U S DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Center
P 0 Drawer 1207
Pascagoula, Miss. 39568-1207

OREGON II Cruise 92-01 (198)

3 January - 11 February 1992

INTRODUCTION

Very little is known about marine mammals in the Atlantic Ocean in water deeper than 100 fathoms. Therefore, a 40-day cruise was conducted to study marine mammals and pelagic apex predators in the Atlantic Ocean. The NOAA Ship Oregon II departed Pascagoula, Mississippi on 3 January 1992. The primary area of operation was in the Blake Plateau area of the Atlantic Ocean between 28°00' and 35°00' North latitude and from the coastal boundary (100 fathom contour line) to the Exclusive Economic Zone (Figure 1). The Gulf Stream, along the western portion of the study area, is the dominant oceanographic feature in this area.

OBJECTIVES

1. Complete a line-transect survey of the study area for marine mammals during the daylight hours, following prescribed course transects.

2. Deploy longline fishing gear during the evening hours for the purpose of catching and sampling pelagic apex predators (primarily swordfish, other billfish, tunas, and sharks).

3. Collect associated oceanographic data.

METHODS

Marine Mammals

Line transect data was collected by two teams of three observers during daylight hours, weather permitting (i.e., no rain, Beaufort sea state <6). Each team had one member that was highly experienced in shipboard surveys and identification of marine mammals. Two observers searched for marine mammals using 25X binoculars mounted on the ship's flying bridge. A third observer searched for marine mammals near the ship and recorded data. Data were entered on a laptop computer using a BASIC data acquisition program. Data were collected on the survey environment and included subjective measures of sea state, weather, glare and wind. When marine mammals were sighted, data collected included bearing

from the bow, linear distance, species, number of animals, surface temperature and depth.

In addition to marine mammal surveys on the primary Atlantic Ocean study area, surveys were conducted while transiting to and from Pascagoula in the Gulf of Mexico and the Straits of Florida.

Pelagic Longline Fishing

Weather permitting, between 60 and 120 hooks were to be deployed on longline gear in deep waters (> 60 fathoms) each evening at 6:30 pm and the gear hauled at 2:00 am. Swordfish, as well as other pelagic fishes (tunas and sharks) were targeted for catch and subsequent biological sampling. The outcome of this fishing strategy will be used to determine if future scientific endeavors primarily targeting small swordfish ($\leq$ 25 kg) can be undertaken successfully. The use of catch data pertaining to the small swordfish ($\leq$ 25 kg; 2 years or less) may be useful in the assessment of the recruitment index.

Several nautical miles of 1/4 inch braided nylon line were dyed green with orange marks every 100 feet to space hooks and floats. Double 8 by 20 inch bullet floats were attached to 200 foot droplines every three hooks. Gangions were 40 feet long with 36 feet of green three strand nylon line and four feet of 200 lb. monofilament line ending in a Mustad long point hook (7698B). Standard stainless A-K snaps attached the gangions to the main line. Yellow and green light sticks were attached to the mono at the gangion splice using elastic bands. Colors were alternated each set. In general, one-half the hooks were baited with Atlantic mackerel (Scomber scombrus) and the other half with offshore squid (Illex sp.). A standard high flyer staff buoy was placed at each end of gear when one mile (6,000 ft or 60 hooks) of mainline was set, and another in the middle if two miles (12,000 ft or 120 hooks) of mainline were set. The one or two miles of longline gear were set depending on wind conditions and sea state. Soak time (based on the time the first buoy was deployed to the last buoy brought on board the vessel) for the longline gear ranged from about 7 to 11 hours with the average soak time lasting about 9 hours (Table 4).

Oceanographic Data

A continuous flow thermosalinagraph was operational 24 hours a day. Every 60 seconds, the surface temperature and salinity was measured and downloaded to a data file. During daylight hours, a XBT was dropped four times each day and the thermal profile recorded and stored in a data file. Each evening a CTD was deployed to a depth of 200 m.

RESULTS

Marine Mammals

A total of 193 hours were spent searching for marine mammals on 28 days. A total of 3,464 transect kilometers were surveyed (Figure 1, Table 1). About 132 hours of survey time was completely lost due to poor weather. When surveys were conducted, the survey conditions were usually less than ideal. Sixty-three percent of the transect kilometers were conducted at a Beaufort 4 or 5.

At least 10 cetacean species were sighted in 85 herd sightings (Table 1). Of these sightings, 67 were made on-effort (Table 2) and 18 were made off-effort. Tursiops truncatus and Stenella frontalis were the most commonly sighted cetaceans. Combined they made up 49% of the herd sightings. Twenty sightings could not be identified to generic level.

Dolphin species generally had the largest herd sizes. Cetaceans were found throughout the area surveyed. More sightings were made in the northern portion of the study area (Figure 2). Balaenopterid, physeterids and ziphiids appear to inhabit deeper water that delphinids (Table 2). Differences in the habitat preferences of T. truncatus and S. frontalis are of great interest. However, preliminary data indicate no obvious differenences in the habitat preference of the two species in terms of macro-spatial distribution (Figure 3), water temperature or water depth (Table 2).

