CRUISE RESULTS

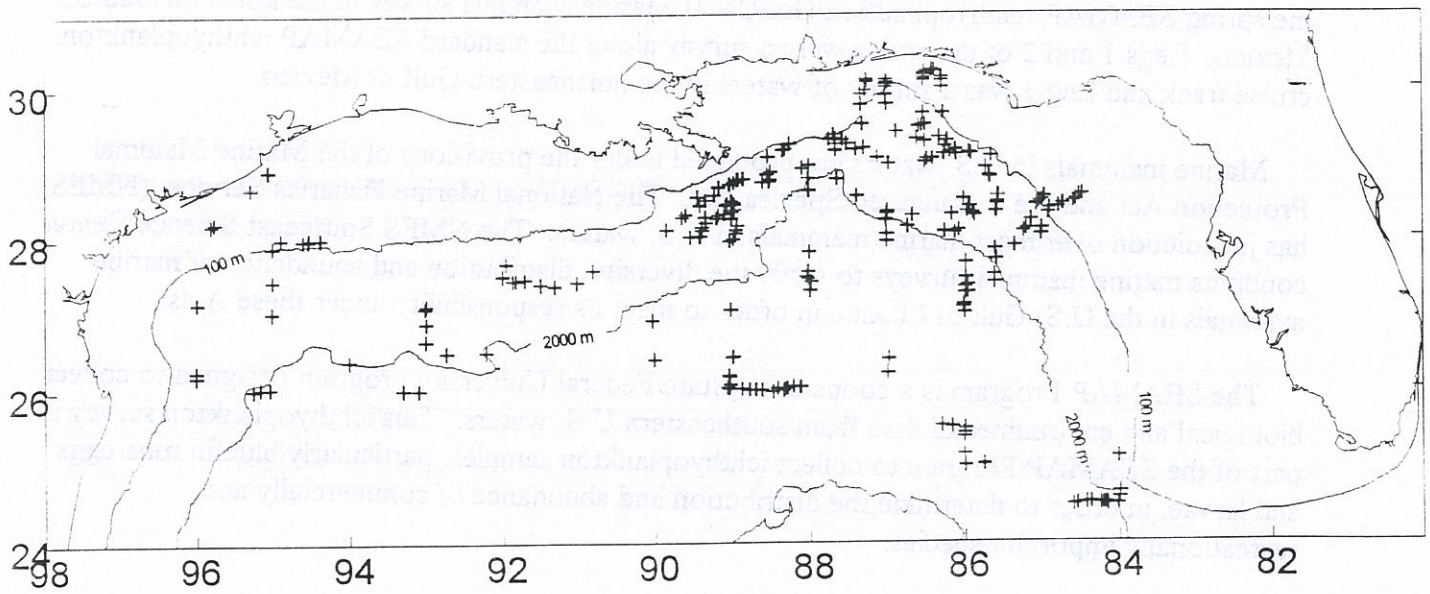
Spring GulfCet II Marine Mammal Survey

and

Spring Southeast Area Monitoring and Assessment Program (SEAMAP) Ichthyoplankton Survey

NOAA Ship *Oregon II* Cruise OT-97-02 (225)

04\16 - 06\10\97



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Mississippi Laboratories
Pascagoula Facility
P.O. Drawer 1207
Pascagoula, MS 39568-1207

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Oregon II Cruise 97-02 (225)
April 16 - June 10, 1997

INTRODUCTION

The NOAA Ship *Oregon II* departed Pascagoula, Mississippi on April 16, 1997, to conduct the spring SEAMAP Ichthyoplankton/GulfCet II Marine Mammal survey in the northern Gulf of Mexico. Legs 1 and 2 of the cruise were a survey along the standard SEAMAP ichthyoplankton cruise track and Leg 3 was a survey of waters in the northeastern Gulf of Mexico.

Marine mammals in U.S. waters are protected under the provisions of the Marine Mammal Protection Act and the Endangered Species Act. The National Marine Fisheries Service (NMFS) has jurisdiction over most marine mammals in U.S. waters. The NMFS Southeast Science Center conducts marine mammal surveys to study the diversity, distribution and abundance of marine mammals in the U.S. Gulf of Mexico in order to meet its responsibility under these Acts.

The SEAMAP Program is a cooperative State/Federal/University program designed to collect biological and environmental data from southeastern U.S. waters. This ichthyoplankton survey is part of the SEAMAP Program to collect ichthyoplankton samples, particularly bluefin tuna eggs and larvae, in order to determine the distribution and abundance of commercially and recreationally important species.

OBJECTIVES

1. Collect line transect data to estimate abundances and define distributions of cetaceans in oceanic and selected continental shelf waters of the northern Gulf of Mexico.

2. Collect ichthyoplankton samples, particularly bluefin tuna eggs and larvae, to determine the distribution and abundance of commercially and recreationally important species.

3. Collect associated environmental data at all designated ichthyoplankton and marine mammal stations.

4. Collect data on the distribution and abundance of sea turtles, seabirds and other marine life.

5. Collect data on the distribution and type of marine debris encountered during the survey.

6. Obtain biopsy samples of skin and blubber from selected cetacean species for contaminant studies and genetic analysis.

7. Obtain photographs of selected cetacean species for photo-identification studies.

METHODS

Marine Mammals

The *Oregon II* has been used extensively since 1990 for cetacean surveys in the Gulf of Mexico. Line transect data were collected by two teams of three observers during daylight hours, weather permitting (i.e., no rain, Beaufort sea state <6). Each team consisted of skilled observers experienced in shipboard cetacean observation and identification techniques. Two observers searched for cetaceans using 25X "Bigeye" binoculars mounted on the ship's flying bridge. The third observer maintained a search of the area near the ship using unaided eye or 7X hand-held binoculars, and recorded data. Data were recorded on a laptop computer using a BASIC data acquisition program interfaced with a Global Positioning System (GPS). Data collected on the survey environment included measures of sea state, weather, wind and glare. Cetacean sighting data included species, group size, presence of calves, bearing from the bow, linear distance from the ship, surface temperature, depth and behavioral observations.

Legs 1 and 2 were conducted in conjunction with the SEAMAP ichthyoplankton sampling. Line transect sampling was conducted while traveling between stations during daylight hours (Figures 1 and 2). Leg 3 was a dedicated cetacean survey that focused on the northeastern Gulf of Mexico continental slope (100-2000 m) and shelf waters (Figure 3).

As required by Marine Mammal Research Permit No. 738 issued to the Southeast Fisheries Science Center under Marine Mammal Protection Act guidelines, data on the behavioral responses of cetaceans to the survey vessel were recorded. A complete set of these responses can be obtained from the Pascagoula Laboratory.

Biopsy samples of skin and blubber were collected from selected cetacean species (designated by Permit No. 738) for genetic and contaminant analyses. A pole spear and a modified rifle were used for obtaining samples and each was fitted with specially designed heads that extract a small plug of tissue from animals at close range. Samples were collected from bow-riding animals at the bow of the *Oregon II*. Because of the additional staffing requirements of biopsy sampling, the majority of the biopsy effort was confined to Leg 3 when additional staff could be accommodated. As required by Permit No. 738, data on each sampling attempt were recorded and included date, time, platform, sampler and recorder name, field number, device, species, location (GPS), number of hits and misses, body location struck, and whether a sample was taken. A complete log can be obtained from the National Marine Fisheries Service, Pascagoula Laboratory.

Data on seabirds and non-passerines encountered by the observers while searching for cetaceans were recorded. Birds were identified to the lowest taxonomic level possible and flock size was enumerated. While observers had a wide range of experience in identifying birds, searching for cetaceans was the primary objective and most observers could not quickly identify bird sightings to species except under the best circumstances. Passerine neotropical migrants, which can be numerous in the Gulf of Mexico during the spring, were not recorded.

Ichthyoplankton

Ichthyoplankton sampling on Legs 1 and 2 was performed in accordance with standard SEAMAP protocol. Ninety-three stations on Leg 1 and 79 stations on Leg 2 were targeted for ichthyoplankton sampling (Figures 4 and 5). Stations were approximately 30 NM apart in the Gulf of Mexico from 50 fm out to the U.S. EEZ. Stations at whole degrees of longitude or latitude were sampled using a 61 cm bongo with .333 mm nets and a double neuston net (two 1x2m neuston frames welded together) with .950 mm nets. Bongo tows were deployed to a maximum depth of 200m at a rate of 40 meters/minute and a retrieval rate of 20 meters/minute with a wire angle of 45 degrees. Double neuston nets were towed with half of the frame submerged for 10 minutes. Stations at half degrees of longitude or latitude were sampled only with the double neuston gear. Standard SEAMAP protocol was followed for handling and preserving the sample.

During Leg 3, ichthyoplankton sampling was conducted just before sunrise (when marine mammal operations began) and just after sunset (when marine mammal operations ended) each day (Figure 6). Stations consisted of bongo and double neuston sampling gear. On days when marine mammal surveys either began or ended in very shallow water, ichthyoplankton was not sampled.

Environmental Data

A continuous flow thermosalinograph and fluorometer recorded environmental data 24 hours a day. The surface temperature and salinity were downloaded every 60 seconds to the data file. This data and a host of other information from shipboard sensors were accessed and displayed via the Scientific Computer System (SCS) utilized for the first time on the *Oregon II* on this cruise.

Data from Seabird SBE 25-03 Sealogger conductivity-temperature-depth (CTD) profiles were recorded during a cast at one scan per second. On Legs 1 and 2, CTD casts to a maximum depth of 200m were scheduled at each ichthyoplankton station (Figures 4 and 5). For Leg 3, CTD casts to 500m or maximum depth were made at the beginning and end of each transect line (in conjunction with ichthyoplankton sampling). In addition, for the longer transect lines, CTD casts were made at the one-third and two-thirds points of the line distance, and for the shorter transect lines, a CTD cast was made at the mid-point of the line (Figure 6). Three CTD casts were made to 850m in the western, central and eastern part of the Leg 3 survey area so that CTD salinity could be splined to XBT temperature profiles. XBT's were deployed every 18.5 km (10 NM) on Leg 3, beginning at and seaward of the 100m isobath.

RESULTS

Marine Mammals

During the 44 survey days, 6366 transect kilometers were surveyed (Leg 1, 2039 km; Leg 2, 2505 km; Leg 3, 1822 km) (Table 1, Figures 1, 2 and 3). Daily effort ranged up to 11.9 hours/day and 219 km/day and averaged 145 km/day. Poor weather (Beaufort sea state >6) eliminated survey effort on four days during Leg 1.

