96	60	On
18		J 1778	15 Oct 93	0657	N24:02.69	W107:32.25	1	95	17	On
18	02 06 99	J 1779	15 Oct 93	0726	N23:56.01	W107:31.28	0	55	2233	On
18		J 1780	15 Oct 93	0737	N23:55.99	W107:33.90	0	55	9	On
18		J 1789	15 Oct 93	1148	N23:45.08	W107:38.11	1	55	45	On
18		J 1800	16 Oct 93	0653	N22:59.70	W107:18.35	1	55	22	On
18		J 1801	16 Oct 93	0703	N22:59.78	W107:19.41	1	96	2	On
18		J 1805	16 Oct 93	0910	N22:54.66	W107:01.01	2	94	6	On
18		J 1817	18 Oct 93	0612	N22:08.16	W106:30.94	1	96	46	On
18		J 1819	18 Oct 93	0809	N21:53.11	W106:30.25	2	94	26	On
18		J 1820	18 Oct 93	0827	N21:50.97	W106:30.42	2	95	48	On
18		J 1823	18 Oct 93	1127	N21:59.93	W106:49.74	1	73	9	On
18		J 1839	19 Oct 93	1717	N20:37.58	W108:11.74	5	55	20	On
18		J 1841	20 Oct 93	0832	N20:30.64	W108:32.59	3	55	3	On
18	15 21 70	J 1844	20 Oct 93	1449	N20:10.40	W109:16.29	5	55	58	On
18		J 1853	21 Oct 93	1315	N19:44.12	W110:40.43	4	107	3	Off
18		J 1871	22 Oct 93	1614	N19:20.74	W112:01.44	4	94	10	On
18		J 1886	25 Oct 93	0641	N21:14.90	W111:53.67	2	73	13	On
18		J 1887	25 Oct 93	0645	N21:14.47	W111:51.33	2	73	205	On
18	36	J 1891	25 Oct 93	0905	N21:29.63	W111:43.73	4	55	22	On
18		J 1893	25 Oct 93	0955	N21:31.87	W111:41.43	4	96	4	On
18		J 1919	27 Oct 93	1054	N24:32.32	W112:20.88	3	4	8	Off
18		J 1920	27 Oct 93	1059	N24:31.46	W112:22.56	3	96	11	On
18		J 1927	27 Oct 93	1700	N24:23.65	W113:07.55	3	94	5	On
18		J 1933	28 Oct 93	0957	N24:05.63	W113:41.39	3	55	7	On
18		J 1949	30 Oct 93	1713	N24:03.33	W116:30.41	1	55	54	On
18	36	J 1953	31 Oct 93	1056	N24:36.05	W116:08.03	2	95	23	On
18		J 1954	31 Oct 93	1101	N24:37.37	W116:07.15	2	95	68	On
18		J 1957	31 Oct 93	1524	N24:58.52	W115:46.73	1	96	28	Off
<i>Grampus griseus</i>										
21		M 31	30 Jul 93	1550	N33:13.35	W118:15.76	5	94	5	On
21		M 127	4 Aug 93	1014	N34:55.83	W121:03.70	2	74	8	On
21		M 128	4 Aug 93	1037	N34:55.21	W121:04.99	3	96	5	On
21		M 129	4 Aug 93	1043	N34:54.16	W121:06.24	3	55	34	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
21		M 260	15 Aug 93	1429	N39:09.57	W124:59.58	3	95	15	On
21	27	M 297	31 Aug 93	1319	N36:43.03	W122:33.95	3	95	101	On
21		M 340	2 Sep 93	1357	N34:07.06	W123:42.87	4	55	7	On
21		M 346	3 Sep 93	1039	N33:47.29	W123:29.76	4	95	8	On
21		M 350	6 Sep 93	0837	N32:07.57	W121:42.36	3	107	4	On
21	18	M 351	6 Sep 93	0922	N32:03.05	W121:51.49	3	95	33	On
21		M 353	6 Sep 93	1839	N32:40.58	W122:26.86	3	55	7	On
21	17 13	M 392	26 Sep 93	1517	N38:36.00	W126:30.38	4	91	192	On
21	18	M 450	4 Oct 93	1631	N38:25.34	W126:52.38	4	108	9	On
21		M 486	11 Oct 93	1024	N37:27.94	W124:44.16	4	91	4	On
21	18	M 489	11 Oct 93	1551	N36:56.01	W124:51.66	3	97	45	On
21	27 18	M 495	12 Oct 93	0855	N36:35.33	W125:22.10	2	108	52	On
21		M 497	12 Oct 93	1212	N36:07.85	W125:30.82	3	76	12	On
21		M 519	21 Oct 93	1403	N29:28.48	W119:49.57	3	97	13	On
21	18	M 589	2 Nov 93	0647	N23:04.27	W106:58.68	3	104	52	On
21	18	J 1079	4 Aug 93	0815	N26:02.35	W109:58.30	5	7	14	On
21		J 1080	4 Aug 93	0834	N26:03.33	W109:58.54	5	109	1*	On
21		J 1092	5 Aug 93	0659	N27:06.23	W111:00.74	2	91	10	On
21		J 1094	5 Aug 93	0731	N27:08.65	W111:01.49	2	108	25	On
21		J 1311	15 Aug 93	0721	N26:44.34	W110:58.66	2	7	27	On
21		J 1312	15 Aug 93	0754	N26:43.13	W111:01.81	2	92	10	On
21		J 1313	15 Aug 93	0807	N26:41.38	W111:01.70	2	92	3	On
21		J 1314	15 Aug 93	0822	N26:37.41	W111:03.05	2	7	9	On
21		J 1315	15 Aug 93	0831	N26:37.37	W111:02.12	2	7	12	On
21		J 1316	15 Aug 93	0834	N26:36.45	W111:02.12	2	108	15	On
21		J 1317	15 Aug 93	0838	N26:36.07	W111:01.98	2	7	65	On
21		J 1319	15 Aug 93	0905	N26:34.13	W111:01.31	2	109	8	On
21		J 1321	15 Aug 93	0909	N26:32.60	W111:01.55	2	91	2	On
21		J 1323	15 Aug 93	0913	N26:32.08	W111:01.24	2	109	20	On
21		J 1337	16 Aug 93	1032	N25:00.34	W110:02.48	3	97	9	On
21		J 1338	16 Aug 93	1056	N25:00.36	W110:06.51	3	7	6	On
21		J 1340	16 Aug 93	1400	N24:59.11	W110:00.12	3	97	2	On
21		J 1342	16 Aug 93	1410	N24:56.77	W110:01.99	3	109	7	On
21		J 1343	16 Aug 93	1422	N24:55.80	W110:01.20	3	97	5	On
21	77	J 1345	17 Aug 93	1245	N23:59.25	W108:08.65	2	97	30	On
21		J 1346	17 Aug 93	1329	N23:58.04	W108:04.87	1	92	20	On
21		J 1347	17 Aug 93	1331	N23:57.34	W108:03.60	1	109	30	On
21		J 1348	17 Aug 93	1332	N23:55.01	W108:04.49	1	109	6	On
21		J 1392	28 Aug 93	0734	N19:03.34	W110:00.78	2	91	1	Off
21		J 1402	29 Aug 93	1017	N20:02.92	W109:57.12	2	76	8	On
21		J 1411	29 Aug 93	1540	N20:42.17	W109:58.79	2	100	18	Off
21		J 1574	28 Sep 93	1519	N25:20.82	W110:27.91	3	55	150	On
21		J 1594	29 Sep 93	0921	N26:59.84	W111:28.00	3	94	17	On
21		J 1595	29 Sep 93	1011	N27:01.18	W111:25.47	3	55	250	On
21		J 1597	29 Sep 93	1031	N27:05.13	W111:27.83	3	55	17	On
21		J 1598	29 Sep 93	1055	N27:07.82	W111:28.54	3	1	8	On
21		J 1599	29 Sep 93	1106	N27:12.79	W111:29.41	3	1	138	On
21		J 1601	29 Sep 93	1221	N27:18.42	W111:27.99	2	1	12	On
21	18	J 1621	30 Sep 93	0959	N26:38.60	W110:28.25	2	107	44	On
21	18	J 1635	1 Oct 93	0630	N25:23.32	W109:29.96	2	94	332	On
21		J 1643	2 Oct 93	0808	N23:27.05	W108:58.00	1	107	31	On
21		J 1656	2 Oct 93	1428	N22:49.94	W108:55.11	2	94	5	On
21	18	J 1693	3 Oct 93	1542	N22:43.95	W108:00.79	1	55	13	On
21	18	J 1714	5 Oct 93	0731	N23:33.84	W108:28.98	1	107	26	On
21	18	J 1716	5 Oct 93	0820	N23:39.33	W108:28.93	1	94	155	On
21		J 1717	5 Oct 93	0824	N23:38.87	W108:27.33	1	107	30	Off
21	18	J 1727	5 Oct 93	1551	N24:47.96	W108:31.71	2	94	228	On
21		J 1738	6 Oct 93	1138	N23:43.73	W108:04.50	1	94	6	On
21		J 1739	6 Oct 93	1148	N23:41.46	W108:06.06	1	1	45	On
21		J 1743	6 Oct 93	1448	N23:20.03	W108:01.34	1	95	10	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
21		J 1755	7 Oct 93	0921	N22:04.85	W107:29.90	2	55	12	On
21		J 1763	8 Oct 93	1453	N20:45.84	W106:02.61	4	55	175	On
21 18		J 1776	14 Oct 93	1306	N23:21.39	W106:58.39	2	96	60	On
21		J 1791	15 Oct 93	1337	N23:30.81	W107:33.41	3	95	14	On
21		J 1818	18 Oct 93	0809	N21:52.07	W106:29.89	2	55	7	On
21		J 1824	18 Oct 93	1459	N21:38.66	W107:00.74	2	107	7	On
21		J 1828	18 Oct 93	1652	N21:21.12	W106:59.92	2	96	19	On
21		J 1837	19 Oct 93	1057	N20:47.86	W107:18.85	2	73	9	On
21 18 15 70		J 1844	20 Oct 93	1449	N20:10.40	W109:16.29	5	55	58	On
21		J 1858	22 Oct 93	0828	N19:37.15	W111:00.73	3	94	12	On
21		J 1859	22 Oct 93	0912	N19:35.23	W111:05.38	3	73	5	On
21		J 1860	22 Oct 93	0915	N19:35.12	W111:02.96	3	95	1	On
21		J 1861	22 Oct 93	0936	N19:34.46	W111:06.55	4	55	3	On
21		J 1864	22 Oct 93	1054	N19:31.58	W111:21.03	3	55	10	On
21		J 1866	22 Oct 93	1147	N19:28.69	W111:28.97	3	73	2	On
21		J 1868	22 Oct 93	1323	N19:24.04	W111:41.78	3	55	20	On
21		J 1879	24 Oct 93	1104	N20:21.96	W112:17.92	4	107	17	On
21 75		J 1973	5 Nov 93	0657	N31:03.64	W119:59.60	4	94	44	Off
<i>Lagenorhynchus obliquidens</i>										
22 75	M	102	3 Aug 93	1036	N34:02.02	W120:32.72	4	96	6	On
22 ZC	M	133	4 Aug 93	1150	N34:54.38	W121:13.74	3	55	13	On
22	M	169	6 Aug 93	0810	N37:05.40	W122:41.72	4	105	1*	Off
22 44	M	231	12 Aug 93	0738	N41:51.84	W125:00.17	5	55	2	On
22 27	M	232	12 Aug 93	0919	N41:47.37	W125:00.44	6	55	8	Off
22 27	M	234	13 Aug 93	0837	N41:29.67	W124:54.60	5	94	30	On
22	M	236	13 Aug 93	1004	N41:19.45	W124:55.29	5	55	5	On
22	M	242	14 Aug 93	1655	N40:19.56	W125:00.99	3	96	29	On
22	M	246	14 Aug 93	1738	N40:14.06	W124:59.55	3	55	4	On
22 27	M	269	16 Aug 93	0651	N40:55.15	W126:03.13	5	74	21	On
22	M	270	16 Aug 93	0702	N41:00.37	W126:01.01	5	95	5	On
22 27	M	451	5 Oct 93	0754	N39:04.72	W124:00.31	1	92	51	On
22	J	1011	30 Jul 93	1714	N27:56.98	W115:06.34	4	109	24	Off
22 ZC	J	1012	30 Jul 93	1730	N27:57.50	W115:04.34	3	7	4	Off
22	J	1022	31 Jul 93	1743	N26:40.58	W113:55.40	4	7	1	On
22	J	1494	23 Sep 93	1811	N29:10.00	W114:54.20	3	4	14	Off
22	J	1503	24 Sep 93	1806	N27:26.98	W114:50.06	3	1	11	Off
22 76 16	J	1504	24 Sep 93	1816	N27:27.08	W114:49.30	3	4	30	Off
22 16	J	1507	25 Sep 93	1222	N25:49.71	W112:34.16	1	96	867	On
22 16	J	1918	27 Oct 93	0943	N24:35.67	W112:15.05	4	73	1245	On
<i>Lissodelphis borealis</i>										
27 17	M	175	6 Aug 93	1715	N36:36.56	W124:02.13	5	95	10	On
27 22	M	232	12 Aug 93	0919	N41:47.37	W125:00.44	6	55	8	Off
27 22	M	234	13 Aug 93	0837	N41:29.67	W124:54.60	5	94	30	On
27 36	M	266	15 Aug 93	1837	N39:33.49	W125:03.98	5	74	24	On
27 22	M	269	16 Aug 93	0651	N40:55.15	W126:03.13	5	74	21	On
27 21	M	297	31 Aug 93	1319	N36:43.03	W122:33.95	3	95	101	On
27	M	309	1 Sep 93	1114	N35:29.61	W122:49.10	4	96	40	On
27 22	M	451	5 Oct 93	0754	N39:04.72	W124:00.31	1	92	51	On
27 21 18	M	495	12 Oct 93	0855	N36:35.33	W125:22.10	2	108	52	On
<i>Feresa attenuata</i>										
32	J	1950	31 Oct 93	0641	N24:10.88	W116:23.66	2	107	16	On
32	J	1951	31 Oct 93	0657	N24:11.28	W116:23.40	2	98	10	Off
<i>Pseudorca crassidens</i>										
33 77	J	1467	5 Sep 93	1010	N25:05.17	W118:44.97	3	74	13	On
33 18 79	J	1469	6 Sep 93	1420	N26:57.70	W118:05.19	3	97	353	On

Table 5. (continued)

Other Code	Sighting Codes	Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
<i>Globicephala macrorhynchus</i>										
36	M	198	8 Aug 93	1154	N35:30.98	W127:17.46	2	96	16	Off
36	M	224	10 Aug 93	1813	N39:05.83	W126:57.31	3	104	12	On
36	27	M 266	15 Aug 93	1837	N39:33.49	W125:03.98	5	74	24	On
36	M	475	5 Oct 93	1603	N38:11.56	W124:28.89	2	104	23	On
36	M	487	11 Oct 93	1129	N37:17.84	W124:50.47	3	74	10	On
36	18	M 529	27 Oct 93	1357	N26:42.44	W115:03.98	4	74	6	On
36	M	537	29 Oct 93	0836	N22:00.15	W114:30.39	3	92	9	On
36	M	561	31 Oct 93	1419	N22:56.18	W110:38.53	2	76	10	Off
36	J	1116	6 Aug 93	0845	N28:04.21	W112:29.34	1	109	8	On
36	18	J 1118	6 Aug 93	0920	N28:10.63	W112:31.02	2	97	31	On
36	18	J 1305	14 Aug 93	1346	N27:36.49	W112:03.48	2	91	32	On
36	J	1308	14 Aug 93	1701	N27:17.87	W111:57.92	2	91	15	On
36	J	1330	15 Aug 93	1611	N25:46.05	W110:57.55	3	91	7	On
36	J	1331	15 Aug 93	1654	N25:38.32	W110:57.13	3	108	13	On
36	J	1332	15 Aug 93	1754	N25:36.76	W110:56.55	2	97	17	On
36	J	1336	16 Aug 93	0648	N25:35.33	W109:54.90	3	7	30	On
36	13	J 1461	4 Sep 93	0842	N25:41.40	W116:42.48	3	76	119	Off
36	18	J 1589	29 Sep 93	0801	N26:46.00	W111:31.41	2	1	36	On
36	J	1590	29 Sep 93	0817	N26:47.33	W111:34.93	2	95	8	On
36	J	1602	29 Sep 93	1240	N27:23.00	W111:26.72	2	94	29	On
36	J	1609	29 Sep 93	1517	N27:48.19	W111:29.32	2	96	12	On
36	18	J 1631	30 Sep 93	1638	N25:45.64	W110:31.22	1	55	21	On
36	J	1632	30 Sep 93	1710	N25:43.46	W110:26.88	2	96	30	On
36	18	J 1891	25 Oct 93	0905	N21:29.63	W111:43.73	4	55	22	On
36	18	J 1953	31 Oct 93	1056	N24:36.05	W116:08.03	2	95	23	On
<i>Orcinus orca</i>										
37	M	233	13 Aug 93	0654	N41:44.78	W125:00.26	5	55	4	On
37	M	284	22 Aug 93	0827	N41:38.82	W125:09.11	3	1	9	On
37	M	527	27 Oct 93	1009	N27:02.63	W114:51.23	4	74	8	On
37	J	1230	10 Aug 93	1352	N30:52.73	W113:59.29	1	92	6	On
37	J	1483	9 Sep 93	1252	N27:28.45	W117:45.85	5	4	8	Off
37	J	1491	23 Sep 93	0935	N28:44.18	W115:57.37	4	96	6	On
37	J	1614	29 Sep 93	1756	N28:00.78	W111:33.60	1	4	5	Off
37	J	1784	15 Oct 93	1030	N23:47.76	W107:36.98	1	94	2	On
37	J	1916	26 Oct 93	1555	N23:35.05	W112:31.12	5	96	4	On
37	J	1944	30 Oct 93	1017	N23:04.79	W116:59.13	4	73	3	On
<i>Phocoena phocoena</i>										
40	M	117	4 Aug 93	0628	N35:05.91	W120:42.03	0	104	1	On
40	M	390	25 Sep 93	1246	N39:16.71	W123:55.13	1	92	2	On
40	M	458	5 Oct 93	1018	N38:48.49	W124:07.40	2	92	1	On
<i>Phocoena sinus</i>										
41	J	1169	8 Aug 93	1637	N31:04.39	W113:31.18	4	91	2	On
41	J	1171	9 Aug 93	0641	N31:22.46	W114:30.53	3	92	1	On
41	J	1172	9 Aug 93	0733	N31:19.15	W114:30.83	2	4	1	Off
41	J	1173	9 Aug 93	0809	N31:17.69	W114:31.41	2	92	1	On
41	J	1175	9 Aug 93	0845	N31:11.67	W114:32.03	1	7	2	On
41	J	1176	9 Aug 93	0853	N31:11.20	W114:32.05	1	4	1	Off
41	J	1177	9 Aug 93	0857	N31:10.00	W114:32.67	1	97	1	Off
41	J	1178	9 Aug 93	0905	N31:08.97	W114:32.59	1	91	2	On
41	J	1179	9 Aug 93	0933	N31:03.34	W114:32.19	1	109	1	On
41	J	1181	9 Aug 93	1039	N30:51.84	W114:30.98	1	92	1	On
41	J	1183	9 Aug 93	1107	N30:48.50	W114:30.71	1	4	1	Off
41	J	1246	11 Aug 93	0622	N31:14.07	W114:37.83	1	92	1	On
41	J	1247	11 Aug 93	0624	N31:13.48	W114:37.97	1	92	2	On
41	J	1248	11 Aug 93	0626	N31:12.63	W114:37.39	1	91	2	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
41		J 1249	11 Aug 93	0630	N31:12.81	W114:36.99	1	91	2	On
41		J 1250	11 Aug 93	0630	N31:12.87	W114:37.48	1	91	2	On
41		J 1251	11 Aug 93	0644	N31:10.06	W114:35.88	1	4	1	Off
41		J 1252	11 Aug 93	0708	N31:05.26	W114:38.29	1	4	1	Off
41		J 1253	11 Aug 93	0711	N31:05.66	W114:39.24	1	4	2	Off
41		J 1254	11 Aug 93	0721	N31:01.43	W114:38.02	1	98	1	Off
41		J 1257	11 Aug 93	0915	N30:51.66	W114:30.61	1	92	1	Off
41		J 1264	11 Aug 93	1307	N31:16.87	W114:23.93	1	109	2	On
41		J 1265	11 Aug 93	1323	N31:18.83	W114:25.24	1	92	3	On
41		J 1269	11 Aug 93	0744	N31:00.80	W114:39.13	1	4	2	Off
41		J 1270	11 Aug 93	0759	N30:57.85	W114:38.21	1	4	3	Off
41		J 1272	11 Aug 93	1356	N31:22.70	W114:24.91	1	4	3	On
<i>Phocoenoides dalli</i>										
44		M 110	3 Aug 93	1413	N34:14.84	W120:27.49	4	96	9	On
44	ZC	M 112	3 Aug 93	1429	N34:16.59	W120:24.91	4	74	6	On
44	22	M 231	12 Aug 93	0738	N41:51.84	W125:00.17	5	55	2	On
44		M 237	13 Aug 93	1035	N41:12.54	W124:55.82	5	55	1	On
44		M 241	14 Aug 93	1650	N40:22.11	W125:00.17	3	107	1	On
44		M 247	14 Aug 93	1740	N40:10.21	W125:01.98	3	55	3	On
44		M 249	14 Aug 93	1853	N40:02.72	W124:58.62	3	104	4	On
44		M 256	15 Aug 93	0944	N39:15.93	W124:24.56	3	55	13	On
44		M 257	15 Aug 93	0950	N39:15.56	W124:25.47	3	55	5	On
44		M 274	17 Aug 93	1235	N41:46.23	W124:38.14	5	107	2	On
44		M 282	22 Aug 93	0710	N41:44.14	W124:51.81	3	95	3	On
44		M 283	22 Aug 93	0741	N41:41.76	W124:58.06	3	1	4	On
44		M 285	22 Aug 93	1447	N41:18.95	W126:15.10	4	95	2	On
44		M 459	5 Oct 93	1023	N38:47.97	W124:07.97	2	104	1	On
44		M 466	5 Oct 93	1303	N38:28.99	W124:18.84	3	76	2	On
44		M 472	5 Oct 93	1527	N38:16.77	W124:25.50	3	108	6	On
<i>Physeter macrocephalus</i>										
46		M 194	8 Aug 93	1111	N35:34.11	W127:13.81	2	104	5	On
46		M 195	8 Aug 93	1111	N35:38.72	W127:14.42	2	94	2	On
46		M 197	8 Aug 93	1133	N35:31.92	W127:15.08	2	96	2	On
46		M 202	8 Aug 93	1732	N35:27.12	W127:44.77	2	74	6	On
46		M 225	11 Aug 93	0732	N39:31.49	W126:45.26	4	96	4	On
46		M 337	2 Sep 93	1218	N34:11.01	W123:39.10	5	96	5	On
46		M 339	2 Sep 93	1352	N34:04.64	W123:41.26	4	55	2	On
46		M 349	5 Sep 93	0717	N31:04.64	W124:51.92	5	1	1	On
46		M 352	6 Sep 93	1812	N32:39.17	W122:27.38	3	1	3	On
46		M 381	18 Sep 93	0726	N29:03.61	W122:59.11	4	76	2	On
46		M 412	28 Sep 93	0938	N39:01.01	W129:59.54	3	76	11	On
46		M 461	5 Oct 93	1116	N38:35.23	W124:13.93	2	92	20	On
46		M 462	5 Oct 93	1139	N38:31.84	W124:14.85	2	74	8	On
46		M 463	5 Oct 93	1146	N38:29.91	W124:13.35	2	97	12	On
46		M 464	5 Oct 93	1148	N38:32.40	W124:17.40	2	74	22	On
46		M 465	5 Oct 93	1151	N38:30.19	W124:14.40	2	97	10	On
46		M 469	5 Oct 93	1418	N38:18.87	W124:21.38	3	74	18	On
46		M 533	28 Oct 93	1357	N23:33.81	W115:00.26	3	108	7	On
46		M 535	29 Oct 93	0726	N22:09.40	W114:26.24	3	108	1	On
46		M 540	29 Oct 93	1708	N20:58.80	W114:51.21	3	104	1	On
46		M 542	30 Oct 93	1154	N21:22.30	W113:53.75	4	104	5	On
46		M 543	30 Oct 93	1222	N21:23.42	W113:54.05	4	74	3	On
46		M 544	30 Oct 93	1223	N21:22.42	W113:53.06	4	97	1	On
46		M 545	30 Oct 93	1238	N21:20.61	W113:50.21	4	92	12	On
46		J 1063	2 Aug 93	1450	N22:35.06	W110:28.24	5	108	6	Off
46		J 1089	5 Aug 93	0615	N27:01.05	W110:59.39	2	97	2	On
46		J 1093	5 Aug 93	0716	N27:06.88	W111:02.05	2	108	2	On
46		J 1324	15 Aug 93	1230	N26:10.93	W110:57.65	3	108	10	On



Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
46		J 1325	15 Aug 93	1255	N26:07.65	W110:57.16	3	108	1	On
46		J 1326	15 Aug 93	1302	N26:07.57	W110:58.92	3	109	3	On
46		J 1358	26 Aug 93	0954	N21:56.80	W108:31.71	2	74	10	On
46		J 1359	26 Aug 93	1014	N21:55.27	W108:31.30	2	92	8	On
46		J 1367	26 Aug 93	1530	N21:18.24	W108:58.42	1	92	12	On
46		J 1376	26 Aug 93	1817	N20:54.44	W109:02.71	2	97	2	Off
46		J 1417	30 Aug 93	0641	N22:27.97	W110:30.67	4	97	8	On
46		J 1453	2 Sep 93	1103	N24:25.13	W113:16.04	5	108	1	On
46		J 1454	2 Sep 93	1156	N24:30.77	W113:12.98	5	4	1	Off
46		J 1455	2 Sep 93	1225	N24:35.47	W113:11.05	5	97	2	On
46		J 1465	5 Sep 93	0739	N25:12.00	W118:21.63	3	92	2	On
46		J 1466	5 Sep 93	0927	N25:03.79	W118:38.83	3	108	2	On
46		J 1475	7 Sep 93	1535	N27:28.81	W117:28.48	5	76	1	On
46		J 1476	7 Sep 93	1612	N27:23.75	W117:30.36	5	76	2	On
46		J 1477	7 Sep 93	1615	N27:22.73	W117:28.89	5	108	1	On
46		J 1478	7 Sep 93	1637	N27:21.59	W117:26.94	5	74	3	On
46		J 1480	8 Sep 93	1343	N25:43.47	W117:28.23	4	76	1	On
46		J 1481	8 Sep 93	1542	N25:25.26	W117:28.44	4	4	1	Off
46		J 1488	22 Sep 93	1207	N29:50.85	W117:29.77	4	55	1	On
46	18	J 1527	26 Sep 93	1039	N23:19.61	W111:25.71	1	1	2	Off
46	02	J 1532	26 Sep 93	1208	N23:15.14	W111:11.05	2	55	86	Off
46		J 1565	28 Sep 93	0907	N24:38.87	W110:27.66	3	107	3	Off
46		J 1573	28 Sep 93	1407	N25:07.31	W110:28.80	3	4	1	Off
46		J 1612	29 Sep 93	1615	N27:52.60	W111:34.03	2	95	2	On
46		J 1633	30 Sep 93	1715	N25:39.65	W110:29.41	2	95	4	On
46		J 1634	30 Sep 93	1715	N25:39.56	W110:28.37	2	96	4	On
46		J 1883	24 Oct 93	1713	N21:07.07	W111:56.22	2	96	3	On
46		J 1885	24 Oct 93	1749	N21:13.12	W111:51.81	2	55	4	On
46		J 1963	1 Nov 93	1342	N25:58.03	W115:23.99	4	107	15	On
<i>Kogia breviceps</i>										
47		M 422	1 Oct 93	1159	N40:41.84	W127:38.89	1	91	1	On
47		J 1113	6 Aug 93	0623	N27:47.31	W112:28.91	1	7	1	On
<i>Kogia simus</i>										
48		J 1362	26 Aug 93	1112	N21:49.76	W108:37.53	2	91	2	On
48		J 1363	26 Aug 93	1132	N21:48.29	W108:38.74	2	92	2	On
48		J 1407	29 Aug 93	1308	N20:20.61	W110:00.86	1	91	1	On
48		J 1520	26 Sep 93	0921	N23:33.09	W111:32.20	1	94	1	Off
48		J 1543	27 Sep 93	0814	N22:55.92	W109:30.16	1	1	3	On
48		J 1557	27 Sep 93	1737	N23:53.86	W109:32.82	1	95	1	On
48		J 1558	27 Sep 93	1747	N23:58.18	W109:29.24	1	4	3	Off
48		J 1559	27 Sep 93	1803	N24:00.47	W109:32.84	1	4	2	Off
48		J 1567	28 Sep 93	1039	N24:43.94	W110:30.09	1	4	1	Off
48		J 1568	28 Sep 93	1100	N24:47.07	W110:27.60	2	55	1	On
48		J 1577	28 Sep 93	1627	N25:28.31	W110:33.42	3	94	3	On
48		J 1580	28 Sep 93	1651	N25:30.69	W110:36.31	1	95	3	On
48		J 1581	28 Sep 93	1729	N25:34.16	W110:30.29	1	55	1	On
48		J 1591	29 Sep 93	0835	N26:50.97	W111:32.06	2	95	4	On
48		J 1611	29 Sep 93	1603	N27:50.79	W111:29.19	2	95	1	On
48		J 1625	30 Sep 93	1233	N26:23.19	W110:29.02	1	4	1	Off
48		J 1626	30 Sep 93	1302	N26:17.45	W110:28.95	0	95	3	On
48		J 1648	2 Oct 93	1018	N23:15.84	W108:58.91	0	1	1	Off
48		J 1660	2 Oct 93	1515	N22:46.04	W109:02.48	2	55	1	On
48		J 1667	3 Oct 93	0653	N21:50.43	W107:56.92	0	55	1	Off
48		J 1699	3 Oct 93	1722	N22:53.15	W108:02.97	1	55	1	On
48		J 1709	4 Oct 93	1535	N23:05.79	W108:28.73	1	1	2	On
48		J 1713	5 Oct 93	0715	N23:31.56	W108:29.11	2	96	1	On
48		J 1718	5 Oct 93	0921	N23:42.25	W108:29.99	0	95	1	On
48		J 1720	5 Oct 93	0958	N23:48.34	W108:30.28	1	96	1	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
48		J 1724	5 Oct 93	1253	N24:15.80	W108:31.12	2	55	1	On
48		J 1733	6 Oct 93	0930	N24:00.33	W108:00.45	1	107	4	On
48		J 1783	15 Oct 93	1015	N23:53.11	W107:39.04	1	94	4	On
48		J 1785	15 Oct 93	1032	N23:50.14	W107:37.57	1	95	1	Off
48		J 1786	15 Oct 93	1032	N23:50.10	W107:37.18	1	98	2	Off
48		J 1948	30 Oct 93	1654	N23:57.77	W116:32.29	1	55	1	On
ziphiid whale										
49	M	238	13 Aug 93	1151	N40:59.95	W124:54.86	5	74	1	On
49	M	383	18 Sep 93	1622	N30:16.75	W122:19.29	5	92	1	On
49	M	399	27 Sep 93	1052	N38:00.77	W128:10.91	3	104	1	On
49	M	418	1 Oct 93	0859	N40:47.91	W127:20.70	1	92	2	On
49	M	442	3 Oct 93	1439	N40:11.68	W129:27.69	2	104	1	On
49	M	446	3 Oct 93	1753	N40:22.16	W129:00.91	2	76	2	On
49	M	494	12 Oct 93	0832	N36:35.11	W125:17.75	2	74	1	Off
49	M	502	12 Oct 93	1722	N35:36.83	W125:42.42	3	92	1	On
49	M	503	13 Oct 93	0953	N35:07.96	W125:56.05	2	104	1	On
49	M	510	16 Oct 93	1435	N31:52.88	W124:59.30	3	91	1	On
49	M	511	16 Oct 93	1532	N31:41.43	W125:00.32	3	91	1	On
49	J	1068	3 Aug 93	1339	N24:52.17	W108:58.70	3	91	3	On
49	J	1077	4 Aug 93	0639	N25:46.44	W110:00.02	4	97	3	On
49	J	1100	5 Aug 93	1039	N27:31.62	W110:58.78	3	91	3	On
49	J	1373	26 Aug 93	1753	N20:58.48	W108:58.16	2	92	2	On
49	J	1377	27 Aug 93	0755	N20:36.90	W109:13.37	3	91	2	On
49	J	1382	27 Aug 93	1107	N20:17.21	W109:24.80	2	76	2	On
49	J	1385	27 Aug 93	1447	N19:41.04	W109:42.90	3	92	2	On
49	J	1403	29 Aug 93	1046	N20:06.01	W109:57.23	2	91	4	On
49	J	1534	26 Sep 93	1319	N23:18.91	W111:00.43	2	96	3	Off
49	J	1578	28 Sep 93	1628	N25:30.54	W110:34.78	3	94	2	On
49	J	1623	30 Sep 93	1122	N26:27.34	W110:24.10	1	94	4	On
49	J	1645	2 Oct 93	0951	N23:19.46	W108:57.38	0	95	1	On
49	J	1712	4 Oct 93	1730	N23:19.44	W108:28.69	2	55	1	On
49	J	1719	5 Oct 93	0939	N23:47.83	W108:31.03	1	96	2	On
49	J	1735	6 Oct 93	1057	N23:49.34	W108:03.36	1	107	2	On
49	J	1741	6 Oct 93	1305	N23:33.10	W108:01.63	1	96	1	On
49	J	1747	6 Oct 93	1648	N23:06.33	W107:58.12	2	96	1	On
49	J	1781	15 Oct 93	0901	N23:55.86	W107:32.40	0	94	2	On
49	J	1822	18 Oct 93	1038	N22:02.02	W106:39.72	1	96	2	On
Mesoplodon sp.										
51	M	212	9 Aug 93	1215	N36:39.90	W128:03.98	1	95	2	On
51	M	376	11 Sep 93	0837	N30:21.94	W119:07.46	5	106	2	Off
51	M	434	2 Oct 93	1124	N41:21.26	W128:55.02	2	76	5	On
51	J	1327	15 Aug 93	1313	N26:05.91	W110:57.58	3	91	1	On
51	J	1406	29 Aug 93	1235	N20:15.36	W109:58.96	1	97	3	On
51	J	1540	27 Sep 93	0627	N22:41.51	W109:28.79	2	94	1	On
51	J	1586	28 Sep 93	1822	N25:42.50	W110:34.68	1	96	5	Off
51	J	1618	30 Sep 93	0829	N26:52.05	W110:27.34	2	55	4	On
51	J	1628	30 Sep 93	1419	N26:08.41	W110:29.73	1	4	2	Off
51	J	1644	2 Oct 93	0828	N23:23.88	W108:57.85	1	107	2	On
51	J	1725	5 Oct 93	1254	N24:17.36	W108:30.73	2	55	3	On
51	J	1740	6 Oct 93	1223	N23:37.22	W108:04.07	1	55	3	On
51	J	1821	18 Oct 93	1027	N21:58.40	W106:37.19	1	73	2	On
51	J	1925	27 Oct 93	1454	N24:26.06	W112:54.77	3	73	2	On
51	J	1956	31 Oct 93	1501	N24:58.08	W115:49.33	1	94	1	Off
Mesoplodon densirostris										
59	M	421	1 Oct 93	1030	N40:44.75	W127:34.26	1	74	5	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
<i>Ziphius cavirostris</i>										
61	M	14	29 Jul 93	1407	N32:19.02	W118:20.09	4	55	1	On
61	M	87	2 Aug 93	1628	N33:12.91	W120:45.93	4	55	2	On
61	M	174	6 Aug 93	1150	N36:56.05	W123:13.85	4	107	1	On
61	M	206	8 Aug 93	1949	N35:23.61	W128:01.24	1	107	5	Off
61	M	226	11 Aug 93	1015	N39:54.23	W126:31.29	5	96	2	On
61	M	313	1 Sep 93	1425	N35:04.47	W122:56.51	5	96	2	On
61	M	347	3 Sep 93	1216	N33:33.37	W123:38.95	4	55	1	On
61	M	367	7 Sep 93	1329	N34:33.16	W122:25.58	3	95	2	Off
61	M	428	1 Oct 93	1753	N40:21.69	W128:40.28	2	76	2	On
61	M	445	3 Oct 93	1741	N40:22.36	W129:04.86	2	91	3	On
61	M	507	15 Oct 93	0810	N33:09.70	W126:25.98	2	91	3	On
61	M	584	1 Nov 93	1414	N22:00.19	W108:00.73	1	102	2	On
61	J	1408	29 Aug 93	1440	N20:35.45	W109:59.40	1	91	1	On
61	J	1552	27 Sep 93	1639	N23:46.77	W109:30.32	2	4	2	Off
61	J	1575	28 Sep 93	1525	N25:19.30	W110:31.15	3	1	3	On
61	J	1582	28 Sep 93	1732	N25:36.48	W110:28.26	1	96	4	On
61	J	1619	30 Sep 93	0940	N26:40.34	W110:29.02	2	55	3	On
61	J	1624	30 Sep 93	1142	N26:26.00	W110:25.87	1	95	3	On
61	J	1629	30 Sep 93	1542	N25:53.84	W110:28.99	1	95	1	On
61	J	1637	1 Oct 93	0930	N25:06.48	W109:32.77	2	4	1	Off
61	J	1638	1 Oct 93	0957	N24:58.01	W109:31.35	2	1	4	On
61	J	1640	1 Oct 93	1133	N24:49.55	W109:31.90	3	55	2	On
61	J	1687	3 Oct 93	1150	N22:14.58	W108:02.11	1	98	1	Off
61	J	1694	3 Oct 93	1559	N22:44.07	W108:01.44	1	55	1	Off
61	J	1710	4 Oct 93	1621	N23:14.26	W108:27.84	1	107	4	On
61	J	1721	5 Oct 93	1026	N23:55.36	W108:28.83	1	55	1	On
61	J	1723	5 Oct 93	1233	N24:12.55	W108:29.88	2	95	1	On
61	J	1746	6 Oct 93	1604	N23:11.85	W107:59.58	1	55	2	On
61	J	1843	20 Oct 93	1240	N20:26.69	W108:59.23	5	96	1	On
61	J	1880	24 Oct 93	1248	N20:30.38	W112:12.33	4	95	2	On
61	J	1961	1 Nov 93	1045	N25:36.49	W115:40.01	3	55	2	On
61	J	1962	1 Nov 93	1144	N25:43.85	W115:33.06	3	55	1	On
<i>Berardius bairdii</i>										
63	M	142	4 Aug 93	1522	N34:41.28	W121:40.50	4	95	9	On
63	M	261	15 Aug 93	1523	N39:14.53	W124:58.78	4	55	4	Off
63	M	267	15 Aug 93	1858	N39:37.57	W125:03.82	5	96	19	On
63	M	294	31 Aug 93	1051	N36:57.56	W122:32.12	3	96	13	On
63	M	305	31 Aug 93	1847	N36:01.10	W122:30.04	2	107	19	On
<i>Balaenoptera sp.</i>										
70	M	85	2 Aug 93	1446	N33:09.96	W120:53.39	4	74	1	Off
70	M	93	2 Aug 93	1932	N33:33.52	W120:30.87	4	95	2	On
70	M	101	3 Aug 93	0941	N33:54.21	W120:30.66	4	95	2	On
70	M	104	3 Aug 93	1202	N34:04.49	W120:35.51	4	74	1	Off
70	M	151	5 Aug 93	0853	N36:13.12	W122:22.63	5	95	1	On
70	M	163	5 Aug 93	1301	N36:34.67	W122:16.51	4	74	1	On
70	M	179	7 Aug 93	0654	N36:31.76	W124:28.90	4	95	1	On
70	M	300	31 Aug 93	1550	N36:32.79	W122:28.45	3	95	1	On
70	M	303	31 Aug 93	1729	N36:15.20	W122:31.03	2	90	1	On
70	M	314	1 Sep 93	1433	N35:03.85	W122:59.74	4	96	1	On
70	M	316	1 Sep 93	1512	N34:57.14	W122:54.81	4	95	1	On
70	M	324	1 Sep 93	1844	N34:39.50	W123:01.80	4	95	2	On
70	M	330	2 Sep 93	0749	N34:28.61	W123:13.59	5	95	1	On
70	M	332	2 Sep 93	0804	N34:30.82	W123:17.83	5	107	2	On
70	M	400	27 Sep 93	1125	N37:59.76	W128:16.72	3	92	1	On
70	M	401	27 Sep 93	1226	N38:01.27	W128:22.46	3	74	1	On
70 73	M	437	2 Oct 93	1356	N40:57.35	W129:02.80	2	108	3	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
70		M 438	3 Oct 93	0831	N39:52.68	W130:39.30	3	108	2	On
70	17	M 536	29 Oct 93	0748	N22:04.70	W114:29.37	3	97	141	On
70		M 564	31 Oct 93	1532	N22:57.59	W110:27.96	2	108	1	Off
70	02 10	M 581	1 Nov 93	1021	N22:04.12	W108:35.78	2	76	145	Off
70		J 1103	5 Aug 93	1351	N27:54.56	W111:09.62	3	97	1	Off
70		J 1125	6 Aug 93	1319	N28:33.36	W112:33.20	2	7	1	On
70		J 1136	6 Aug 93	1657	N28:49.26	W112:35.67	2	92	1	Off
70		J 1137	6 Aug 93	1729	N28:49.29	W112:35.96	2	91	5	On
70		J 1138	6 Aug 93	1730	N28:50.80	W112:38.23	2	7	10	On
70		J 1141	6 Aug 93	1815	N28:55.57	W112:38.34	2	84	1	Off
70		J 1148	7 Aug 93	0921	N29:16.57	W113:30.01	5	92	1	On
70		J 1149	7 Aug 93	0930	N29:17.46	W113:30.53	4	91	1	On
70		J 1151	7 Aug 93	1229	N29:36.39	W113:33.60	5	7	1	Off
70		J 1152	7 Aug 93	1231	N29:36.31	W113:30.88	5	7	1	Off
70		J 1153	7 Aug 93	1238	N29:36.61	W113:33.21	5	92	1	Off
70		J 1154	7 Aug 93	1252	N29:36.20	W113:28.93	4	97	1	Off
70		J 1158	7 Aug 93	1329	N29:35.94	W113:27.12	4	91	3	Off
70		J 1160	7 Aug 93	1432	N29:38.62	W113:28.01	4	91	1	On
70		J 1163	7 Aug 93	1740	N30:01.74	W113:21.89	4	91	3	On
70		J 1164	8 Aug 93	0621	N30:06.16	W113:32.85	3	109	2	On
70		J 1165	8 Aug 93	0740	N30:21.00	W113:29.97	4	109	1	On
70		J 1182	9 Aug 93	1058	N30:50.34	W114:30.18	1	91	1	Off
70		J 1186	9 Aug 93	1436	N30:16.02	W114:27.20	1	92	1	On
70		J 1187	9 Aug 93	1455	N30:11.28	W114:27.66	1	92	1	On
70		J 1188	9 Aug 93	1736	N30:00.67	W114:09.01	2	109	1	On
70		J 1208	10 Aug 93	1107	N30:29.17	W114:04.19	1	91	1	On
70		J 1210	10 Aug 93	1111	N30:32.86	W113:56.45	1	92	1	On
70		J 1215	10 Aug 93	1240	N30:39.68	W113:59.39	1	91	2	On
70		J 1226	10 Aug 93	1338	N30:44.79	W114:00.31	1	4	2	Off
70		J 1229	10 Aug 93	1349	N30:51.39	W113:59.01	1	109	2	On
70		J 1239	10 Aug 93	1451	N31:01.21	W114:02.72	0	7	1*	On
70		J 1240	10 Aug 93	1507	N31:02.37	W114:03.73	0	91	1	On
70		J 1256	11 Aug 93	0856	N30:54.79	W114:33.30	1	97	1	Off
70		J 1258	11 Aug 93	0915	N30:52.12	W114:28.77	1	92	1	Off
70		J 1259	11 Aug 93	0918	N30:48.37	W114:28.83	1	92	1	Off
70		J 1266	11 Aug 93	1418	N31:27.50	W114:24.60	1	7	1	On
70		J 1267	11 Aug 93	1513	N31:14.30	W114:13.66	1	7	1	Off
70		J 1271	11 Aug 93	0914	N30:50.48	W114:30.67	1	7	1	Off
70		J 1275	12 Aug 93	0829	N30:04.95	W113:02.92	5	109	5	On
70		J 1276	12 Aug 93	0834	N30:03.55	W113:01.54	5	97	1	On
70		J 1277	12 Aug 93	0840	N30:05.21	W113:02.70	5	97	4	On
70		J 1278	12 Aug 93	0841	N30:01.45	W112:59.56	5	92	1	On
70		J 1281	12 Aug 93	0901	N30:03.16	W113:01.25	5	4	1	Off
70		J 1282	12 Aug 93	0903	N29:59.08	W112:58.18	5	7	1	On
70		J 1283	12 Aug 93	0908	N30:00.43	W112:59.03	4	7	1	On
70		J 1285	12 Aug 93	1218	N29:42.50	W112:56.35	5	92	2	On
70		J 1286	12 Aug 93	1219	N29:44.48	W112:58.19	5	92	1	On
70		J 1287	12 Aug 93	1222	N29:43.96	W112:59.20	5	92	2	On
70		J 1288	12 Aug 93	1226	N29:41.90	W112:57.26	5	92	6	On
70		J 1289	12 Aug 93	1236	N29:40.85	W112:56.74	5	92	2	On
70		J 1292	12 Aug 93	1712	N29:04.55	W113:03.22	5	109	1	On
70	76 99	J 1293	12 Aug 93	1725	N29:01.68	W113:00.99	5	91	3	On
70	79	J 1302	14 Aug 93	0805	N28:25.31	W112:00.60	3	92	2	On
70		J 1368	26 Aug 93	1546	N21:14.19	W108:59.41	1	76	1	On
70		J 1424	30 Aug 93	0907	N22:24.03	W110:45.47	5	108	1	On
70		J 1425	30 Aug 93	0910	N22:27.12	W110:44.95	5	76	1	On
70		J 1490	23 Sep 93	0823	N28:38.95	W116:05.00	5	94	1	On
70		J 1492	23 Sep 93	1416	N29:00.43	W115:15.70	4	55	1	On
70		J 1518	26 Sep 93	0851	N23:33.38	W111:34.36	1	1	1	Off
70		J 1521	26 Sep 93	0929	N23:28.39	W111:34.55	1	107	1	Off

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
70		J 1523	26 Sep 93	0941	N23:27.17	W111:29.12	1	107	1	Off
70		J 1525	26 Sep 93	1020	N23:23.75	W111:24.27	1	95	1	Off
70	99	J 1533	26 Sep 93	1215	N23:14.70	W111:11.84	2	55	2	Off
70	18 15 21	J 1844	20 Oct 93	1449	N20:10.40	W109:16.29	5	55	58	On
70	99	J 1854	21 Oct 93	1338	N19:36.80	W110:41.95	4	95	5	Off
70		J 1855	21 Oct 93	1410	N19:31.82	W110:42.58	4	55	1	Off
70		J 1856	21 Oct 93	1425	N19:33.69	W110:46.27	4	94	2	Off
70		J 1911	26 Oct 93	1249	N23:11.85	W112:27.03	5	96	2	On
70		J 1914	26 Oct 93	1532	N23:29.47	W112:34.33	5	4	1	Off
70		J 1936	28 Oct 93	1150	N23:59.12	W114:00.24	4	4	1	Off
70		J 1943	30 Oct 93	0844	N23:01.06	W116:56.07	3	96	1	On
<i>Balaenoptera acutorostrata</i>										
71		M 56	31 Jul 93	1354	N32:49.64	W119:15.71	3	95	1	Off
71		J 1194	10 Aug 93	1014	N30:20.08	W114:04.11	1	92	1	On
<i>Balaenoptera edeni</i>										
72		M 549	31 Oct 93	0713	N22:28.02	W111:17.35	4	91	1	On
72		M 560	31 Oct 93	1353	N22:57.24	W110:42.11	2	76	1	Off
72		M 580	1 Nov 93	1001	N22:07.08	W108:39.79	2	91	1	Off
72		J 1048	1 Aug 93	1331	N24:26.87	W112:09.32	4	92	4	Off
72		J 1073	3 Aug 93	1537	N25:04.30	W108:58.80	3	92	1	On
72	74	J 1082	4 Aug 93	1233	N26:40.46	W109:58.04	3	109	5	On
72		J 1109	5 Aug 93	1719	N28:08.11	W111:27.21	2	109	3	On
72		J 1184	9 Aug 93	1109	N30:48.29	W114:30.72	1	4	1	Off
72		J 1378	27 Aug 93	0820	N20:31.91	W109:15.78	3	91	1	On
72		J 1409	29 Aug 93	1448	N20:36.32	W110:03.02	1	74	1	On
72		J 1536	26 Sep 93	1426	N23:24.87	W110:52.73	3	95	1	Off
72		J 1659	2 Oct 93	1500	N22:47.39	W109:02.41	2	94	1	On
72		J 1661	2 Oct 93	1533	N22:42.90	W109:01.79	2	55	1	On
72		J 1754	7 Oct 93	0725	N22:15.92	W107:27.39	2	55	1	On
72		J 1903	25 Oct 93	1552	N22:10.79	W111:22.32	4	55	1	On
72		J 1904	25 Oct 93	1654	N22:20.75	W111:18.76	4	107	1	On
<i>Balaenoptera borealis</i>										
73	70	M 437	2 Oct 93	1356	N40:57.35	W129:02.80	2	108	3	On
<i>Balaenoptera physalus</i>										
74		M 71	31 Jul 93	1911	N32:50.16	W119:53.74	4	55	2	On
74		M 95	3 Aug 93	0656	N33:42.30	W120:39.38	3	105	1	Off
74		M 96	3 Aug 93	0708	N33:37.68	W120:35.79	4	74	1	On
74		M 97	3 Aug 93	0758	N33:42.38	W120:34.26	5	74	1	On
74		M 98	3 Aug 93	0821	N33:43.71	W120:34.52	5	55	1	On
74		M 143	4 Aug 93	1732	N34:39.88	W121:49.72	4	96	2	On
74	77	M 145	4 Aug 93	1834	N34:44.01	W121:58.70	4	55	17	On
74		M 148	5 Aug 93	0745	N36:07.18	W122:22.97	5	55	2	On
74		M 149	5 Aug 93	0754	N36:09.55	W122:23.06	5	55	2	On
74		M 150	5 Aug 93	0816	N36:10.02	W122:22.94	5	94	4	On
74		M 152	5 Aug 93	0916	N36:12.15	W122:24.35	5	74	2	On
74		M 154	5 Aug 93	0943	N36:17.96	W122:23.66	5	74	2	On
74		M 155	5 Aug 93	1038	N36:24.51	W122:23.29	4	107	4	On
74		M 252	14 Aug 93	2000	N39:54.46	W124:58.79	4	74	1	On
74		M 262	15 Aug 93	1553	N39:18.27	W125:00.20	5	55	3	On
74		M 264	15 Aug 93	1634	N39:20.44	W125:01.49	5	95	1	On
74		M 268	15 Aug 93	1958	N39:42.36	W125:06.58	4	95	1	On
74		M 296	31 Aug 93	1218	N36:51.13	W122:33.06	3	1	2	On
74		M 299	31 Aug 93	1522	N36:34.98	W122:32.90	3	55	1	On
74		M 302	31 Aug 93	1654	N36:17.75	W122:30.75	2	95	3	On
74		M 315	1 Sep 93	1448	N34:59.83	W122:57.31	4	55	2	On
74	17	M 317	1 Sep 93	1542	N34:49.03	W122:57.07	4	94	33	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
74	17	M 320	1 Sep 93	1646	N34:45.74	W122:58.61	4	94	81	On
74		M 322	1 Sep 93	1823	N34:44.93	W123:00.25	4	107	2	On
74		M 326	1 Sep 93	1931	N34:39.10	W123:05.31	4	95	1	On
74		M 327	1 Sep 93	1932	N34:38.25	W123:05.77	4	94	1	On
74		M 328	2 Sep 93	0658	N34:35.85	W123:12.71	5	96	1	On
74		M 336	2 Sep 93	1029	N34:15.97	W123:21.05	5	96	1	On
74	75	M 354	7 Sep 93	0717	N34:14.03	W123:20.43	3	1	2	On
74		M 365	7 Sep 93	1321	N34:33.19	W122:23.89	3	95	2	On
74		M 387	20 Sep 93	1425	N35:12.23	W122:26.29	1	92	2	On
74		M 395	27 Sep 93	0845	N38:02.34	W127:52.79	3	97	1	On
74		M 396	27 Sep 93	0923	N38:04.50	W127:57.84	3	108	2	On
74		M 397	27 Sep 93	1004	N38:04.62	W128:03.03	3	76	4	On
74		M 398	27 Sep 93	1005	N38:02.59	W128:02.54	3	91	1	Off
74		M 405	27 Sep 93	1454	N37:55.40	W128:41.29	2	91	1	On
74	72	J 1082	4 Aug 93	1233	N26:40.46	W109:58.04	3	109	5	On
74		J 1134	6 Aug 93	1650	N28:46.66	W112:33.58	2	97	2	On
74		J 1155	7 Aug 93	1258	N29:36.94	W113:27.24	4	92	1	Off
74		J 1166	8 Aug 93	0927	N30:33.68	W113:29.53	5	4	3	Off
74		J 1167	8 Aug 93	1140	N30:38.27	W113:28.87	5	109	2	On
74		J 1214	10 Aug 93	1239	N30:40.36	W114:00.29	1	109	2	On
74		J 1217	10 Aug 93	1302	N30:45.08	W114:01.13	1	109	2	On
74		J 1218	10 Aug 93	1304	N30:44.50	W113:57.51	1	91	3	On
74		J 1219	10 Aug 93	1307	N30:45.43	W114:01.15	1	109	2	On
74		J 1220	10 Aug 93	1334	N30:45.02	W113:57.62	1	108	1	On
74		J 1221	10 Aug 93	1334	N30:46.97	W114:00.48	1	97	2	On
74		J 1222	10 Aug 93	1336	N30:47.76	W114:02.88	1	97	1	On
74		J 1223	10 Aug 93	1337	N30:46.35	W113:59.97	1	109	2	On
74		J 1224	10 Aug 93	1337	N30:45.22	W114:00.16	1	97	1	On
74		J 1225	10 Aug 93	1338	N30:45.29	W114:00.10	1	97	1	On
74		J 1227	10 Aug 93	1340	N30:48.04	W114:02.70	1	97	1	On
74		J 1228	10 Aug 93	1341	N30:47.15	W114:00.38	1	97	2	On
74		J 1261	11 Aug 93	1033	N30:52.00	W114:19.77	1	92	2	On
74		J 1274	12 Aug 93	0759	N30:07.69	W112:59.94	5	109	1	On
74		J 1279	12 Aug 93	0844	N30:02.48	W113:00.06	5	92	2	On
74		J 1280	12 Aug 93	0859	N30:03.49	W113:00.14	5	109	2	Off
74		J 1284	12 Aug 93	1031	N29:45.02	W113:01.08	5	7	27	On
74		J 1297	13 Aug 93	1032	N28:30.90	W112:52.21	3	91	3	Off
74	99 79	J 1298	13 Aug 93	1624	N29:05.90	W112:30.92	5	92	3	On
74		J 1306	14 Aug 93	1430	N27:30.27	W112:02.11	2	108	1	On

*Balaenoptera musculus*

75		M 26	30 Jul 93	0838	N33:10.08	W117:55.18	2	94	2	On
75		M 27	30 Jul 93	0949	N33:09.22	W117:53.05	2	15	1	Off
75		M 28	30 Jul 93	1002	N33:11.38	W117:50.98	2	55	1	On
75		M 34	30 Jul 93	1818	N33:03.94	W118:40.29	4	94	4	On
75		M 36	30 Jul 93	1845	N33:04.03	W118:42.16	4	95	5	Off
75		M 41	31 Jul 93	0642	N33:08.54	W118:41.28	2	107	1	Off
75		M 47	31 Jul 93	0830	N33:00.77	W118:55.10	2	104	1	Off
75		M 49	31 Jul 93	0914	N32:56.81	W118:53.71	2	96	1	Off
75		M 52	31 Jul 93	1014	N32:54.37	W118:57.50	2	95	2	On
75		M 55	31 Jul 93	1254	N32:50.44	W119:15.21	3	55	2	On
75		M 57	31 Jul 93	1404	N32:46.12	W119:19.85	3	95	1	On
75		M 61	31 Jul 93	1556	N32:53.43	W119:29.07	4	96	1	On
75		M 62	31 Jul 93	1614	N32:53.44	W119:30.64	4	15	2	On
75		M 64	31 Jul 93	1627	N32:53.36	W119:31.99	4	96	1	On
75		M 66	31 Jul 93	1643	N32:52.91	W119:33.96	3	15	1	Off
75		M 67	31 Jul 93	1732	N32:48.50	W119:42.00	3	95	2	On
75		M 68	31 Jul 93	1759	N32:48.49	W119:46.83	3	95	2	On
75		M 69	31 Jul 93	1819	N32:48.40	W119:47.89	3	94	2	On
75		M 70	31 Jul 93	1858	N32:50.23	W119:52.05	4	74	1	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
75		M 74	1 Aug 93	0701	N32:42.91	W119:59.74	4	94	1	On
75		M 75	1 Aug 93	0758	N32:38.02	W120:06.27	4	96	1	On
75		M 79	2 Aug 93	1146	N32:50.79	W120:59.97	4	55	1	On
75		M 84	2 Aug 93	1405	N33:07.63	W120:54.33	4	74	2	On
75		M 86	2 Aug 93	1550	N33:12.98	W120:47.15	4	55	1	On
75		M 89	2 Aug 93	1653	N33:15.84	W120:42.97	4	95	1	On
75	22	M 102	3 Aug 93	1036	N34:02.02	W120:32.72	4	96	6	On
75		M 103	3 Aug 93	1143	N34:03.96	W120:34.25	4	55	2	On
75		M 105	3 Aug 93	1215	N34:05.11	W120:35.85	4	107	2	On
75		M 106	3 Aug 93	1238	N34:05.50	W120:37.18	4	94	1	On
75		M 135	4 Aug 93	1223	N34:50.04	W121:16.52	3	94	2	On
75		M 189	7 Aug 93	1435	N36:10.16	W125:39.31	4	95	1	On
75		M 251	14 Aug 93	1925	N39:56.78	W124:58.74	4	74	1	On
75		M 259	15 Aug 93	1200	N39:05.50	W124:47.26	3	94	1	On
75	76	M 286	31 Aug 93	0750	N37:16.72	W122:31.53	3	96	2	On
75		M 287	31 Aug 93	0754	N37:17.47	W122:31.28	3	90	1	Off
75		M 288	31 Aug 93	0815	N37:16.73	W122:31.65	3	55	2	On
75		M 289	31 Aug 93	0820	N37:16.32	W122:31.30	3	55	3	On
75		M 290	31 Aug 93	0829	N37:15.52	W122:31.01	3	55	3	On
75		M 291	31 Aug 93	0839	N37:14.11	W122:30.63	3	95	1	On
75		M 304	31 Aug 93	1809	N36:08.79	W122:30.58	3	1	2	On
75		M 306	1 Sep 93	0800	N35:48.47	W122:37.91	4	96	2	On
75		M 318	1 Sep 93	1622	N34:48.49	W122:56.23	4	95	2	Off
75		M 319	1 Sep 93	1626	N34:49.09	W122:55.61	4	90	2	Off
75		M 325	1 Sep 93	1909	N34:39.93	W123:05.29	4	95	2	On
75		M 333	2 Sep 93	0822	N34:26.93	W123:17.44	5	95	1	On
75		M 335	2 Sep 93	0936	N34:21.27	W123:18.09	5	96	2	On
75		M 338	2 Sep 93	1250	N34:11.66	W123:41.21	5	94	1	On
75	74	M 354	7 Sep 93	0717	N34:14.03	W123:20.43	3	1	2	On
75		M 357	7 Sep 93	0932	N34:17.05	W123:05.59	3	95	1	On
75		M 362	7 Sep 93	1043	N34:25.68	W122:50.73	3	96	3	On
75		M 363	7 Sep 93	1149	N34:29.51	W122:38.69	3	107	2	On
75		M 366	7 Sep 93	1326	N34:34.15	W122:25.32	3	94	2	On
75		M 394	26 Sep 93	1734	N38:30.39	W126:44.14	3	76	2	On
75		M 449	4 Oct 93	1111	N38:10.55	W127:38.04	3	92	1	On
75		M 467	5 Oct 93	1310	N38:23.25	W124:20.34	3	91	2	On
75		M 471	5 Oct 93	1502	N38:18.28	W124:25.67	3	92	1	Off
75		M 488	11 Oct 93	1222	N37:12.31	W124:50.92	3	97	1	On
75		M 500	12 Oct 93	1419	N35:50.30	W125:37.43	2	74	2	On
75		M 530	27 Oct 93	1514	N26:32.85	W115:03.80	4	76	1	On
75		J 1423	30 Aug 93	0804	N22:24.37	W110:41.26	4	97	1	On
75		J 1426	30 Aug 93	0930	N22:24.79	W110:47.75	5	91	1	On
75		J 1430	30 Aug 93	1418	N22:09.89	W111:26.66	4	74	1	On
75		J 1433	30 Aug 93	1658	N22:02.15	W111:45.26	3	92	1	On
75		J 1448	1 Sep 93	1617	N23:45.80	W113:34.25	4	76	1	On
75		J 1451	2 Sep 93	0923	N24:18.18	W113:19.52	5	97	3	On
75		J 1517	26 Sep 93	0822	N23:36.77	W111:38.00	1	55	1	Off
75		J 1908	26 Oct 93	1015	N22:56.03	W112:30.38	5	94	2	On
75		J 1909	26 Oct 93	1131	N23:07.25	W112:31.03	5	96	1	On
75		J 1910	26 Oct 93	1136	N23:05.66	W112:33.33	5	96	1	On
75		J 1912	26 Oct 93	1311	N23:17.37	W112:32.07	5	73	2	On
75		J 1913	26 Oct 93	1401	N23:17.55	W112:33.03	4	94	1	On
75		J 1915	26 Oct 93	1551	N23:34.98	W112:31.28	5	55	1	On
75		J 1917	26 Oct 93	1723	N23:42.11	W112:31.01	5	55	1	On
75		J 1922	27 Oct 93	1254	N24:27.90	W112:40.60	3	73	1	Off
75		J 1924	27 Oct 93	1342	N24:28.84	W112:49.35	3	73	1	On
75		J 1930	28 Oct 93	0814	N24:10.69	W113:27.40	3	73	1	On
75		J 1932	28 Oct 93	0855	N24:06.40	W113:37.81	3	95	2	On
75		J 1934	28 Oct 93	1121	N24:02.00	W113:53.95	4	107	1	On
75		J 1935	28 Oct 93	1127	N24:01.13	W113:54.87	4	107	1	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
75		J 1940	29 Oct 93	1110	N23:26.32	W115:37.54	2	73	1	On
75		J 1960	1 Nov 93	0918	N25:30.32	W115:41.66	3	73	2	On
75	21	J 1973	5 Nov 93	0657	N31:03.64	W119:59.60	4	94	44	Off
<i>Megaptera novaeangliae</i>										
76		M 118	4 Aug 93	0654	N35:03.69	W120:46.57	0	96	1	On
76		M 156	5 Aug 93	1107	N36:30.76	W122:21.87	4	95	1	On
76		M 157	5 Aug 93	1156	N36:29.98	W122:21.56	4	95	2	Off
76		M 158	5 Aug 93	1207	N36:32.84	W122:22.67	4	74	1	On
76		M 159	5 Aug 93	1207	N36:30.82	W122:20.54	4	55	1	On
76		M 160	5 Aug 93	1208	N36:31.49	W122:21.93	4	74	2	On
76		M 161	5 Aug 93	1233	N36:33.25	W122:21.97	4	74	1	On
76		M 162	5 Aug 93	1243	N36:33.56	W122:20.01	4	74	2	On
76		M 167	6 Aug 93	0728	N37:06.59	W122:36.08	4	95	1	On
76		M 168	6 Aug 93	0751	N37:05.92	W122:38.83	4	107	1	On
76		M 170	6 Aug 93	0829	N37:05.26	W122:43.54	4	74	3	On
76		M 171	6 Aug 93	0920	N37:04.63	W122:46.77	4	94	2	On
76		M 276	17 Aug 93	1251	N41:45.64	W124:32.49	5	95	2	On
76		M 278	17 Aug 93	1340	N41:49.00	W124:25.95	4	94	1	On
76		M 279	17 Aug 93	1613	N41:54.42	W124:32.38	5	107	2	Off
76		M 280	21 Aug 93	1251	N40:34.14	W124:27.66	5	95	5	Off
76		M 281	21 Aug 93	1541	N40:33.07	W124:33.61	4	1	2	On
76	75	M 286	31 Aug 93	0750	N37:16.72	W122:31.53	3	96	2	On
76		M 292	31 Aug 93	0841	N37:14.51	W122:32.46	#	55	2	On
76		M 293	31 Aug 93	0902	N37:11.68	W122:32.45	3	55	2	On
76		M 371	8 Sep 93	1155	N34:06.93	W120:01.18	4	55	2	On
76		M 389	24 Sep 93	1112	N37:39.43	W123:02.73	1	99	55	Off
76		M 393	26 Sep 93	1625	N38:32.38	W126:40.96	4	74	3	On
76		M 476	5 Oct 93	1642	N38:07.75	W124:30.18	2	76	1	On
76	99 70	J 1293	12 Aug 93	1725	N29:01.68	W113:00.99	5	91	3	On
76	22 16	J 1504	24 Sep 93	1816	N27:27.08	W114:49.30	3	4	30	Off
76		J 1570	28 Sep 93	1107	N24:52.69	W110:27.93	2	55	1	On
Unidentified dolphin										
77		M 16	29 Jul 93	1541	N32:29.96	W118:16.37	4	95	6	On
77		M 32	30 Jul 93	1745	N33:04.00	W118:36.30	4	95	200	On
77		M 33	30 Jul 93	1802	N33:05.58	W118:36.37	4	94	1	On
77		M 35	30 Jul 93	1825	N33:05.03	W118:38.62	4	94	3	Off
77		M 76	1 Aug 93	1055	N32:25.16	W120:33.92	4	74	1	On
77		M 81	2 Aug 93	1309	N33:00.22	W120:55.78	4	95	48	Off
77		M 116	4 Aug 93	0624	N35:06.71	W120:41.61	0	94	4	On
77		M 123	4 Aug 93	0837	N35:04.49	W120:59.70	2	107	100	On
77		M 130	4 Aug 93	1103	N34:55.24	W121:06.26	3	96	3	On
77	74	M 145	4 Aug 93	1834	N34:44.01	W121:58.70	4	55	17	On
77		M 180	7 Aug 93	0919	N36:28.90	W124:52.05	5	55	5	On
77		M 192	8 Aug 93	0703	N35:51.46	W126:30.45	3	95	15	On
77		M 205	8 Aug 93	1927	N35:22.09	W128:00.12	1	104	1	Off
77		M 222	10 Aug 93	1535	N38:41.22	W127:14.88	3	95	100	On
77		M 235	13 Aug 93	0954	N41:21.40	W124:55.40	5	96	7	Off
77		M 240	14 Aug 93	1612	N40:27.22	W125:00.94	4	55	5	On
77		M 342	2 Sep 93	1929	N33:38.74	W124:38.32	4	1	7	On
77		M 373	8 Sep 93	1537	N33:44.13	W119:54.78	5	107	2	On
77		M 375	11 Sep 93	0834	N30:21.83	W119:07.38	5	96	2*	On
77		M 384	18 Sep 93	1704	N30:23.02	W122:16.89	5	109	1	On
77		M 385	20 Sep 93	1021	N34:36.59	W122:28.46	3	76	3	On
77	17	M 388	20 Sep 93	1525	N35:15.90	W122:27.52	1	108	26	On
77		M 406	27 Sep 93	1532	N37:58.27	W128:43.97	2	74	200	On
77		M 419	1 Oct 93	0917	N40:47.20	W127:21.86	1	74	8	On
77		M 431	2 Oct 93	0939	N41:35.63	W128:45.48	2	74	60	On
77		M 435	2 Oct 93	1217	N41:13.17	W128:55.69	2	74	7	On



Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
77		M 470	5 Oct 93	1418	N38:20.66	W124:23.84	3	91	2	On
77		M 481	5 Oct 93	1730	N38:03.43	W124:33.71	1	108	2	On
77		M 512	19 Oct 93	1648	N30:39.36	W122:02.88	4	76	14	On
77		M 556	31 Oct 93	1049	N22:53.37	W111:07.61	4	91	1	On
77		M 557	31 Oct 93	1227	N22:59.09	W110:55.61	2	76	50	Off
77		M 563	31 Oct 93	1529	N22:54.00	W110:25.31	2	91	40	Off
77		M 565	31 Oct 93	1611	N22:54.07	W110:27.97	3	97	1	Off
77		M 566	31 Oct 93	1616	N22:55.64	W110:22.12	3	97	10	Off
77		M 578	1 Nov 93	0945	N22:07.76	W108:44.32	1	97	1	Off
77		M 579	1 Nov 93	1001	N22:03.38	W108:39.95	2	97	100	Off
77		M 582	1 Nov 93	1037	N22:01.98	W108:33.52	2	76	30	Off
77		J 1003	29 Jul 93	1014	N30:20.45	W116:25.41	3	109	1*	On
77		J 1019	30 Jul 93	1831	N28:02.14	W115:00.06	3	91	9	On
77		J 1021	31 Jul 93	1124	N27:02.81	W114:20.65	2	97	8	Off
77		J 1032	1 Aug 93	0835	N24:50.87	W112:36.00	3	97	1*	Off
77		J 1034	1 Aug 93	0846	N24:49.07	W112:34.02	3	7	5*	Off
77		J 1057	2 Aug 93	0954	N23:02.35	W110:57.30	4	109	6	On
77		J 1059	2 Aug 93	1111	N22:55.95	W110:54.98	4	92	1	Off
77		J 1066	3 Aug 93	1227	N24:40.31	W108:59.07	3	7	2	On
77		J 1067	3 Aug 93	1307	N24:45.58	W108:59.30	3	109	1*	On
77		J 1078	4 Aug 93	0723	N25:54.79	W109:59.41	4	92	1	On
77		J 1084	4 Aug 93	1358	N26:45.02	W110:03.63	2	92	280	On
77		J 1090	5 Aug 93	0619	N27:05.38	W110:59.08	2	97	2	On
77		J 1098	5 Aug 93	0947	N27:23.87	W110:58.88	3	97	4	On
77		J 1106	5 Aug 93	1601	N27:57.06	W111:25.26	3	109	1*	On
77		J 1110	5 Aug 93	1720	N28:07.75	W111:28.04	2	7	1*	Off
77		J 1112	6 Aug 93	0607	N27:41.57	W112:25.83	1	92	80	On
77		J 1122	6 Aug 93	1021	N28:16.10	W112:33.83	2	91	10	On
77		J 1126	6 Aug 93	1344	N28:33.82	W112:27.99	3	91	300	On
77		J 1131	6 Aug 93	1548	N28:43.51	W112:32.00	2	97	1	On
77		J 1133	6 Aug 93	1608	N28:48.52	W112:29.74	2	97	11	On
77		J 1140	6 Aug 93	1746	N28:52.58	W112:40.54	2	7	70*	On
77		J 1143	7 Aug 93	0644	N29:02.36	W113:21.56	3	91	20	On
77		J 1180	9 Aug 93	0939	N31:02.14	W114:32.25	1	91	1	On
77		J 1185	9 Aug 93	1423	N30:17.01	W114:27.58	1	92	30	On
77		J 1216	10 Aug 93	1250	N30:43.57	W113:58.35	1	91	300	On
77		J 1234	10 Aug 93	1409	N30:53.86	W113:56.34	1	109	150	On
77		J 1244	10 Aug 93	1800	N31:19.03	W113:53.72	2	92	4	Off
77		J 1262	11 Aug 93	1119	N31:02.55	W114:23.91	1	7	10	On
77		J 1291	12 Aug 93	1526	N29:25.93	W112:59.50	5	109	7	On
77		J 1322	15 Aug 93	0909	N26:32.89	W111:01.00	2	109	10	On
77		J 1341	16 Aug 93	1403	N24:58.41	W110:00.22	3	109	1	On
77		J 1344	16 Aug 93	1731	N24:20.64	W110:03.65	4	92	16*	On
77	21	J 1345	17 Aug 93	1245	N23:59.25	W108:08.65	2	97	30	On
77		J 1360	26 Aug 93	1023	N21:56.15	W108:35.66	2	97	25	On
77		J 1381	27 Aug 93	1039	N20:20.64	W109:22.11	2	76	7	On
77		J 1383	27 Aug 93	1108	N20:17.60	W109:26.97	2	108	20	Off
77		J 1387	27 Aug 93	1755	N19:10.22	W109:53.36	3	76	50	On
77		J 1389	28 Aug 93	0634	N19:08.28	W109:55.75	2	108	6	On
77		J 1396	28 Aug 93	1015	N18:44.82	W110:14.85	3	92	200	On
77		J 1427	30 Aug 93	1110	N22:19.39	W111:02.80	4	74	1	On
77	33	J 1467	5 Sep 93	1010	N25:05.17	W118:44.97	3	74	13	On
77		J 1468	6 Sep 93	0924	N26:10.16	W118:24.46	3	91	1	On
77	17	J 1474	7 Sep 93	1402	N27:40.81	W117:30.15	5	92	54	On
77		J 1498	24 Sep 93	1321	N27:57.42	W114:58.47	4	55	200	Off
77		J 1502	24 Sep 93	1647	N27:35.70	W115:01.14	3	96	50	Off
77		J 1514	25 Sep 93	1500	N25:31.26	W112:45.68	2	1	5	On
77		J 1519	26 Sep 93	0901	N23:31.41	W111:36.10	1	96	65	Off
77		J 1529	26 Sep 93	1047	N23:22.46	W111:20.36	1	94	15	Off
77		J 1530	26 Sep 93	1157	N23:17.60	W111:14.81	2	107	15	Off

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
77		J 1537	26 Sep 93	1531	N23:26.61	W110:45.24	4	4	4	Off
77		J 1541	27 Sep 93	0726	N22:48.80	W109:25.29	1	55	20	On
77		J 1542	27 Sep 93	0800	N22:54.03	W109:25.36	1	55	50	On
77		J 1549	27 Sep 93	1630	N23:49.36	W109:32.26	2	1	20	On
77		J 1550	27 Sep 93	1631	N23:49.88	W109:28.77	2	96	1*	On
77		J 1551	27 Sep 93	1637	N23:51.05	W109:31.05	2	1	3	On
77		J 1561	28 Sep 93	0712	N24:28.38	W110:32.82	3	107	10	On
77		J 1569	28 Sep 93	1104	N24:52.43	W110:29.10	2	55	1	On
77		J 1584	28 Sep 93	1752	N25:41.11	W110:27.05	1	94	25*	On
77		J 1585	28 Sep 93	1801	N25:42.59	W110:32.99	1	96	1*	On
77		J 1593	29 Sep 93	0845	N26:53.79	W111:29.15	2	94	10	On
77		J 1613	29 Sep 93	1748	N28:01.83	W111:29.10	1	95	1*	On
77		J 1616	30 Sep 93	0625	N27:10.81	W110:33.38	2	96	300	On
77		J 1620	30 Sep 93	0958	N26:36.61	W110:31.77	2	107	30	On
77		J 1641	1 Oct 93	1233	N24:40.58	W109:34.40	4	95	40	On
77		J 1657	2 Oct 93	1428	N22:51.82	W108:58.37	2	95	2*	On
77		J 1663	2 Oct 93	1757	N22:28.83	W108:58.35	1	94	2*	On
77		J 1670	3 Oct 93	0747	N21:52.40	W107:54.30	2	55	50	On
77		J 1678	3 Oct 93	1018	N22:05.68	W107:53.47	0	94	2*	On
77		J 1680	3 Oct 93	1057	N22:11.38	W108:02.69	0	96	80	On
77		J 1681	3 Oct 93	1058	N22:11.31	W107:53.86	0	95	170	On
77		J 1685	3 Oct 93	1139	N22:13.74	W107:59.28	1	107	95	On
77		J 1698	3 Oct 93	1717	N22:54.64	W108:05.90	1	94	20*	On
77		J 1722	5 Oct 93	1222	N24:13.80	W108:32.16	2	95	200	On
77		J 1731	6 Oct 93	0835	N24:07.87	W107:58.24	1	55	10	On
77		J 1737	6 Oct 93	1133	N23:41.87	W108:07.92	1	1	130	On
77		J 1744	6 Oct 93	1547	N23:16.18	W108:02.20	1	1	8	On
77		J 1748	6 Oct 93	1736	N22:54.66	W107:59.16	2	107	60	On
77		J 1798	15 Oct 93	1721	N23:05.52	W107:33.03	3	4	4*	Off
77		J 1803	16 Oct 93	0813	N23:00.34	W107:03.55	2	107	7	On
77		J 1808	16 Oct 93	1125	N22:35.25	W106:57.55	1	73	135	On
77		J 1809	16 Oct 93	1132	N22:31.15	W106:58.44	1	73	2	On
77		J 1829	19 Oct 93	0624	N21:11.38	W106:56.50	1	94	2*	On
77		J 1830	19 Oct 93	0718	N21:08.82	W106:50.72	1	95	250	Off
77		J 1831	19 Oct 93	0724	N21:03.28	W106:50.08	1	95	120	Off
77		J 1832	19 Oct 93	0731	N21:03.43	W106:51.32	1	98	4	Off
77		J 1833	19 Oct 93	0737	N21:02.45	W106:49.64	1	94	10	Off
77		J 1846	20 Oct 93	1723	N20:07.77	W109:36.35	5	94	15	On
77		J 1847	21 Oct 93	0702	N20:00.56	W109:43.50	4	96	50	On
77	13	J 1848	21 Oct 93	0813	N19:58.94	W110:00.72	4	73	24	On
77		J 1850	21 Oct 93	1100	N19:52.77	W110:21.14	4	95	2	On
77		J 1852	21 Oct 93	1302	N19:44.36	W110:36.07	4	94	1*	Off
77		J 1857	21 Oct 93	1437	N19:30.98	W110:48.03	4	94	2*	Off
77		J 1867	22 Oct 93	1227	N19:23.87	W111:32.05	3	94	1*	On
77		J 1877	23 Oct 93	1736	N19:41.25	W112:35.40	2	107	35	On
77		J 1878	24 Oct 93	0958	N20:12.55	W112:22.18	4	55	3	On
77		J 1890	25 Oct 93	0834	N21:28.71	W111:50.92	3	96	100	On
77		J 1897	25 Oct 93	1148	N21:44.89	W111:35.90	3	55	3	On
77		J 1900	25 Oct 93	1448	N22:08.87	W111:27.50	4	73	1*	On
77		J 1931	28 Oct 93	0846	N24:04.78	W113:33.34	3	95	35	On
77		J 1942	30 Oct 93	0724	N23:07.63	W116:44.38	3	73	33	On
77		J 1964	1 Nov 93	1620	N26:14.93	W115:23.84	4	94	30	Off
77		J 1965	2 Nov 93	0832	N26:11.55	W117:47.73	5	73	1*	Off
77		J 1967	2 Nov 93	1114	N26:22.11	W118:13.07	5	95	11	Off
Unidentified small whale										
78		M 53	31 Jul 93	1112	N32:51.24	W118:59.08	3	74	2	On
78		M 94	3 Aug 93	0619	N33:34.66	W120:42.20	3	95	3	On
78		M 137	4 Aug 93	1318	N34:46.41	W121:21.32	3	104	1	On
78		M 201	8 Aug 93	1607	N35:33.74	W127:33.41	1	102	1	Off

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
78		M 204	8 Aug 93	1925	N35:25.06	W128:00.38	1	55	3	Off
78		M 230	11 Aug 93	1329	N40:22.64	W126:18.33	5	104	1	On
78		M 248	14 Aug 93	1751	N40:11.02	W124:59.61	3	107	1	On
78		M 263	15 Aug 93	1619	N39:18.02	W125:01.48	5	96	1	On
78		M 272	16 Aug 93	1918	N41:12.36	W125:58.86	4	96	1	On
78		M 506	14 Oct 93	1148	N33:57.05	W126:34.76	3	97	1	On
78		M 514	20 Oct 93	1035	N29:16.26	W122:28.07	3	108	2	On
78		M 532	28 Oct 93	0957	N24:17.68	W115:02.22	4	91	1	On
78		M 585	1 Nov 93	1457	N21:59.97	W107:58.58	1	92	2	On
78		J 1195	10 Aug 93	1017	N30:20.75	W113:59.12	1	109	1	On
78		J 1651	2 Oct 93	1259	N23:06.28	W108:59.92	2	96	1	On
78		J 1760	8 Oct 93	0703	N20:05.33	W106:31.20	4	55	1	On
78		J 1928	27 Oct 93	1718	N24:21.51	W113:12.76	3	94	1	On
Unidentified large whale										
79		M 50	31 Jul 93	0927	N33:00.09	W118:55.76	2	96	1	On
79		M 54	31 Jul 93	1146	N32:51.52	W119:04.43	3	104	1	On
79		M 60	31 Jul 93	1541	N32:52.41	W119:29.56	3	15	1	On
79		M 72	31 Jul 93	1922	N32:50.57	W119:54.63	4	107	3	Off
79		M 146	5 Aug 93	0654	N36:04.21	W122:26.19	5	104	1	On
79		M 172	6 Aug 93	0954	N36:59.06	W122:49.99	4	55	1	On
79		M 265	15 Aug 93	1728	N39:24.09	W125:03.84	5	94	1	On
79		M 295	31 Aug 93	1144	N36:54.68	W122:35.11	4	96	15	On
79		M 298	31 Aug 93	1358	N36:41.59	W122:35.46	3	104	1	On
79		M 345	3 Sep 93	0923	N33:52.94	W123:29.31	4	96	1	On
79		M 360	7 Sep 93	1011	N34:18.35	W122:55.11	3	94	1	On
79		M 460	5 Oct 93	1107	N38:42.39	W124:14.43	2	92	30	On
79		M 468	5 Oct 93	1318	N38:22.30	W124:17.57	3	91	2	On
79		M 516	20 Oct 93	1426	N29:28.14	W121:52.23	3	92	1	On
79		J 1004	29 Jul 93	1349	N29:43.75	W116:32.52	5	92	2	On
79		J 1064	2 Aug 93	1717	N22:35.88	W110:01.71	5	92	1*	On
79		J 1099	5 Aug 93	1004	N27:26.77	W111:02.45	3	7	15	On
79		J 1114	6 Aug 93	0647	N27:52.05	W112:28.34	1	7	1	On
79		J 1135	6 Aug 93	1652	N28:47.25	W112:31.93	2	109	1	Off
79		J 1273	12 Aug 93	0733	N30:08.74	W113:00.54	5	109	1	On
79		J 1290	12 Aug 93	1458	N29:27.14	W113:00.98	5	108	1	On
79		J 1294	13 Aug 93	0626	N28:55.02	W113:02.95	5	109	1	On
79		J 1295	13 Aug 93	0838	N28:36.35	W112:57.82	4	7	1	On
79		J 1296	13 Aug 93	0849	N28:37.38	W113:00.04	4	108	1	Off
79	74 99	J 1298	13 Aug 93	1624	N29:05.90	W112:30.92	5	92	3	On
79		J 1299	13 Aug 93	1716	N29:07.98	W112:35.91	5	91	1	On
79	70	J 1302	14 Aug 93	0805	N28:25.31	W112:00.60	3	92	2	On
79		J 1418	30 Aug 93	0707	N22:25.65	W110:34.87	4	92	1	On
79	33 18	J 1469	6 Sep 93	1420	N26:57.70	W118:05.19	3	97	353	On
79		J 1906	26 Oct 93	0813	N22:36.61	W112:29.80	4	73	1	Off
79		J 1907	26 Oct 93	0933	N22:48.00	W112:33.84	4	94	1	On
<i>Kogia simus/breviceps</i>										
80		M 207	8 Aug 93	1956	N35:23.77	W128:01.41	1	96	1	Off
80		M 213	9 Aug 93	1520	N36:59.23	W127:56.64	1	55	1	On
80		J 1583	28 Sep 93	1746	N25:39.53	W110:27.91	1	94	1	On
80		J 1610	29 Sep 93	1533	N27:46.41	W111:29.40	2	107	2	On
80		J 1684	3 Oct 93	1133	N22:11.92	W108:02.97	0	107	1	On
<i>Stenella attenuata</i> (unidentified subspecies)										
90		M 504	14 Oct 93	0846	N33:39.71	W126:43.04	2	91	61	On
90		M 513	19 Oct 93	1741	N30:31.41	W122:04.01	4	108	24	On
90		M 522	24 Oct 93	0844	N28:12.18	W120:26.52	2	92	85	On
90		M 523	24 Oct 93	1819	N27:01.74	W120:59.91	3	104	58	On
90		J 1060	2 Aug 93	1128	N22:55.27	W110:49.25	4	92	23*	Off

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft. no.	Obs. no.	School Size	Efort
90	06	J 1072	3 Aug 93	1508	N25:01.92	W108:58.19	3	97	361	On
90	06	J 1076	3 Aug 93	1758	N25:22.01	W109:04.99	3	97	376	On
90		J 1333	16 Aug 93	0610	N25:39.92	W110:00.26	2	92	6	Off
90	06	J 1350	17 Aug 93	1522	N24:01.62	W107:46.02	2	108	223	On
90		J 1365	26 Aug 93	1352	N21:26.22	W108:50.36	2	74	65	On
90		J 1371	26 Aug 93	1648	N21:03.47	W108:56.05	1	74	40	On
90		J 1374	26 Aug 93	1805	N20:58.81	W108:59.30	2	74	9	On
90		J 1655	2 Oct 93	1359	N22:53.17	W108:56.39	2	94	70	On
90		J 1691	3 Oct 93	1447	N22:35.83	W108:04.42	1	96	75	On
90		J 1729	6 Oct 93	0616	N24:31.59	W107:59.95	2	107	3*	Off
90		J 1745	6 Oct 93	1556	N23:15.26	W108:03.35	1	1	150	On
90		J 1756	7 Oct 93	0942	N21:58.85	W107:27.06	3	1	200	On
90	03	J 1762	8 Oct 93	0925	N20:21.10	W106:20.53	4	107	12	On
90	06	J 1767	9 Oct 93	0658	N20:42.53	W105:28.87	3	95	30	On
90		J 1770	9 Oct 93	1647	N21:24.53	W105:29.92	4	98	7	Off
90		J 1771	10 Oct 93	0848	N21:00.71	W105:58.51	3	95	285	On
90		J 1947	30 Oct 93	1453	N23:46.99	W116:43.52	2	94	425	On
90		J 1968	3 Nov 93	1439	N27:30.97	W119:35.05	3	96	118	On
90		J 1971	4 Nov 93	1007	N28:06.49	W119:59.11	2	107	96	On
Unidentified cetacean										
96		M 12	29 Jul 93	1106	N31:56.82	W118:34.05	4	95	5	On
96		M 80	2 Aug 93	1258	N33:01.98	W120:56.34	4	95	5	On
96		M 374	10 Sep 93	1552	N31:06.91	W120:06.38	5	94	1	On
96		M 447	3 Oct 93	1807	N40:22.67	W128:59.75	2	104	1	On
96		M 482	5 Oct 93	1748	N37:58.42	W124:33.14	1	74	5	On
96		M 541	30 Oct 93	1022	N21:18.95	W114:11.95	3	76	1	On
96		J 1242	10 Aug 93	1654	N31:18.51	W113:59.35	0	109	1	On
96		J 1304	14 Aug 93	1233	N27:50.42	W112:02.41	3	92	2	On
96		J 1524	26 Sep 93	1003	N23:23.75	W111:31.02	1	1	3	Off
96		J 1576	28 Sep 93	1612	N25:26.12	W110:33.53	3	94	3	On
96		J 1592	29 Sep 93	0843	N26:51.68	W111:31.81	2	4	1	Off
96		J 1600	29 Sep 93	1108	N27:09.26	W111:25.53	3	96	3	On
96		J 1689	3 Oct 93	1427	N22:30.92	W108:01.51	1	55	1	On
96		J 1750	7 Oct 93	0615	N22:23.98	W107:25.63	2	94	5	On
96		J 1777	14 Oct 93	1445	N23:34.24	W107:03.64	2	55	3	On
96		J 1788	15 Oct 93	1104	N23:46.46	W107:35.20	1	96	3	On
96		J 1790	15 Oct 93	1225	N23:40.43	W107:36.26	2	96	3	On
96		J 1792	15 Oct 93	1341	N23:25.60	W107:32.85	3	95	1	On
96		J 1802	16 Oct 93	0810	N23:00.07	W107:05.05	2	94	1	On
96		J 1874	23 Oct 93	1448	N19:23.33	W112:51.54	3	73	1	On
96		J 1894	25 Oct 93	1009	N21:35.81	W111:42.72	4	94	2*	On
Unidentified whale										
98		M 348	4 Sep 93	1222	N31:37.47	W124:40.23	5	90	1	On
98		M 379	17 Sep 93	1259	N29:57.83	W120:12.51	5	91	1	On
98		M 420	1 Oct 93	0956	N40:46.17	W127:29.93	1	92	1	On
98		J 1410	29 Aug 93	1527	N20:41.58	W109:58.37	1	108	1	On
98		J 1851	21 Oct 93	1258	N19:47.84	W110:39.49	4	4	1	Off
98		J 1899	25 Oct 93	1427	N22:02.57	W111:28.32	3	107	1	On
<i>Balaenoptera borealis/edeni</i>										
99		M 214	9 Aug 93	1612	N37:09.81	W127:55.01	1	95	1	On
99		M 217	9 Aug 93	1827	N37:20.58	W127:52.07	1	102	1	On
99		J 1009	30 Jul 93	1328	N28:07.12	W115:27.59	4	97	2	Off
99		J 1047	1 Aug 93	1239	N24:30.14	W112:13.24	3	97	1	Off
99		J 1130	6 Aug 93	1530	N28:39.75	W112:29.15	2	91	1	On
99	76 70	J 1293	12 Aug 93	1725	N29:01.68	W113:00.99	5	91	3	On
99	74 79	J 1298	13 Aug 93	1624	N29:05.90	W112:30.92	5	92	3	On
99		J 1339	16 Aug 93	1244	N24:59.52	W110:06.30	3	91	2	On

Table 5. (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft. no.	Obs. no.	School Size	Effort
99		J 1349	17 Aug 93	1350	N23:57.96	W108:02.96	1	109	1	On
99	18	J 1398	28 Aug 93	1029	N18:39.06	W110:12.52	3	76	8	Off
99		J 1499	24 Sep 93	1332	N27:52.26	W115:01.21	3	107	1	Off
99	70	J 1533	26 Sep 93	1215	N23:14.70	W111:11.84	2	55	2	Off
99		J 1548	27 Sep 93	1555	N23:39.53	W109:30.06	2	4	1	On
99		J 1642	1 Oct 93	1539	N24:05.65	W109:31.46	3	94	1	On
99	02 18 06	J 1779	15 Oct 93	0726	N23:56.01	W107:31.28	0	55	2233	On
99	70	J 1854	21 Oct 93	1338	N19:36.80	W110:41.95	4	95	5	Off
99		J 1862	22 Oct 93	1008	N19:29.02	W111:13.08	4	96	1	On
99		J 1863	22 Oct 93	1037	N19:31.47	W111:18.27	4	95	2	On
99		J 1870	22 Oct 93	1532	N19:23.24	W112:00.98	4	73	2	On

Table 5. Pinniped sightings

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
Unidentified pinniped										
PU	M	44	31 Jul 93	0736	N33:05.25	W118:47.70	2	107	2	Off
PU	M	99	3 Aug 93	0847	N33:46.86	W120:35.00	5	107	1	On
PU	M	109	3 Aug 93	1407	N34:14.91	W120:28.49	4	96	1	On
PU	M	122	4 Aug 93	0836	N35:01.39	W120:58.25	2	95	1	On
PU	M	140	4 Aug 93	1413	N34:45.32	W121:28.34	3	104	1	On
PU	M	164	5 Aug 93	1306	N36:37.28	W122:18.58	4	94	1	On
PU	M	239	14 Aug 93	1440	N40:39.73	W124:59.10	4	74	1	On
PU	M	250	14 Aug 93	1909	N40:01.62	W124:58.95	4	96	1	On
PU	M	273	16 Aug 93	1949	N41:08.79	W126:00.20	4	55	1	On
PU	M	361	7 Sep 93	1036	N34:22.51	W122:54.31	3	96	1	On
PU	M	423	1 Oct 93	1317	N40:39.60	W127:52.69	0	92	1	On
PU	M	427	1 Oct 93	1643	N40:26.29	W128:26.34	2	92	1	On
PU	M	430	2 Oct 93	0844	N41:38.72	W128:40.11	2	74	1	On
PU	M	440	3 Oct 93	1239	N40:01.31	W129:51.62	2	74	1	On
PU	M	443	3 Oct 93	1538	N40:15.81	W129:17.84	2	91	1	On
PU	M	444	3 Oct 93	1617	N40:19.82	W129:10.71	2	97	1	On
PU	M	474	5 Oct 93	1603	N38:11.01	W124:28.39	2	97	1	On
PU	M	477	5 Oct 93	1642	N38:07.45	W124:28.61	2	91	1	On
PU	M	483	5 Oct 93	1756	N37:57.93	W124:34.31	1	91	1	On
PU	M	484	5 Oct 93	1803	N37:59.17	W124:35.25	1	91	1	On
PU	M	485	5 Oct 93	1817	N37:57.08	W124:35.68	1	92	1	On
PU	M	575	1 Nov 93	0833	N22:13.19	W108:53.81	2	97	1*	Off
PU	J	1005	30 Jul 93	0800	N28:40.66	W115:00.01	5	91		On
PU	J	1007	30 Jul 93	0849	N28:31.86	W114:59.82	5	97		On
PU	J	1043	1 Aug 93	1020	N24:41.39	W112:27.74	3	91	1	Off
PU	J	1058	2 Aug 93	1107	N22:56.53	W110:55.76	4	98	1	Off
PU	J	1506	25 Sep 93	1206	N25:56.35	W112:32.66	2	96	1	On
Unidentified sea lion										
UO	M	10	29 Jul 93	0954	N31:45.01	W118:39.82	3	96	1	On
UO	M	77	1 Aug 93	1427	N32:18.75	W121:06.58	4	74	1	On
UO	M	577	1 Nov 93	0938	N22:06.56	W108:43.80	1	97	1	Off
UO	J	1191	10 Aug 93	0612	N29:43.48	W113:59.32	1	109		On
UO	J	1473	7 Sep 93	1255	N27:53.79	W117:30.24	5	74	1	On
UO	J	1974	5 Nov 93	0920	N31:21.97	W119:57.34	3	55	1	On
<i>Zalophus californianus</i>										
ZC	M	19	30 Jul 93	0618	N32:55.77	W118:01.92	2	55	1	On
ZC	M	108	3 Aug 93	1405	N34:13.73	W120:28.42	4	74	1	On
ZC	M	111	3 Aug 93	1427	N34:16.37	W120:25.56	4	94	1	On
ZC 44	M	112	3 Aug 93	1429	N34:16.59	W120:24.91	4	74	6	On
ZC	M	119	4 Aug 93	0802	N35:01.30	W120:53.37	2	55	4	On
ZC	M	120	4 Aug 93	0804	N35:01.17	W120:53.68	2	96	1	On
ZC 22	M	133	4 Aug 93	1150	N34:54.38	W121:13.74	3	55	13	On
ZC	M	136	4 Aug 93	1307	N34:48.23	W121:18.99	3	104	1	On
ZC	M	138	4 Aug 93	1406	N34:45.42	W121:27.19	3	96	1	On
ZC	M	141	4 Aug 93	1441	N34:44.42	W121:33.89	3	55	1	On
ZC	M	165	5 Aug 93	1313	N36:38.10	W122:17.75	4	74	1	On
ZC	M	228	11 Aug 93	1157	N40:09.65	W126:23.56	4	55	1	On
ZC	M	243	14 Aug 93	1711	N40:17.58	W124:59.89	3	74	1	On
ZC	M	301	31 Aug 93	1616	N36:28.42	W122:31.12	3	95	1	On
ZC	M	370	8 Sep 93	1123	N34:14.66	W120:01.00	2	96	2	On
ZC	M	452	5 Oct 93	0855	N38:59.94	W124:01.00	1	76	1	On
ZC	M	453	5 Oct 93	0858	N38:59.15	W124:01.63	1	76	2	On
ZC	M	455	5 Oct 93	0935	N38:55.69	W124:04.12	2	76	1	On
ZC	M	456	5 Oct 93	0939	N38:55.20	W124:03.77	2	91	1	On
ZC	M	457	5 Oct 93	0956	N38:52.60	W124:05.32	2	91	2	On
ZC	M	528	27 Oct 93	1324	N26:48.49	W115:00.44	4	104	2	On
ZC	M	551	31 Oct 93	0925	N22:36.61	W111:10.80	4	74	1	On