Pelagic Longline Fishing

During the cruise, 15 longline sets were made (Table 3, Figure 4). From these sets 12 swordfish (Xiphias gladius), 21 silky sharks (Carcharhinus falciformis) , 9 blue sharks (Prionace glauca), 4 scalloped hammerhead sharks (Sphyrna lewini), 1 bignose shark (Carcharhinus altimus), 1 bigeye thresher shark (Alopias superciliosus), 1 whitetip shark (Carcharhinus carcharias), 1 dolphin fish (Coryphaena hippurus), and 1 tuna (Thunnus sp) were either tagged and released, released at the surface, or landed on board the vessel (Table 4). Through the efforts of the vessel crew and the scientific personnel 4 of the swordfish, in addition to 8 silky, 5 blue, 1 bignose, and 1 scalloped hammerhead sharks were tagged and released.

CRUISE PARTICIPANTS

Transit - Pascagoula to Miami (3-6 January 1992)

Keith Mullin (Chief Scientist)	NMFS Pascagoula, MS
Carol Roden	NMFS Pascagoula, MS
Robert Pitman	NMFS La Jolla, CA
James Cotton	NMFS La Jolla, CA
Nelson May	NMFS Bay St. Louis, MS

Leg 1 (7-14 January 1992)

Keith Mullin (Chief Scientist)	NMFS Pascagoula, MS
Carol Roden	NMFS Pascagoula, MS
Robert Pitman	NMFS La Jolla, CA
James Cotton	NMFS La Jolla, CA
Darlene Johnson	NMFS Miami, FL
Ann Jennings	NMFS Charleston, SC
John Nicolas	NMFS Woods Hole, MA
Mark McDuff	NMFS Bay St. Louis, MS
Dennis Lee	NMFS Miami, FL
Cheryl Brown	NMFS Miami, FL
Jean Cramer	NMFS Miami, FL
Jose Castro	NMFS Miami, FL

Leg 2 (15-25 January 1992)

Robert Ford (Chief Scientist)	NMFS Pascagoula, MS
Carol Roden	NMFS Pascagoula, MS
Robert Pitman	NMFS La Jolla, CA
James Cotton	NMFS La Jolla, CA
Darlene Johnson	NMFS Miami, FL
Ann Jennings	NMFS Charleston, SC
John Nicolas	NMFS Woods Hole, MA
Nicole Tschaepe	NMFS Panama City, FL
Dennis Lee	NMFS Miami, FL
Andy Bertolino	NMFS Miami, FL
Craig Brown	NMFS Miami, FL
Robert Bailey	NMFS Miami, FL

Leg 3 (26 January - 8 February 1992)

Robert Ford (Chief Scientist)	NMFS Pascagoula, MS
Carol Roden	NMFS Pascagoula, MS
Robert Pitman	NMFS La Jolla, CA
James Cotton	NMFS La Jolla, CA
Darlene Johnson	NMFS Miami, FL
Kathy Moore	NMFS Charleston, SC
John Nicolas	NMFS Woods Hole, MA

Dennis Lee	NMFS Miami, FL
Andy Bertolino	NMFS Miami, FL
Harold Pratt	NMFS Narraganett, RI
Gerry Scott	NMFS Miami, FL

Transit - Miami to Pascagoula (9-11 February 1992)

Robert Ford (Chief Scientist)	NMFS Pascagoula, MS
Carol Roden	NMFS Pascagoula, MS
James Cotton	NMFS La Jolla, CA

Submitted by:

Keith Mullin
Chief Scientist (Leg 1)

Approved by:

Scott Nichols, Acting Director
Mississippi Laboratories

Robert Ford
Chief Scientist (Legs 2&3)

Bradford E. Brown, Acting
Director, Southeast Science and
Research Director

Table 1. Marine mammal sightings made during Cruise 198.

DATE / Species	TRANSECT KM / Herd Size	AVERAGE SEA STATE / Position		Water Temp. (C)	Depth (fm)	
3 JAN 1992	0 KM	-				
(depart Pascagoula)						
4 JAN 1992	208 KM		4.7			
Stenella longirostris	47	28°09.7	86°35.1	24.0	550	
5 JAN 1992	209 KM		2.9			
Stenella frontalis	8	24°40.2	83°18.5	22.8	35	OFF
Tursiops truncatus/ Stenella frontalis	21	24°17.0	82°42.2	23.9	140	
Tursiops truncatus	22	24°17.6	82°13.0	23.9	142	
Tursiops truncatus	98	24°16.6	82°08.2	24.1	250	
6 JAN 1992	15 KM		3.6			
(no sightings)						
7 JAN 1992	50 KM		4.1			
Unid. dolphin	4	25°48.5	79°59.9	24.4	14	
8 JAN 1992	172 KM		3.2			
Stenella frontalis	34	28°18.1	80°05.7	22.7	26	
Globicephala sp.	3	28°17.7	79°06.1	25.6	468	
Unid. odontocete	2	28°17.6	78°43.6	24.8	482	
9 JAN 1992	168 KM		3.2			
Balaenoptera sp.	2	28°26.8	77°49.3	24.1	543	
B. edeni/borealis	1	28°25.1	77°29.4	23.6	560	
10 JAN 1992	52 KM		5.6			
(no sightings)						
11 JAN 1992	61 KM		5.0			
S. attenuata/frontalis	6	29°46.0	78°41.0	23.4	420	OFF
12 JAN 1992	177 KM		3.5			
Stenella frontalis	12	29°36.2	78°50.3	23.4	340	
Kogia sp.	3	29°45.3	79°12.6	25.3	435	
Globicephala sp.	10	29°46.8	79°14.7	25.4	432	
Tursiops truncatus	26	29°47.4	79°16.2	25.4	432	
Tursiops truncatus	8	30°03.8	79°46.6	25.5	413	
13 JAN 1992	50 KM		5.7			
Stenella frontalis	1	30°45.9	80°35.1	18.6	19	OFF
Stenella frontalis	8	30°46.4	80°36.3	18.3	15	
Stenella frontalis	38	30°49.8	80°47.2	17.2	13	
Tursiops truncatus	12	30°56.9	81°03.7	15.1	10	

