Distribution and Abundance of Marine Mammals in the North-Central and Western Gulf of Mexico

Shipboard Visual Survey
NOAA Ship *Oregon II* Cruise No. 199
17 April - 8 June 1992

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INTRODUCTION

The Southeast Fisheries Science Center has conducted an annual marine mammal and ichthyoplankton cruise in the northern Gulf of Mexico since 1989. In response to the Center's participation in the GULFCET Program, the 1992 cruise was expanded in duration to collect additional marine mammal visual sighting data in the GULFCET study area. The environmental data collection was tailored to meet the overall objectives of the GULFCET Program. The objectives of the cruise were as follows:

1. conduct line transect surveys of marine mammals to study their diversity, distribution and abundance,
2. collect ichthyoplankton (particularly bluefin tuna eggs and larva) for distribution and abundance determinations,
3. collect associated environmental data in order to study the factors which may ultimately affect the diversity, distribution and abundance of both ichthyoplankton and marine mammals,
4. collect biopsy samples of marine mammals for genetic analysis in order to learn about the population structure of selected species, and
5. collect flying fish (Exocoetidae) samples in order to study their diversity and distribution in the Gulf of Mexico.

METHODS

The planned 54-day cruise was conducted in three separate legs as follows:

Leg 1: 17 April - 4 May,
Leg 2: 6 May - 25 May, and
Leg 3: 26 May - 8 June.

Legs 1 and 2 were planned to cover the traditional ichthyoplankton study area (100 fm isobath to the EEZ in the U.S. Gulf east of 94° W). For the GULFCET program, the study area was expanded to 96° W longitude. Environmental stations included CTD/STD hydrocasts to 500 m. Casts were made every 30 minutes of latitude or longitude along the cruise track. The cruise track was sampled 24 hours a day during Legs 1 and 2. Marine mammal visual surveys using "bigeye binoculars" were conducted during daylight hours when the Beaufort sea state was less than 6. Opportunistic biopsy samples of bow-riding dolphins were collected using a crossbow. Flying fish were sampled during a standardized one-hour collection period each evening using dip-nets. Leg 3 was planned for the GULFCET study area. North-south transects were planned with a CTD cast every 30 minutes of latitude and an XBT sample at 15 minutes of latitude between each CTD station. A thermo-salinograph collected surface water salinity and temperature every minute of time throughout the cruise.

The scientific party for the cruise included:

Marine Mammals

Carol Roden, MM Cruise Leader, NMFS Pascagoula (Legs 1,2&3)
Darlene Johnson, Observer, NMFS Miami (Legs 1,2&3)
Kathy Prunier, Observer, NMFS Miami (Leg 1)
Bob Pitman, ID Specialist, NMFS La Jolla (Legs 1,2&3)
Carolyn Rogers, Observer, NMFS Pascagoula (Legs 1&2)
Jim Cotton, ID Specialist, NMFS La Jolla (Legs 1&2)
Scott Benson, ID Specialist, NMFS La Jolla (Leg 3)
Wayne Hoggard, Observer, NMFS Pascagoula (Leg 2)
Keith Mullin, Chief Scientist, NMFS Pascagoula (Leg 3)
Kevin Rademacher, Observer, NMFS Pascagoula (Leg 1&3)
Eric Jensen, DVM, Marine Life Oceanarium, Gulfport, MS (Leg 3)
Barbara Curry, Texas A&M University (Leg 3)
Lisa Dailey, University of South Alabama (Leg 3)

Environmental

Alonzo Hamilton, Chief Scientist NMFS Pascagoula (Legs 1&2)
Karen Mitchell, NMFS Pascagoula (Leg 1)
Jack Javech, NMFS Miami (Leg 1)
Clifton Harper, NMFS Stennis (Leg 1)
Brian Underwood, NMFS Pascagoula (Leg 2)
Kevin Rademacher, NMFS Pascagoula (Leg 2)
Stephanie Bolden, NMFS Miami (Leg 2)
Jon Peterson, NMFS Pascagoula (Leg 2)

RESULTS

Mechanical problems with the CTD winch, and the CTD caused a delay in the beginning of the cruise and a 2-day delay in the beginning of Leg 2 (Table 1). A mechanical problem with the ship's generator resulted in the loss of 1.5 days of survey effort on Leg 3. Because of these delays, the cruise track for Legs 1,2 & 3 were altered (Figures 1, 2 & 3, daylight portions only).