Total cetacean groups sighted during the 44 survey days was 264 (Leg 1, 58 groups; Leg 2, 122 groups; Leg 3, 84 groups) (Figure 7). Seventeen of these groups were off-effort and the remaining 247 were sighted while on-effort. The highest number of cetacean groups sighted on one day was 24 (Tables 1 and 4). At least 18 species were sighted (Tables 2 and 3). The most commonly sighted species were pantropical spotted dolphins (57 sightings), bottlenose dolphins (43 sightings), Atlantic spotted dolphins (23 sightings; there were also 13 sightings identified as bottlenose or Atlantic spotted dolphins), dwarf/pygmy sperm whales (20 sightings), Risso's dolphins (19 sightings) and sperm whales (15 sightings). These six species comprised 84% of the identified sightings (Tables 2 and 4).

The largest herd recorded on this cruise was a group of 485 spinner dolphins. This species also had the largest mean herd size with an average of 129 animals/sighting on the eight occasions that spinners were sighted. A group of 300 pantropical spotted dolphins was recorded and, in 57 sightings, this species averaged 55 animals/herd. The sperm whale and dwarf/pygmy sperm whale groups were small, averaging 2.4 and 1.9 animals/sighting, respectively. Bottlenose dolphins were identified, when possible, as nearshore and offshore animals. The mean herd size for the 18 groups identified as nearshore bottlenose dolphins was 9 animals/herd with a maximum herd size of 27 dolphins. The mean for the 17 groups identified as offshore bottlenose dolphins was 16 animals/herd with a maximum herd size of 85 dolphins. A summary of herd size, water depth and sea surface temperature for each species is presented in Table 3. Associations between cetacean species were noted for Risso's dolphins and unidentified dolphins (twice), melon-headed/pygmy killer whales and pantropical spotted dolphins, and false killer whales and rough-toothed dolphins (Table 4).

Cetaceans were encountered in all areas of the Gulf of Mexico surveyed (Figures 7). Sightings were more common in some areas than in others (e.g., near the Mississippi River delta), but in some cases, this may reflect sighting conditions rather than true cetacean distribution. Bottlenose dolphins and Atlantic spotted dolphins were the only species sighted in continental shelf waters (<100m, e.g., Destin Dome lease area).

Observations were recorded on the prevalence of bite wounds from cookie-cutter sharks (Isistius sp.) on Gulf of Mexico cetaceans. In all 11 of the species that were observed at close enough range to see the crater wounds or healed scars caused by cookie-cutter sharks, at least one animal showed evidence of an Isistius attack. The other seven species were not observed at close enough range to determine the presence or absence of cookie-cutter wounds.

On Leg 3, equipment to obtain recordings of cetacean vocalizations was temporarily installed on the ship (an acoustic array housed in a 500m cable). The array was towed behind the ship during survey periods and several significant recordings were obtained. Of particular interest was the high quality recordings obtained from the single sighting of Fraser's dolphins. These animals are a rare sighting in the Gulf of Mexico and very few acoustic recordings exist of the vocalizations of this species.

Thirty-seven biopsy samples were collected (Leg 1, 11 samples; Leg 2, 5 samples; and Leg 3, 21 samples) from six species (Table 5). These included bottlenose dolphins, Atlantic spotted dolphins, pantropical spotted dolphins, spinner dolphins, rough-toothed dolphins and very rare biopsies of Fraser's dolphins. All of the samples were collected from the bow of the *Oregon II*. The skin and blubber samples were sent to the NMFS Charleston, South Carolina Laboratory for analyses and storage.

Bird sightings included 1065 flocks of at least 19 species (Table 6). Unidentified storm petrel flocks were recorded most often and made up 368 (35%) of the sightings. One sighting was identified as the Maderian storm petrel. The next most common bird sighting was unidentified terns with 182 sightings. Identified tern species included the black tern (25 sightings), the bridled tern (1 sighting), the sooty tern (6 sightings), bridled/sooty terns (36 sightings), the Caspian tern (2 sightings), the least tern (1 sighting) and the royal tern (8 sightings). Total tern sightings made up 261 (26%) of all bird flock sightings. There were 99 egret flocks sighted. Most of these were probably cattle egrets (Bubulcus ibis). Laughing gulls (107 flocks) and shearwaters (53 flocks), including Audubon's, were common seabirds. Flock sizes were generally small (means <10) with the largest flocks numbering less than 50 birds.

Ichthyoplankton

On Leg 1, 90 of the 93 selected stations were sampled with the double neuston (Figure 4). Bad weather and very rough seas precluded double neuston sampling at three stations. On two occasions, one of the neuston net bags untied during the tow resulting in a single neuston sample. The standard 10-minute neuston tow was cut to five minutes at several stations due to the massive amount of sargassum in the water. This change in protocol is noted on the appropriate station sheets. Forty-one bongo samples were collected on Leg 1.

All 79 of the scheduled stations were sampled with the double neuston on Leg 2 (Figure 5). Bongo samples were obtained at 37 stations. On Leg 3, 17 stations were sampled with double neuston and bongo gear (Figure 6). After assignment of SEAMAP numbers to SEAMAP samples, the right bongo and neuston samples were shipped to ZSIOP, Szczecin, Poland for sorting. The left bongo samples were deposited at the Mississippi Gulf Coast Research Laboratory (GCRL) for processing, analysis and storage. The left neuston samples were deposited at the NMFS, Miami Laboratory for processing, analysis and storage.

Environmental Data

CTD casts were made at all 93 of the pre-selected stations on Leg 1 and all 79 of the pre-selected stations on Leg 2 (Figures 4 and 5). On Leg 3, 32 CTD casts were made and 79 XBT profiles were taken (Figure 6). CTD and XBT profiles, continuous flow thermosalinograph and fluorometer files and all other environmental data were returned to the NMFS Mississippi Laboratories for analysis, editing, comparison and archiving.

CRUISE 225 PARTICIPANTS

Leg 1 (April 16-May 6, 1997)

Carol Roden	Field Party Chief	NMFS, Pascagoula, MS
Wayne Hoggard	Team Leader	NMFS, Pascagoula, MS
Karen Mitchell	Watch Leader	NMFS, Pascagoula, MS
Alonzo Hamilton	Watch Leader	NMFS, Pascagoula, MS
Tony Martinez	Computer Specialist	NMFS, Miami, FL
Cheryl Brown	Fishery Biologist	NMFS, Miami, FL
Carolyn Rogers	Team Leader	JCWS, Pascagoula, MS
Denice Drass	Watch Leader	JCWS, Pascagoula, MS
Carrie Hubard	Biologist	JCWS, Pascagoula, MS
Mindy Zuschlag	Biologist	JCWS, Pascagoula, MS
Jason Link	Biologist	JCWS, Pascagoula, MS
Molly Thomas	Cooperator	New Orleans, LA

Leg 2 (May 8-26, 1997)

Carol Roden	Field Party Chief	NMFS, Pascagoula, MS
Alonzo Hamilton	Watch Leader	NMFS, Pascagoula, MS
Tony Martinez	Team Leader	NMFS, Miami, FL
Jim Tobias	Fishery Biologist	NMFS, Miami, FL
Joe Contillo	Biologist	NMFS, Miami, FL
Carolyn Rogers	Team Leader	JCWS, Pascagoula, MS
Denice Drass	Watch Leader	JCWS, Pascagoula, MS
Danielle Raha	Contract Observer	Pascagoula, MS
Kimberly Marks	Contract Observer	Miami, FL
Kathy Mays	Cooperator	Texas A&M University
Claudine Bartels	Watch Leader	Florida Inst. of Technology
Heidi Ferrell	Cooperator	Florida Inst. of Technology
Carleigh Trappe	Cooperator	Vanderbilt University

Leg 3 (May 28-June 10, 1997)

Keith Mullin	Field Party Chief	NMFS, Pascagoula, MS
Wayne Hoggard	Fishery Biologist	NMFS, Pascagoula, MS
Carolyn Rogers	Team Leader	JCWS, Pascagoula, MS
Carrie Hubard	Team Leader	JCWS, Pascagoula, MS
Mindy Zuschlag	Biologist	JCWS, Pascagoula, MS
Denice Drass	Watch Leader	JCWS, Pascagoula, MS
Danielle Raha	Contract Observer	Pascagoula, MS

Kimberly Marks	Contract Observer	Pascagoula, MS
Jeff Norris	Cooperator	Texas A&M University
Shannon Rankin	Cooperator	Texas A&M University
Theia DeLong	Cooperator	Univ. of Southern Miss.
Clint Jeske	Cooperator	National Biological Survey

Submitted by:

Carol Roden
Carol Roden
Field Party Chief

Approved by:

Terry Howard for
Scott Nichols, Director
Mississippi Laboratories

Bradford E. Brown, Director
Southeast Science and Research Center

Table 1. Effort, Beaufort sea state and number of sightings for each day of NOAA Ship *Oregon II* Cruise 225, April-June 1997.

Leg Date	Effort hours	Transect kilometers	Average Sea State	Number of Sightings
Leg 1				
16 Apr	Depart Pascagoula			
17 Apr	8.5	165	4.8	3
18 Apr	4.3	83	3.5	0
19 Apr	5.9	105	1.1	13
20 Apr	6.8	127	1.3	9
21 Apr	7.9	147	2.5	5
22 Apr	6.6	107	3.6	5
23 Apr	2.5	50	5.4	0
24 Apr	9.2	173	2.7	4
25 Apr	0	0	>6.0	0
26 Apr	0	0	>6.0	0
27 Apr	0	0	>6.0	0
28 Apr	0	0	>6.0	0
29 Apr	8.4	159	2.8	3
30 Apr	5.3	111	5.0	3
01 May	8.9	172	2.6	1
02 May	11.3	192	3.8	0
03 May	8.4	159	3.8	7
04 May	4.4	70	5.2	2
05 May	11.9	219	2.9	3
06 May	Arrive Pascagoula			
Total	110.3	2039		58
Leg 2				
08 May	Depart Pascagoula			
09 May	6.3	116	1.4	14
10 May	7.6	142	2.3	8
11 May	10.0	180	3.6	2
12 May	7.3	137	3.3	8
13 May	8.2	156	2.9	9
14 May	4.8	88	0.6	20
15 May	4.6	86	1.2	24
16 May	8.1	147	2.8	2
17 May	8.4	163	2.2	1
18 May	7.1	142	3.7	0
19 May	6.6	151	3.4	4
20 May	8.9	158	2.6	5
21 May	8.5	157	2.2	5

continued

Table 1. continued

Leg Date	Effort hours	Transect kilometers	Average Sea State	Number of Sightings
22 May	8.7	168	3.1	0
23 May	7.9	150	2.6	6
24 May	10.4	197	4.6	2
25 May	8.7	167	3.0	12
26 May	Arrive Pascagoula			
Total	132.1	2505		122
Leg 3				
28 May	Depart Pascagoula			
29 May	7.0	128	4.5	0
30 May	9.1	168	3.0	10
31 May	8.3	146	2.5	13
01 Jun	11.1	191	4.1	8
02 Jun	7.5	141	3.0	5
03 Jun	8.1	140	2.9	4
04 Jun	8.9	150	1.8	18
05 Jun	9.6	164	3.5	2
06 Jun	9.2	150	2.9	8
07 Jun	10.4	172	2.6	7
08 Jun	9.2	168	4.0	4
09 Jun	6.1	104	4.5	5
10 Jun	Arrive Pascagoula			
Total	104.5	1822		84
TOTAL	346.9	6366		264

Table 2. Number of sightings of cetacean species during each leg of NOAA Ship *Oregon II* Cruise 225 conducted in the U.S. Gulf of Mexico, April-June 1997.