Table 5. Pinniped sightings (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Efort
ZC		M 552	31 Oct 93	0946	N22:39.87	W111:09.76	3	74	1	On
ZC		M 553	31 Oct 93	0951	N22:40.91	W111:09.60	3	76	1	On
ZC		M 554	31 Oct 93	1018	N22:45.10	W111:08.12	4	104	2	On
ZC		M 555	31 Oct 93	1044	N22:49.76	W111:06.32	4	91	1	On
ZC		M 558	31 Oct 93	1230	N23:00.44	W110:57.03	2	97	1*	Off
ZC		M 569	1 Nov 93	0806	N22:14.53	W109:00.21	2	92	1	Off
ZC		M 570	1 Nov 93	0811	N22:12.54	W108:58.86	2	92	1	Off
ZC		M 571	1 Nov 93	0822	N22:11.62	W108:56.48	2	108	1*	Off
ZC		M 572	1 Nov 93	0823	N22:11.13	W108:54.46	2	74	1	Off
ZC		M 573	1 Nov 93	0828	N22:15.20	W108:53.28	2	108	1*	Off
ZC		M 574	1 Nov 93	0832	N22:11.65	W108:52.96	2	74	1	Off
ZC		J 1006	30 Jul 93	0845	N28:32.54	W114:59.54	5	97		On
ZC	22	J 1012	30 Jul 93	1730	N27:57.50	W115:04.34	3	7	4	Off
ZC		J 1062	2 Aug 93	1246	N22:48.88	W110:45.29	4	91		Off
ZC		J 1168	8 Aug 93	1342	N30:54.45	W113:29.06	5	91	1	On
ZC		J 1189	10 Aug 93	0601	N29:40.44	W114:00.06	1	97		On
ZC		J 1190	10 Aug 93	0603	N29:41.37	W114:00.01	1	92		On
ZC		J 1193	10 Aug 93	0656	N29:49.81	W114:01.24	1	7		On
ZC		J 1196	10 Aug 93	1025	N30:22.00	W114:00.84	1	7		On
ZC		J 1197	10 Aug 93	1027	N30:23.53	W114:02.22	1	7		On
ZC		J 1198	10 Aug 93	1031	N30:22.32	W114:00.01	1	92		On
ZC		J 1199	10 Aug 93	1032	N30:23.05	W114:00.33	1	7		On
ZC		J 1200	10 Aug 93	1045	N30:26.21	W114:00.60	1	7		On
ZC		J 1201	10 Aug 93	1047	N30:27.28	W114:01.52	1	7		On
ZC		J 1202	10 Aug 93	1053	N30:28.86	W113:59.49	1	7		On
ZC		J 1203	10 Aug 93	1058	N30:29.69	W114:00.58	1	7		On
ZC		J 1204	10 Aug 93	1105	N30:28.48	W113:59.96	1	92		On
ZC		J 1205	10 Aug 93	1105	N30:28.49	W113:59.92	1	92		On
ZC		J 1206	10 Aug 93	1106	N30:28.57	W113:59.93	1	91		On
ZC		J 1207	10 Aug 93	1106	N30:28.74	W114:01.79	1	91		On
ZC		J 1212	10 Aug 93	1124	N30:30.93	W114:00.46	1	91		On
ZC		J 1213	10 Aug 93	1126	N30:31.75	W114:00.64	1	91		On
ZC		J 1235	10 Aug 93	1430	N30:57.25	W114:02.07	0	7	2	On
ZC		J 1236	10 Aug 93	1431	N30:54.55	W113:59.36	0	97		On
ZC		J 1245	10 Aug 93	1809	N31:15.50	W113:57.99	2	97		Off
ZC		J 1263	11 Aug 93	1222	N31:08.51	W114:25.96	1	109		On
ZC		J 1452	2 Sep 93	1040	N24:20.32	W113:18.28	5	91		On
ZC		J 1456	2 Sep 93	1426	N24:50.09	W113:04.77	5	91		On
ZC		J 1457	2 Sep 93	1456	N24:54.62	W113:02.33	5	92		On
ZC		J 1472	7 Sep 93	1129	N28:07.08	W117:30.54	5	76	1	On
ZC		J 1495	24 Sep 93	0734	N28:19.16	W114:18.56	3	1		On
ZC		J 1505	25 Sep 93	1134	N26:00.28	W112:30.31	2	55		On
ZC		J 1508	25 Sep 93	1303	N25:47.57	W112:36.79	1	55	1	On
ZC		J 1509	25 Sep 93	1306	N25:46.92	W112:36.83	1	107		On
ZC		J 1510	25 Sep 93	1309	N25:46.51	W112:37.29	1	55	1	On
ZC		J 1511	25 Sep 93	1341	N25:40.47	W112:39.36	1	1		On
ZC		J 1512	25 Sep 93	1349	N25:37.74	W112:38.44	1	1		On
ZC		J 1516	25 Sep 93	1800	N25:04.89	W112:57.27	2	98		Off
ZC		J 1675	3 Oct 93	0945	N21:59.33	W107:58.06	1	1	1	Off
ZC		J 1929	28 Oct 93	0654	N24:16.72	W113:12.70	4	55	1	On

*Callorhinus ursinus*

CU		M 173	6 Aug 93	1125	N36:56.84	W123:09.28	4	94	1	On
CU		M 186	7 Aug 93	1349	N36:12.56	W125:32.24	4	55	1	On
CU		M 244	14 Aug 93	1712	N40:18.50	W124:59.27	3	94	1	On
CU		M 245	14 Aug 93	1715	N40:17.65	W124:59.81	3	74	1	On
CU		M 253	15 Aug 93	0856	N39:18.87	W124:16.61	2	96	1	On
CU		M 254	15 Aug 93	0857	N39:18.99	W124:16.78	2	96	1	On
CU		M 308	1 Sep 93	1109	N35:31.58	W122:47.02	4	96	1	On
CU		M 368	7 Sep 93	1433	N34:36.68	W122:17.49	3	55	1	On

Table 5. Pinniped sightings (continued)

Code	Other Codes	Sighting Number	Date	Time	Latitude	Longitude	Bft.	Obs. no.	School Size	Effort
<i>Mirounga angustirostris</i>										
MA	M	11	29 Jul 93	1055	N31:54.61	W118:33.86	3	96	1	On
MA	M	15	29 Jul 93	1439	N32:21.41	W118:18.79	4	95	1	On
MA	M	20	30 Jul 93	0624	N32:57.17	W118:00.87	2	104	1	On
MA	M	132	4 Aug 93	1139	N34:52.46	W121:08.97	3	95	1	On
MA	M	134	4 Aug 93	1222	N34:53.59	W121:16.55	3	15	1	On
MA	M	139	4 Aug 93	1410	N34:45.90	W121:28.85	3	104	1	On
MA	M	153	5 Aug 93	0943	N36:15.11	W122:24.34	5	96	1	On
MA	M	227	11 Aug 93	1028	N39:55.70	W126:30.35	3	74	1	On
MA	M	229	11 Aug 93	1216	N40:11.14	W126:23.58	4	74	1	On
MA	M	255	15 Aug 93	0918	N39:18.66	W124:19.56	2	96	1	On
MA	M	271	16 Aug 93	1824	N41:20.72	W125:56.05	4	74	1	On
MA	M	275	17 Aug 93	1250	N41:47.36	W124:35.15	5	74	1	On
MA	M	355	7 Sep 93	0835	N34:14.09	W123:12.83	3	55	1	On
MA	M	359	7 Sep 93	0954	N34:19.36	W123:01.03	3	1	1	On
MA	M	415	1 Oct 93	0805	N40:57.07	W127:11.66	1	76	1	On
MA	M	433	2 Oct 93	1116	N41:21.82	W128:53.64	2	76	1	On
MA	M	439	3 Oct 93	1055	N39:58.10	W130:10.76	3	76	1	On
MA	M	441	3 Oct 93	1404	N40:09.95	W129:35.13	2	97	1	On
MA	M	454	5 Oct 93	0926	N38:57.34	W124:02.86	2	76	1	On
MA	M	473	5 Oct 93	1549	N38:13.26	W124:27.16	3	76	1	On
MA	M	478	5 Oct 93	1713	N38:05.76	W124:30.62	2	74	1	On
MA	M	480	5 Oct 93	1725	N38:03.76	W124:31.39	2	74	1	On
MA	J	1471	7 Sep 93	1042	N28:15.05	W117:30.06	5	76	1	On
MA	J	1484	11 Sep 93	0952	N31:03.66	W116:51.62	1	91		On
MA	J	1522	26 Sep 93	0939	N23:29.75	W111:28.61	1	94	1	Off
MA	J	1975	5 Nov 93	1333	N32:03.79	W119:59.55	3	55	1	On



Table 6. PODS 93 Sighting Summary. Number of Schools Sighted includes both on-effort and off-effort sightings. A mixed species sighting is counted once for each species present in the sighting; thus, the total of mixed sightings exceeds the 106 sightings of mixed schools.

Species Code	Name	Number of Schools Sighted			Average School size
		Pure	Mixed	Total	
02	<i>Stenella attenuata</i> (offshore)	31	19	50	137.4
03	<i>Stenella longirostris</i> (unid. subsp.)	3	1	4	332.4
05	<i>Delphinus</i> sp.	22	0	22	86.0
06	<i>Stenella attenuata graffmani</i>	6	6	12	94.0
10	<i>Stenella longirostris orientalis</i>	21	18	39	131.9
13	<i>Stenella coeruleoalba</i>	72	21	93	55.9
15	<i>Steno bredanensis</i>	19	3	22	7.7
16	<i>Delphinus capensis</i>	46	4	50	272.2
17	<i>Delphinus delphis</i>	152	25	177	181.3
18	<i>Tursiops truncatus</i>	128	29	157	20.6
21	<i>Grampus griseus</i>	64	18	82	30.8
22	<i>Lagenorhynchus obliquidens</i>	9	11	20	49.4
27	<i>Lissodelphis borealis</i>	1	8	9	13.0
32	<i>Feresa attenuata</i>	2	0	2	12.8
33	<i>Pseudorca crassidens</i>	0	2	2	123.4
36	<i>Globicephala macrorhynchus</i>	16	9	25	16.3
37	<i>Orcinus orca</i>	10	0	10	5.5
40	<i>Phocoena phocoena</i>	3	0	3	1.4
41	<i>Phocoena sinus</i>	26	0	26	1.6
44	<i>Phocoenoides dalli</i>	14	2	16	3.8
46	<i>Physeter macrocephalus</i>	55	2	57	4.9
47	<i>Kogia breviceps</i>	2	0	2	1.0
48	<i>Kogia simus</i>	31	0	31	1.8
49	ziphiid whale	30	0	30	1.8
51	<i>Mesoplodon</i> sp.	15	0	15	2.5
59	<i>Mesoplodon densirostris</i>	1	0	1	4.8
61	<i>Ziphius cavirostris</i>	32	0	32	2.1
63	<i>Berardius bairdii</i>	5	0	5	12.9
70	<i>Balaenoptera</i> sp.	80	8	88	1.5
71	<i>Balaenoptera acutorostrata</i>	2	0	2	1.0
72	<i>Balaenoptera edeni</i>	15	1	16	1.4
73	<i>Balaenoptera borealis</i>	0	1	1	2.0
74	<i>Balaenoptera physalus</i>	55	6	61	2.2
75	<i>Balaenoptera musculus</i>	78	4	82	1.5
76	<i>Megaptera novaeangliae</i>	24	3	27	3.7
77	unidentified dolphin	134	6	140	36.9
78	unidentified small whale	17	0	17	1.4
79	unidentified large whale	28	3	31	3.1
80	<i>Kogia simus/breviceps</i>	5	0	5	1.2
90	<i>Stenella attenuata</i> (unid. subsp.)	19	5	24	112.1
96	unidentified cetacean	21	0	21	2.4
98	unidentified whale	6	0	6	1.0
99	<i>Balaenoptera borealis/edeni</i>	13	6	19	2.5
PU	unidentified pinniped	27	0	27	1.0
UO	unidentified sea lion	6	0	6	1.0
ZC	<i>Zalophus californianus</i>	69	3	72	1.2
CU	<i>Callorhinus ursinus</i>	8	0	8	1.0
MA	<i>Mirounga angustirostris</i>	26	0	26	1.0

Table 7. PODS 93 Schools of Mixed Species Composition. See Appendix E for an explanation of species codes and abbreviations.

Species 1	Species 2	Species 3	Species 4	Number of Sightings
02 OFFSH_SPOT	06 COAST_SPOT	18 TURSIOPS	99 SEI/BRYDES	1
02 OFFSH_SPOT	10 EAST_SPINR			16
02 OFFSH_SPOT	10 EAST_SPINR	70 UNID_RORQL		1
02 OFFSH_SPOT	46 SPERM_WHAL			1
03 UNID_SPINR	90 UNID_SPOT			1
06 COAST_SPOT	10 EAST_SPINR	18 TURSIOPS		1
06 COAST_SPOT	90 UNID_SPOT			4
13 STRIPED	17 SHRTB_COMM			17
13 STRIPED	17 SHRTB_COMM	21 GRAMPUS		1
13 STRIPED	18 TURSIOPS			1
13 STRIPED	36 SHRT_PILOT			1
13 STRIPED	77 UNID_DOLPH			1
15 STENO	18 TURSIOPS			2
15 STENO	18 TURSIOPS	21 GRAMPUS	70 UNID_RORQL	1
16 LONGB_COMM	17 SHRTB_COMM			1
16 LONGB_COMM	22 P_WHT_SIDE			2
16 LONGB_COMM	22 P_WHT_SIDE	76 HUMPBACK_W		1
17 SHRTB_COMM	27 LISSO_BOR			1
17 SHRTB_COMM	70 UNID_RORQL			1
17 SHRTB_COMM	74 FIN_WHALE			2
17 SHRTB_COMM	77 UNID_DOLPH			2
18 TURSIOPS	21 GRAMPUS			12
18 TURSIOPS	21 GRAMPUS	27 LISSO_BOR		1
18 TURSIOPS	33 FALSE_KLLR	79 UNID_LG_WH		1
18 TURSIOPS	36 SHRT_PILOT			7
18 TURSIOPS	46 SPERM_WHAL			1
18 TURSIOPS	99 SEI/BRYDES			1
21 GRAMPUS	27 LISSO_BOR			1
21 GRAMPUS	75 BLUE_WHALE			1
21 GRAMPUS	77 UNID_DOLPH			1
22 P_WHT_SIDE	27 LISSO_BOR			4
22 P_WHT_SIDE	44 DALLS_PORP			1
22 P_WHT_SIDE	75 BLUE_WHALE			1
22 P_WHT_SIDE	ZC CA_SEALION			2
27 LISSO_BOR	36 SHRT_PILOT			1
33 FALSE_KLLR	77 UNID_DOLPH			1
44 DALLS_PORP	ZC CA_SEALION			1
70 UNID_RORQL	73 SEI/WHALE			1
70 UNID_RORQL	76 HUMPBACK_W	99 SEI/BRYDES		1
70 UNID_RORQL	79 UNID_LG_W			1
70 UNID_RORQL	99 SEI/BRYDES			2
72 BRYDES_WHL	74 FIN_WHALE			1
74 FIN_WHALE	75 BLUE_WHALE			1
74 FIN_WHALE	77 UNID_DOLPH			1
74 FIN_WHALE	79 UNID_LG_WH	99 SEI/BRYDES		1
75 BLUE_WHALE	76 HUMPBACK_W			1

Table 8. PODS 93 Observer Sighting Rates. The twelve primary observers conducted observations during the regular watch rotations. Secondary observers or other scientific personnel substituted on the 25x150 binoculars when needed or served in the independent observer position. See Table 2 for a complete listing of the observer numbers for the participating scientific personnel.

	Observer Number	Miles Searched	Number of Sightings	Sightings per 1000 nm
Primary Observers	1	1,143.7	47	41.09
	7	617.8	41	66.36
	55	2,551.3	169	66.24
	73	779.3	31	39.78
	74	2,843.0	100	35.17
	76	2,043.7	65	31.81
	91	2,843.7	97	34.11
	92	2,717.5	103	37.90
	94	2,586.0	109	42.15
	95	2,527.8	113	44.70
	96	2,610.2	124	47.51
	97	2,566.1	72	28.06
	104	2,494.2	35	14.03
	107	2,615.1	71	27.15
	108	2,611.1	49	18.77
109	677.4	49	72.33	
	Total	34,227.9	1275	37.25
Secondary Observers	4	40.1	2	49.90
	15	50.0	3	59.98
	50	88.7	0	0.00
	57	22.4	0	0.00
	80	2.3	1	428.97
	81	176.2	1	5.68
	83	94.0	1	10.64
	84	215.4	0	0.00
	86	50.8	0	0.00
	90	46.6	2	42.92
	99	14.1	0	0.00
	102	94.0	2	21.28
	105	12.6	0	0.00
106	7.4	0	0.00	
110	46.5	0	0.00	
	Total	961.1	12	12.49

Table 9. PODS 93 35mm Photographic Summary.

Species photographed	Number of Sightings	Number of Photographs
<i>Delphinus delphis</i>	92	1245
<i>Delphiuns capensis</i>	30	472
<i>Balaenoptera musculus</i>	30	519
<i>Megaptera novaeangliae</i>	15	1151
<i>Stenella attenuata</i>	15	205
<i>Stenella coeruleoalba</i>	15	255
<i>Stenella longirostris</i>	12	153
<i>Balaenoptera physalus</i>	9	216
<i>Orca orcinus</i>	7	123
<i>Lagenorhynchus obliquidens</i>	6	76
<i>Tursiops truncatus</i>	6	44
<i>Globicephala macrorhynchus</i>	5	106
<i>Physeter macrocephalus</i>	5	137
<i>Berardius bairdii</i>	5	112
<i>Lissodelphis borealis</i>	3	39
<i>Pseudorca crassidens</i>	2	11
<i>Grampus griseus</i>	2	13
Unidentified dolphin	2	72
<i>Steno bredanensis</i>	1	23
<i>Ziphius cavirostris</i>	1	8
<i>Balaenoptera acutorostrata</i>	1	1
<i>Balaenoptera edeni</i>	1	26
<i>Balaenoptera borealis</i>	1	17
Total	265	5024

Figure 1. PODS 93 Study Area with Strata and On-Effort Tracklines.

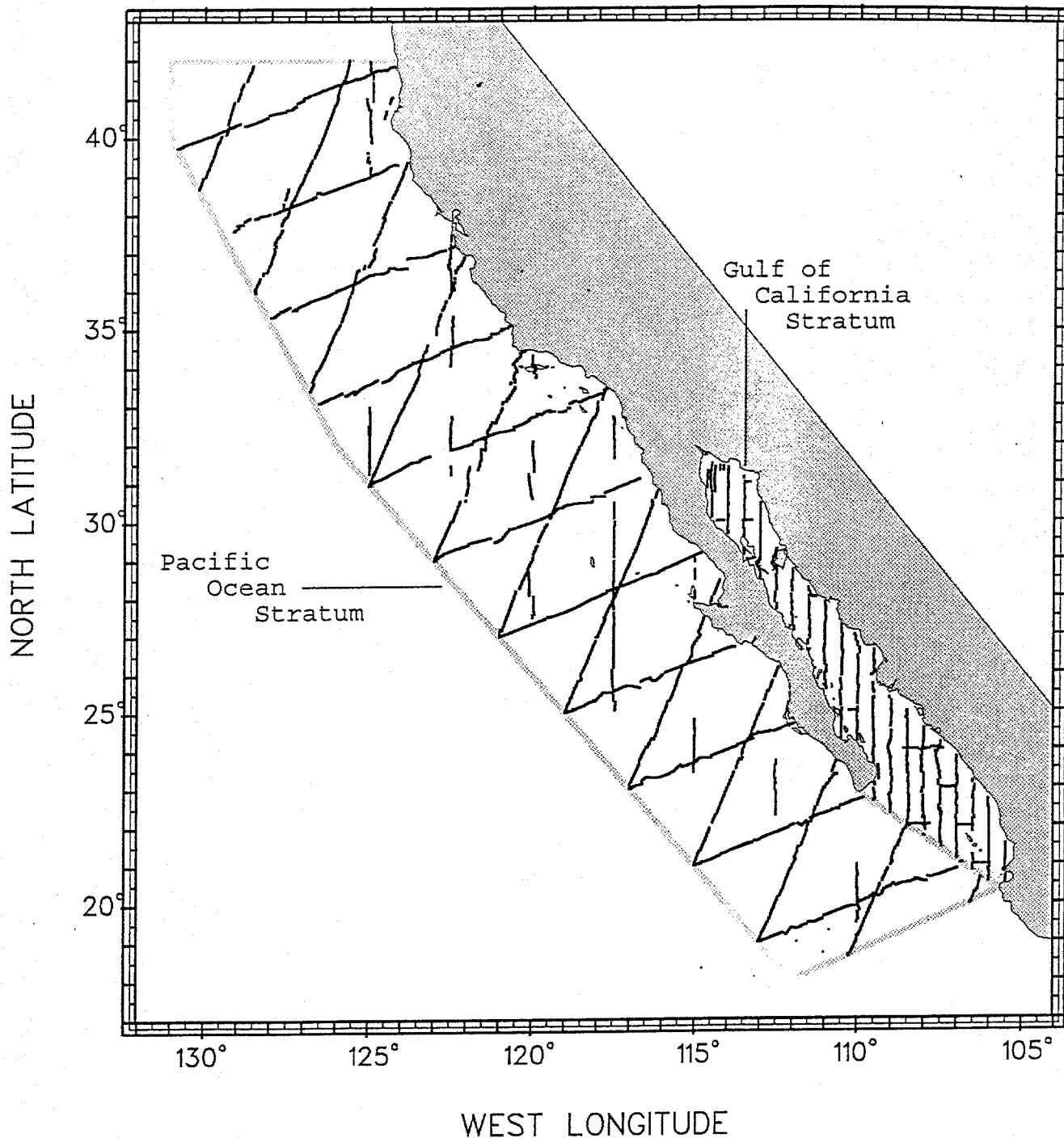


Figure 2. PODS 93 Tracklines for McArthur.

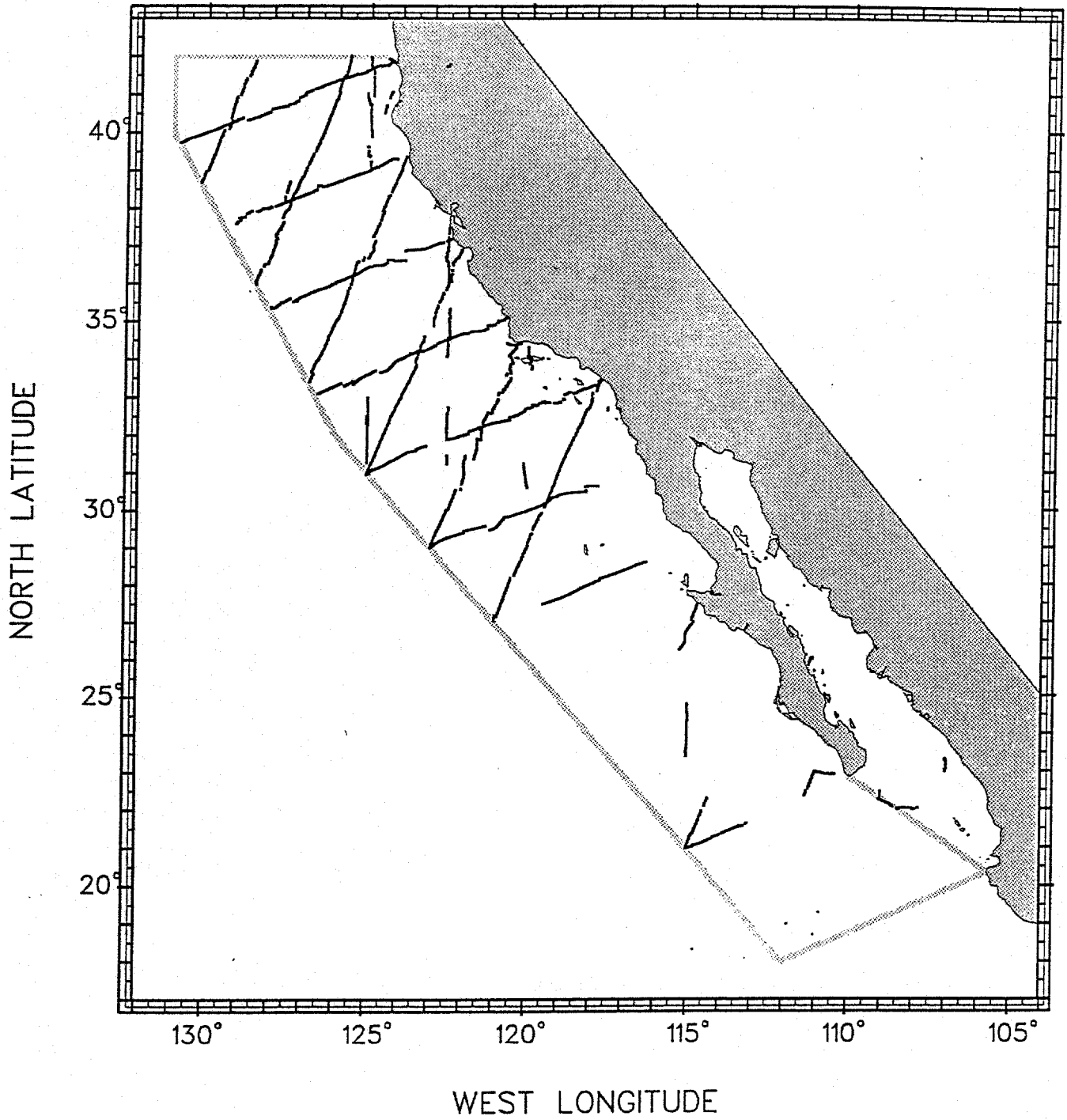


Figure 3. PODS 93 Tracklines for David Starr Jordan.

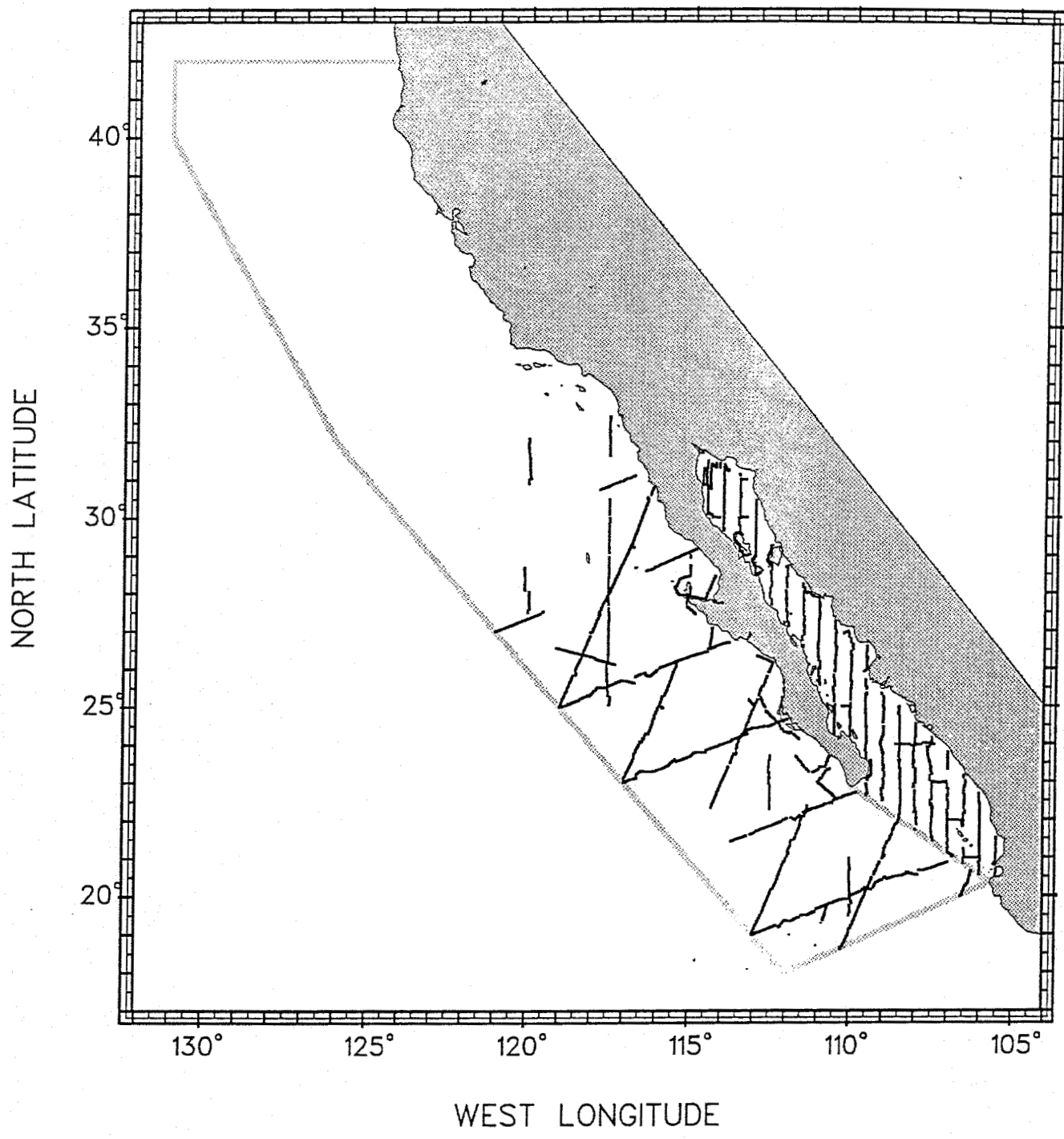


Figure 4. PODS 93 Legs 1 & 2 Tracklines by Beaufort. Thick lines indicate Beaufort 0-2, medium lines Beaufort 3 and thin lines Beaufort 4-5 of on-effort tracklines.

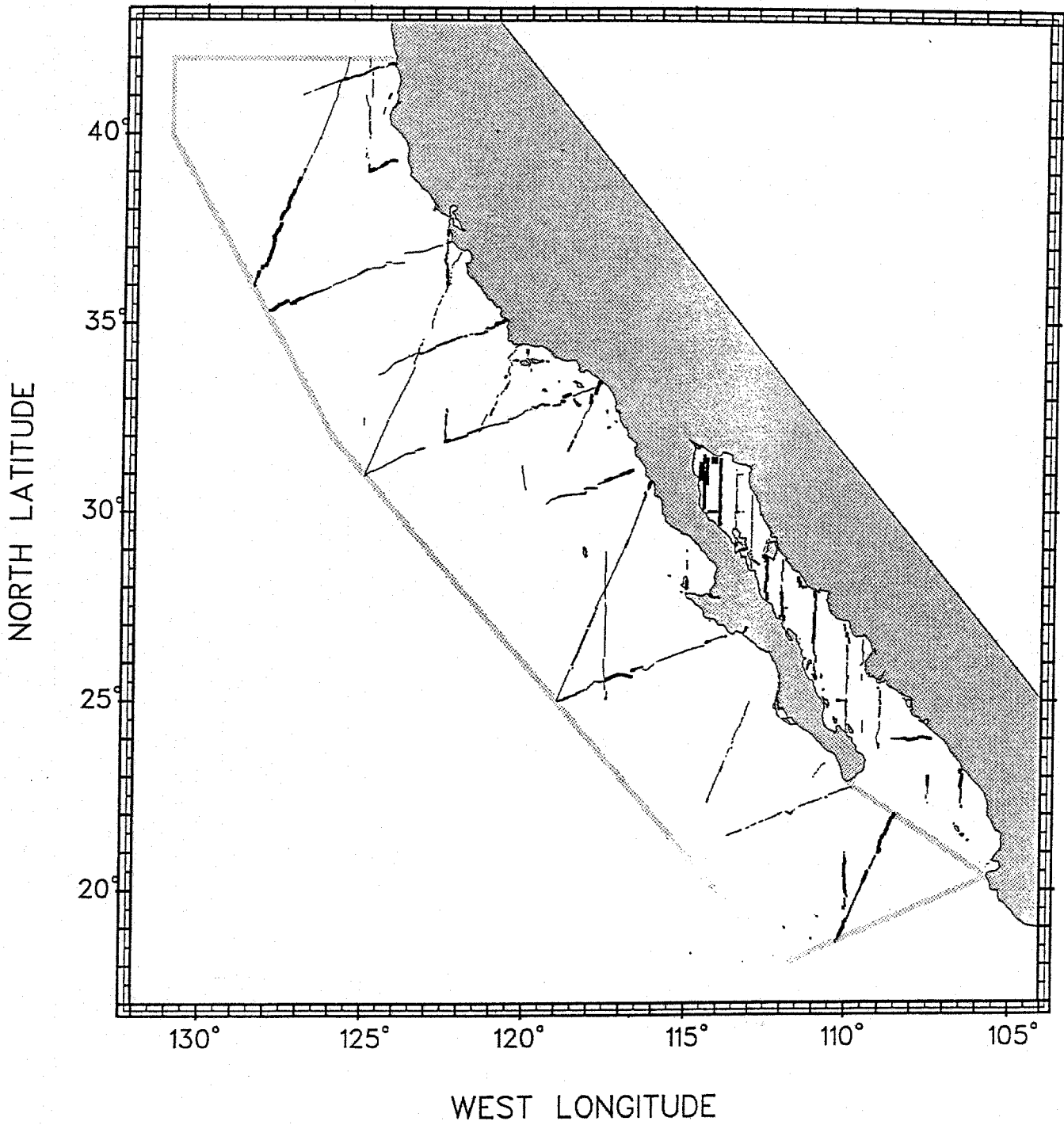




Figure 5. PODS 93 Legs 3 & 4 Tracklines by Beaufort. Thick lines indicate Beaufort 0-2, medium lines Beaufort 3 and thin lines Beaufort 4-5 of on-effort tracklines.