For all three legs, 6,154 transect kilometers were visually surveyed for cetaceans. This resulted in 273 sightings of 20 species of cetaceans (Figures 1-3, Tables 1-2). These include the first sightings of *Peponocephala electra, Kogia breviceps* and *Mesoplodon densirostris*, and the second sighting of *Lagenodelphis hosei* in the Gulf of Mexico. *Tursiops truncatus* was the most common species sighted followed by *Stenella attenuata*.

During Legs 1, 2 and 3, 96, 76 and 76 CTD/STD/XBT stations, respectively, were sampled (Figures 4-6).

A total of 16 biopsy samples from 5 dolphin species were collected. Ten species of flying fish were collected from 429 samples.

Table 1. Effort, Beaufort sea state and number of sightings for each day of NOAA Ship *Oregon II* Cruise 199.

Leg Date	Effort (hours)	Transect (kilometers)	Average Sea State	Number of Sightings
Leg 1				
17 APR	(in Pascagoula, mechanical problems, winch)			
18 APR	(in Pascagoula, mechanical problems, winch)			
19 APR	(in Pascagoula, mechanical problems, winch)			
20 APR	(in Pascagoula, mechanical problems, winch)			
21 APR	(in Pascagoula, mechanical problems, winch)			
22 APR	8.8	162	3.9	4
23 APR	7.6	154	2.8	7
24 APR	7.8	147	2.7	12
25 APR	9.1	165	3.0	4
26 APR	0	0	6.0	-
27 APR	8.4	152	3.2	8
28 APR	0.8	14	5.9	0
29 APR	9.4	181	2.4	2
30 APR	9.3	160	2.9	2
1 MAY	8.8	177	3.8	2
2 MAY	10.1	189	3.8	2
3 MAY	6.7	121	1.1	16
4 MAY	1.8	34	5.0	3
5 MAY	(scheduled port call, Pascagoula)			
6 MAY	(scheduled port call, Pascagoula)			
Leg 2				
7 MAY	(in Pascagoula, winch repair)			
8 MAY	(in Pascagoula, winch repair)			
9 MAY	9.2	182	1.9	11
10 MAY	8.8	177	3.8	1
11 MAY	10.2	169	3.1	3
12 MAY	8.4	163	1.8	13
13 MAY	6.2	110	2.7	15
14 MAY	8.5	118	2.8	10
15 MAY	10.7	226	0.9	34
16 MAY	(in Pascagoula, CTD repair)			
17 MAY	9.8	200	4.4	4
18 MAY	8.6	179	3.8	7
19 MAY	10.7	212	4.4	0
20 MAY	8.7	184	4.5	3
21 MAY	8.5	176	5.0	1

continued

Table 1. continued.

Leg Date	Effort (hours)	Transect (kilometers)	Average Sea State	Number of Sightings
22 MAY	10.2	180	4.1	4
23 MAY	11.6	214	3.4	5
24 MAY	9.7	168	1.6	16
Leg 3				
25 MAY	(scheduled port call, Galveston)			
26 MAY	(scheduled port call, Galveston)			
27 MAY	8.3	149	3.0	6
28 MAY	8.6	181	2.9	4
29 MAY	7.4	146	4.1	3
30 MAY	(in Galveston, mechanical problems, generator)			
31 MAY	12.0	239	4.2	1
1 JUN	10.5	197	3.3	5
2 JUN	3.7	75	3.9	1
3 JUN	9.2	196	3.8	4
4 JUN	10.3	195	2.8	11
5 JUN	9.1	179	1.0	22
6 JUN	9.1	181	2.5	17
7 JUN	5.5	102	3.7	5
8 JUN	(cruise terminates on schedule, Pascagoula)			

Table 2. Summary of marine mammal sightings from NOAA Ship *Oregon II* during Cruise 199, 21 April - 8 June 1992.