Species	Leg 1	Leg 2	Leg 3	Total
Bryde's whale (*Balaenoptera edeni*)	0	1	0	1
Sperm whale (*Physeter macrocephalus*)	3	11	1	15
Dwarf/pygmy sperm whale (*Kogia* sp.)	5	14	1	20
Cuvier's beaked whale (*Ziphius cavirostris*)	0	1	0	1
Blainville's beaked whale (*Mesoplodon densirostris*)	0	1	0	1
Unid. mesoplodon (*Mesoplodon* sp.)	1	1	0	2
Unidentified ziphiid (*Z. cavirostris/Mesoplodon*)	2	0	0	2
Striped dolphin (*Stenella coeruleoalba*)	0	3	0	3
Spinner dolphin (*Stenella longirostris*)	2	4	2	8
Clymene dolphin (*Stenella clymene*)	0	2	0	2
Pantropical spotted dolphin (*Stenella attenuata*)	16	33	8	57
Atlantic spotted dolphin (*Stenella frontalis*)	3	1	19	23
Unidentified stenellid (*Stenella* sp.)	1	0	1	2
Fraser's dolphin (*Lagenodelphis hosei*)	0	0	1	1

continued

Table 2. continued.

Species	Leg 1	Leg 2	Leg 3	Total
Bottlenose dolphin (nearshore) (*Tursiops truncatus*)	2	4	12	18
Bottlenose dolphin (offshore) (*Tursiops truncatus*)	1	12	4	17
Bottlenose dolphin (unidentified) (*Tursiops truncatus*)	0	2	6	8
Bottlenose/At. spotted dolphin (*T. truncatus/S. frontalis*)	1	0	12	13
Rough-toothed dolphin (*Steno bredanensis*)	1	1	1	3
Risso's dolphin (*Grampus griseus*)	8	8	3	19
Killer whale (*Orcinus orca*)	0	1	0	1
False killer whale (*Pseudorca crassidens*)	1	0	2	3
Pilot whale (*Globicephala* sp.)	1	3	0	4
Pygmy killer whale (*Feresa attenuata*)	1	0	0	1
Melon-headed/pygmy killer whale (*P. electra/F. attenuata*)	1	0	0	1
Unidentified dolphin	8	16	7	31
Unidentified small whale	1	0	2	3
Unidentified large whale	0	0	1	1
Unidentified odontocete	2	3	2	7
TOTAL	61	122	85	268

Table 3. Number of sightings (n) and mean group-size, water depth and sea surface temperature of species of cetaceans in the U.S. Gulf of Mexico sighted during NOAA Ship *Oregon II* Cruise 225, April-June 1997.

		Group Size (animals)		Water Depth (meters)		Sea Surface Temperature (EC)	
Species	n	Mean(SE)	Range	Mean(SE)	Range	Mean(SE)	Range
Balaenoptera edeni	1	2.0		227		23.2	
Physeter macrocephalus	15	2.4(0.50)	1- 6	1007(139)	230-2744	24.4(0.38)	21.1-26.8
Kogia sp.	20	1.9(0.29)	1- 6	2013(229)	338-3420	25.5(0.30)	22.8-27.4
Ziphius cavirostris	1	4.0		3000		24.8	
Mesoplodon densirostris	1	1.0		1364		27.5	
Mesoplodon sp.	2	1.0(0.00)	1- 1	2286(969)	1317-3256	27.2(0.30)	26.9-27.5
Z. cavirostris/Mesoplodon	2	1.0(0.00)	1- 1	1672(1141)	530-2813	22.6(0.10)	22.5-22.7
Stenella coeruleoalba	3	81.0(11.59)	58- 95	1683(670)	918-3018	24.1(0.92)	22.5-25.7
Stenella longirostris	8	128.8(52.57)	15-485	648(240)	274-2268	23.4(0.48)	22.2-25.9
Stenella clymene	2	45.0(25.00)	20- 70	1294(462)	832-1756	26.1(0.10)	26.0-26.2
Stenella attenuata	57	55.2(8.16)	6-300	2067(125)	329-3292	24.9(0.21)	21.0-27.4
Stenella frontalis	23	16.7(2.37)	1- 42	91(11)	24- 221	24.8(0.26)	21.3-26.1
Stenella cly/longir/coerul	2	3.5(0.50)	3- 4	436(111)	326- 547	23.7(1.60)	22.1-25.3
Lagenodelphis hosei	1	117.0		251		25.3	
Tursiops truncatus (nearsh)	18	9.0(1.82)	1- 27	102(27)	24- 439	24.5(0.39)	20.7-26.0
Tursiops truncatus (offsh)	17	16.1(5.27)	1- 85	172(19)	18- 293	24.4(0.39)	21.4-27.0
Tusiops truncatus (unid.)	8	6.4(2.07)	1- 20	221(94)	22- 221	25.9(0.22)	25.1-27.1
T. truncatus/S. frontalis	13	6.5(2.14)	1- 25	74(17)	24- 214	25.2(0.20)	23.0-25.8
Steno bredanensis	3	12.7(8.74)	2- 30	1707(703)	915-3109	25.6(1.66)	22.3-27.5
Grampus griseus	19	8.7(1.73)	2- 25	1289(247)	241-3438	25.7(0.37)	22.6-27.7
Orcinus orca	1	1.0		2744		25.7	
Pseudorca crassidens	3	40.7(12.73)	22- 65	1677(762)	914-3201	27.3(0.37)	26.8-28.0
Globicephala sp.	4	34.3(18.63)	3- 85	1378(237)	907-1902	27.4(1.05)	26.3-28.4
Feresa attenuata	1	13.0		3420		26.8	
P. electra/F. attenuata	1	6.0		2743		22.2	
Unidentified dolphin	31	5.4(1.19)	1- 30	1719(232)	106-3438	25.5(0.25)	22.0-27.7
Unidentified small whale	3	1.7(0.67)	1- 3	1297(382)	580-1884	25.6(1.07)	23.5-26.8
Unidentified large whale	1	1.0		210		25.5	
Unidentified odontocete	7	1.3(0.18)	1- 2	1478(447)	355-3292	24.9(0.50)	23.1-26.9

Table 4. Summary of cetacean sightings during NOAA Ship *Oregon II* Cruise 225 in the U.S. Gulf of Mexico, April-June 1997 (S = effort status of sighting).

Leg Date	Species	Group size	Position	SST °C	Depth (m)	S
LEG 1						
1997 Apr 17	Tursiops sp. nearshore	2	29°31' 86°32'	20.7	203	on
1997 Apr 17	Physeter macrocephalus	1	29°21' 86°21'	21.1	231	on
1997 Apr 17	Unidentified dolphin	1	29°07' 86°06'	22.0	243	on
1997 Apr 19	Stenella frontalis	20	25°06' 84°00'	22.4	124	off
1997 Apr 19	Physeter macrocephalus	1	24°41' 83°59'	24.9	970	on
1997 Apr 19	Grampus griseus	4	24°34' 84°00'	24.8	1464	on
1997 Apr 19	Kogia sp.	1	24°29' 84°00'	24.2	2288	on
1997 Apr 19	Grampus griseus	12	24°29' 84°08'	26.9	2379	on
1997 Apr 19	Grampus griseus	4	24°29' 84°09'	27.0	2379	on
1997 Apr 19	Kogia sp.	2	24°30' 84°10'	27.2	2745	on
1997 Apr 19	Kogia sp.	1	24°30' 84°12'	27.1	2562	on
1997 Apr 19	Kogia sp.	1	24°29' 84°14'	27.4	2236	on
1997 Apr 19	Grampus griseus	11	24°30' 84°16'	27.0	3440	on
	Unidentified dolphin	6				
1997 Apr 19	Unidentified dolphin	3	24°30' 84°23'	27.2	3440	on
1997 Apr 19	Kogia sp.	2	24°29' 84°31'	26.9	3422	on
1997 Apr 19	Feresa attenuata	13	24°29' 84°33'	26.8	3422	on
1997 Apr 20	Stenella attenuata	8	24°59' 85°44'	26.6	3294	on
1997 Apr 20	Unidentified odontocete	1	25°00' 85°58'	26.9	3294	on
1997 Apr 20	Unidentified dolphin	6	25°00' 86°00'	26.9	3294	on
1997 Apr 20	Unidentified dolphin	4	25°08' 85°59'	26.9	3276	on
1997 Apr 20	Stenella attenuata	33	25°21' 85°59'	27.4	3239	on
1997 Apr 20	Mesoplodon sp.	1	25°25' 86°00'	27.5	3257	on
1997 Apr 20	Pseudorca crassidens	65	25°29' 86°00'	28.0	3203	on
1997 Apr 20	Grampus griseus	10	25°30' 86°08'	27.7	3203	on
1997 Apr 20	Grampus griseus	3	25°30' 86°17'	27.7	3221	on
	Unidentified dolphin	1				
1997 Apr 21	Stenella attenuata	25	27°38' 85°59'	24.2	3203	on
1997 Apr 21	Stenella longirostris	100	28°13' 85°59'	23.1	423	on
1997 Apr 21	Unidentified dolphin	1	28°19' 85°52'	23.0	401	on
1997 Apr 21	Stenella longirostris	110	28°23' 85°55'	23.0	351	on
1997 Apr 21	Stenella sp.	4	28°29' 85°59'	22.1	326	on
1997 Apr 22	Stenella attenuata	35	28°21' 86°59'	22.2	1067	on
1997 Apr 22	Steno bredanensis	6	28°18' 86°59'	22.3	1098	on
1997 Apr 22	Peppnocephala/Feresa	6	28°15' 87°00'	22.2	2745	on
	Stenella attenuata	17				
1997 Apr 22	Unidentified ziphiidae	1	28°02' 87°00'	22.5	2815	on
1997 Apr 22	Stenella attenuata	20	27°57' 87°00'	22.9	2855	on
1997 Apr 24	Stenella attenuata	32	28°56' 88°00'	21.1	1510	on
1997 Apr 24	Tursiops sp. nearshore	7	29°15' 88°14'	21.0	92	on
1997 Apr 24	Stenella frontalis	17	29°11' 88°19'	21.3	221	on
1997 Apr 24	Tursiops sp. offshore	85	29°09' 88°19'	21.4	240	on
1997 Apr 29	Unidentified dolphin	1	26°00' 93°03'	22.9	2196	on
1997 Apr 29	Stenella attenuata	50	26°00' 93°16'	22.9	2379	on
1997 Apr 29	Unidentified small whale	1	26°22' 94°00'	23.5	1885	on
1997 Apr 30	Stenella frontalis	19	28°00' 94°52'	22.0	82	on
1997 Apr 30	Stenella attenuata	17	27°26' 95°00'	22.4	999	off
1997 Apr 30	Stenella attenuata	200	27°02' 94°59'	22.5	1382	on
1997 May 01	Unidentified ziphiidae	1	27°08' 95°59'	22.7	531	on
1997 May 03	Grampus griseus	22	27°41' 91°57'	23.5	641	on
1997 May 03	Stenella attenuata	55	27°32' 91°59'	23.6	778	on