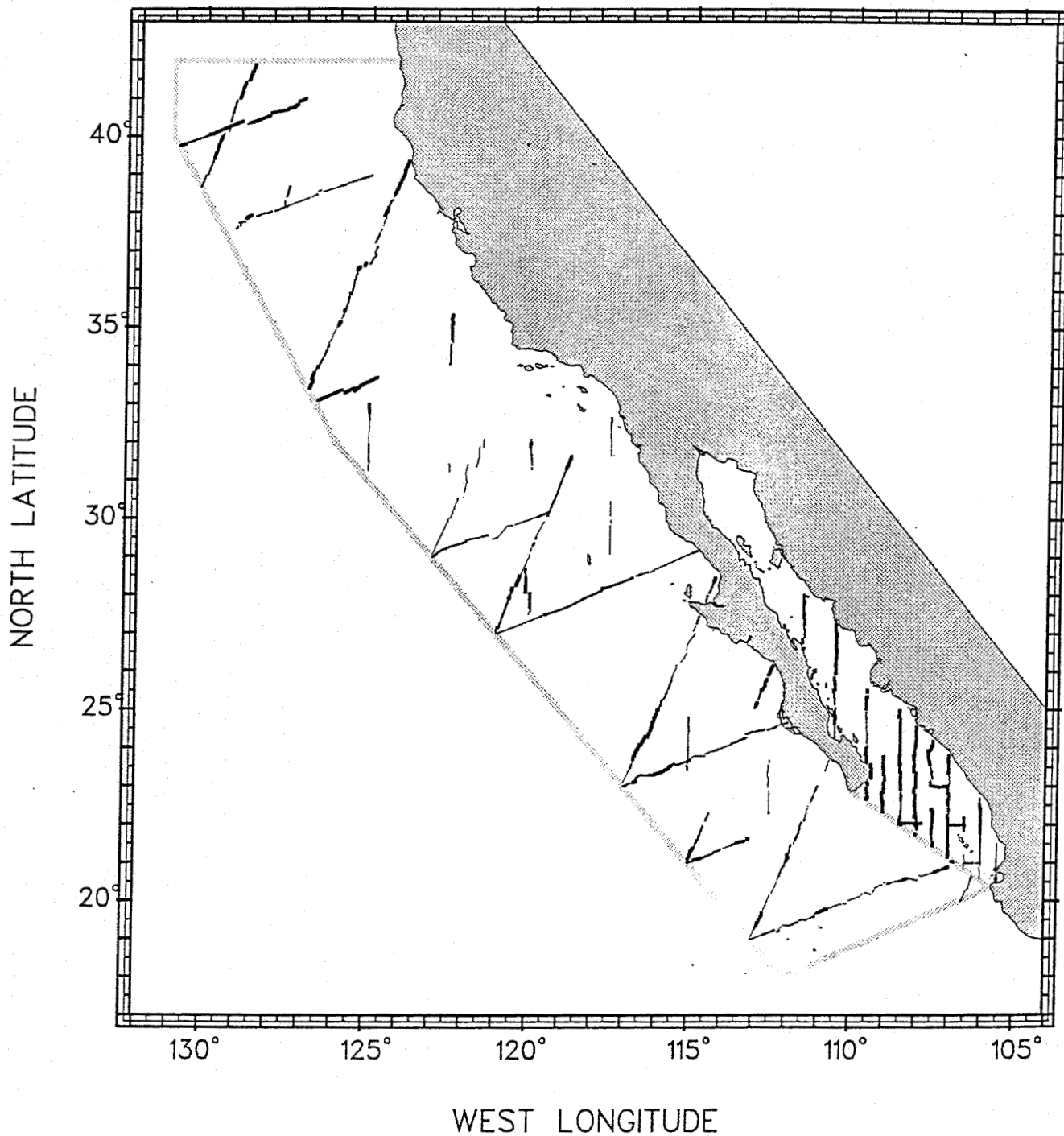


Figure 6. PODS 93 Spotted dolphin sightings.

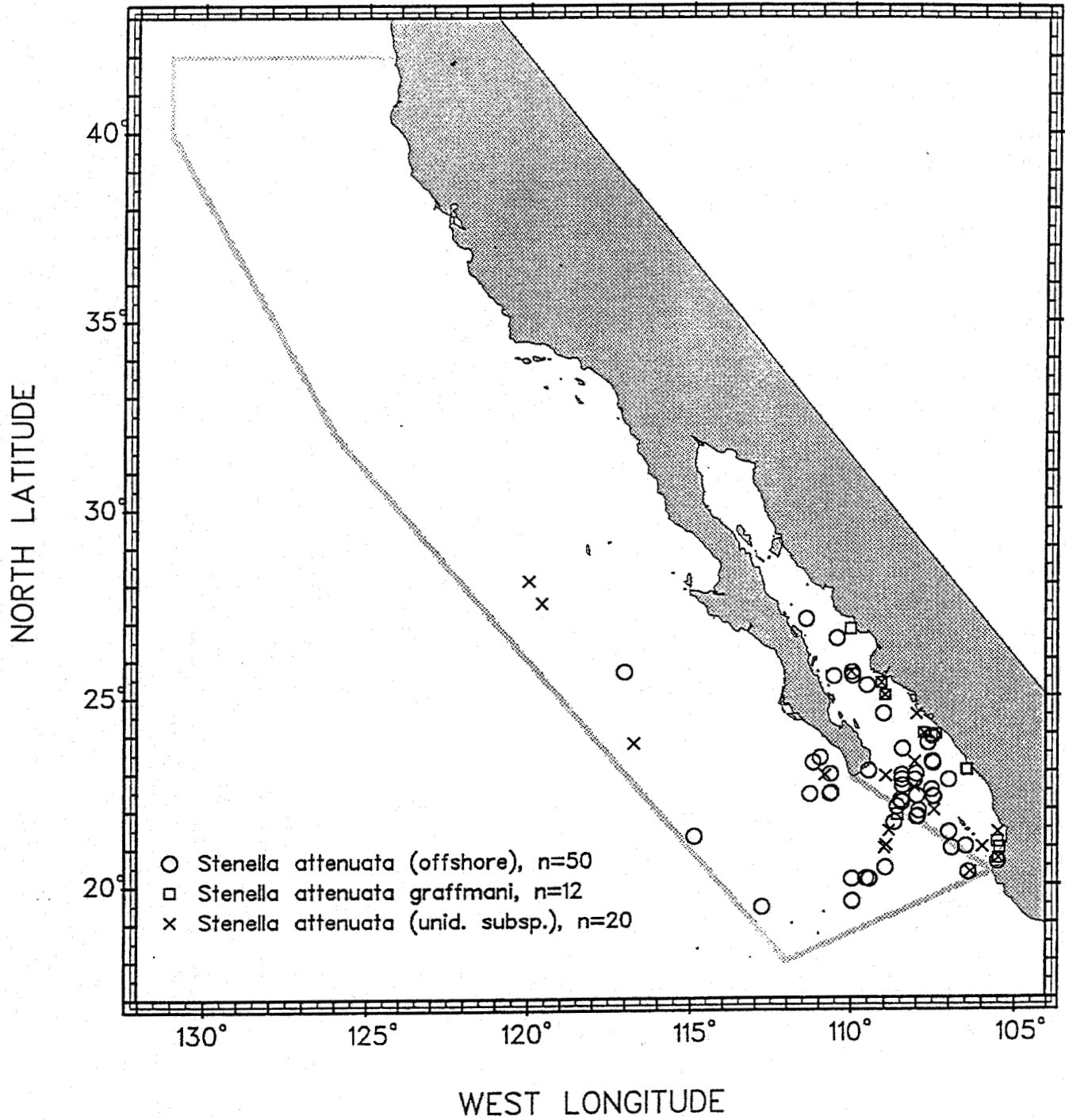


Figure 7. PODS 93 Striped dolphin sightings.

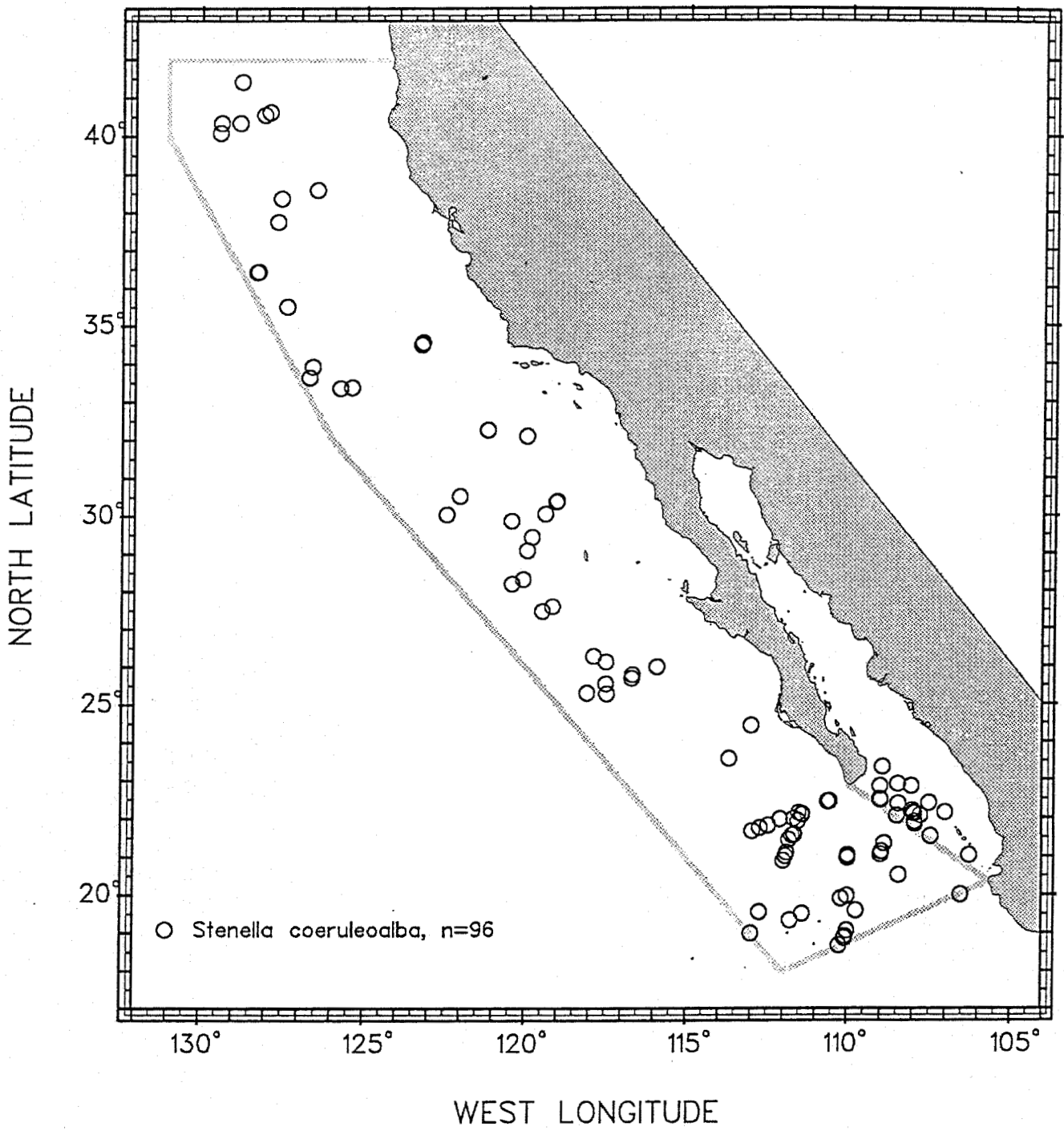


Figure 8. PODS 93 Spinner dolphin sightings.

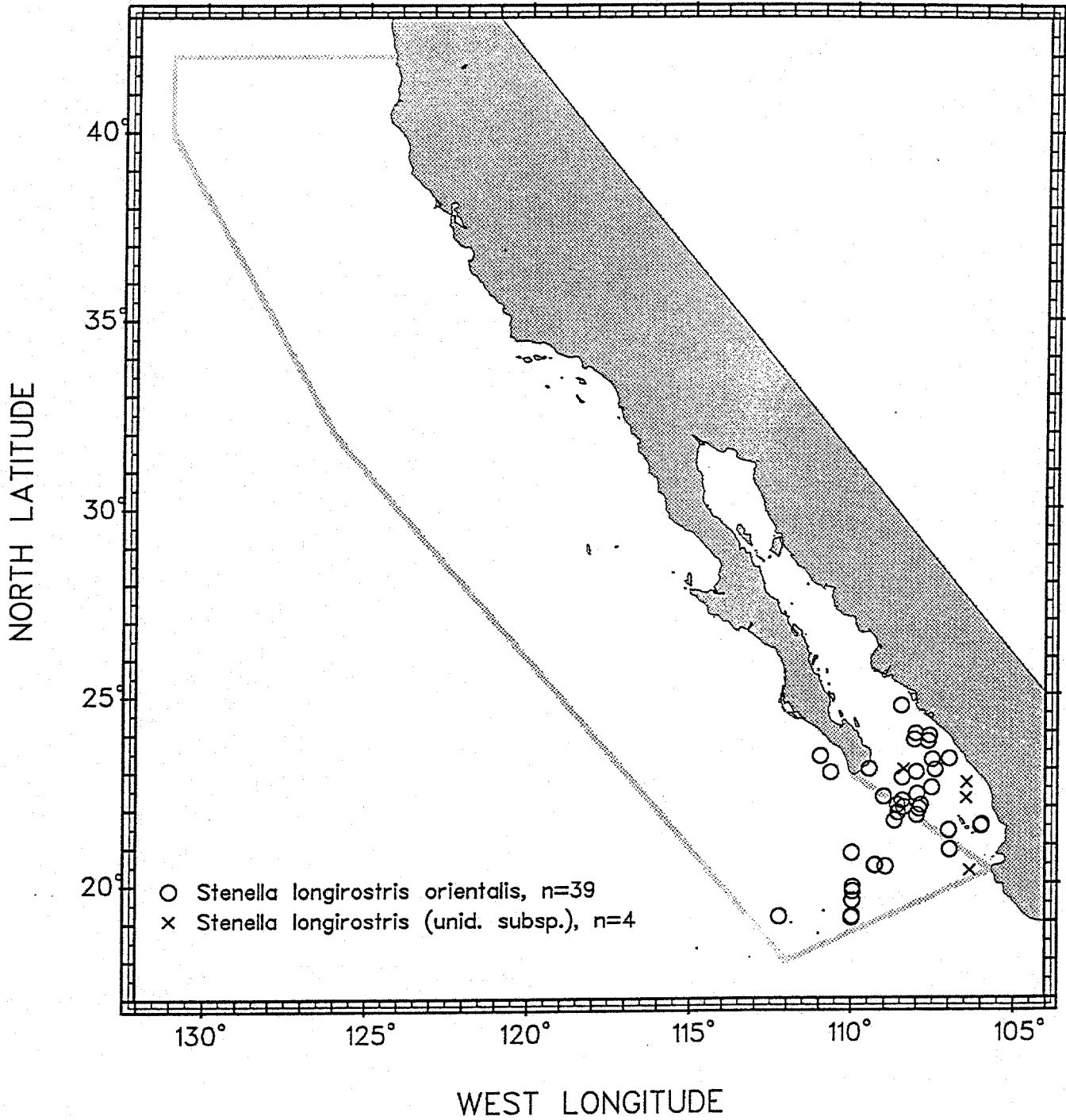


Figure 9. PODS 93 Rough-toothed dolphin sightings.

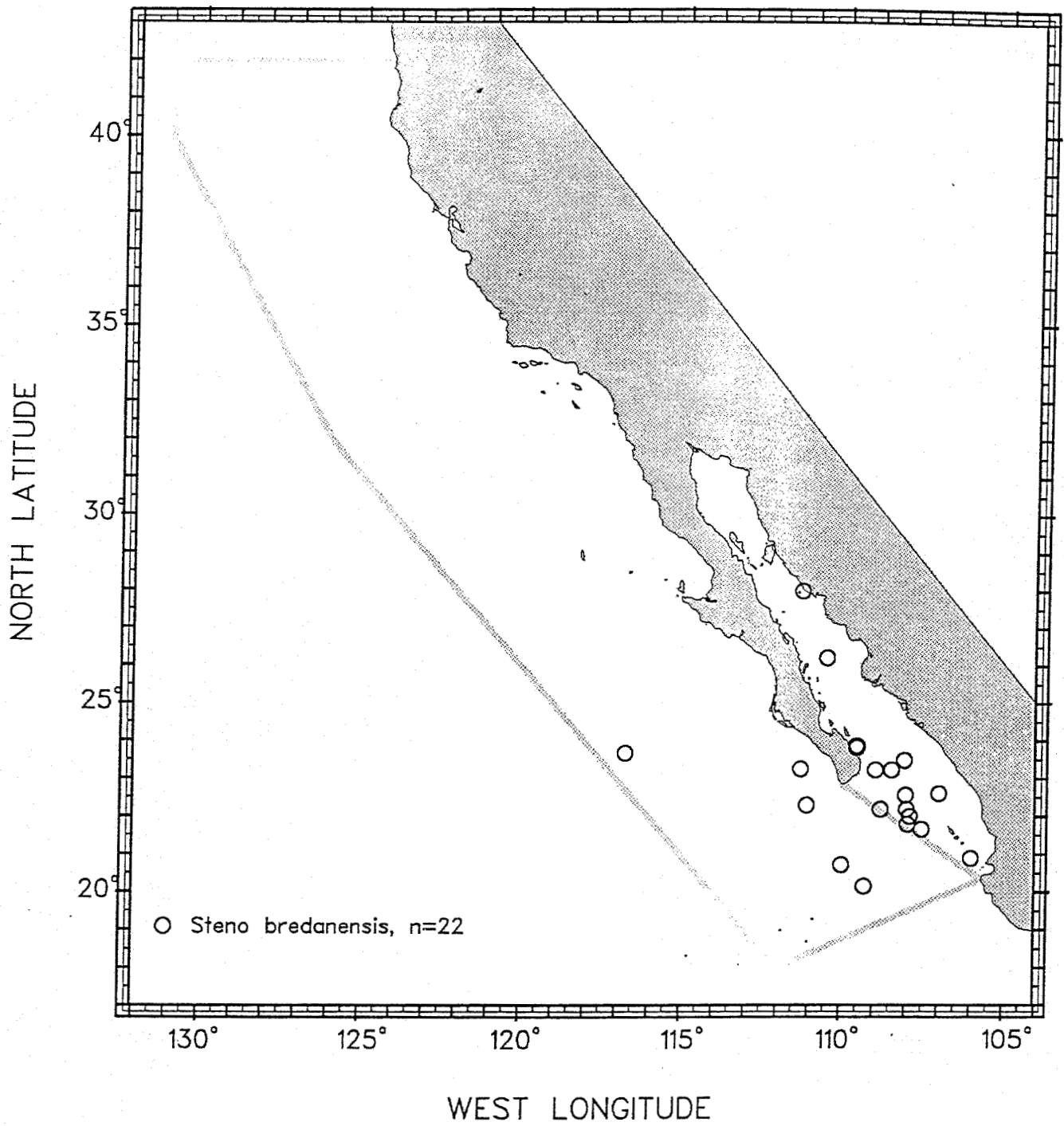


Figure 10. PODS 93 Bottlenose dolphin sightings.

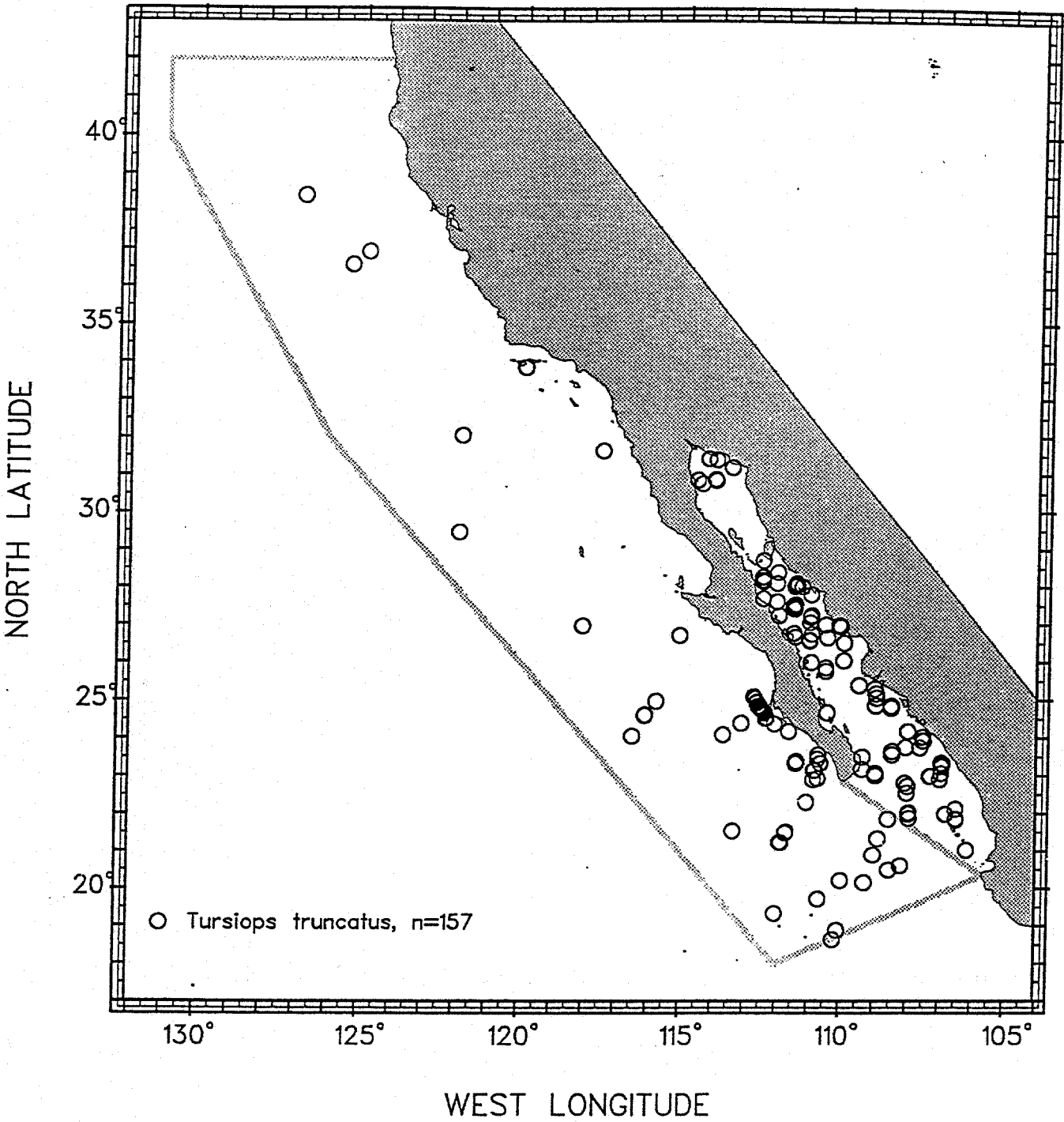


Figure 11. PODS 93 Risso's dolphin sightings.

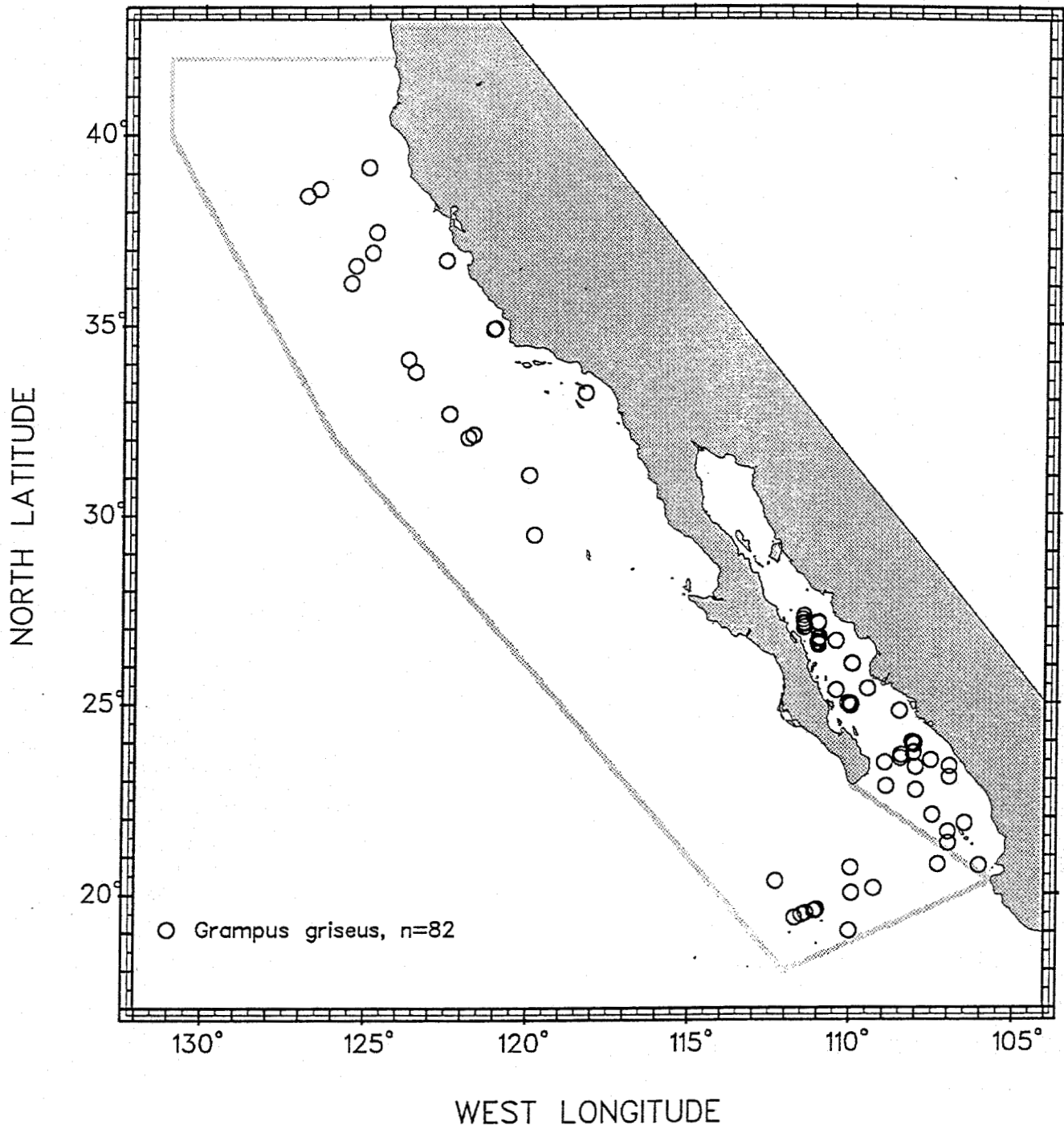


Figure 12. PODS 93 Northern right whale dolphin sightings.

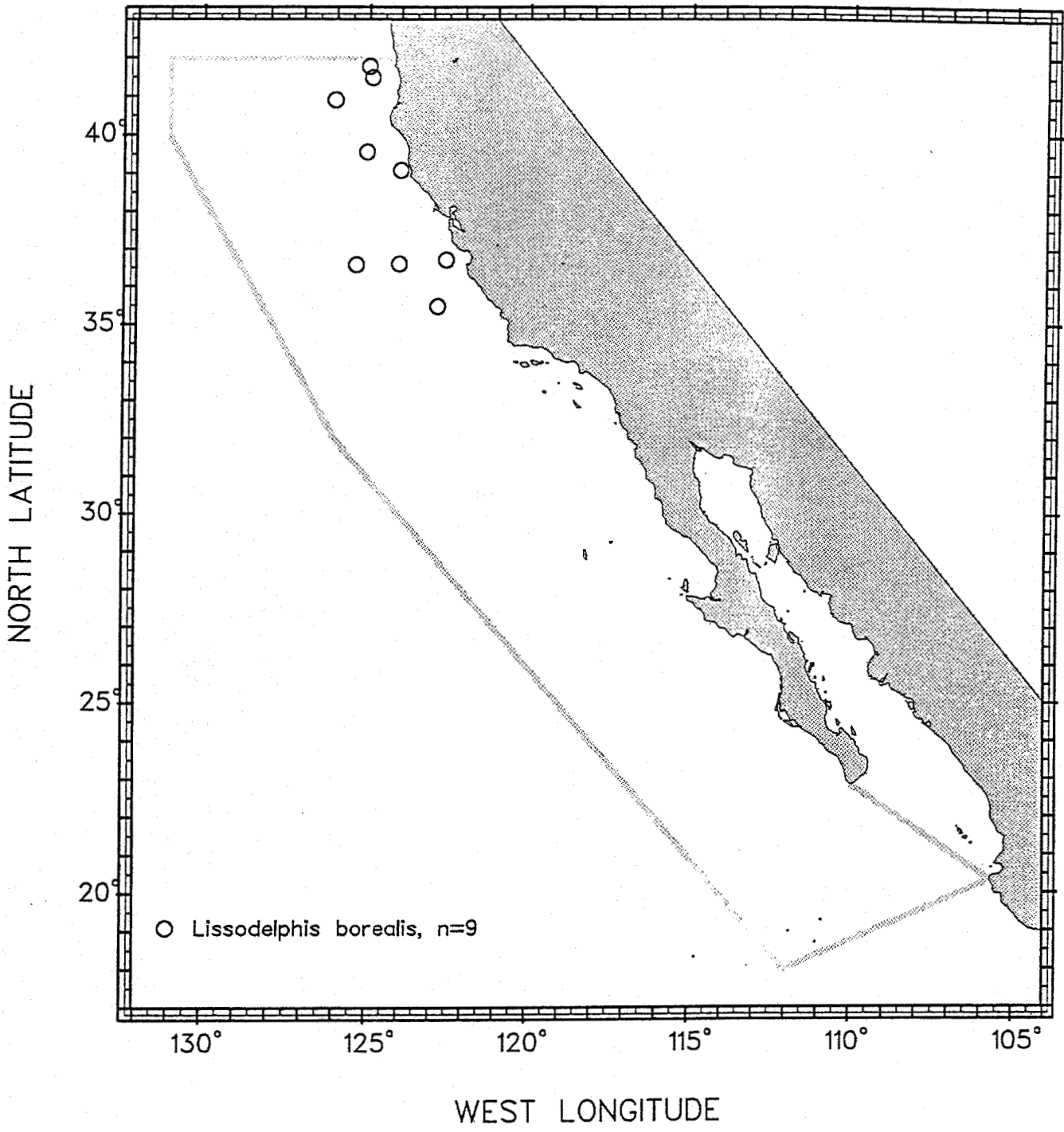




Figure 13. PODS 93 Pacific white-sided dolphin sightings.