Species	Leg 1	Leg 2	Leg 3	Total
Balaenoptera edeni	1	0	0	1
Balaenoptera edeni/borealis	2	0	1	3
Physeter macrocephalus	6	9	4	19
Kogia breviceps	1	3	1	5
Kogia simus	2	12	4	18
Kogia sp.	0	8	4	12
Mesoplodon sp. (not densirostris)	1	3	2	6
Mesoplodon densirostris	0	0	1	1
Unid. Ziphiid	0	0	2	2
Peponocephala electra	0	1	1	2
Feresa attenuata	0	1	1	2
Feresa/Peponocephala	1	0	0	1
Pseudorca crassidens	1	0	0	1
Orcinus orca	0	0	1	1
Globicephala macrorhynchus	0	2	1	3
Steno bredanensis	0	2	3	5
Lagenodelphis hosei	0	0	1	1
Tursiops truncatus	14	28	6	48
Grampus griseus	3	16	5	24
Stenella frontalis	3	3	1	7
Tursiops/S. frontalis	1	0	0	1
Stenella attenuata	18	13	12	43
Stenella coeruleoalba	3	2	2	7
Stenella longirostris	0	2	4	6
Stenella clymene	0	3	3	6
Stenella sp.	0	1	0	1
Unid. dolphin	6	8	13	27
Unid. small whale	0	1	3	4
Unid. odontocete	2	9	5	16
TOTALS	65	127	81	273

Leg 1: 21 April - 4 May 1992
Leg 2: 8 May - 25 May 1992
Leg 3: 26 May - 8 June 1992