continued

Table 4. continued.

Leg Date	Species	Group size	Position	SST °C	Depth (m)	S
1997 May 03	Stenella attenuata	250	27°28' 91°54'	23.7	970	on
1997 May 03	Stenella attenuata	13	27°26' 91°49'	23.7	1007	on
1997 May 03	Globicephala sp.	39	27°26' 91°45'	24.0	1058	on
1997 May 03	Grampus griseus	7	27°24' 91°30'	24.0	1089	on
1997 May 03	Stenella attenuata	300	27°23' 91°20'	24.3	1292	on
1997 May 04	Stenella attenuata	14	27°03' 89°00'	23.9	2196	on
1997 May 04	Physeter macrocephalus	6	28°24' 88°59'	22.9	961	on
1997 May 05	T. truncatus/S. frontalis	1	28°33' 89°27'	23.0	214	on
1997 May 05	Unidentified odontocete	1	28°49' 88°32'	23.1	871	on
1997 May 05	Stenella attenuata	37	29°01' 88°29'	22.5	329	on
LEG 2						
1997 May 09	Tursiops sp. nearshore	24	29°17' 86°29'	22.0	275	on
1997 May 09	Stenella longirostris	40	29°06' 86°30'	22.5	357	on
1997 May 09	Stenella longirostris	80	29°00' 86°30'	22.5	357	on
1997 May 09	Kogia sp.	1	29°02' 86°25'	22.8	339	on
1997 May 09	Grampus griseus	7	29°02' 86°25'	22.8	339	off
1997 May 09	Tursiops sp. offshore	17	29°05' 86°15'	23.5	293	on
1997 May 09	Tursiops sp. offshore	13	29°07' 86°13'	24.0	260	on
1997 May 09	Balaenoptera edeni	2	29°08' 86°08'	23.2	229	on
1997 May 09	Unidentified dolphin	2	29°08' 86°08'	23.2	229	off
1997 May 09	Tursiops sp. offshore	1	29°08' 85°56'	23.5	187	on
1997 May 09	Tursiops sp. offshore	3	29°06' 85°55'	23.3	187	on
1997 May 09	Tursiops sp. offshore	3	28°56' 85°44'	23.1	178	on
1997 May 09	Tursiops sp. offshore	9	28°51' 85°40'	23.1	181	on
1997 May 09	Tursiops sp. offshore	5	28°48' 85°40'	23.2	181	off
1997 May 10	Stenella attenuata	12	27°28' 86°00'	25.1	3203	on
1997 May 10	Stenella attenuata	35	27°24' 85°59'	25.8	3203	on
1997 May 10	Unidentified dolphin	3	27°21' 85°57'	26.1	3203	on
1997 May 10	Unidentified dolphin	4	27°18' 85°59'	26.3	3203	on
1997 May 10	Stenella attenuata	32	27°16' 85°57'	26.3	3203	on
1997 May 10	Stenella attenuata	80	27°08' 85°59'	26.6	3203	on
1997 May 10	Kogia sp.	1	27°05' 86°00'	26.3	3203	on
1997 May 10	Stenella attenuata	15	27°01' 86°00'	26.0	3203	on
1997 May 11	Steno bredanensis	30	26°12' 86°59'	27.5	3111	on
1997 May 11	Stenella attenuata	30	26°23' 86°59'	27.4	3056	on
1997 May 12	Grampus griseus	2	28°58' 86°59'	22.6	644	on
1997 May 12	Physeter macrocephalus	3	29°02' 87°04'	22.7	781	on
1997 May 12	Stenella attenuata	200	29°06' 87°13'	22.9	1010	on
1997 May 12	Stenella attenuata	120	29°12' 87°23'	22.9	1098	on
1997 May 12	Stenella coeruleoalba	90	29°13' 87°28'	22.5	919	on
1997 May 12	Tursiops sp. nearshore	27	29°15' 87°31'	22.4	439	on
1997 May 12	Stenella longirostris	15	29°18' 87°34'	22.2	275	on
1997 May 12	Tursiops sp. offshore	40	29°19' 87°40'	22.5	201	on
1997 May 13	Stenella attenuata	28	28°50' 88°00'	22.9	1830	on
1997 May 13	Stenella longirostris	70	28°38' 88°00'	22.9	2269	on
1997 May 13	Stenella attenuata	17	27°50' 87°59'	24.0	2525	on
1997 May 13	Stenella attenuata	25	27°34' 88°00'	23.8	3056	on
1997 May 13	Stenella attenuata	12	27°30' 88°00'	24.2	2562	off
1997 May 13	Unidentified dolphin	1	27°32' 88°00'	24.2	2562	on
1997 May 13	Stenella attenuata	7	27°28' 88°00'	24.2	2562	on
1997 May 13	Stenella attenuata	19	27°26' 88°00'	24.5	2654	on
1997 May 13	Stenella attenuata	35	27°21' 87°58'	25.5	2654	on

continued

Table 4. continued.

Leg Date	Species	Group size	Position	SST °C	Depth (m)	S
1997 May 14	Stenella attenuata	35	26°00' 88°02'	25.9	2965	on
1997 May 14	Unidentified dolphin	14	26°02' 88°07'	26.0	3001	on
1997 May 14	Stenella attenuata	19	26°02' 88°14'	26.2	3001	on
1997 May 14	Kogia sp.	2	26°01' 88°16'	26.2	3001	on
1997 May 14	Kogia sp.	1	26°01' 88°18'	26.2	3001	off
1997 May 14	Stenella attenuata	19	26°01' 88°17'	26.2	3001	on
1997 May 14	Stenella attenuata	19	25°59' 88°20'	25.5	3001	on
1997 May 14	Ziphius cavirostris	4	26°01' 88°26'	24.8	3001	on
1997 May 14	Kogia sp.	6	25°59' 88°34'	24.7	3020	on
1997 May 14	Unidentified odontocete	1	26°00' 88°40'	24.9	3001	on
1997 May 14	Unidentified dolphin	15	26°00' 88°40'	24.9	3020	off
1997 May 14	Unidentified dolphin	30	26°00' 88°44'	25.1	3056	on
1997 May 14	Stenella attenuata	70	26°00' 88°49'	25.1	3203	on
1997 May 14	Stenella attenuata	60	25°59' 88°58'	25.9	3129	off
1997 May 14	Kogia sp.	2	25°59' 88°58'	25.9	3129	off
1997 May 14	Stenella attenuata	35	26°01' 88°59'	25.5	2928	on
1997 May 14	Stenella coeruleoalba	95	26°09' 89°01'	25.7	3020	on
1997 May 14	Unidentified dolphin	20	26°09' 89°01'	25.7	3020	off
1997 May 14	Physeter macrocephalus	6	26°24' 88°59'	26.4	2745	off
1997 May 14	Orcinus orca	1	26°22' 89°00'	25.7	2745	on
1997 May 15	Physeter macrocephalus	5	27°55' 88°59'	23.5	1327	on
1997 May 15	Stenella attenuata	65	27°58' 89°00'	23.2	1318	on
1997 May 15	Kogia sp.	2	28°02' 88°57'	23.8	1373	on
1997 May 15	Kogia sp.	2	28°05' 88°55'	23.7	1464	on
1997 May 15	Unidentified odontocete	1	28°07' 88°56'	23.8	1363	on
1997 May 15	Physeter macrocephalus	1	28°14' 88°59'	23.9	1171	on
1997 May 15	Physeter macrocephalus	2	28°19' 88°59'	24.5	1061	on
1997 May 15	Stenella attenuata	55	28°19' 88°59'	24.3	1098	on
1997 May 15	Physeter macrocephalus	1	28°23' 88°57'	24.5	1016	on
1997 May 15	Kogia sp.	3	28°27' 88°58'	24.4	878	on
1997 May 15	Physeter macrocephalus	1	28°29' 88°59'	24.3	822	on
1997 May 15	Kogia sp.	4	28°29' 89°00'	24.6	747	on
1997 May 15	Physeter macrocephalus	1	28°26' 89°03'	24.8	739	on
1997 May 15	Physeter macrocephalus	4	28°26' 89°03'	24.8	739	on
1997 May 15	Globicephala sp.	85	28°25' 89°04'	25.2	908	on
1997 May 15	Physeter macrocephalus	1	28°18' 89°09'	25.0	880	on
1997 May 15	Unidentified odontocete	2	28°18' 89°10'	25.3	880	on
1997 May 15	Stenella attenuata	42	28°15' 89°14'	25.9	750	on
1997 May 15	Kogia sp.	3	28°14' 89°20'	24.9	988	on
1997 May 15	Kogia sp.	1	28°09' 89°22'	24.6	1039	on
1997 May 15	Stenella coeruleoalba	58	28°08' 89°22'	24.2	1113	on
1997 May 15	Grampus griseus	25	28°04' 89°23'	24.9	1147	on
1997 May 15	Unidentified dolphin	10	28°04' 89°23'	24.9	1147	off
1997 May 15	Stenella attenuata	53	28°00' 89°28'	24.2	915	on
1997 May 16	Unidentified dolphin	1	26°55' 89°59'	24.8	2562	on
1997 May 16	Stenella attenuata	30	26°26' 89°59'	24.9	2763	on
1997 May 17	Stenella attenuata	100	27°22' 90°59'	24.8	1391	on
1997 May 19	Tursiops sp. offshore	5	28°56' 95°01'	26.1	18	on
1997 May 19	Tursiops sp. unidentified	20	28°40' 95°17'	25.8	22	on
1997 May 19	Tursiops sp. nearshore	9	28°14' 95°44'	25.8	31	on
1997 May 19	Tursiops sp. unidentified	6	28°12' 95°46'	25.8	33	on
1997 May 20	Kogia sp.	1	26°17' 96°00'	25.8	952	on
1997 May 20	Kogia sp.	1	26°12' 96°00'	25.6	1007	on
1997 May 20	Unidentified dolphin	12	26°01' 95°16'	26.2	1793	on

continued

Table 4. continued.