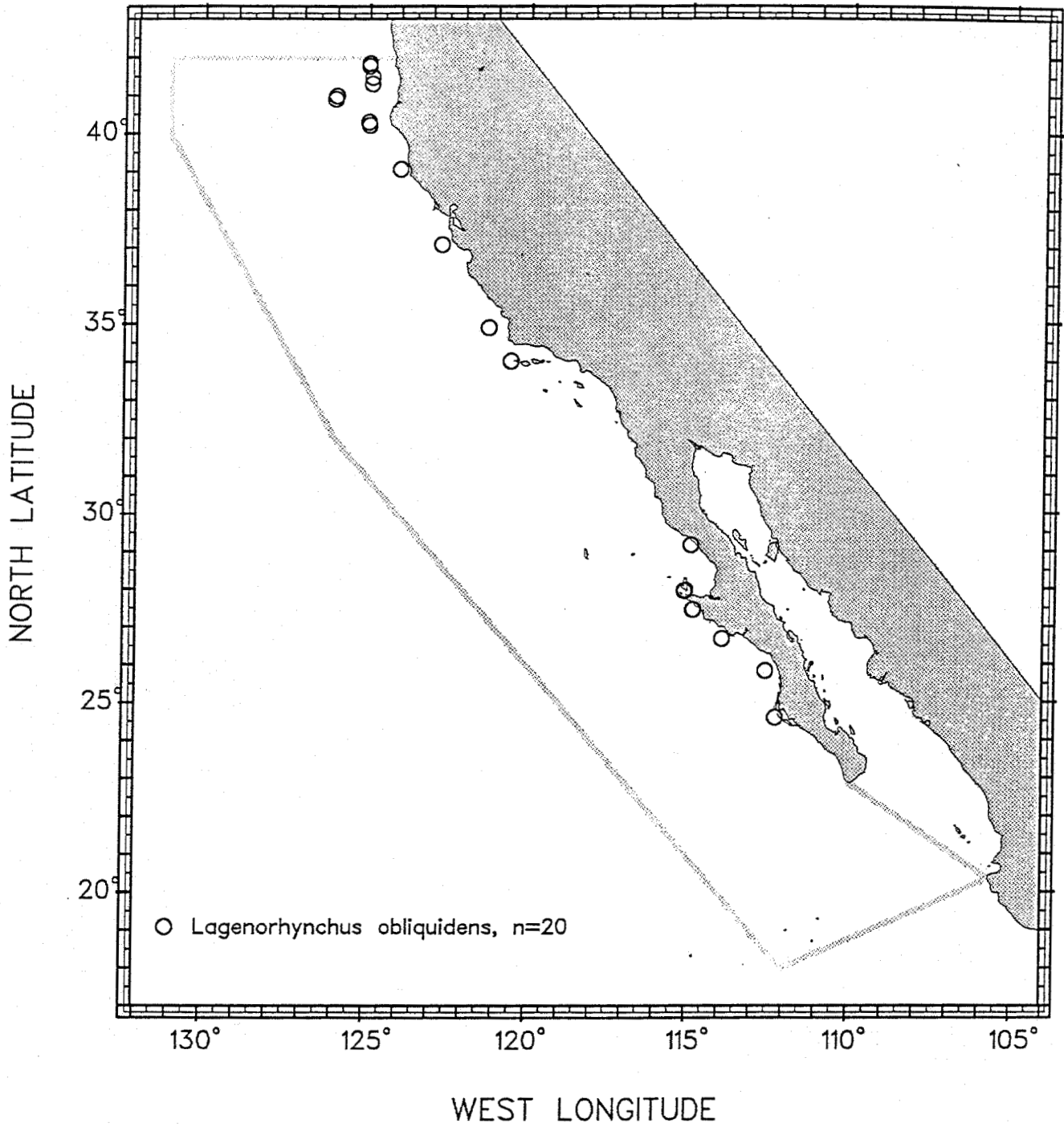


Figure 14. PODS 93 Common dolphin sightings.

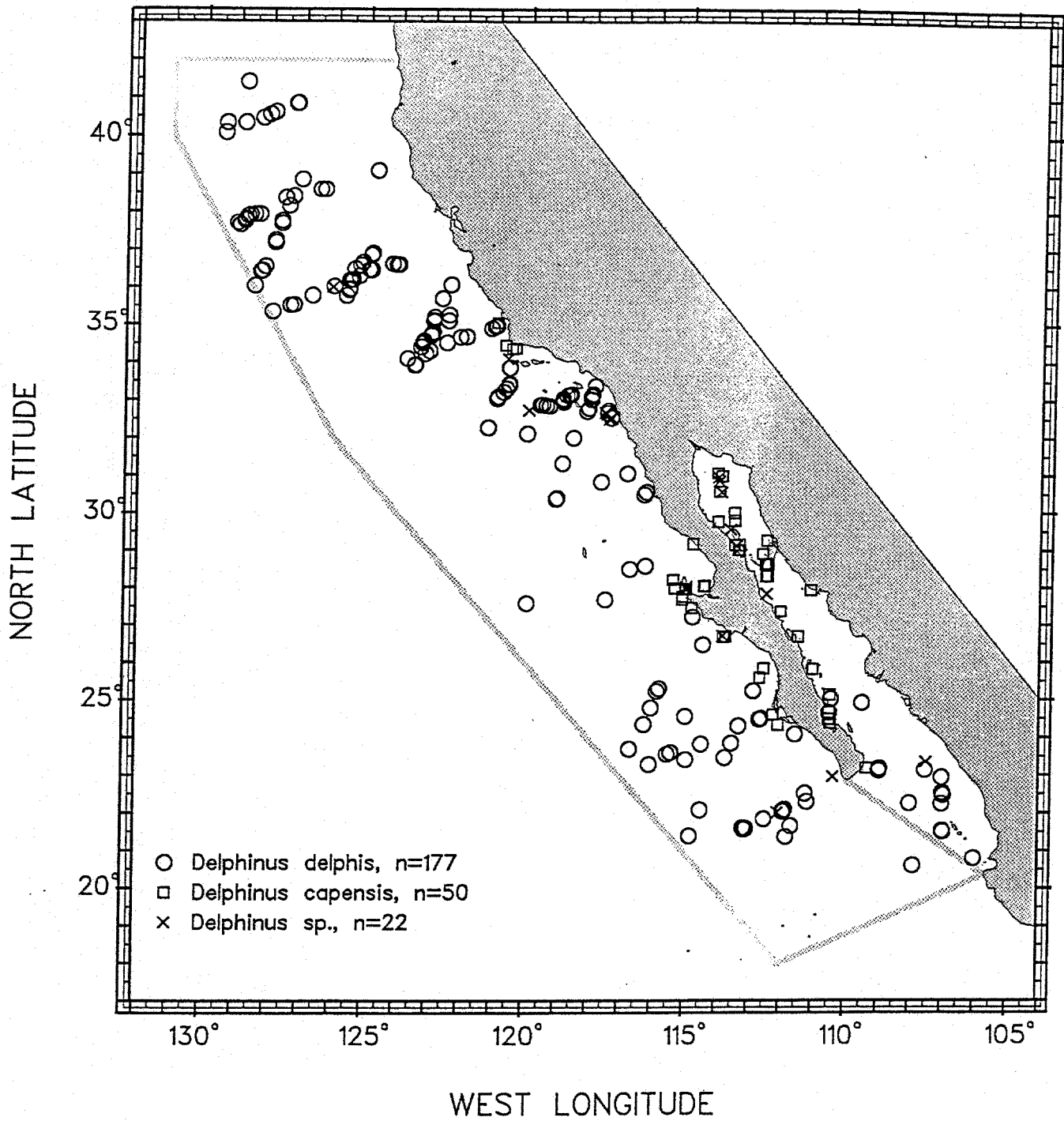


Figure 15. PODS 93 Pygmy killer whale, False killer whale and Killer whale sightings.

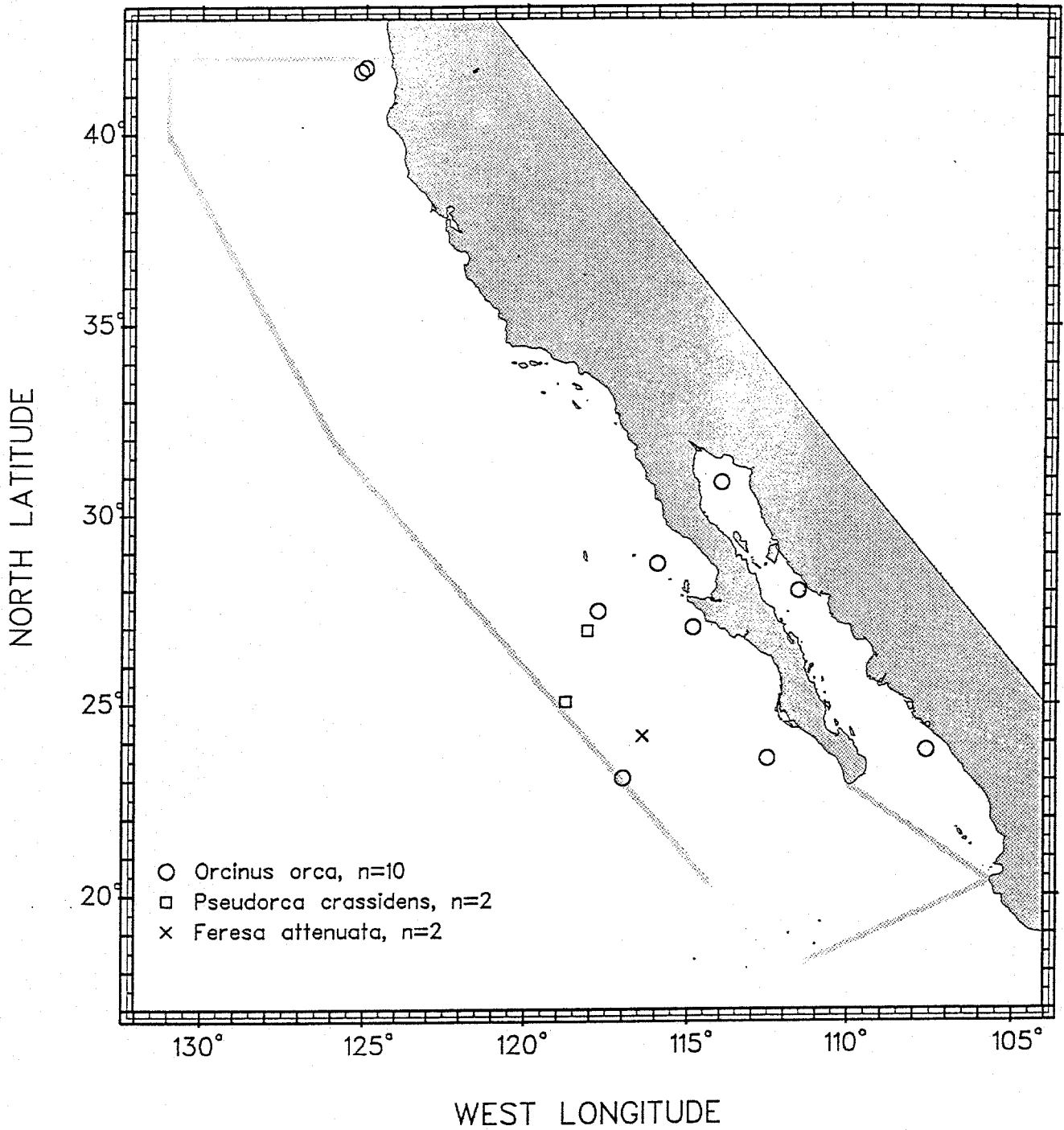


Figure 16. PODS 93 Pilot whale sightings.

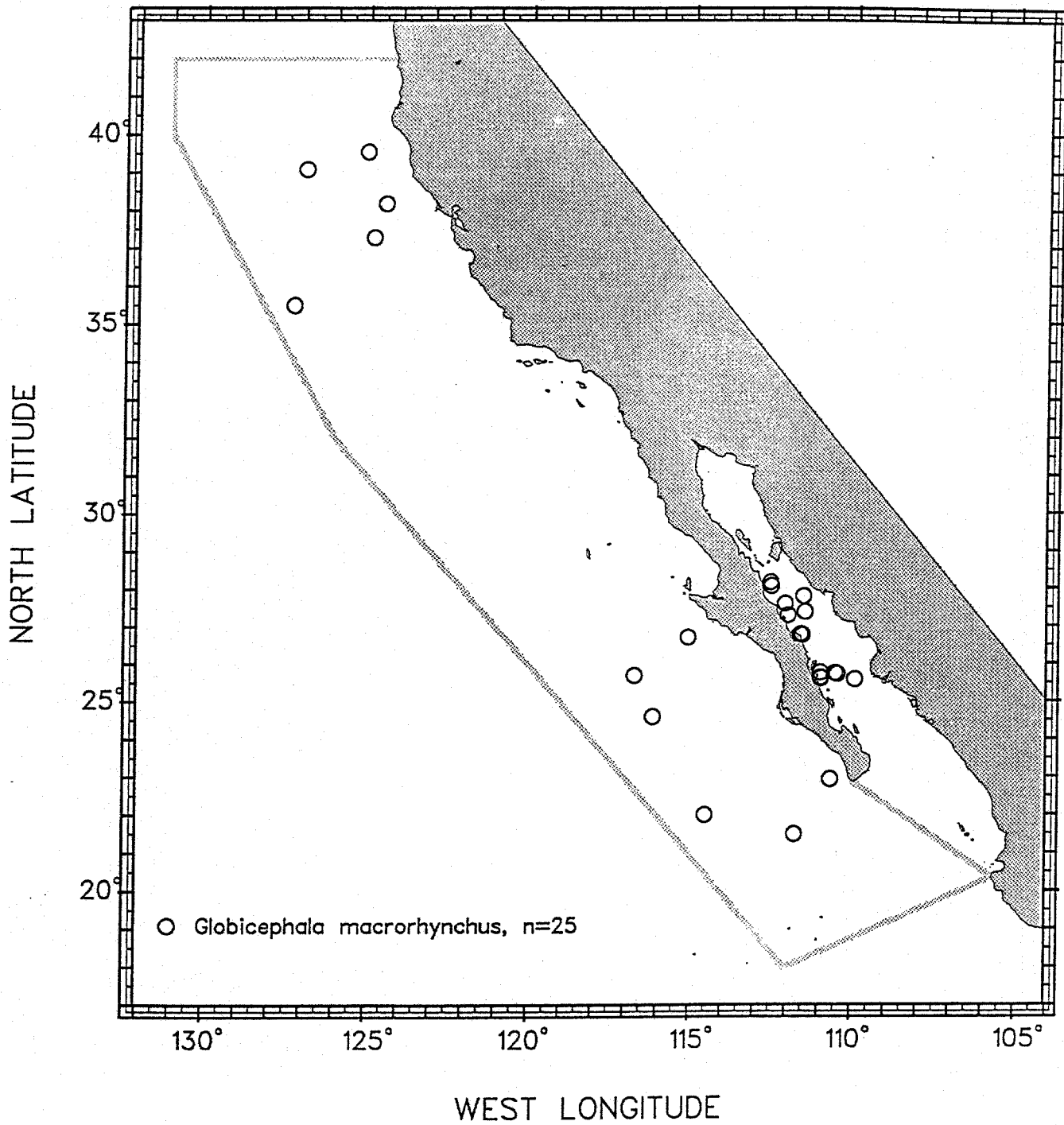


Figure 17. PODS 93 Harbor porpoise and Vaquita sightings.

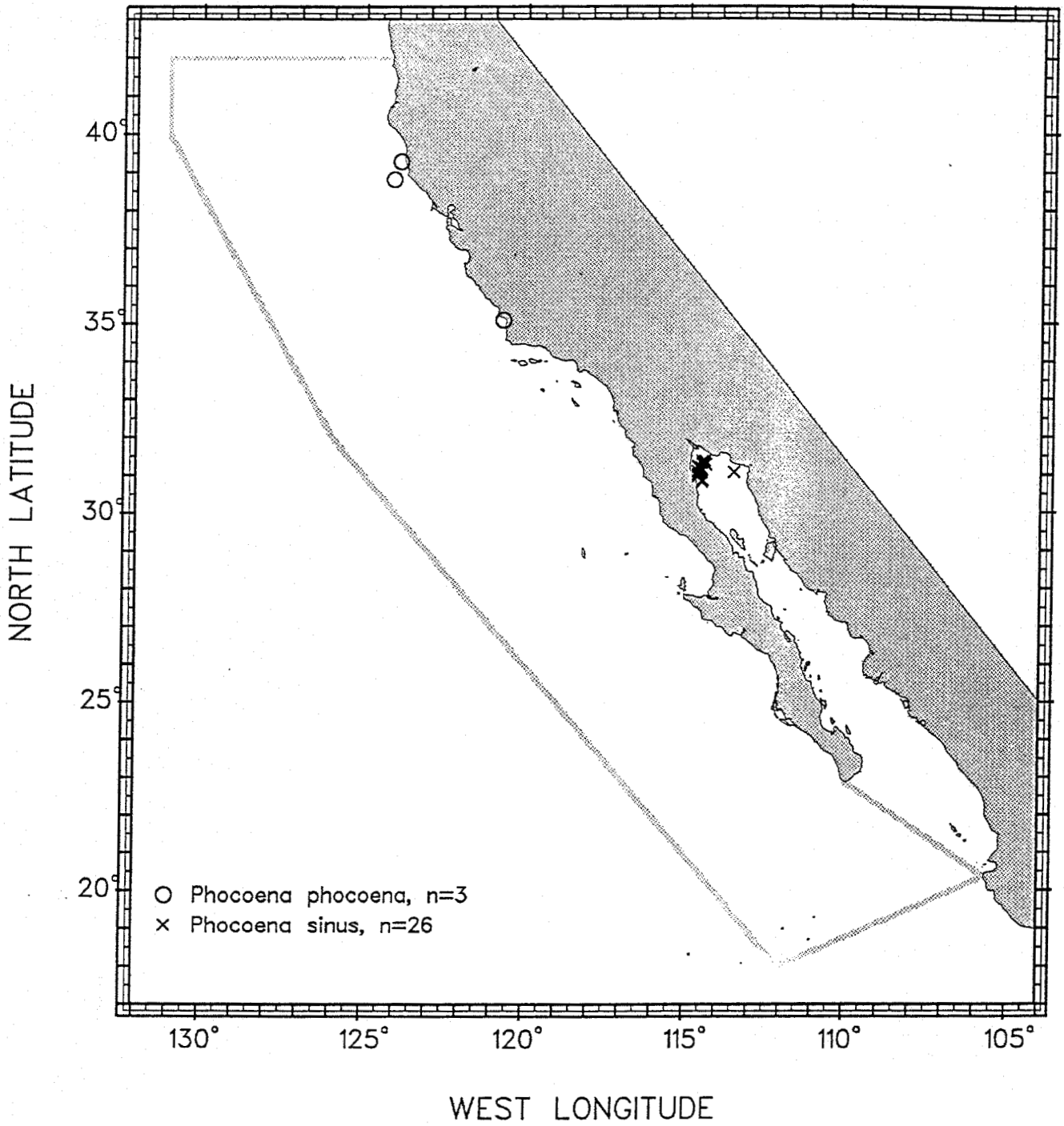


Figure 18. PODS 93 Dall's porpoise sightings.

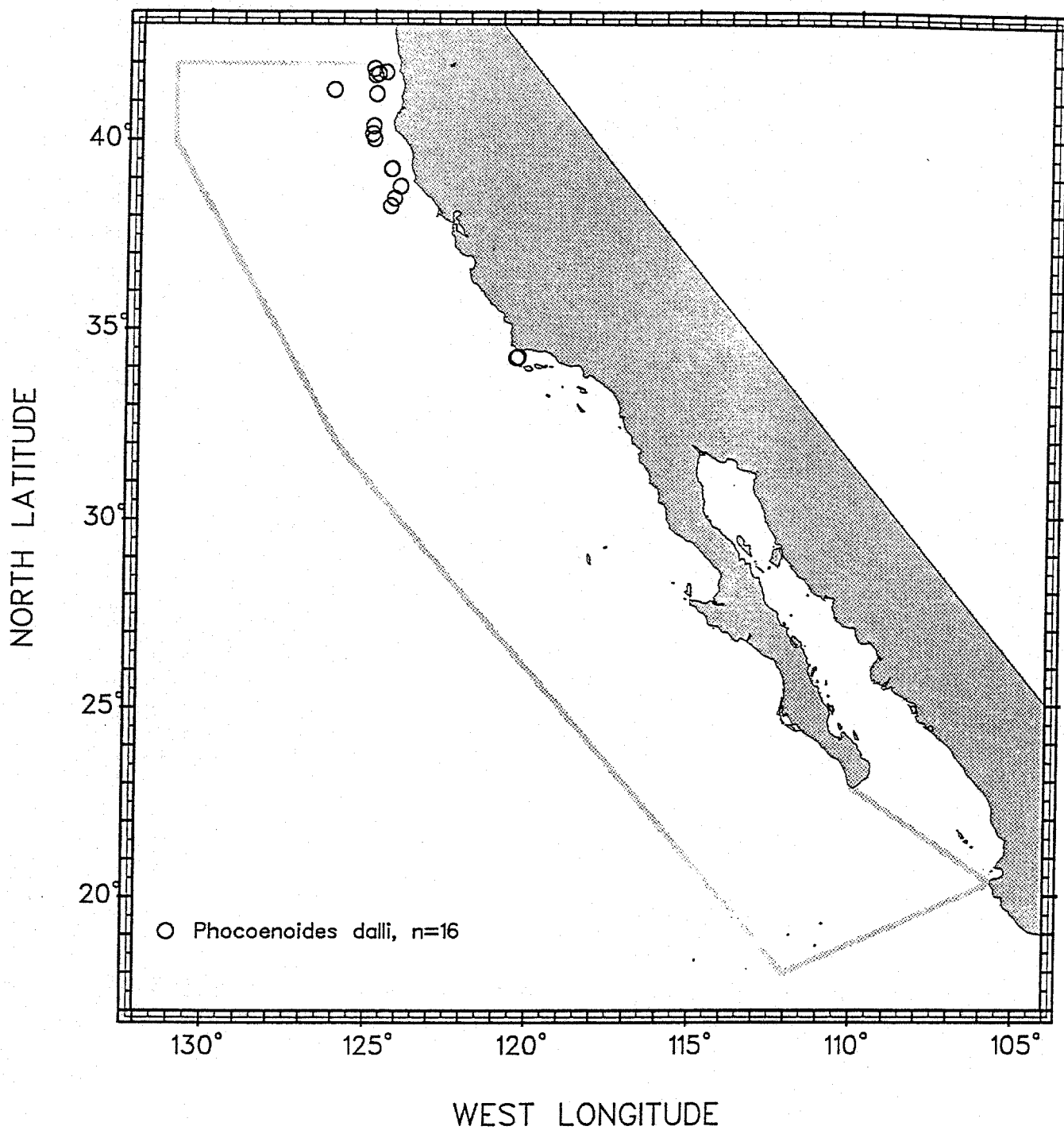


Figure 19. PODS 93 Sperm whale sightings.

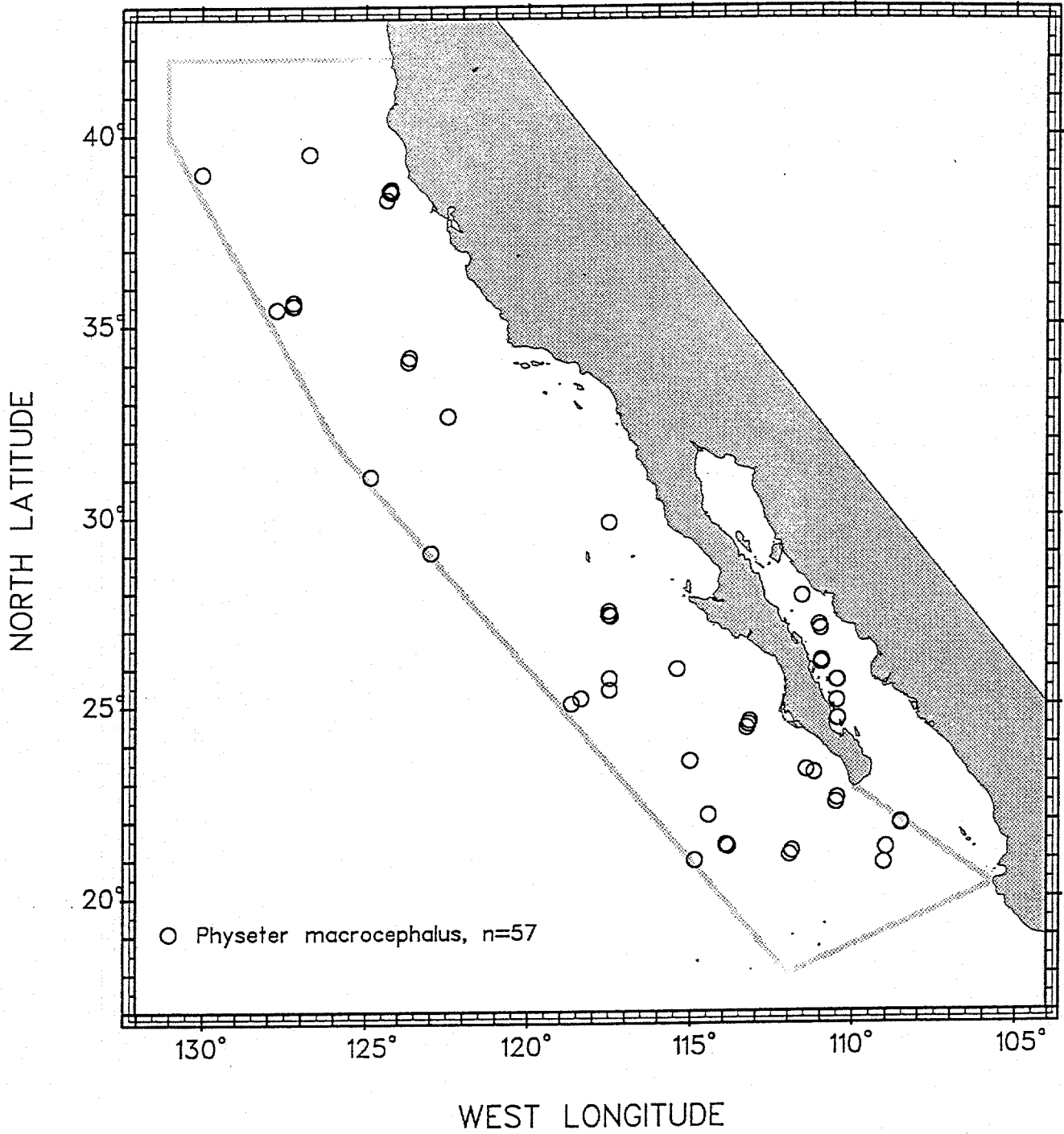


Figure 20. PODS 93 Dwarf and Pygmy sperm whale sightings.

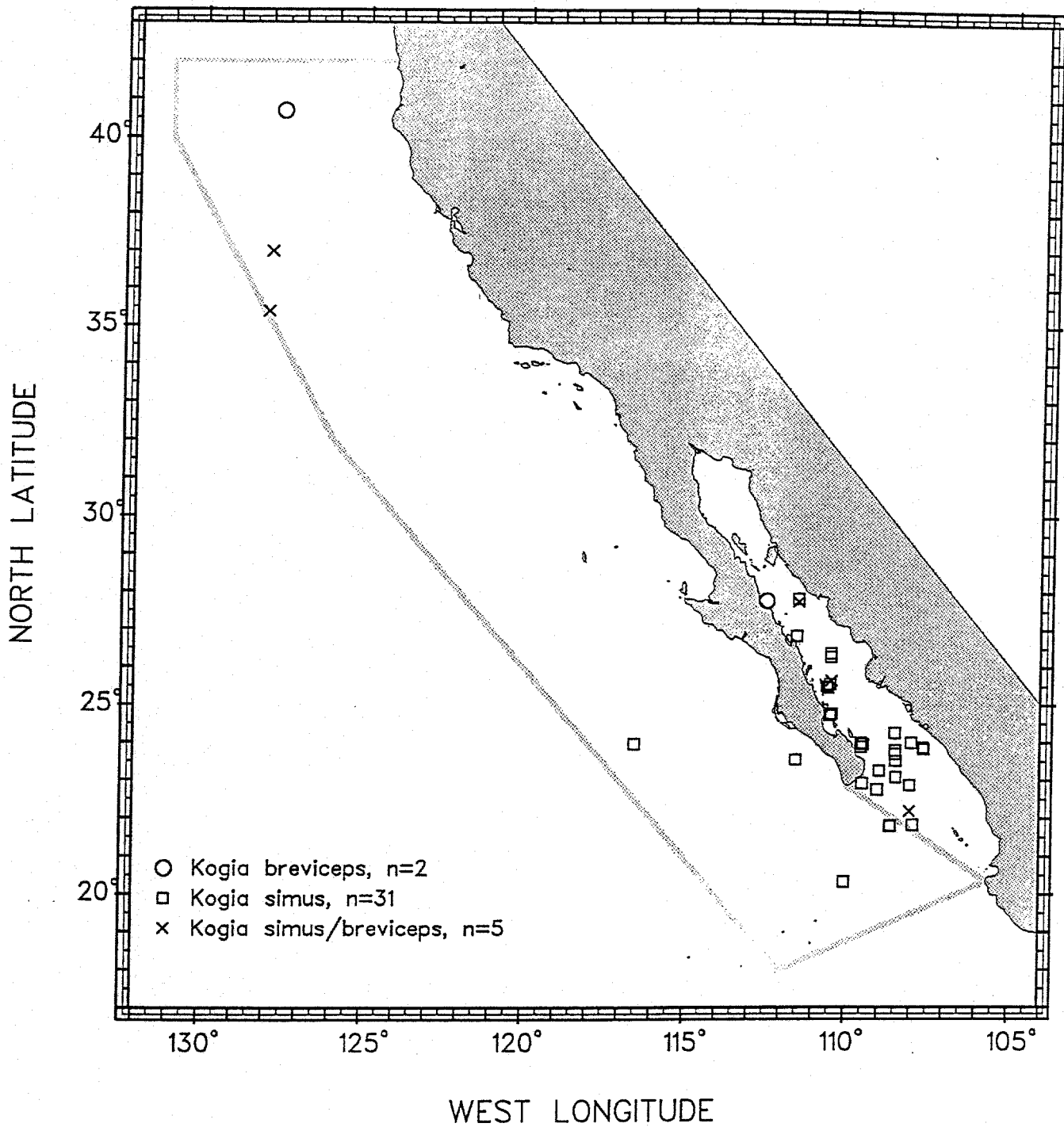




Figure 21. PODS 93 Blaineville's beaked whale and unidentified *Mesoplodon* sightings.

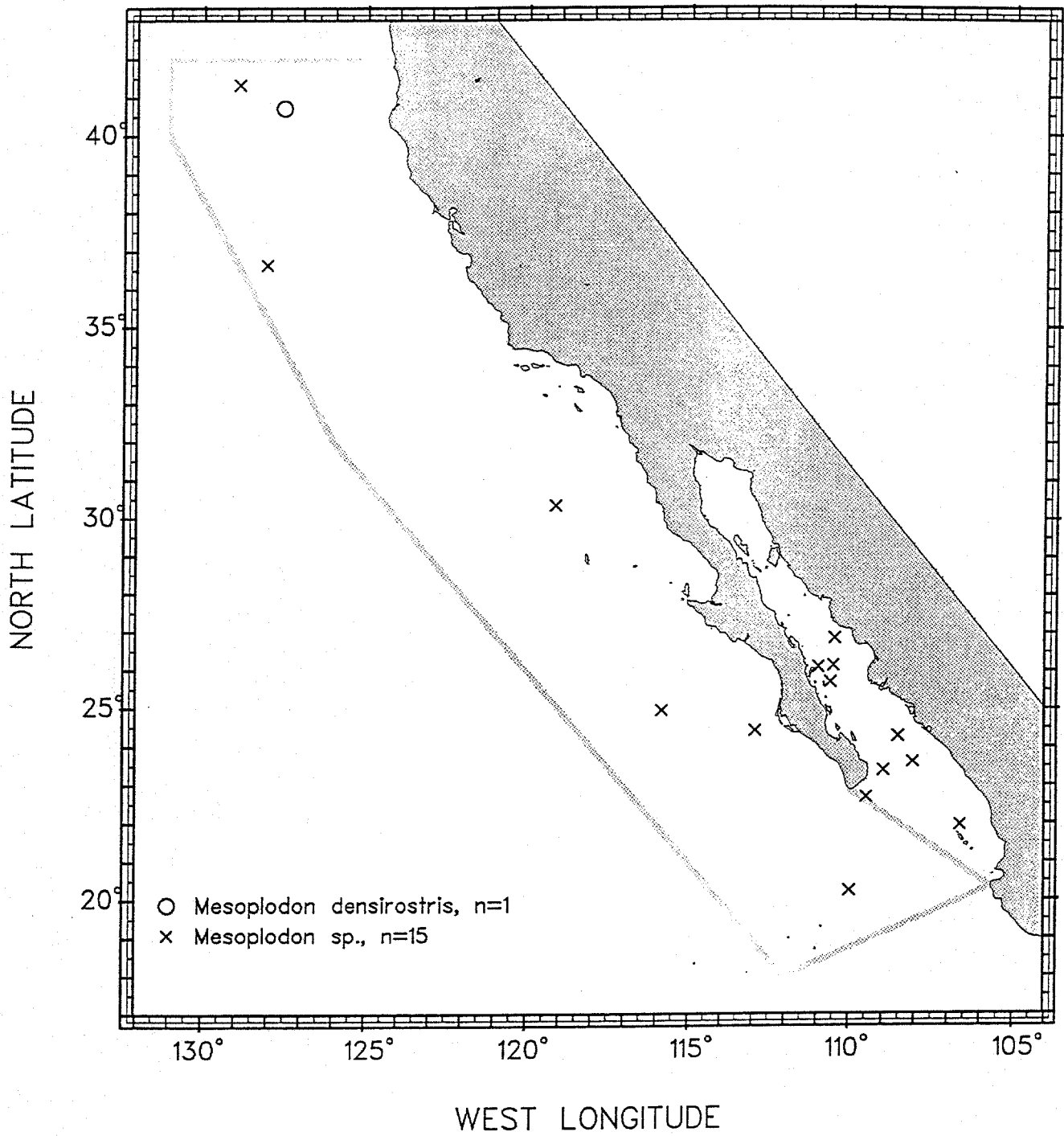


Figure 22. PODS 93 Cuvier's beaked whale sightings.