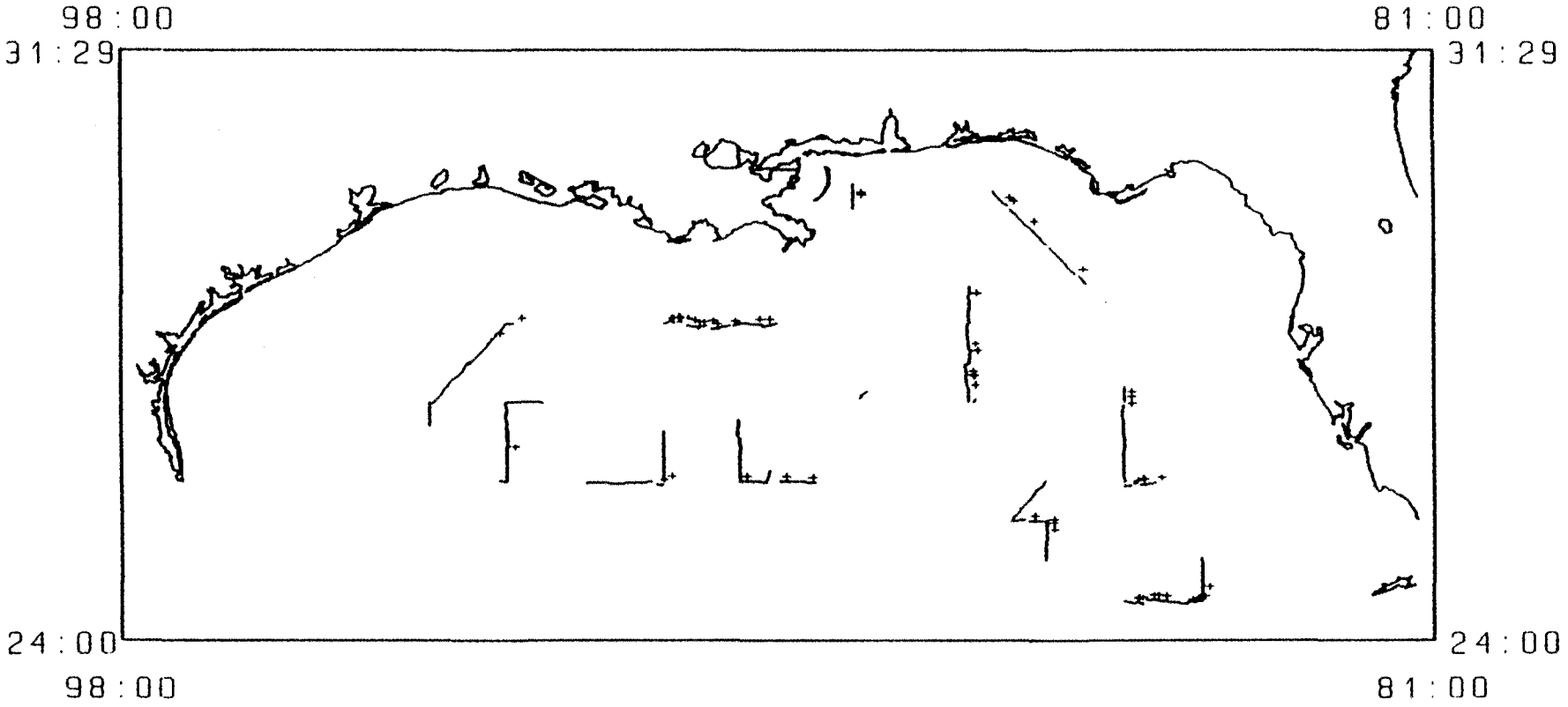

Figure 1. On-effort daylight cruise track and locations (+) of cetacean sightings during Leg 1 of NOAA Ship *Oregon II* Cruise 199.