Table 1. continued.

DATE / Species	TRANSECT KM / Herd Size	AVERAGE SEA STATE / Position		Water Temp. (C)	Depth (fm)	
14-15 JAN 1992 (in port)						
16 JAN 1992	21 KM		6.0			
Stenella frontalis	18	30°41.5	80°46.2	14.7	15	OFF
Unid. dolphin	2	30°25.9	80°26.4	20.7	22	OFF
Stenella frontalis	4	30°24.1	80°24.0	21.1	21	OFF
17 JAN 1992	80 KM		4.3			
Pseudorca crassidens	2	30°14.1	79°43.5	25.0	430	
Pseudorca crassidens	25	30°10.4	79°10.2	24.0	435	OFF
18 JAN 1992	182 KM		3.6			
Stenella frontalis	20	30°10.3	78°46.4	23.8	430	
Unid. odondotocete	3	30°06.8	77°24.4	22.9	470	
19 JAN 1992	122 KM		4.0			
Tursiops truncatus	14	30°01.9	76°19.6	22.1	1120	
Stenella frontalis	5	30°08.9	76°24.0	21.9	1250	OFF
20 JAN 1992	0 KM		6.0			
Stenella frontalis	5	31°08.5	76°42.9	22.7	1460	OFF
Tursiops truncatus	2	31°48.0	77°35.0	23.9	415	OFF
21 JAN 1992	168 KM		2.7			
Tursiops truncatus	10	32°23.7	78°03.6	23.8	201	
Tursiops truncatus	5	32°23.6	77°47.7	23.7	242	
Tursiops truncatus	5	32°23.6	77°42.5	23.1	248	
Tursiops truncatus	3	32°23.8	77°40.7	23.1	248	
Tursiops truncatus	6	32°23.9	77°39.2	23.7	258	
Unid. dolphin	4	32°26.2	77°15.8	24.5	380	
Tursiops truncatus	34	32°26.3	76°53.4	24.5	480	
Unid. small whale	1	32°26.1	76°45.8	24.3	530	
Ziphius cavirostris	3	32°28.4	76°27.0	24.3	1120	
22 JAN 1992	155 KM		3.3			
Unid. ziphiid	3	32°25.6	76°18.8	23.8	1220	
Kogia sp.	4	32°25.8	76°14.7	23.8	1220	
Kogia simus	4	32°26.0	76°13.4	23.8	1220	
Kogia sp.	2	32°25.9	76°11.2	23.8	1120	
B. edeni/borealis	2	32°25.7	76°04.7	22.4	1200	
Physeter macrocephalus	4	32°28.9	75°32.2	22.2	1830	
23 JAN 1992	0 KM		6.0+			
Stenella frontalis	4	34°06.6	76°25.6	18.5	22	OFF

Table 1. continued.

DATE / Species	TRANSECT KM / Herd Size	Position		AVERAGE SEA STATE / Water Temp.(C)	Depth (fm)	
24-26 JAN 1992 (in port)						
27 JAN 1992	140 KM		3.0			
Tursiops truncatus	27	35°00.3	75°36.1	11.4	12	
Tursiops truncatus	6	34°54.4	75°11.4	23.3	600	
Physeter macrocephalus	8	34°54.4	75°11.7	23.4	700	
Globicephala sp.	15	34°53.3	75°09.0	23.6	810	
B. edeni/borealis	2	34°32.6	74°04.0	23.8	1600	
Stenella frontalis	16	34°25.0	74°54.6	22.3	1700	
Globicephala sp.	10	34°19.3	74°50.2	22.2	1700	
28 JAN 1992	84 KM		5.0			
Unid. dolphin	3	34°30.4	75°03.3	23.6	1525	
Balaenoptera sp.	1	34°31.4	75°04.1	23.5	1525	OFF
Tursiops truncatus	11	34°19.2	75°53.4	21.4	135	OFF
29 JAN 1992	142 KM		5.2			
Unid. odontocete	3	34°24.0	75°50.6	22.4	111	
30 JAN 1992	123 KM		3.0			
(no sightings)						
31 JAN 1992	183 KM		4.2			
Unid. dolphin	4	33°21.7	78°37.3	13.7	11	
Tursiops truncatus	2	33°17.9	78°42.1	13.7	10	
Stenella frontalis	3	33°09.2	78°47.3	15.5	10	OFF
Unid. dolphin	4	32°58.9	78°44.0	17.5	14	
Stenella frontalis	12	32°55.5	78°43.9	18.0	17	
Stenella frontalis	6	32°42.5	78°40.9	18.8	19	
1 FEB 1992	98 KM		5.7			
Tursiops truncatus	4	32°04.4	78°25.4	22.7	212	
2 FEB 1992	78 KM		3.5			
(no sightings)						
3 FEB 1992	187 KM		4.4			
Unid. dolphin	1	32°22.2	78°18.0	20.9	165	
Unid. large whale	1	32°16.5	78°10.3	20.2	235	
Unid. dolphin	1	32°13.9	78°07.6	20.5	240	
Unid. dolphin	4	32°06.8	77°58.8	23.1	295	
Unid. odontocete	1	31°43.2	77°14.3	24.4	540	
Tursiops truncatus	20	31°37.4	77°07.4	24.3	770	