Leg Date	Species	Group size	Position	SST °C	Depth (m)	S
1997 May 20	Stenella clymene	70	26°01' 95°11'	26.2	1757	on
1997 May 20	Stenella attenuata	87	26°01' 95°03'	26.2	2397	on
1997 May 21	Stenella frontalis	14	27°54' 95°00'	25.2	110	on
1997 May 21	Tursiops sp. offshore	2	27°58' 94°38'	25.9	73	on
1997 May 21	Tursiops sp. offshore	4	27°59' 94°32'	25.9	73	on
1997 May 21	Tursiops sp. offshore	4	27°59' 94°31'	26.1	68	on
1997 May 21	Tursiops sp. nearshore	5	28°00' 94°23'	26.0	81	off
1997 May 23	Globicephala sp.	3	26°30' 92°12'	26.5	1903	on
1997 May 23	Globicephala sp.	10	26°30' 92°42'	27.0	1647	on
1997 May 23	Stenella attenuata	150	26°39' 92°59'	26.8	1506	on
1997 May 23	Mesoplodon sp.	1	26°52' 92°59'	26.9	1318	on
1997 May 23	Mesoplodon densirostris	1	27°04' 92°59'	27.5	1365	on
1997 May 23	Stenella attenuata	6	27°06' 93°00'	27.4	1299	on
1997 May 24	Unidentified dolphin	4	27°30' 91°59'	26.9	732	on
1997 May 24	Unidentified dolphin	3	27°34' 90°49'	27.0	1138	on
1997 May 25	Stenella attenuata	25	28°06' 89°51'	25.7	595	on
1997 May 25	Physeter macrocephalus	1	28°16' 89°38'	26.0	851	on
1997 May 25	Stenella clymene	20	28°17' 89°36'	26.0	833	on
1997 May 25	Grampus griseus	4	28°25' 89°25'	26.2	571	on
1997 May 25	Grampus griseus	2	28°30' 89°19'	26.2	393	on
1997 May 25	Unidentified dolphin	2	28°34' 89°14'	25.9	309	on
1997 May 25	Grampus griseus	25	28°45' 88°57'	26.5	573	on
1997 May 25	Grampus griseus	3	28°46' 88°54'	26.5	620	on
1997 May 25	Unidentified dolphin	2	28°47' 88°53'	27.3	673	on
1997 May 25	Stenella attenuata	160	28°45' 88°34'	25.8	941	on
1997 May 25	Grampus griseus	11	28°45' 88°31'	26.1	1190	on
1997 May 25	Unidentified dolphin	3	28°45' 88°29'	25.9	1248	on
LEG 3						
1997 May 30	Tursiops sp. offshore	30	28°01' 85°00'	25.1	223	on
1997 May 30	Unidentified dolphin	3	28°05' 84°59'	24.8	188	on
1997 May 30	Stenella frontalis	38	28°17' 84°55'	25.2	93	on
1997 May 30	T. truncatus/S. frontalis	4	28°20' 84°54'	25.3	79	on
1997 May 30	Stenella frontalis	5	28°24' 84°48'	25.0	59	on
1997 May 30	Tursiops sp. nearshore	2	28°24' 84°44'	25.0	57	on
1997 May 30	Stenella frontalis	11	28°27' 84°37'	25.4	53	on
1997 May 30	Stenella frontalis	3	28°28' 84°34'	25.6	49	on
1997 May 30	T. truncatus/S. frontalis	2	28°31' 84°30'	25.5	46	on
1997 May 30	Tursiops sp. nearshore	1	28°34' 84°28'	25.5	42	on
1997 May 31	Stenella frontalis	14	28°31' 84°57'	24.6	82	off
1997 May 31	Stenella frontalis	10	28°30' 84°58'	24.4	93	on
1997 May 31	Unidentified dolphin	5	28°28' 85°00'	24.8	106	on
1997 May 31	Stenella frontalis	1	28°28' 85°00'	24.3	106	on
1997 May 31	T. truncatus/S. frontalis	3	28°27' 85°02'	24.9	119	on
1997 May 31	T. truncatus/S. frontalis	25	28°26' 85°02'	24.9	119	on
1997 May 31	Stenella frontalis	7	28°25' 85°03'	25.1	126	on
1997 May 31	Unidentified dolphin	1	28°14' 85°07'	25.0	181	on
1997 May 31	Unidentified dolphin	1	28°06' 85°11'	25.2	271	on
1997 May 31	Stenella longirostris	130	28°08' 85°10'	25.2	313	on
1997 May 31	Unidentified dolphin	4	27°53' 85°19'	25.7	549	on
1997 May 31	Stenella attenuata	115	27°30' 85°32'	26.5	2745	on
1997 May 31	Stenella attenuata	8	27°25' 85°36'	26.6	2745	on

continued

Table 4. continued.

Leg	Date	Species	Group size	Position	SST °C	Depth (m)	S
1997	Jun 01	Stenella attenuata	10	27°41' 85°37'	26.6	1427	on
1997	Jun 01	Unidentified small whale	1	27°42' 85°34'	26.6	1427	off
1997	Jun 01	Stenella attenuata	37	27°50' 85°35'	26.4	813	on
1997	Jun 01	Unidentified dolphin	2	28°19' 85°34'	25.1	276	on
1997	Jun 01	Tursiops sp. unidentified	3	28°26' 85°34'	25.1	223	on
1997	Jun 01	Tursiops sp. nearshore	3	28°26' 85°34'	25.1	216	on
1997	Jun 01	Tursiops sp. offshore	4	28°32' 85°33'	25.4	192	on
1997	Jun 01	Stenella frontalis	30	29°05' 85°38'	25.1	132	on
1997	Jun 02	Unidentified odontocete	1	28°25' 85°56'	24.2	355	on
1997	Jun 02	Grampus griseus	3	28°21' 85°56'	24.5	415	on
1997	Jun 02	Physeter macrocephalus	2	28°07' 86°01'	26.8	820	on
1997	Jun 02	Pseudorca crassidens	35	28°03' 86°04'	27.0	915	on
		Steno bredanensis	2				
1997	Jun 02	Pseudorca crassidens	22	28°00' 86°09'	26.8	915	on
1997	Jun 03	Stenella sp.	3	28°17' 86°09'	25.3	547	on
1997	Jun 03	Lagenodelphis hosei	117	29°08' 86°13'	25.3	251	on
1997	Jun 03	Unidentified large whale	1	29°16' 86°14'	25.5	210	on
1997	Jun 03	Stenella frontalis	30	29°39' 86°17'	25.3	66	on
1997	Jun 04	Tursiops sp. nearshore	15	29°59' 86°17'	24.8	40	on
1997	Jun 04	Tursiops sp. nearshore	16	30°04' 86°17'	25.0	31	on
1997	Jun 04	Tursiops sp. nearshore	3	30°08' 86°17'	24.9	29	on
1997	Jun 04	T. truncatus/S. frontalis	1	30°12' 86°22'	25.2	26	on
1997	Jun 04	Tursiops sp. nearshore	15	30°13' 86°23'	25.3	24	on
1997	Jun 04	T. truncatus/S. frontalis	20	30°13' 86°23'	25.3	24	on
1997	Jun 04	Stenella frontalis	8	30°13' 86°30'	25.3	24	on
1997	Jun 04	T. truncatus/S. frontalis	3	30°12' 86°30'	25.3	24	on
1997	Jun 04	Tursiops sp. nearshore	9	30°12' 86°30'	25.3	24	on
1997	Jun 04	Tursiops sp. nearshore	5	30°13' 86°30'	25.3	24	on
1997	Jun 04	T. truncatus/S. frontalis	6	30°10' 86°31'	25.3	24	on
1997	Jun 04	Tursiops sp. nearshore	2	30°08' 86°31'	25.3	24	on
1997	Jun 04	Tursiops sp. nearshore	5	30°09' 86°31'	25.3	24	on
1997	Jun 04	T. truncatus/S. frontalis	3	30°06' 86°31'	25.3	24	on
1997	Jun 04	Stenella frontalis	23	29°38' 86°32'	26.1	143	on
1997	Jun 04	Stenella frontalis	25	29°31' 86°33'	26.1	216	on
1997	Jun 04	Grampus griseus	7	29°29' 86°32'	26.1	242	on
1997	Jun 04	Tursiops sp. unidentified	6	29°20' 86°34'	25.7	179	on
1997	Jun 05	Tursiops sp. unidentified	1	28°17' 86°40'	27.1	831	on
1997	Jun 05	Kogia sp.	1	28°08' 86°43'	27.0	2882	on
1997	Jun 06	Stenella longirostris	485	29°20' 86°56'	25.9	845	on
1997	Jun 06	Tursiops sp. nearshore	12	29°46' 86°58'	25.5	185	on
1997	Jun 06	Tursiops sp. unidentified	5	29°51' 87°00'	25.8	156	on
1997	Jun 06	T. truncatus/S. frontalis	12	29°51' 87°00'	25.8	156	off
1997	Jun 06	T. truncatus/S. frontalis	2	30°00' 87°00'	25.7	59	on
1997	Jun 06	T. truncatus/S. frontalis	3	30°02' 87°00'	25.7	53	on
1997	Jun 06	Stenella frontalis	8	30°02' 87°00'	25.7	53	on
1997	Jun 06	Stenella frontalis	17	30°05' 87°00'	25.8	27	on
1997	Jun 07	Tursiops sp. unidentified	7	30°07' 87°15'	25.2	24	on
1997	Jun 07	Stenella frontalis	11	30°05' 87°15'	25.1	31	on
1997	Jun 07	Stenella frontalis	29	29°58' 87°16'	24.8	86	on
1997	Jun 07	Stenella frontalis	42	29°56' 87°16'	24.8	27	on
1997	Jun 07	Stenella frontalis	3	29°46' 87°19'	25.2	88	on
1997	Jun 07	Tursiops sp. unidentified	3	29°31' 87°18'	26.3	302	on
1997	Jun 07	Unidentified dolphin	1	28°35' 87°23'	26.6	1347	on

continued

Table 4. continued.