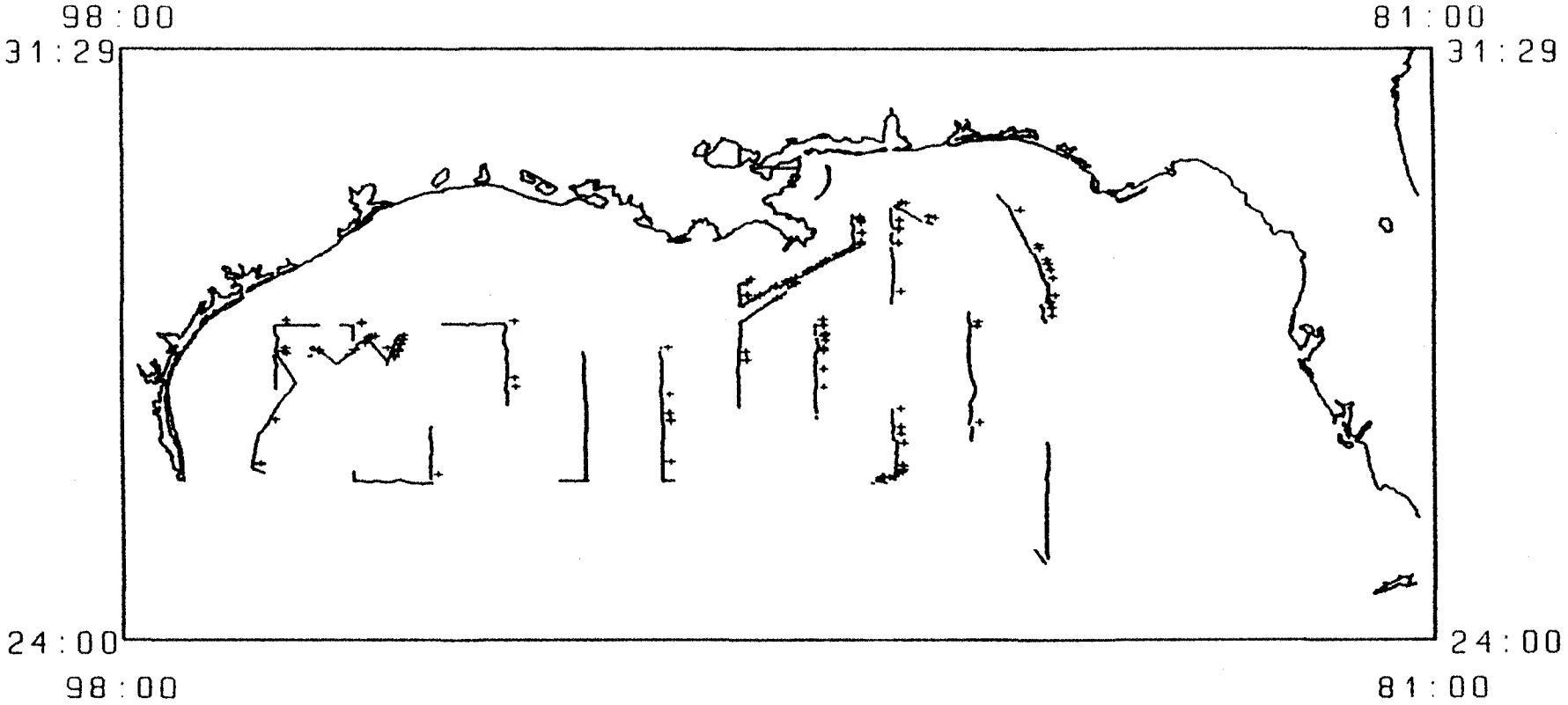

Figure 2. On-effort daylight cruise track and locations (+) of cetacean sightings during Leg 2 of NOAA Ship *Oregon II* Cruise 199.