Table 1. continued.

DATE / Species	TRANSECT KM / Herd Size	AVERAGE SEA STATE / Position		Water Temp.(C)	Depth (fm)	
4 FEB 1992	167 KM		3.4			
Kogia simus	3	31°35.7	77°03.6	24.3	900	
Unid. odontocete	3	31°35.2	77°05.6	24.3	820	
Feresa attenuata	6	31°34.8	77°05.8	24.3	820	OFF
Unid. odontocete	3	31°34.3	77°10.4	24.3	640	
Ziphius cavirostris	3	31°29.9	77°31.7	24.3	450	
Tursiops truncatus	20	31°29.1	77°36.5	23.9	435	
Tursiops truncatus	12	31°21.7	78°12.0	21.1	341	
Tursiops truncatus	22	31°14.9	78°38.6	24.3	307	
5 FEB 1992	45 KM		4.3			
Stenella frontalis	4	30°47.0	79°19.2	24.7	400	
Tursiops truncatus	12	30°18.6	79°55.5	24.9	279	OFF
6 FEB 1992	10 KM		6.0+			
(no sightings)						
7 FEB 1992	105 KM		5.1			
(no sightings)						
8 FEB 1992	0 KM		-			
(in port)						
9 FEB 1992	59 KM		5.0			
(no sightings)						
10 FEB 1992	160 KM		3.8			
Tursiops truncatus	8	24°23.0	82°20.0	22.0	37	OFF
Unid. dolphin	3	24°23.0	82°42.0	21.0	20	
Stenella frontalis	20	25°09.0	83°59.0	22.7	70	OFF
11 FEB 1992						
(return Pascagoula)						

Table 2. Marine mammal species sighted on-effort during Cruise 198.

Species	n	H	se	W	se	T	se
Balaenoptera sp.	1	1.0	-	543	-	24.1	-
B. edeni/borealis	3	1.7	0.3	1120	303	23.2	0.4
Physeter macrocephalus	2	6.0	2.0	1265	565	22.8	0.6
Kogia sp.	3	3.0	0.6	925	247	24.3	0.5
Kogia simus	2	3.5	0.5	1060	160	24.1	0.3
Ziphius cavirostris	2	3.0	0.0	785	335	24.3	0.0
Unid. ziphiid	1	3.0	-	1120	-	23.8	-
Pseudorca crassidens	1	2.0	-	430	-	25.0	-
Globicephala sp.	4	9.5	2.5	853	295	24.2	0.8
Tursiops truncatus	20	17.8	4.7	337	60	22.1	0.9
Stenella frontalis	9	16.7	4.0	339	182	21.0	1.0
T. truncatus/S. frontalis	1	21.0	-	140	-	23.9	-
S. longirostris	1	47.0	-	550	-	24.0	-
Unid. dolphin	8	3.1	0.5	347	174	21.0	1.3
Unid. odontocete	6	2.5	0.3	511	96	23.9	0.4
Unid. small whale	1	1.0	-	530	-	20.2	-
Unid. large whale	1	3.0	-	235	-	23.8	-

H - mean number of cetaceans per group; W - mean water depth in fathoms;
T - mean surface temperature in degrees C.

Table 3. Information pertaining to pelagic longline gear deployment and retrieval. Station numbers assigned by the R/V Oregon II corresponding to the set number, date, and location during gear deployment, along with date and location of gear retrieval.