Leg	Date	Species	Group size	Position	SST °C	Depth (m)	S
1997	Jun 08	Stenella attenuata	35	28°46' 87°38'	25.8	2196	on
1997	Jun 08	Stenella attenuata	55	29°08' 87°39'	26.0	1136	on
1997	Jun 08	Unidentified odontocete	2	29°15' 87°39'	26.0	589	on
1997	Jun 08	Tursiops sp. offshore	10	29°19' 87°39'	26.1	104	on
1997	Jun 09	Stenella attenuata	43	28°57' 88°02'	26.2	1519	on
1997	Jun 09	Stenella attenuata	40	28°53' 88°29'	26.8	816	on
1997	Jun 09	Grampus griseus	3	28°45' 88°56'	27.4	564	on
1997	Jun 09	Unidentified small whale	3	28°43' 89°00'	26.8	580	on
1997	Jun 09	Tursiops sp. offshore	38	28°42' 89°04'	27.0	269	on

Table 5. Biopsy samples collected on NOAA Ship Oregon II Cruise 225, April-June, 1997.

CRUISE 225 BIOPSY SAMPLES

DATE	TIME	SIGHTING #	FIELD #	SPECIES	LATITUDE	LONGITUDE
4/20/97	1240	5	7042001	Stenella attenuata	252261	860029
4/21/97	1635	2	7042101	Stenella longirostris	281722	855191
4/21/97	1742	4	7042102	Stenella longirostris	282406	855562
4/21/97	1742	4	7042103	Stenella longriostris	282406	855562
4/21/97	1742	4	7042104	Stenella longriostris	282406	855562
4/22/97	845	2	7042201	Steno bredanensis	281913	865984
4/24/97	1640	3	7042401	Stenella frontalis	291089	881831
4/24/97	1640	3	7042402	Stenella frontalis	291089	881831
4/24/97	1714	4	7042403	Tursiops	291023	882008
4/24/97	1714	4	7042404	Tursiops	291023	882008
4/24/97	1714	4	7042405	Tursiops	291023	882008
5/ 9/97	1128	7	7050901	Tursiops	290717	861335
5/12/97	1808	6	7051201	Tursiops	291579	873156
5/12/97	1808	6	7051202	Tursiops	291579	873656
5/20/97	915	0	7052001	Tursiops	301550	883800
5/21/97	1248	2	7052101	Tursiops	275819	943878
5/31/97	614	1	7053101	Stenella frontalis	283189	844575
5/31/97	614	1	7053102	Stenella frontalis	283189	844575
5/31/97	851	10	7053103	Stenella longirostris	280466	851373
5/31/97	851	10	7053104	Stenella longirostris	280466	851373
5/31/97	851	10	7053105	Stenella longirostris	280466	851373
6/ 3/97	1217	2	7060301	Lagenodelphis hosei	290850	861353
6/ 3/97	1217	2	7060302	Lagenodelphis hosei	290850	861353
6/ 3/97	1217	2	7060303	Lagenodelphis hosei	290850	861353
6/ 3/97	1754	4	7060304	Stenella frontalis	293938	861707
6/ 4/97	1612	15	7060401	Stenella frontalis	293933	863206
6/ 4/97	1612	15	7060402	Stenella frontalis	293933	863206
6/ 4/97	1732	16	7060403	Stenella frontallis	292988	863304
6/ 6/97	1216	1	7060601	Stenella longirostris	292020	865617
6/ 6/97	1918	8	7060602	Stenella frontalis	300545	870008
6/ 7/97	703	3	7060701	Stenella frontalis	295878	871602
6/ 7/97	703	3	7060702	Stenella frontalis	295878	871602
6/ 7/97	733	4	7060703	Stenella frontalis	295618	871654
6/ 7/97	733	4	7060704	Stenella frontalis	295618	871654
6/ 7/97	733	4	7060705	Stenella frontalis	295618	871654
6/ 8/97	1345	4	7060801	Tursiops	292260	874071
6/ 8/97	1345	4	7060802	Tursiops	292260	874071

Table 6. Number of sightings (n) and mean flock-size of species of birds sighted in the U.S. Gulf of Mexico during NOAA Ship *Oregon II* Cruise 225, April - June 1997.

Species	n	Flock Size (birds) Mean(SE)	Range
Ducks	59	9.6(1.16)	1- 35
Coot (*Fulica americana*)	1	1.0	
Unidentified cormorant (*Phalacrocorax sp.*)	1	1.0	
Audubon's shearwater (*Puffinus lherminieri*)	8	1.1(0.13)	1- 2
Unidentified shearwater (*Puffinus/Calonectris*)	45	1.4(0.22)	1- 10
Madeiran storm petrel (*Oceanodroma castro*)	1	1.0	
Unidentified storm petrel (Hydrobatidae)	368	1.6(0.11)	1- 24
Brown pelican (*Pelecanus occidentalis*)	5	2.4(1.17)	1- 7
Magnificent frigatebird (*Fregata magnificens*)	12	1.1(0.08)	1- 2
Masked booby (*Sula dactylatra*)	6	1.0(0)	1- 1
Unidentified booby (*Sula sp.*)	6	1.0(0)	1- 1
Unidentified tropicbird (*Phaethon sp.*)	1	1.0	
Pomarine jaegar (*Stercorarius pomarinus*)	9	1.1(0.11)	1- 2
Unidentified jaegar (*Stercorarius sp.*)	22	1.4(0.19)	1- 4
Herring gull (*Larus argentatus*)	9	2.2(0.43)	1- 5
Laughing gull (*Larus atricilla*)	107	1.6(0.11)	1- 3

continued

Table 6. continued.

Species	n	Flock Size Mean(SE)	Range
Unidentified gull (*Larus sp.*)	35	1.3(0.11)	1- 3
Black tern (*Chlidonias niger*)	25	1.7(0.21)	1- 5
Bridled tern (*Sterna anaethetus*)	1	25.0	
Bridled/sooty tern (*Sterna anaethetus/fuscata*)	36	4.8(1.36)	1- 45
Caspian tern (*Sterna caspia*)	2	1.5(o.50)	1- 2
Least tern (*Sterna antillarum*)	1	3.0	
Royal tern (*Sterna maxima*)	8	1.3(0.16)	1- 2
Sooty tern (*Sterna fuscata*)	6	2.2(0.65)	1- 5
Unidentified tern (Sternidae)	182	3.9(0.41)	1- 40
Egret	99	5.6(0.60)	1- 30
Non-seabirds	10	1.8(0.44)	1- 5

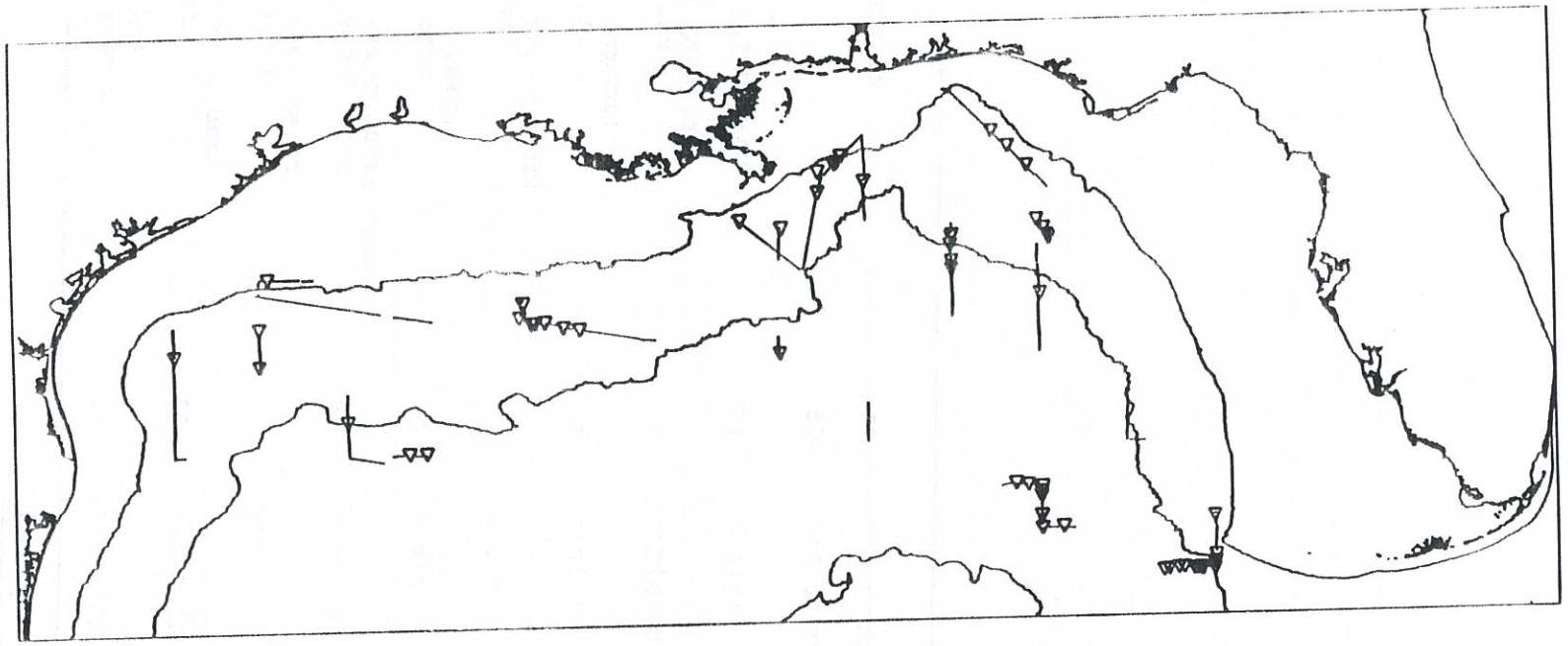

Figure 1. Location of line-transect survey effort (2039 km) and locations of cetacean sightings (n = 58) during NOAA Ship *Oregon II* Cruise 225, Leg 1 (16 April - 06 May 1997). The 100 m and 2000 m isobaths are shown.