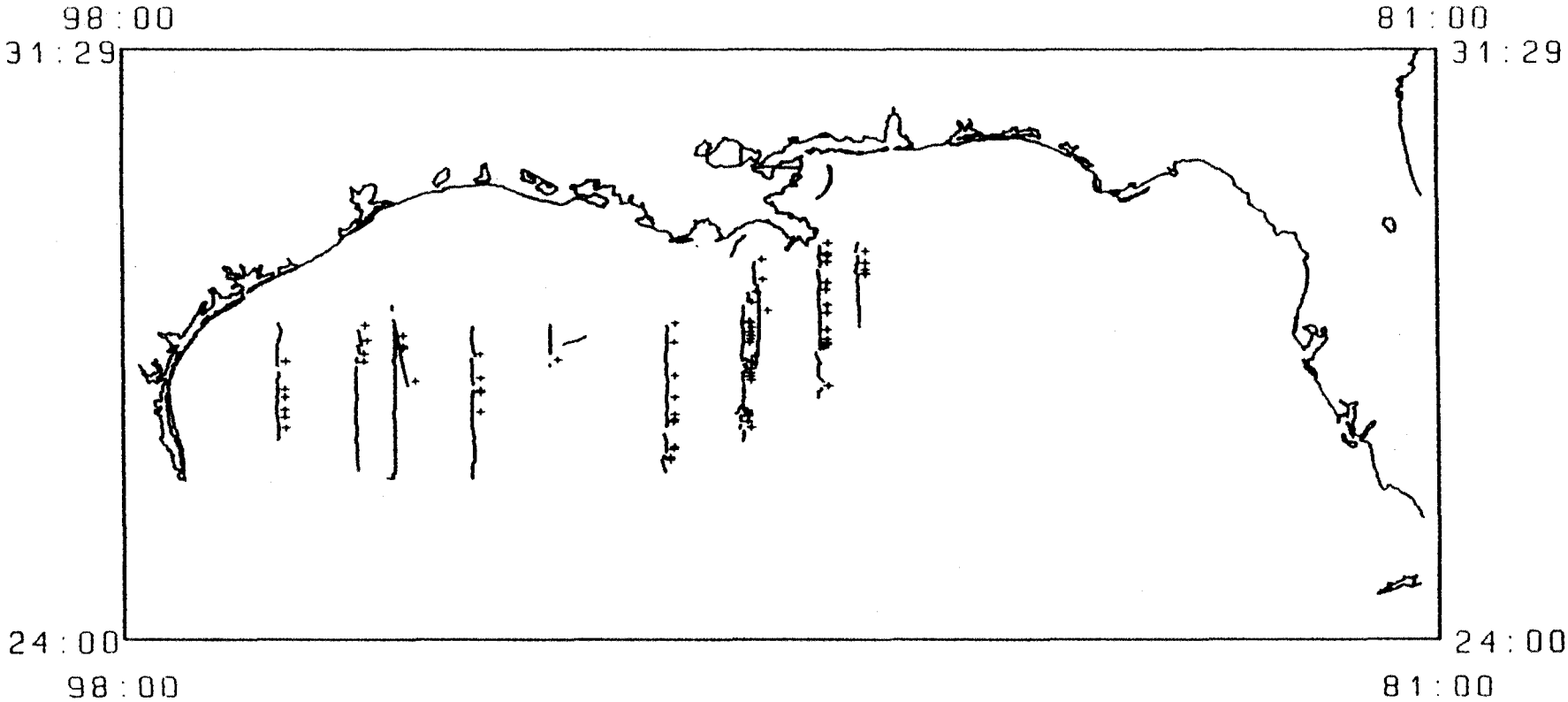

Figure 3. On-effort daylight cruise track and locations (+) of cetacean sightings during Leg 3 of NOAA Ship *Oregon II* Cruise 199.

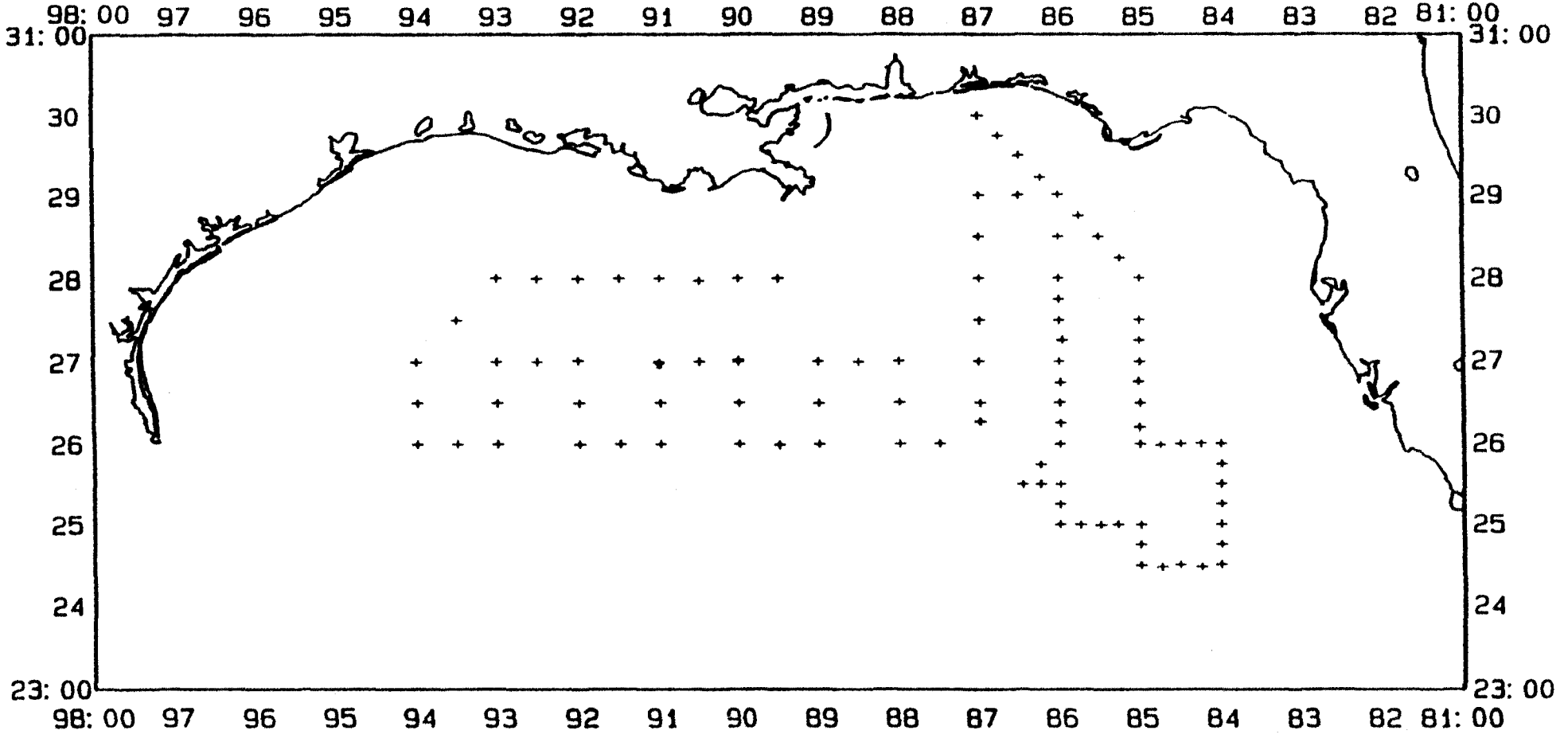

Figure 4. Locations (+) of CTD/XBT sampling stations from Leg 1.