Station Number	Set Number	Date of Set	Set Location Latitude	Set Location Longitude	Haul Number	Date of Haul	Haul Location Latitude	Haul Location Longitude
53654	1	01/08/92	28° 23'	78° 21'	1	01/09/92	28° 32'	78° 16'
53659	2	01/09/92	28° 24'	76° 22'	2	01/10/92	28° 19'	76° 21'
53661	3	01/11/92	29° 21'	78° 26'	3	01/12/92	29° 21'	78° 27'
53668	4	01/12/92	30° 17'	80° 07'	4	01/13/92	30° 33'	80° 01'
53673	5	01/17/92	30° 11'	79° 04'	5	01/18/92	30° 13'	79° 03'
53677	6	01/18/92	30° 07'	77° 09'	6	01/19/92	30° 09'	77° 10'
53681	7	01/20/92	32° 05'	77° 59'	7	01/21/92	32° 15'	77° 44
53685	8	01/21/92	32° 31'	76° 27'	8	01/22/92	32° 34'	76° 18'
53689	9	01/22/92	33° 08'	76° 19'	9	01/23/92	33° 23'	76° 15'
53694	10	01/27/92	34° 12'	74° 41'	10	01/28/92	34° 27'	74° 39'
53705	11	01/30/92	33° 05'	77° 18'	11	01/31/92	33° 05'	77° 16'
53708	12	02/02/92	32° 22'	78° 38'	12	02/03/92	32° 21'	78° 40'
53713	13	02/03/92	31° 29'	77° 22'	13	02/04/92	31° 32'	77° 18'
53718	14	02/04/92	31° 13'	78° 50'	14	02/05/92	31° 18'	78° 42'
53724	15	02/06/92	27° 05'	79° 54'	15	02/07/92	27° 21'	79° 53'

Table 4. Catch result of the Oregon II longline project for each haul, date of the haul, fish caught, live or dead status, result outcome of the fish (tagged, released, boated), type of bait fish was caught on (mackerel or squid), number of hooks fished, and soak time of gear based on first buoy out when the gear was deployed and last buoy in during haul back (hours and minutes).

Haul #	Date	Species (Common Name)	Alive Dead	Tag/ Rel	Rel	Boated	Bait Type	Hooks Fished	Soak Time Hrs	Soak Time Min
1	01/09/92	Silky Shark	D			X	S	120	11	16
		Silky Shark	A	X			S			
2	01/10/92	No catch						60	9	15
3	01/12/92	No catch						60	9	16
4	01/13/92	Bigeye Thrasher	D			X	S	120	10	02
		Swordfish	D			X	S			
		Swordfish	D			X	S			
		Swordfish	D			X	S			
		Swordfish	D			X	M			
		Swordfish	D			X	M			
		Swordfish	D			X	S			
		Silky Shark	D			X	S			
		Silky Shark	D			X	S			
		Silky Shark	D			X	M			
		Silky Shark	D			X	M			
		Silky Shark	D			X	M			
		Silky Shark	D			X	M			
		Silky Shark	D			X	M			
		Silky Shark	A	X			S			
		Silky Shark	A	X			S			
		Silky Shark	A	X			S			
		Silky Shark	A	X			S			
		Silky Shark	A	X			M			
		Silky Shark	A	X			M			
		Swordfish	A	X			S			

Table 4. Continued

Haul #	Date	Species (Common Name)	Alive Dead	Tag/ Rel	Rel	Boated	Bait Type	Hooks Fished	Soak Time Hrs	Soak Time Min
4		Blue Shark	A	X			M			
		Blue Shark	A	X			M			
		Blue Shark	A	X			M			
5	01/18/92	No catch						120	8	
6	01/19/92	Blue Shark	A	X			M	60	9	20
		Blue Shark	A	X			M			
		Swordfish	A	X			M			
7	01/21/92	Blue Shark	A		X		M	60	7	55
8	01/22/92	Swordfish	D			X	S	120	8	10
		White tip Shark	A		X		M			
9	01/23/92	Swordfish	A	X			M	60	7	57
		Tuna (sp)	A		X		M			
10	01/28/92	No catch						60	8	58
11	01/31/92	Scalloped Hammerhead Shark	D			X	M	120	7	40
		Scalloped Hammerhead Shark	A			X	M			
		Bignose Shark	A	X			M			
		Silky Shark	A	X			S			
12	02/03/92	Scalloped Hammerhead Shark	A	X			M	120	8	58
		Blue Shark	A			X	M			
		Blue Shark	A			X	S			
		Swordfish	D			X	S			

Table 4. Continued

Haul #	Date	Species (Common Name)	Alive Dead	Tag/ Rel	Rel	Boated	Bait Type	Hooks Fished	Soak Time Hrs	Soak Time Min
13	02/04/92	Silky Shark	D			X	S	120	8	27
		Dolphin fish	A			X	M			
14	02/05/92	Silky Shark	D			X	M	60	7	56
		Silky Shark	A			X	M			
		Silky Shark	D			X	M			
		Blue Shark	A			X	M			
		Swordfish	A	X			M			
15	02/07/92	Scalloped Hammerhead Shark	D			X	S	60	8	11
		Silky Shark	A			X	S			