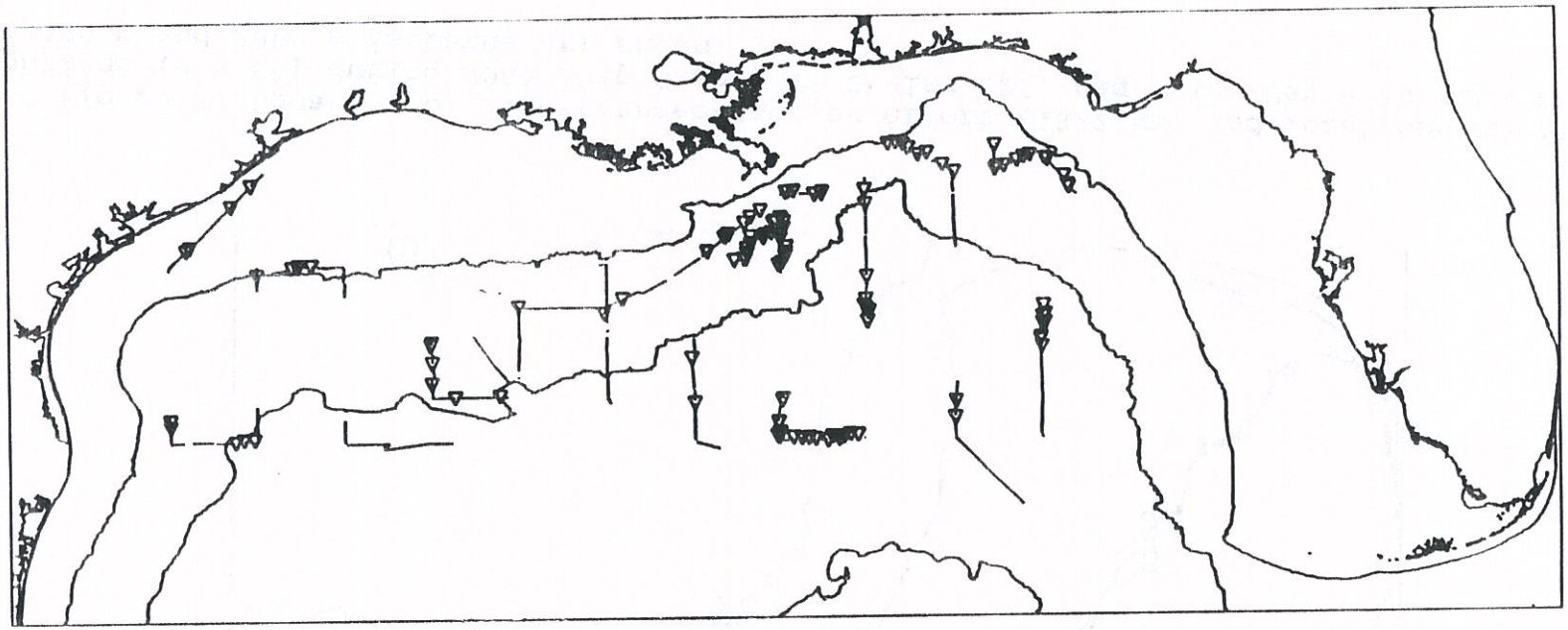

Figure 2. Location of line-transect survey effort (2505 km) and locations of cetacean sightings (n = 122) during NOAA Ship *Oregon II* Cruise 225, Leg 2 (08 May - 26 May 1997). The 100 m and 2000 m isobaths are shown.

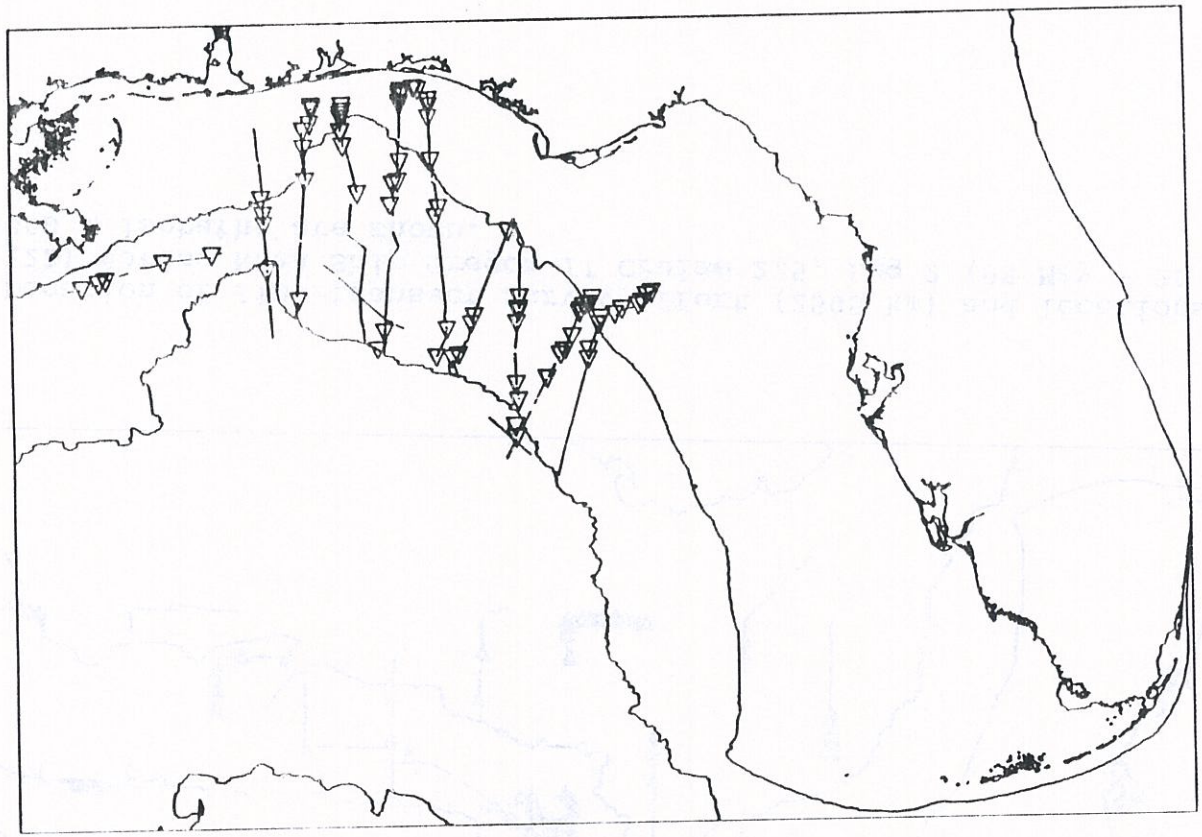

Figure 3. Location of line-transect survey effort (1822 km) and locations of cetacean sightings (n = 84) during NOAA Ship *Oregon II* Cruise 225, Leg 3 (28 May - 10 June 1997). The 100 m and 2000 m isobaths are shown.

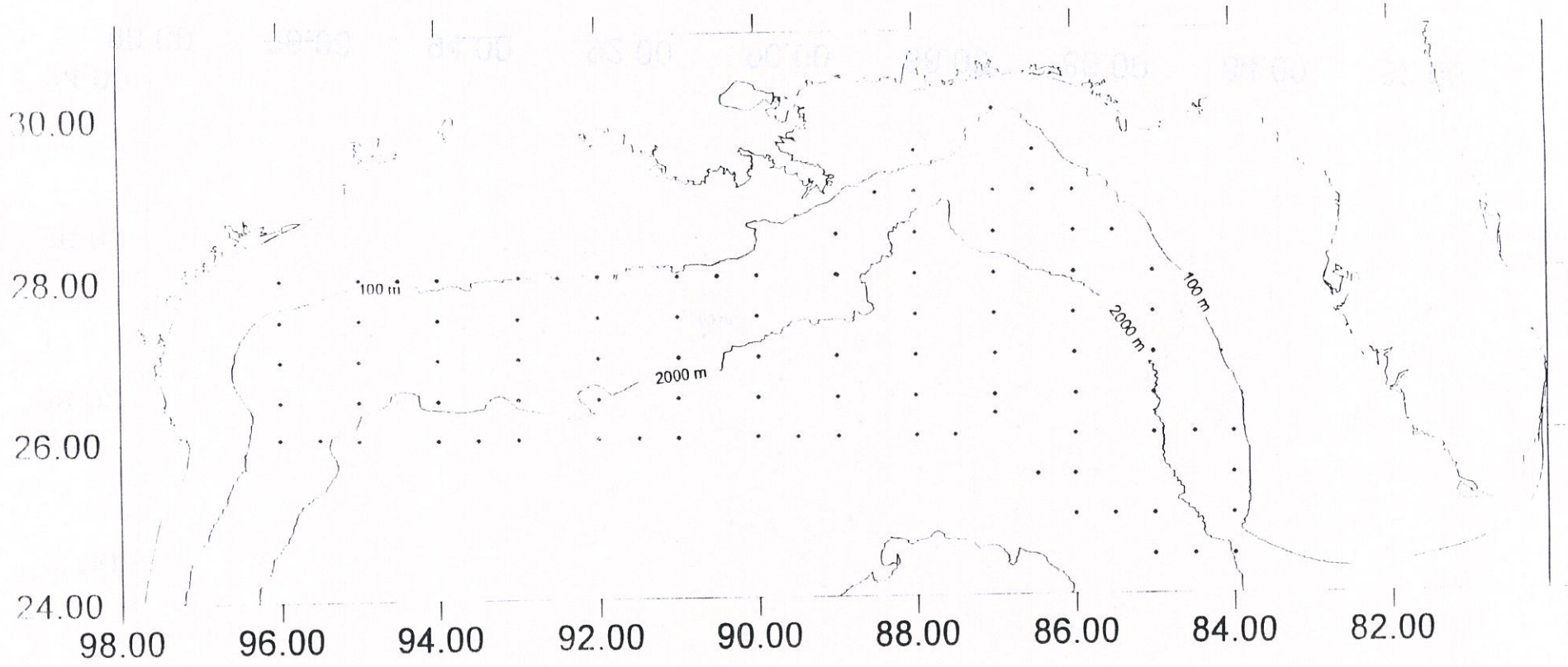

Figure 4. Location of SEAMAP ichthyoplankton/environmental stations (n=93) during Leg 1 of NOAA Ship *Oregon II* Cruise 225.