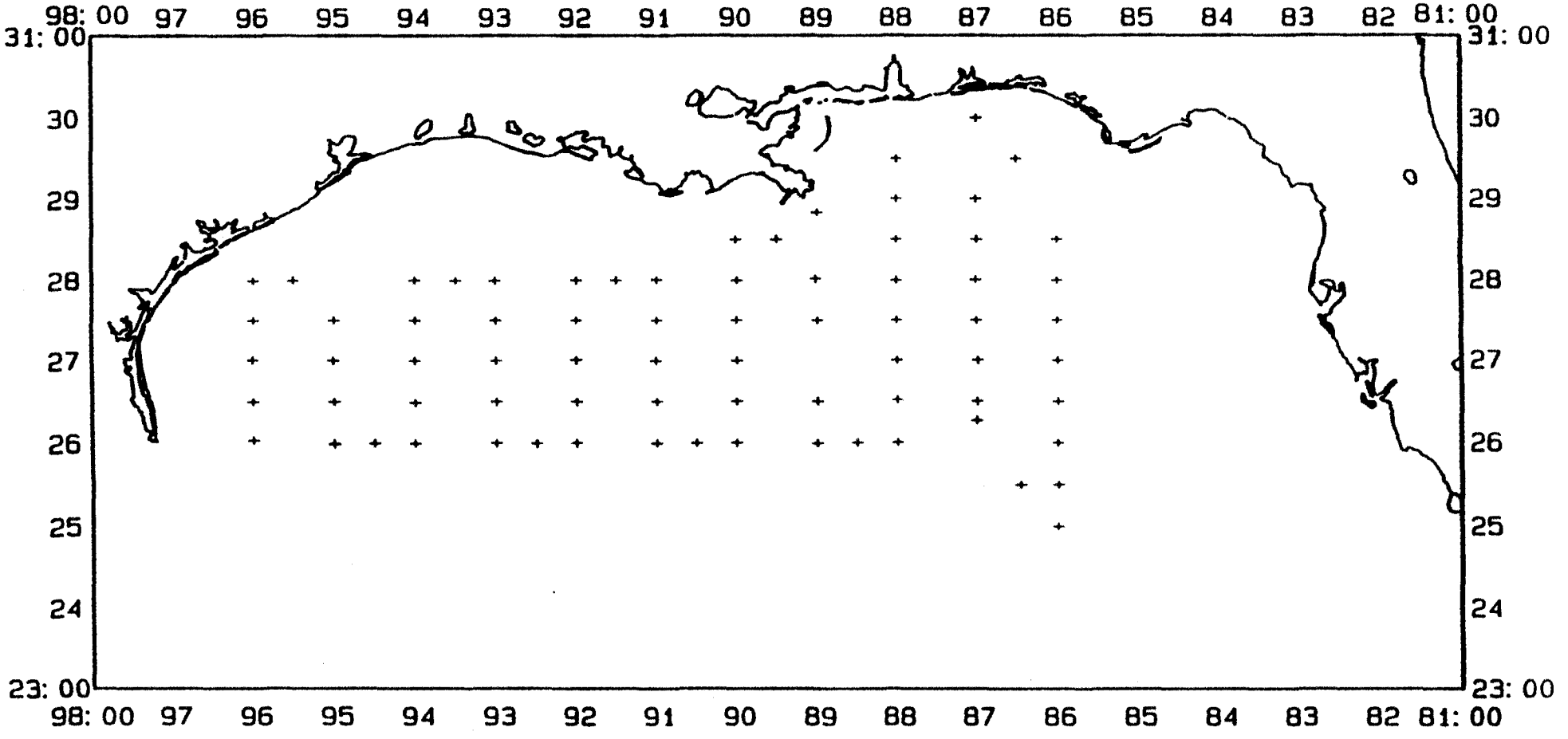

Figure 5. Locations (+) of CTD/XBT sampling stations from Leg 2.