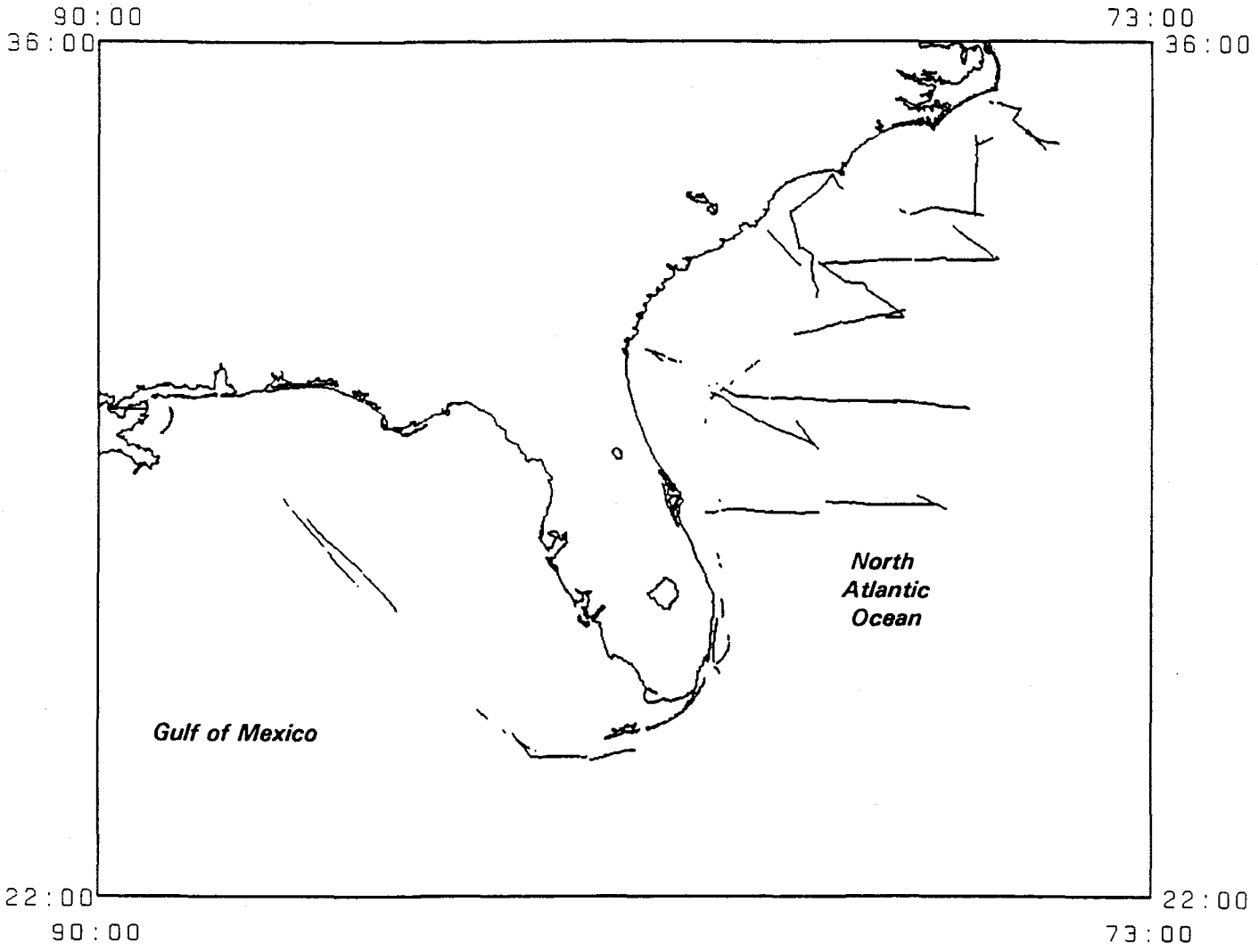

Figure 1. On-effort trackline for Cruise 198.