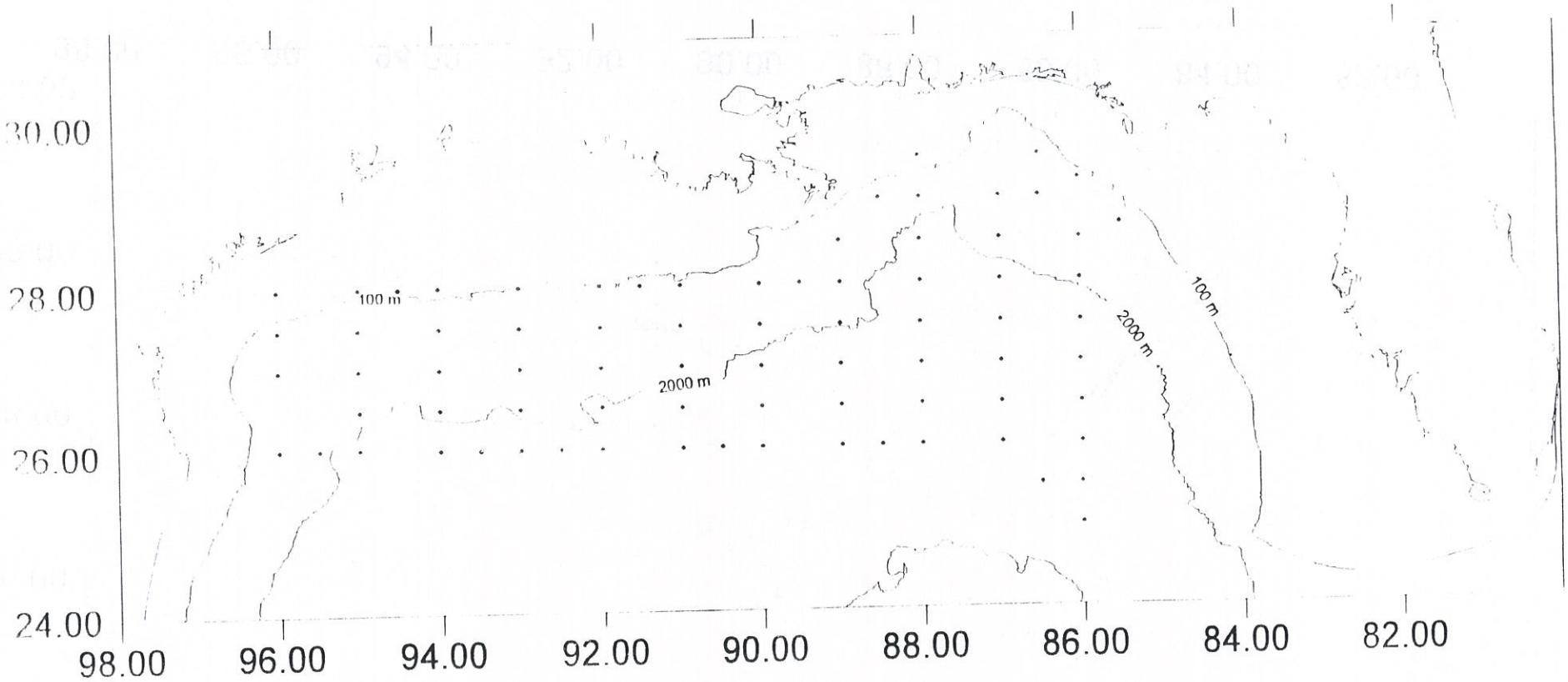

Figure 5. Location of SEAMAP ichthyoplankton/environmental stations (n=79) during Leg 2 of NOAA Ship *Oregon II* Cruise 225.

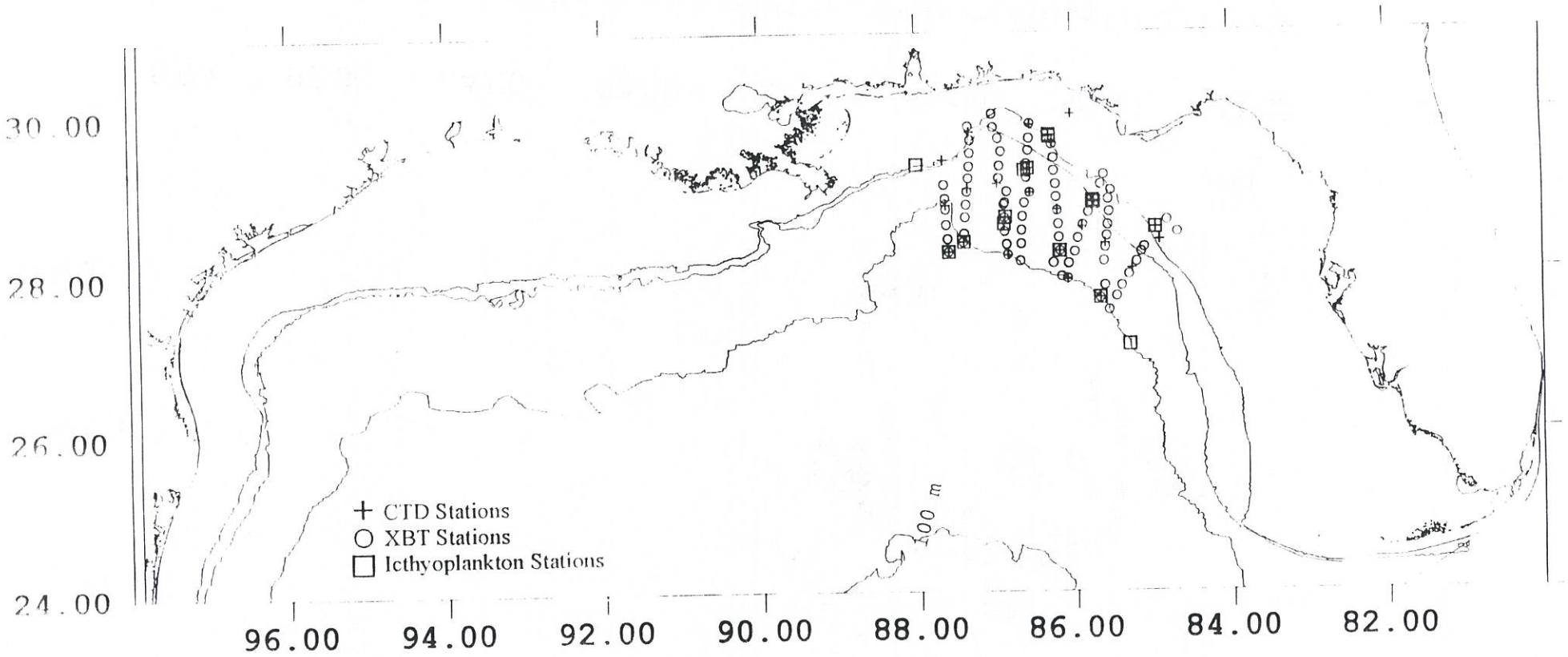

Figure 6. Location of CTD (n=32), XBT (n=79) and ichthyoplankton stations (n=17) during Leg 3 of NOAA Ship *Oregon II* Cruise 225.

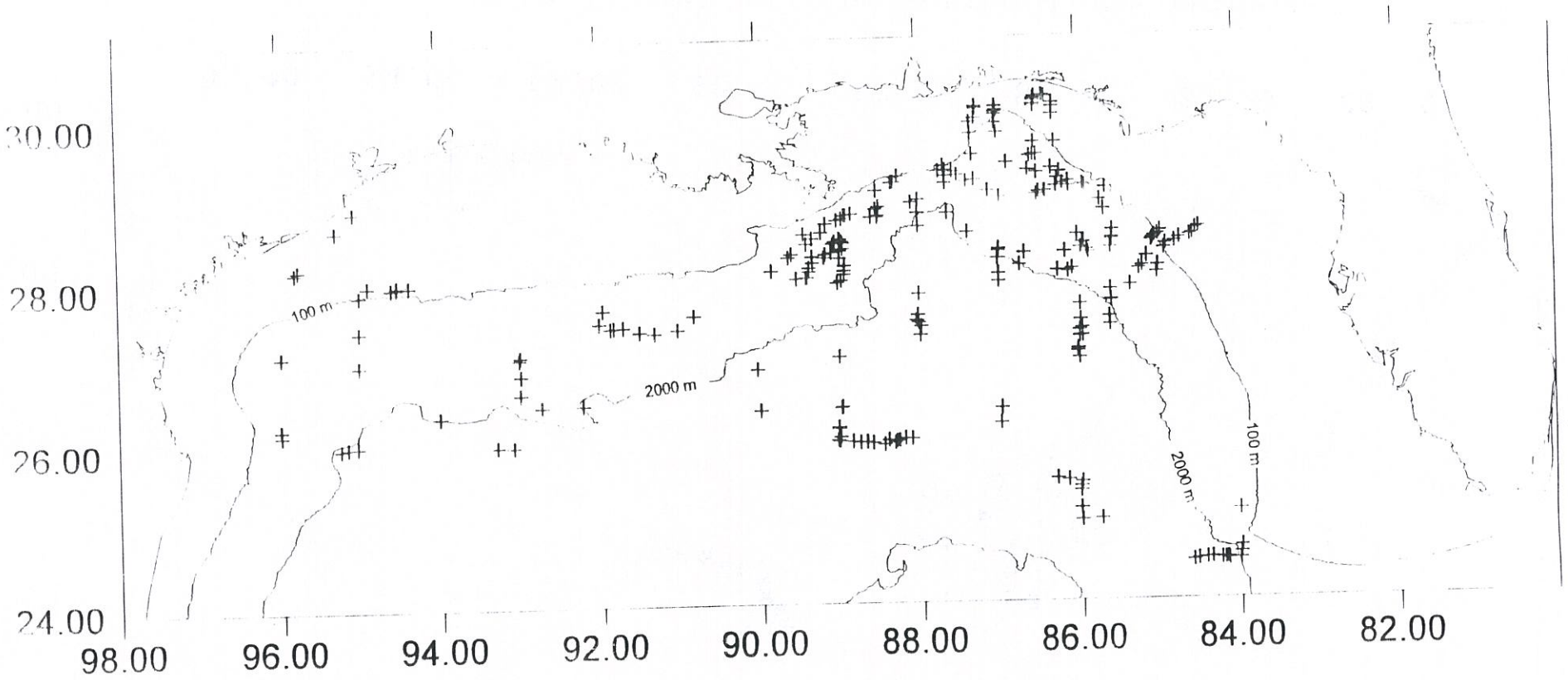

Figure 7. Cetacean groups sighted during NOAA Ship *Oregon II* Cruise 225.