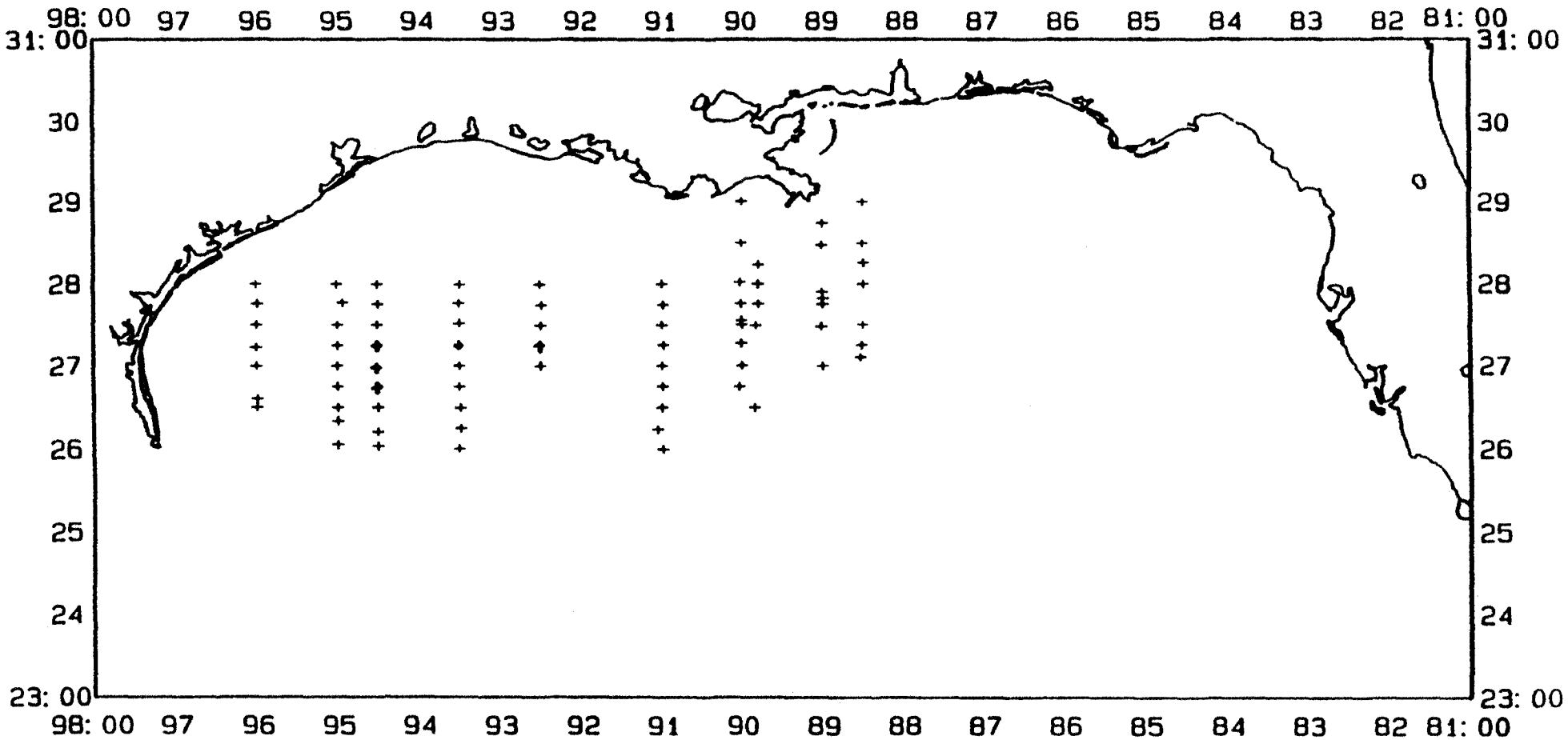

Figure 6. Locations (+) of CTD/XBT sampling stations from Leg 3.