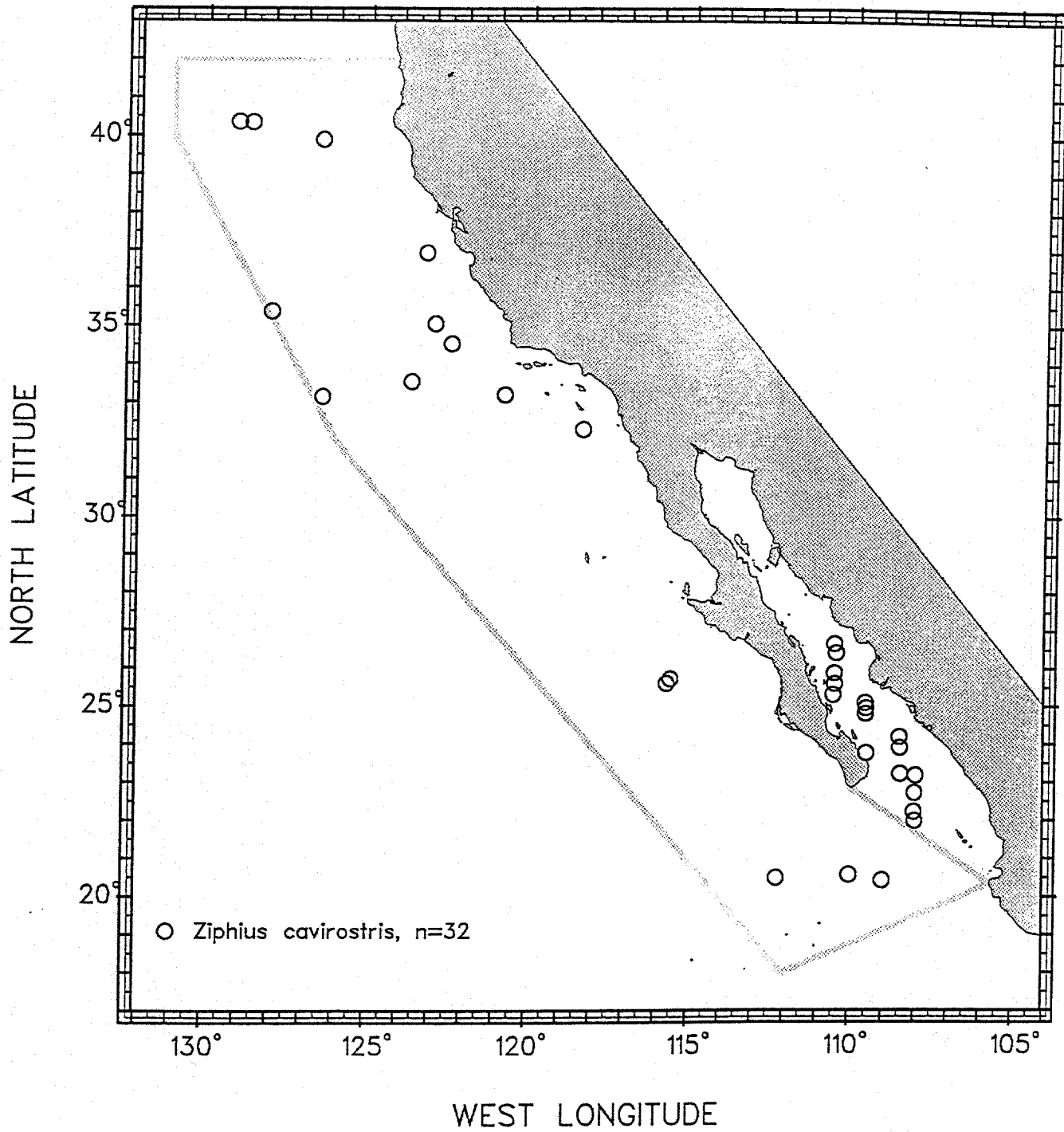


Figure 23. PODS 93 Unidentified ziphiid sightings.

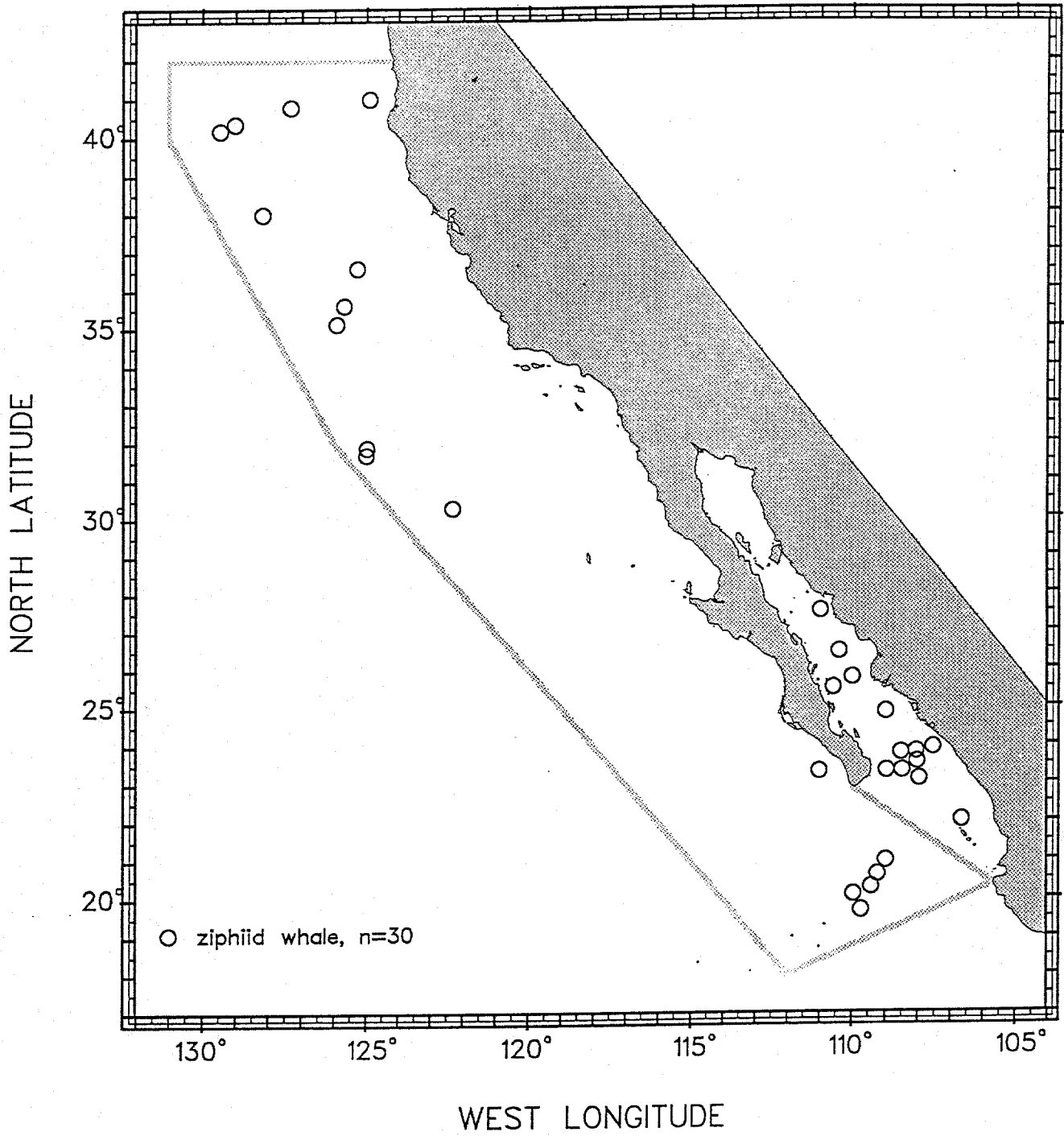


Figure 24. PODS 93 Baird's beaked whale sightings.

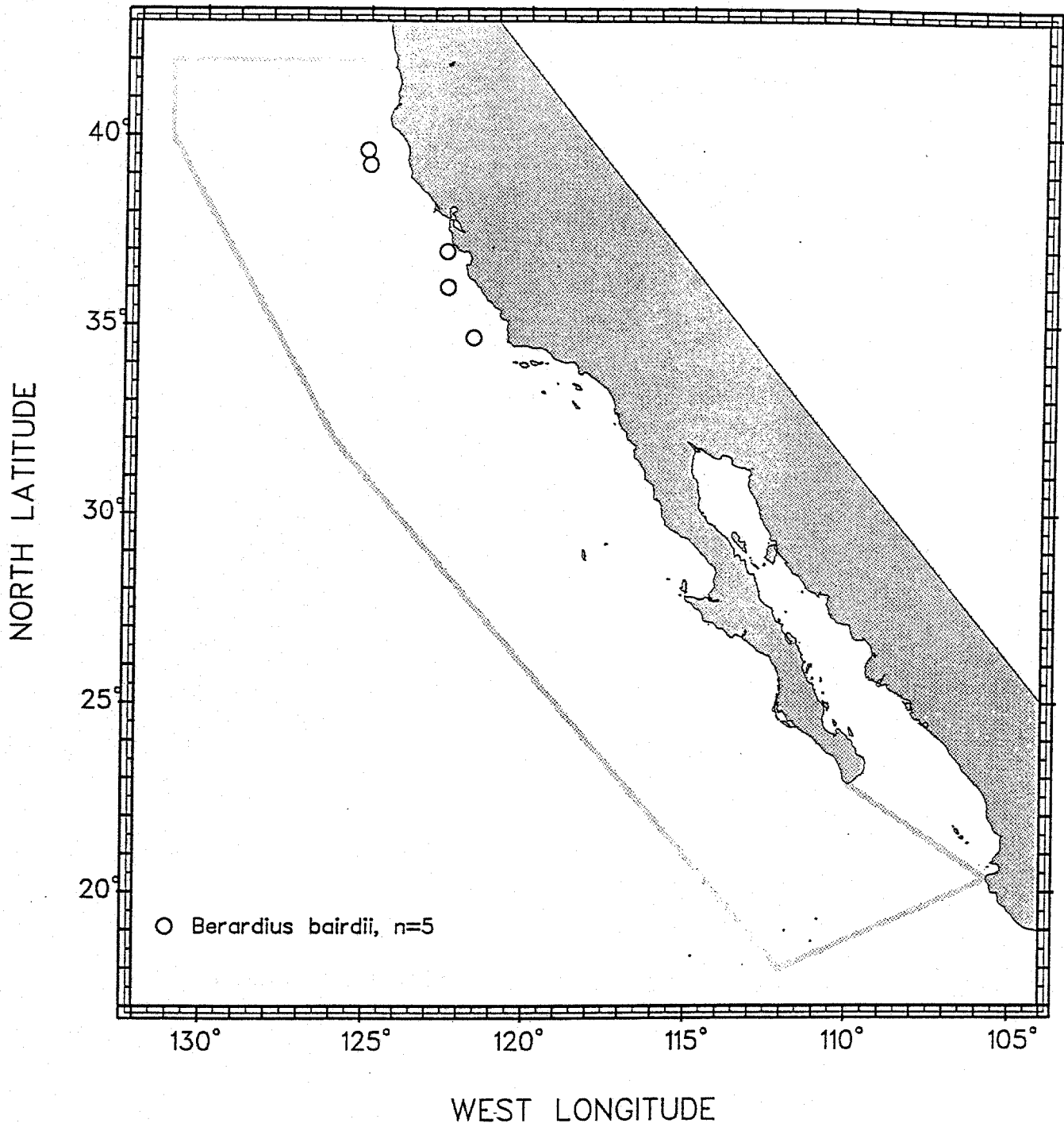


Figure 25. PODS 93 Minke whale sightings.

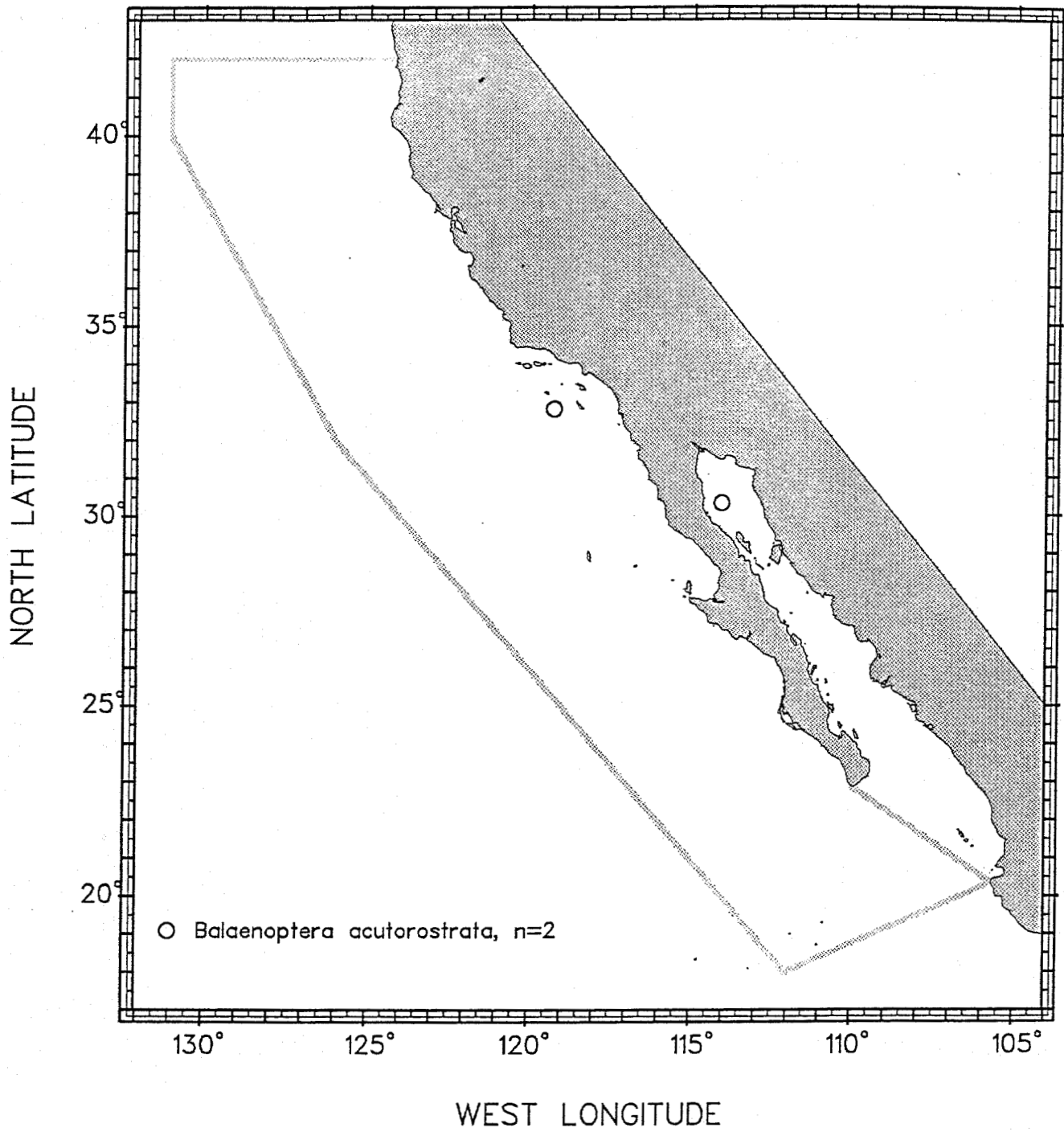


Figure 26. PODS 93 Bryde's and Sei whale sightings.

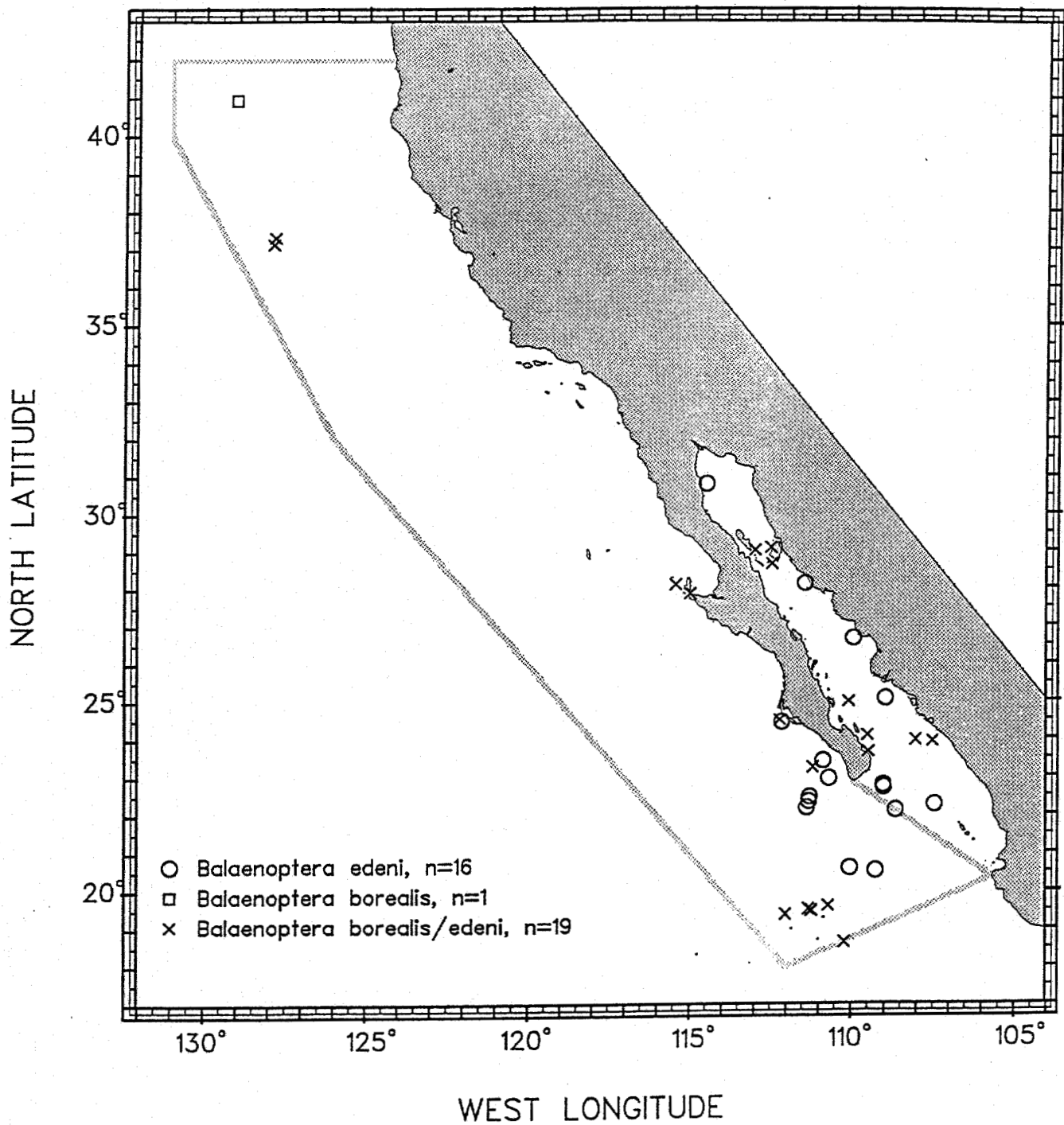


Figure 27. PODS 93 Fin whale sightings.

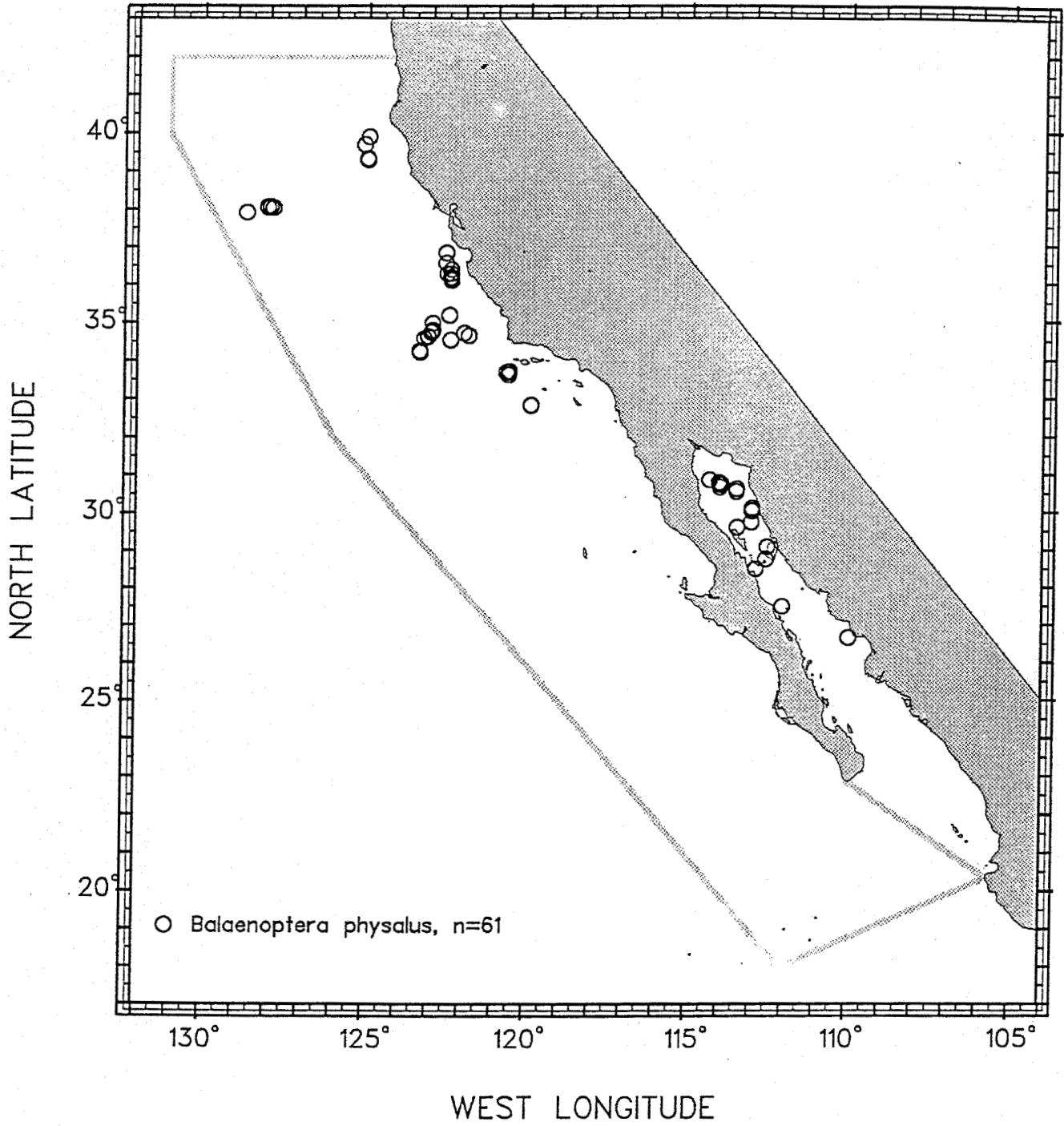


Figure 28. PODS 93 Blue whale sightings.

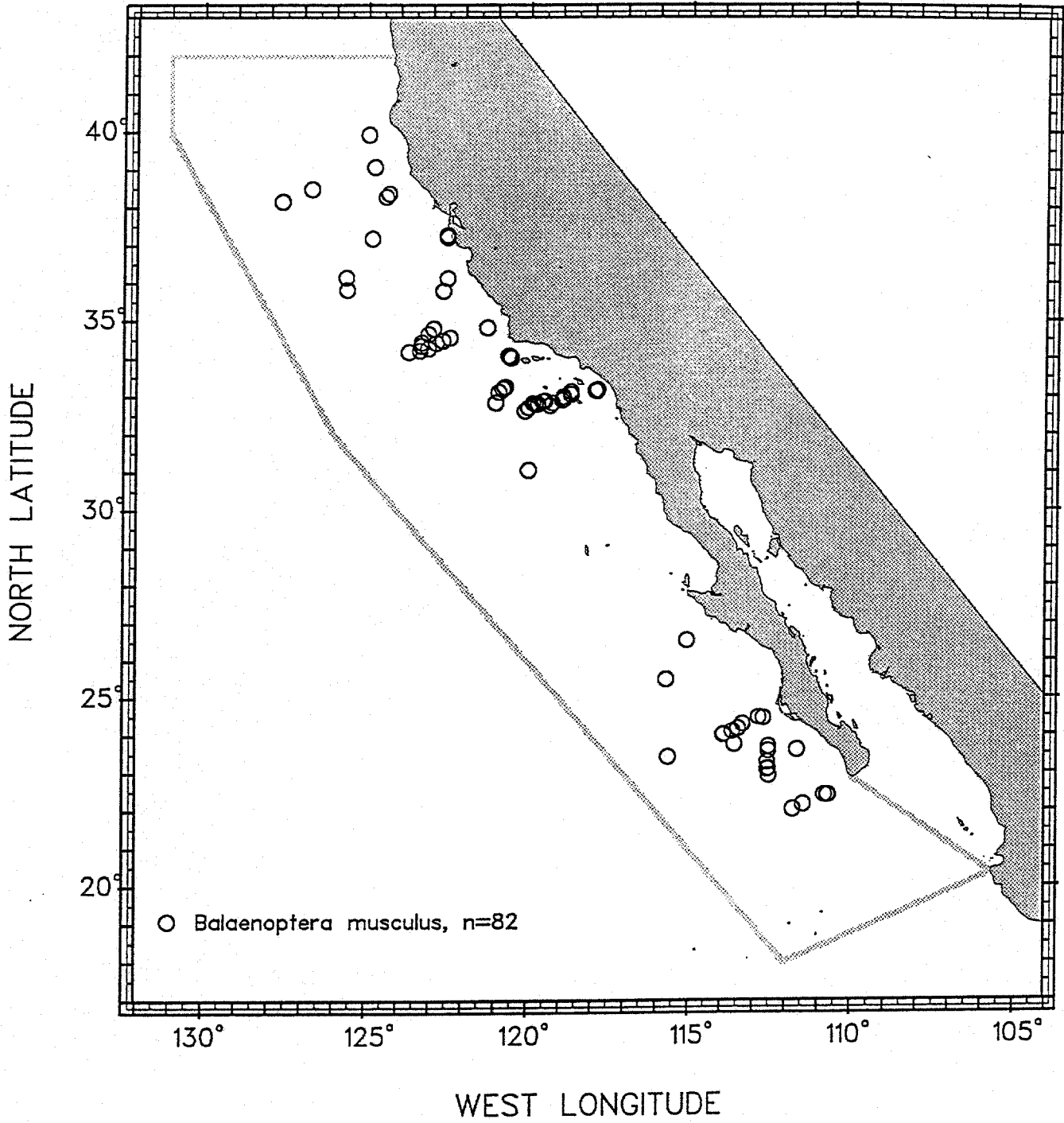




Figure 29. PODS 93 Humpback whale sightings.

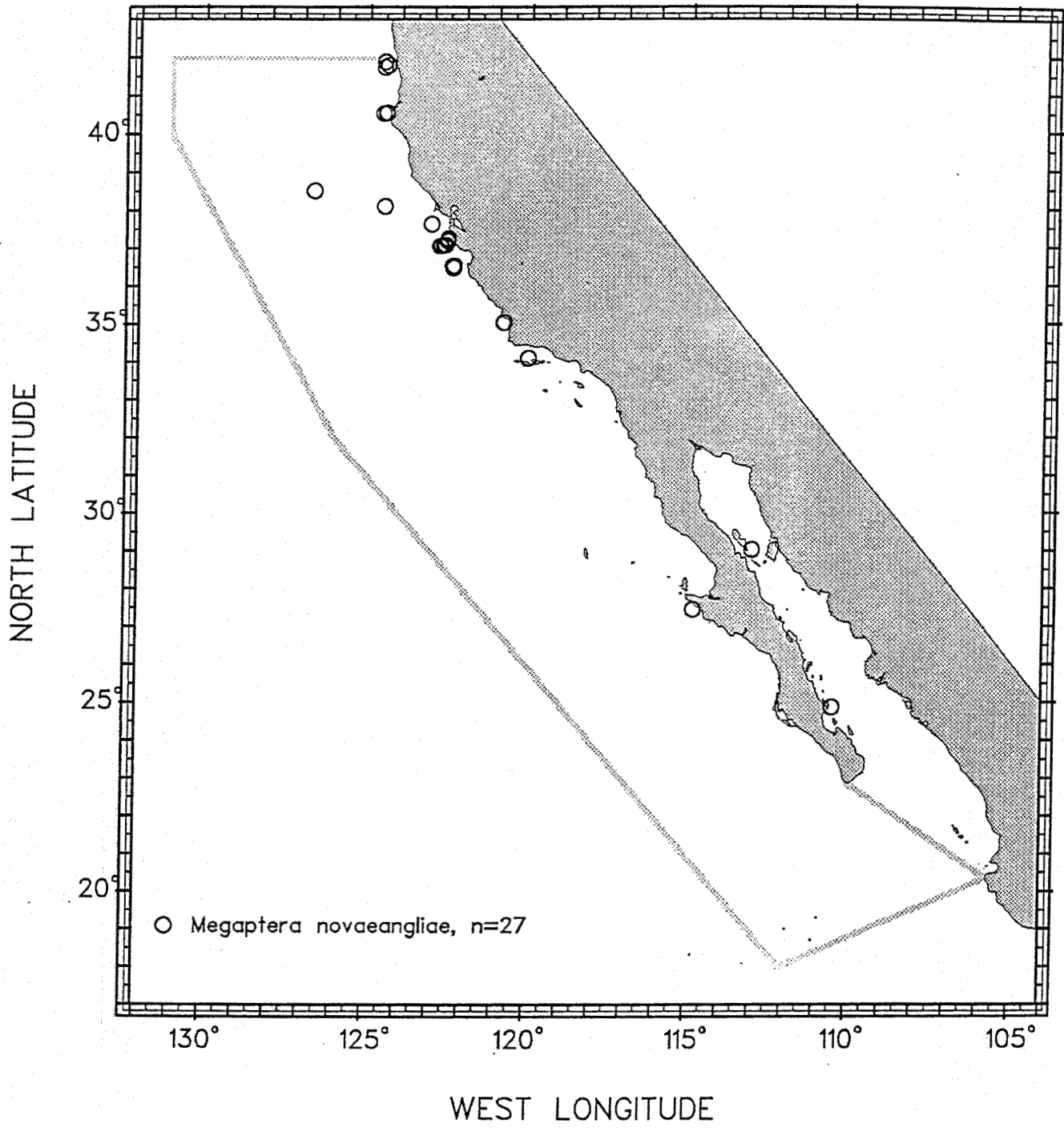


Figure 30. PODS 93 Unidentified dolphin sightings.