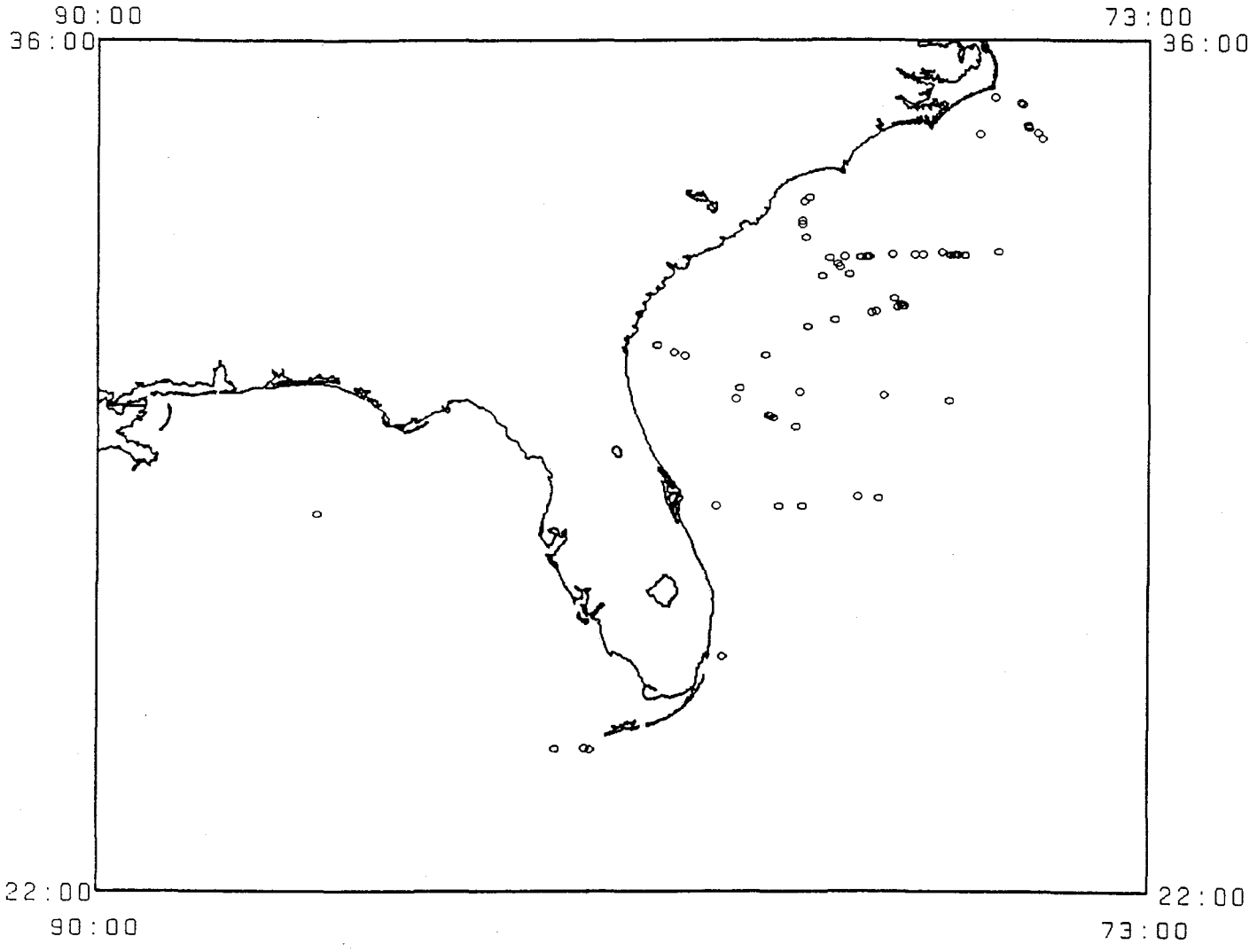

Figure 2. Locations of all cetacean groups (o) sighted on-effort during Cruise 198.

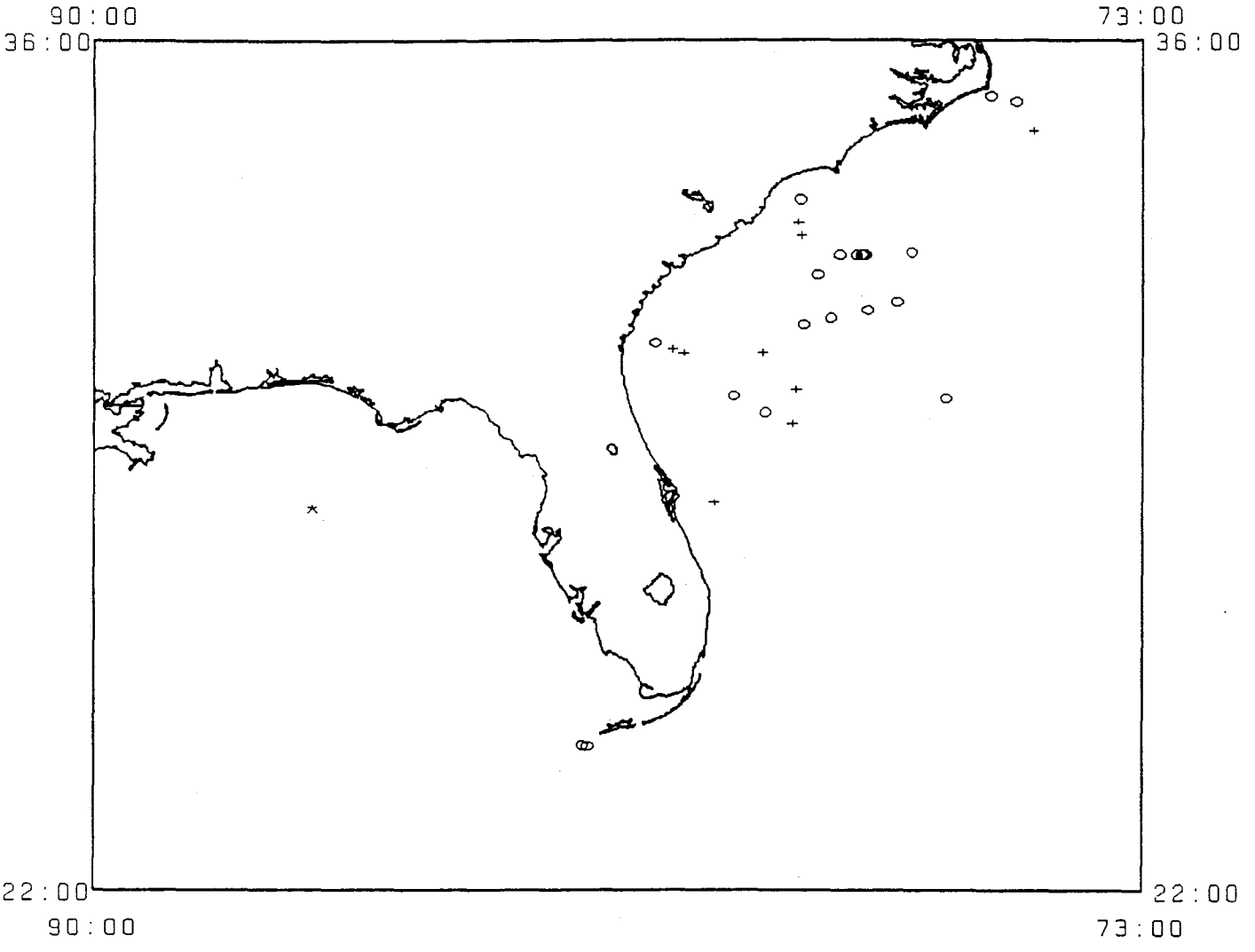

Figure 3. Locations of Tursiops truncatus (o), Stenella frontalis (+) and S. longirostris (*) sighted on-effort during Cruise 198.

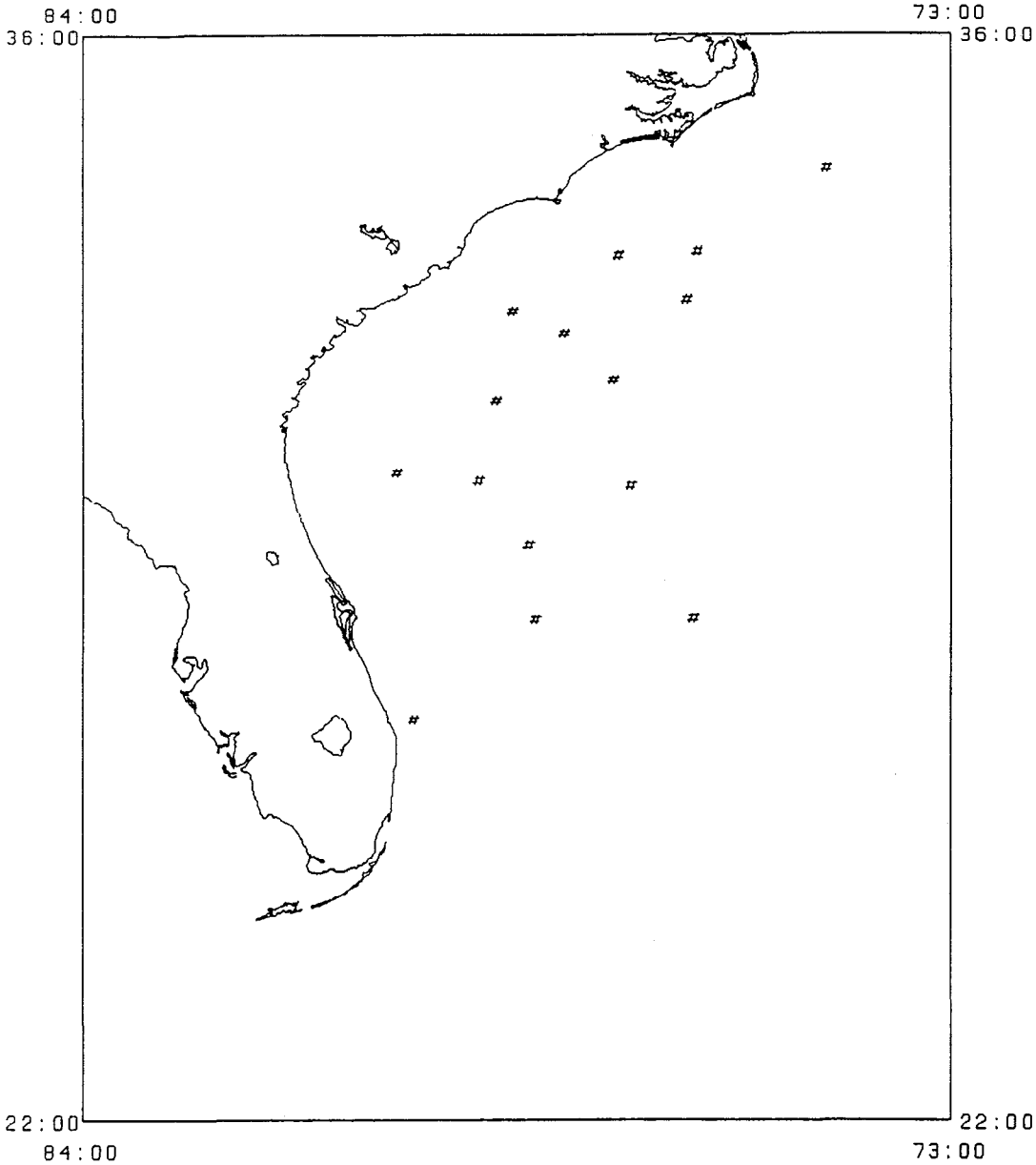

Figure 4. Locations of longline sets (#) made during Cruise 198.