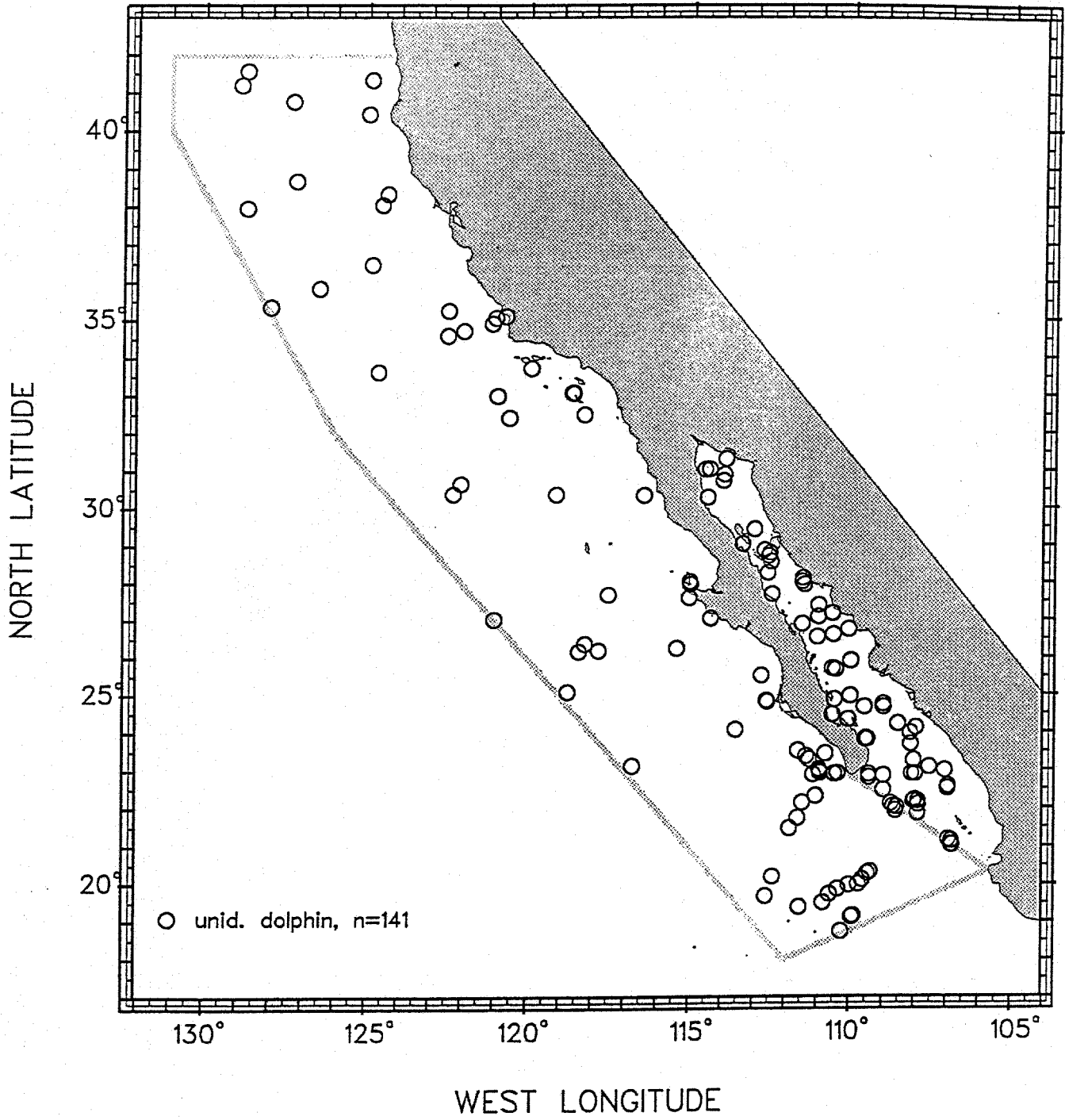


Figure 31. PODS 93 Unidentified small whale and large whale sightings.

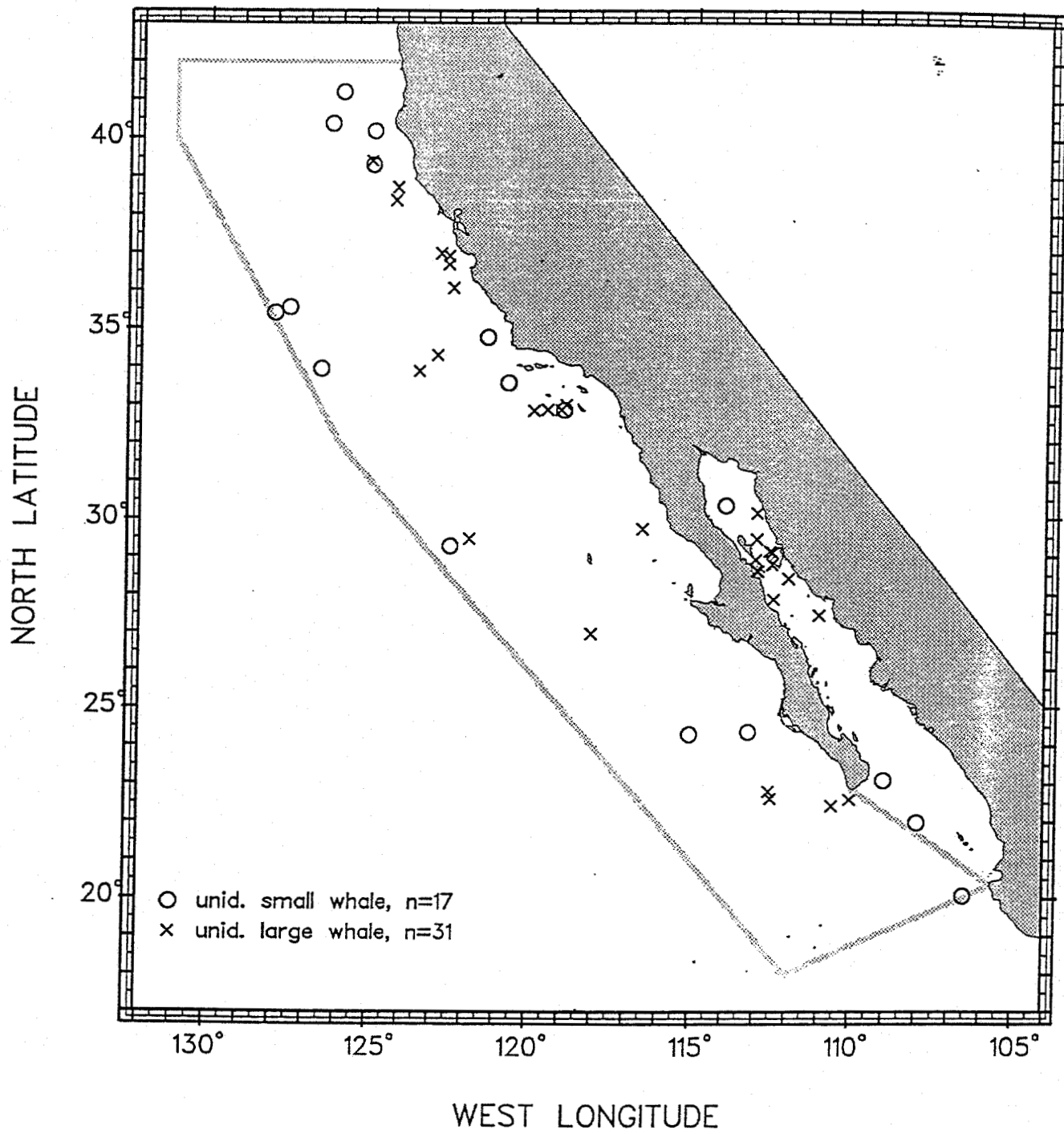
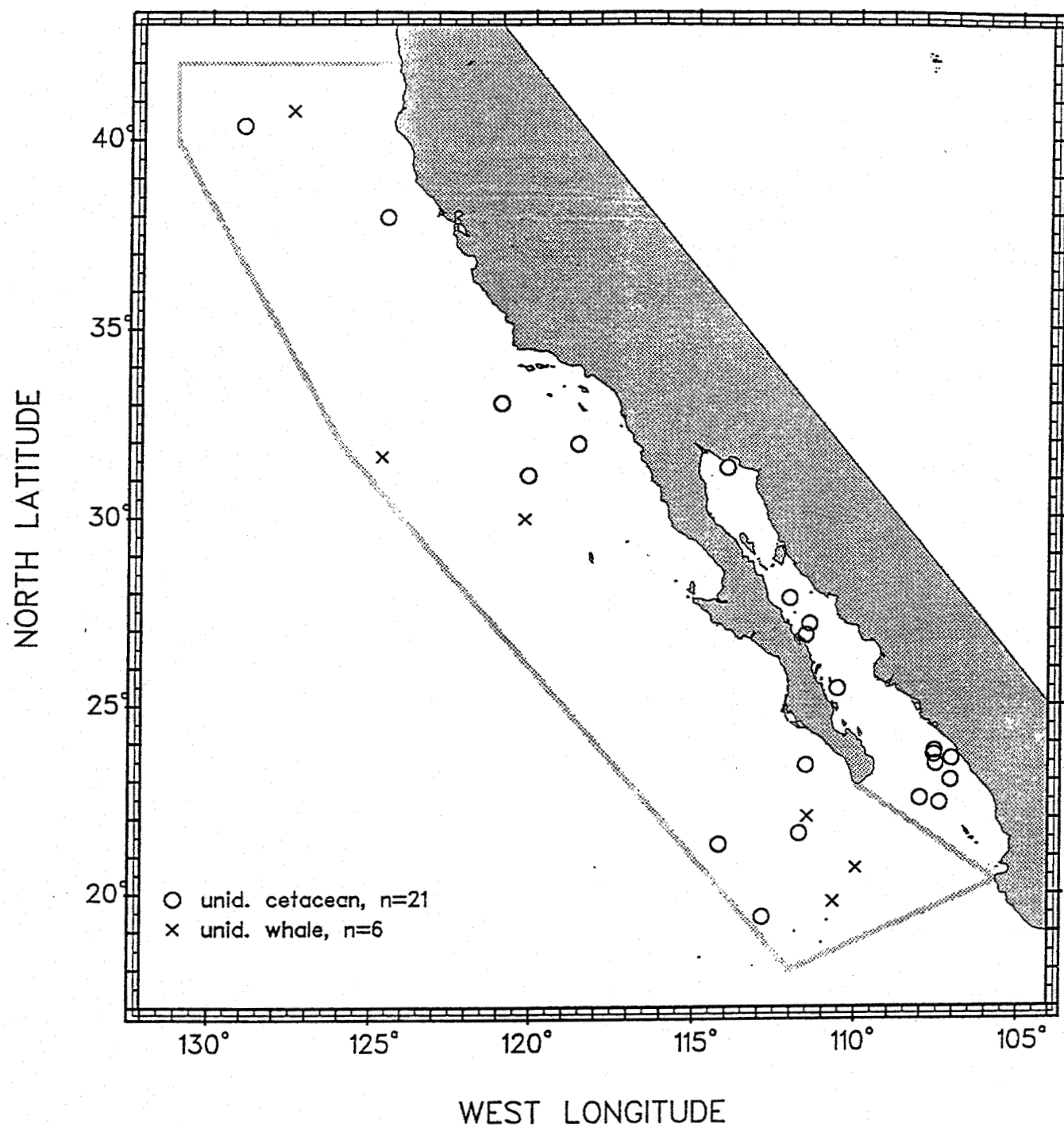


Figure 32. PODS 93 Unidentified whale and cetacean sightings.



Appendix A. CRUISE2 Data Entry Codes.

Event Field Field # Values or Codes

---

B = begin effort

Cruise # 1 4-digit cruise number

E = end effort

R = resume effort

S = marine mammal sighting

Sight #	1	sighting number
Obs ID	2	Observer code (see Table 2) for observer who made sighting
Cue	3	1=bird, 2=splash, 3=mammals, 4=ships, 5=other or unknown, 6=blow and 7=helo
SCode	4	3=crew, 4=observer 25x150, 5=observer not 25x150, 6=other or unknown, 7=helo and 8=independent observer
Bearing	5	relative bearing from ship to animals
Reticle	6	reticle distance to sighting, in tenths
Distance	7	nautical miles to sighting, in tenths

A = auxiliary sighting information

Sight #	1	sighting number
W. Temp	2	degrees centigrade, in tenths
Photo	3	Y/N
Birds	4	Y/N
Spp1Code	5	see Appendix E
Spp2Code	6	see Appendix E
Spp3Code	7	see Appendix E

# = observer estimates (entered during nightly editing)

Obs ID	1	see Table 2
BestSS	2	observer's best school size estimate
HighSS	3	observer's high school size estimate
LowSS	4	observer's low school size estimate
%Spp1	5	% of animals of species 1
%Spp2	6	% of animals of species 2
%Spp3	7	% of animals of species 3

P = observer positions

Left	1	Obs ID (see Table 2) at left bino
Right	2	Obs ID (see Table 2) at right bino
Recorder	3	Obs ID (see Table 2) at recorder
Ind.Obs.	4	Obs ID (see Table 2) at independent obs

V = viewing conditions

Beaufort	1	see Appendix B
Swell Ht	2	numeric value, in feet
SwellDir	3	relative to North
W. Temp	4	degrees centigrade

N = navigation

Course	1	ship heading relative to North
Speed	2	ship speed, in knots

W = weather

Rain/Fog	1	1=no rain or fog, 2=fog, 3=rain, 4=rain and fog, 5=haze, but not rain or fog
Horz Sun	2	see Appendix C
Vert Sun	3	see Appendix C
Wind Dir	4	relative to North
Visbilty	5	nautical miles of visibility

t = turtle sighting

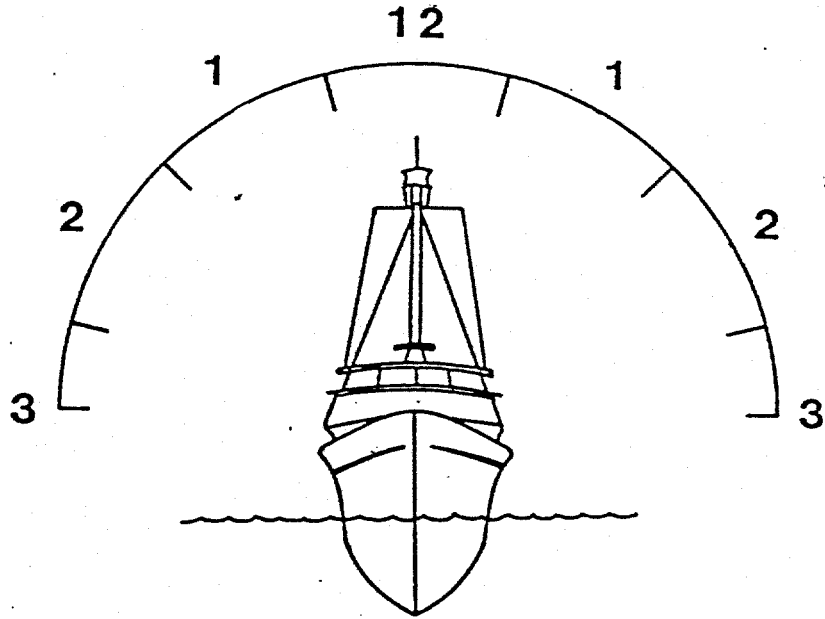
Obs ID	1	Observer code see Table 2 for observer who made sighting
Spp	2	LO = olive ridleys, CC = loggerheads CM = green turtle, DC = leatherbacks EI = Hawksbill, UNK = Unknown
Bearing	3	relative bearing from ship to animals
DistNMI	4	nautical miles to sighting, in tenths
#Turtles	5	numeric value
AssocJFR	6	J=jellyfish, F=floating object, R=red tide

C = Comment

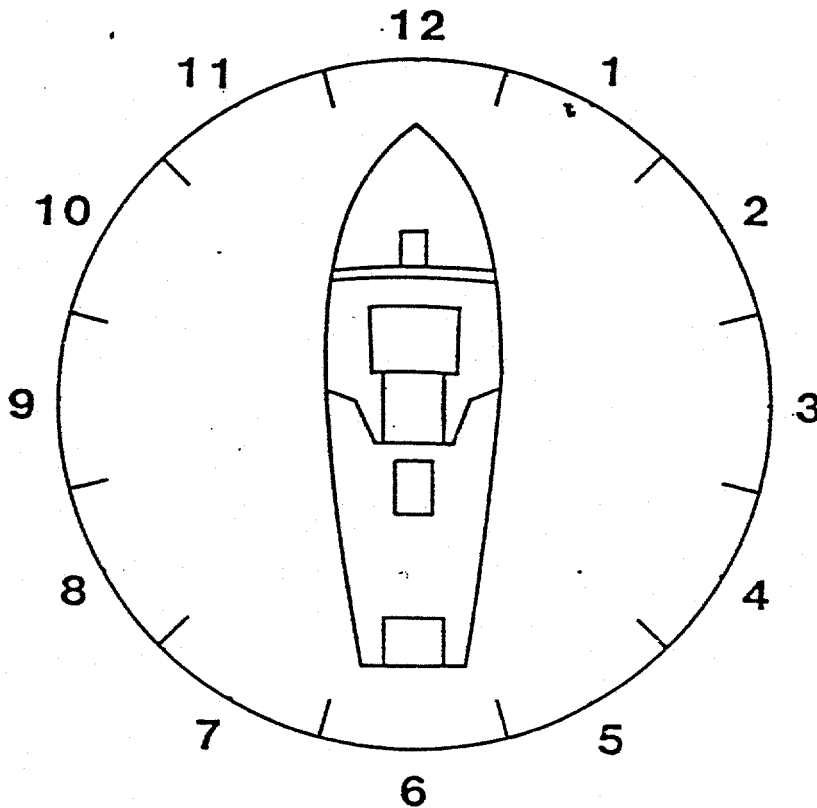
Appendix B. Sea State Conditions measured by the Beaufort scale  
(from Bowditch, 1966).

Wind force (Beaufort)	Knots	Descriptive	Sea Conditions	Probable wave height in feet
0	0- 1	Calm	Sea smooth and mirror-like	-
1	1- 3	Light air	Scale-like ripple without foam crests	1/4
2	4- 6	Light breeze	Small short wavelets; crests have a glassy appearance and do not break	1/2
3	7-10	Gentle breeze	Large wavelets; some crests begin to break; foam of glassy appearance. Occasional white foam crests	2
4	11-16	Moderate breeze	Small waves, becoming longer; fairly frequent white foam crests	4
5	17-21	Fresh breeze	Moderate waves, taking a more pronounced long form; many white foam crests; there may be some spray	6
6	22-27	Strong breeze	Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray	10

Appendix C. Vertical and Horizontal Sun Positions.



**VERTICAL SUN POSITION**



**HORIZONTAL SUN POSITION**



Appendix D. SWFSC Marine Mammal Sighting Form

Date 

Y	Y	M	M	D	D

Observer 

--	--	--

Cruise # 

--	--	--	--

Time 

--	--	--	--

Effort: ON / OFF

Sighting # 

--	--	--	--

**SPECIES DETERMINATION:**

1.	2.	3.
----	----	----

**DIAGNOSTIC FEATURES:** Describe and sketch shape, size and markings of species identified.

**BEHAVIOR:** Describe aggregation, movement, blows, etc.

**ASSOCIATED ANIMALS:** List the number and species of other animals near sightings.

Initials	Roll #	Frame #'s

Biopsy

Bow Riding

Calibration

Initial School Movement:

--	--	--

 Speed - knots

--	--	--

 Direction - relative to bow

Appendix E. SWFSC Marine Mammal Species Code List.

Code	Alpha Code	Species or classification	Common name
01	MESOP_PERU	<i>Mesoplodon peruvianus</i>	Pygmy beaked whale
02	OFFSH_SPOT	<i>Stenella attenuata</i> (offshore)	Offshore pantropical spotted dolphin
03	UNID_SPINR	<i>Stenella longirostris</i> (unidentified subspecies)	Unidentified spinner dolphin
04	CLYMENE	<i>Stenella clymene</i>	Clymene or short-snouted spinner dolphin
05	UNID_COMM	<i>Delphinus</i> sp.	Unidentified common dolphin
06	COAST_SPOT	<i>Stenella attenuata graffmani</i>	Coastal spotted dolphin
07	SOTALIA	<i>Sotalia fluviatilis</i>	Tucuxi, Guiana dolphin
08	ORCAELLA	<i>Orcaella brevirostris</i>	Irrawaddy dolphin
09	SPECTACLED	<i>Australophocaena dioptrica</i>	Spectacled porpoise
10	EAST_SPINR	<i>Stenella longirostris orientalis</i>	Eastern spinner dolphin
11	WBEL_SPINR	<i>Stenella longirostris hybrid</i>	Whitebelly spinner dolphin
12	WHITE-BEAK	<i>Lagenorhynchus albirostris</i>	White-beaked dolphin
13	STRIPED	<i>Stenella coeruleoalba</i>	Striped dolphin, streaker
14	A_WHT_SIDE	<i>Lagenorhynchus acutus</i>	Atlantic white-sided dolphin
15	STENO	<i>Steno bredanensis</i>	Rough-toothed dolphin, Steno
16	LONGB_COMM	<i>Delphinus capensis</i>	Baja neritic common dolphin, long-beaked common dolphin
17	SHRTB_COMM	<i>Delphinus delphis</i>	Offshore common dolphin, short-beaked common dolphin
18	TURSIOPS	<i>Tursiops truncatus</i>	Bottlenose dolphin
19	HEAVISIDES	<i>Cephalorhynchus heavisidii</i>	Heaviside's dolphin
20	HECTORS	<i>Cephalorhynchus hectori</i>	Hector's or pied dolphin
21	GRAMPUS	<i>Grampus griseus</i>	Risso's dolphin, grampus
22	P_WHT_SIDE	<i>Lagenorhynchus obliquidens</i>	Pacific white-sided dolphin
23	PEALES	<i>Lagenorhynchus australis</i>	Peale's dolphin, blackchin
24	HOURGLASS	<i>Lagenorhynchus cruciger</i>	Hourglass dolphin
25	DUSKY	<i>Lagenorhynchus obscurus</i>	Dusky dolphin
26	FRASERS	<i>Lagenodelphis hosei</i>	Fraser's or Sarawak dolphin
27	LISSO_BOR	<i>Lissodelphis borealis</i>	Northern right whale dolphin
28	LISSO_PER	<i>Lissodelphis peronii</i>	Southern right whale dolphin
29	BLACK_DOL	<i>Cephalorhynchus eutropia</i>	Black or Chilean dolphin
30	COMMERSONS	<i>Cephalorhynchus commersonii</i>	Commerson or piebald dolphin
31	MELON_HEAD	<i>Peponocephala electra</i>	Melon-headed whale, electra dolphin
32	PYGMY_KLLR	<i>Feresa attenuata</i>	Pygmy killer whale, slender blackfish
33	FALSE_KLLR	<i>Pseudorca crassidens</i>	False killer whale
34	GLOBI_SP	<i>Globicephala</i> sp.	Unidentified pilot whale
35	LONG_PILOT	<i>Globicephala melas</i>	Long-finned pilot whale, Atlantic pilot whale
36	SHRT_PILOT	<i>Globicephala macrorhynchus</i>	Short-finned pilot whale
37	KILLER_WHA	<i>Orcinus orca</i>	Killer whale
38	SOUSA_CHIN	<i>Sousa chinensis</i>	Indo-Pacific hump-backed or white dolphin
39	SOUSA_TEUS	<i>Sousa teuszii</i>	Atlantic hump-backed dolphin
40	HARBR_PORP	<i>Phocoena phocoena</i>	Harbor porpoise, herring hog
41	VAQUITA	<i>Phocoena sinus</i>	Vaquita, Gulf of California harbor porpoise
42	BURMEISTER	<i>Phocoena spinipinnis</i>	Burmeister or black porpoise
43	BL_FINLESS	<i>Neophocaena phocaenoides</i>	Black finless porpoise
44	DALLS_PORP	<i>Phocoenoides dalli</i>	Dall's porpoise
45	BELUGA	<i>Delphinapterus leucas</i>	White whale, beluga
46	SPERM_WHAL	<i>Physeter macrocephalus</i>	Sperm whale
47	PYGMYSPERM	<i>Kogia breviceps</i>	Pygmy sperm whale
48	DWARFSPERM	<i>Kogia simus</i>	Dwarf sperm whale
49	ZIPHIID_WH	ziphiid whale	Unidentified beaked whale
50	HYPERO_PLN	<i>Hyperoodon planifrons</i>	Southern bottlenose whale
51	MESOP_SP	<i>Mesoplodon</i> sp.	Unidentified <i>Mesoplodon</i>
52	MESOP_CARL	<i>Mesoplodon carlhubbsi</i>	Hubb's beaked whale, archbeak whale

53	MESOP_HECT	<i>Mesoplodon hectori</i>	Hector's beaked whale
54	MESOP_BOWD	<i>Mesoplodon bowdoini</i>	Andrew's beaked whale
55	MESOP_EURO	<i>Mesoplodon europaeus</i>	Gervais' beaked whale, Antillean beaked whale
56	MESOP_BDNS	<i>Mesoplodon bidens</i>	Sowerby's beaked whale
57	MESOP_GNKO	<i>Mesoplodon ginkgodens</i>	Ginkgo-toothed beaked whale
58	MESOP_GRAY	<i>Mesoplodon grayi</i>	Gray's beaked whale
59	MESOP_DENS	<i>Mesoplodon densirostris</i>	Blaineville's beaked whale, tropical beaked whale
60	MESOP_LAYA	<i>Mesoplodon layardii</i>	Strap-toothed whale
61	ZIPHI_CAVI	<i>Ziphius cavirostris</i>	Cuvier's beaked whale
62	BERARD_ARN	<i>Berardius arnuxii</i>	Arnoux's beaked whale, southern giant bottlenose
63	BERARD_BAI	<i>Berardius bairdii</i>	Baird's beaked whale, nothern giant bottlenose
64	TASMA_SHEP	<i>Tasmacetus shepherdii</i>	Shepherd's beaked whale
65	MESOP_PACI	<i>Mesoplodon pacificus</i>	Longman's beaked whale, Indo-Pacific beaked whale
66	N_RIGHT_WH	<i>Eubalaena glacialis</i>	Northern right whale
67	BOWHEAD_WH	<i>Balaena mysticetus</i>	Bowhead whale
68	PYGMY_RGHT	<i>Caperea marginata</i>	Pygmy right whale
69	GRAY_WHALE	<i>Eschrichtius robustus</i>	Gray whale
70	UNID_RORQL	<i>Balaenoptera</i> sp.	Unidentified rorqual
71	MINKE_WHAL	<i>Balaenoptera acutorostrata</i>	Minke whale
72	BRYDES_WHL	<i>Balaenoptera edeni</i>	Bryde's whale
73	SEI_WHALE	<i>Balaenoptera borealis</i>	Sei whale
74	FIN_WHALE	<i>Balaenoptera physalus</i>	Fin whale
75	BLUE_WHALE	<i>Balaenoptera musculus</i>	Blue whale
76	HUMPBACK W	<i>Megaptera novaeangliae</i>	Humpback whale
77	UNID_DOLPH	unid. dolphin	Unid. dolphin or porpoise
78	UNID_SM_WH	unid. small whale	Unidentified small whale
79	UNID_LG_WH	unid. large whale	Unidentified large whale
80	KOGIA_SP	<i>Kogia simus/breviceps</i>	Dwarf or pygmy sperm whale
81	MESOP_STEJ	<i>Mesoplodon stejnegeri</i>	Stejneger's beaked whale
82	MESOP_MIRU	<i>Mesoplodon mirus</i>	True's Beaked Whale
83	MESOP_SP A	<i>Mesoplodon</i> sp. A	Unnamed beaked whale
84	HYPERO_AMP	<i>Hyperoodon ampullatus</i>	N. Atlantic bottlenose whale
85	NARWHALE	<i>Monodon monoceros</i>	Narwhal, sea unicorn
86	S_RIGHT_WH	<i>Eubalaena australis</i>	Southern right whale
87	FRANCISCAN	<i>Pontoporia blainvillei</i>	Franciscana, La Plata dolphin
88	C_A_SPINNR	<i>Stenella longirostris centroamericana</i>	Central American spinner or Costa Rican spinner
89	UNID_SPOT	<i>Stenella attenuata/plagidon</i>	Unidentified spotted dolphin in Atlantic
90	UNID_SPOT	<i>Stenella attenuata</i> (unid. subsp.)	Unidentified pantropical spotted dolphin
91	AT_SPOTTED	<i>Stenella frontalis</i>	Atlantic spotted dolphin
92	GANGES_DOL	<i>Platanista gangetica</i>	Ganges susu, Ganges dolphin
93	INDUS_DOL	<i>Platanista minor</i>	Indus susu, Indus dolphin
94	INIA	<i>Inia geoffrensis</i>	Boto, Amazon river dolphin
95	LIPOTES	<i>Lipotes vexillifer</i>	Baiji, Chinese river dolphin
96	UNID_CETAC	unid. cetacean	Unidentified cetacean
97	UNID_OBJCT	unid. object	Unidentified object, possible marine mammal
98	UNID_WHALE	unid. whale	Unidentified whale
99	SEI/BRYDES	<i>Balaenoptera borealis/edeni</i>	Rorqual identified as a Sei whale or Bryde's whale
PU	UNID_PINNI	unid. pinniped	Unidentified pinniped
UO	UNID_OTARI	unid. sea lion	Unidentified sea lion
EJ	STELLAR_SL	<i>Eumetopias jubatus</i>	Stellar sea lion
ZC	CA_SEALION	<i>Zalophus californianus</i>	California sea lion
UA	UNID_FURSL	unid. fur seal	Unidentified fur seal
AT	GUAD_FURSL	<i>Arctocephalus townsendi</i>	Guadalupe fur seal
CU	NO_FURSEAL	<i>Callorhinus ursinus</i>	Northern fur seal
US	UNID_SEAL	unid. seal	Unidentified seal
MA	N_ELEPHN_S	<i>Mirounga angustirostris</i>	Northern elephant seal
PV	HARBR_SEAL	<i>Phoca vitulina</i>	Harbor seal

## RECENT TECHNICAL MEMORANDUMS

Copies of this and other NOAA Technical Memorandums are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22167. Paper copies vary in price. Microfiche copies cost \$9.00. Recent issues of NOAA Technical Memorandums from the NMFS Southwest Fisheries Science Center are listed below:

- NOAA-TM-NMFS-SWFSC-201 Research plan to assess marine turtle hooking mortality: Results of an expert workshop held in Honolulu, Hawaii, November 16-18, 1993.  
G.H. BALAZS and S.G. POOLEY  
(June 1994)
- 202 Recent information on the status of odontocetes in Californian waters.  
K.A. FORNEY  
(June 1994)
- 203 Recent information on the status of large whales in California waters.  
J. BARLOW  
(June 1994)
- 204 Development of an airborne LIDAR system to detect tunas in the eastern tropical Pacific purse-seine fishery.  
C.W. OLIVER, W.A. ARMSTRONG, and J.A. YOUNG  
(June 1994)
- 205 An assessment of the 1994 status of harbor porpoise in California.  
J. BARLOW and K. FORNEY  
(June 1994)
- 206 The Hawaiian monk seal on Laysan Island, 1990.  
K.B. LOMBARD, B.L. BECKER, M.P. CRAIG, G.C. SPENCER,  
and K. HAGUE-BECHARD  
(June 1994)
- 207 The estimation of perpendicular sighting distance on SWFSC research vessel surveys for cetaceans: 1974 to 1991.  
J. BARLOW and T. LEE  
(August 1994)
- 208 The physical oceanography off the central California coast during February-March and May-June 1992: a summary of CTD data from pelagic young-of-the-year rockfish surveys.  
K.M. SAKUMA, H.A. PARKER, S. RALSTON, F.B. SCHWING,  
D.M. HUSBY, and E.M. ARMSTRONG  
(September 1994)
- 209 The physical oceanography off the central California coast during March and May-June, 1993: a summary of CTD data from pelagic young-of-the-year rockfish surveys.  
K.M. SAKUMA, H.A. PARKER, S. RALSTON, F.B. SCHWING,  
D.M. HUSBY, and E.M. ARMSTRONG  
(September 1994)
- 210 The Hawaiian monk seal at French Frigate Shoals, 1990-91  
M.P. CRAIG, J.L. MEGYESI, C.S. HALL, J.L. GLUECK, L.P.  
LANIAWE, E.A. DELANEY, S.S. KEEFER M.A. McDERMOND, M.  
SCHULZ, G.L. NAKAI, B.L. BECKER, L.M. HIRUKI, and R.J.  
MORROW  
(September 1994)