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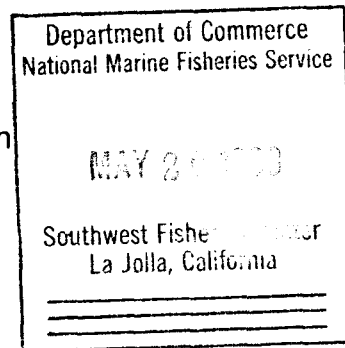
APRIL 1993

REPORT OF ECOSYSTEM STUDIES CONDUCTED DURING THE 1992 EASTERN TROPICAL PACIFIC COMMON DOLPHIN SURVEY ON THE RESEARCH VESSELS *DAVID STARR JORDAN* AND *McARTHUR*

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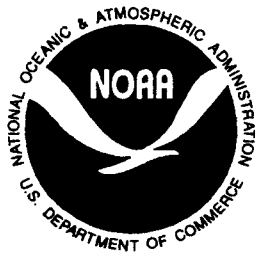
U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Science Center



NOAA Technical Memorandum NMFS

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NOAA Technical Memorandum NMFS

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AND *McARTHUR***

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NOAA-TM-NMFS-SWFSC-180

U.S. DEPARTMENT OF COMMERCE

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INTRODUCTION

The National Marine Fisheries Service (NMFS) has the responsibility of assessing the status of various dolphin stocks affected by the yellowfin tuna purse-seine fishery in the eastern tropical Pacific (ETP). In 1992, the Marine Mammal Division of the Southwest Fisheries Science Center (SWFSC) conducted a survey in the area of the ETP inhabited by the central stock of common dolphin. The primary objective was to estimate the dolphins' absolute abundance, while the secondary objective was to collect physical, biological and oceanographic data in the area inhabited by this stock. This ecosystem approach provides information necessary for understanding the biological basis of their distribution and abundance. Two NOAA vessels were used for this survey, the *David Starr Jordan* (hereafter referred to as the *Jordan*) and the *McArthur*. The vessels operated concurrently in the ETP from July 28 through November 2, 1992.

This report describes the types of data collected and sampling techniques used, as well as summarizes the data collected (including disposition of that data) for the environmental studies conducted aboard the *Jordan* and *McArthur*.

OBJECTIVES

The primary objective of the dolphin habitat monitoring portion of the program is to provide information about the effects of large-scale environmental variation on the estimates of trends in dolphin abundance. These environmental effects are monitored by examining the relationships between dolphin distribution and oceanographic patterns and processes. These phenomena are sampled concurrently with the dolphin sighting survey by measuring regional and local changes in chlorophyll *a*, nutrients, temperature, salinity and the occurrence of seabirds and other animals. These parameters can fluctuate both seasonally and as a result of large scale ocean-atmosphere interactions such as the El Niño-Southern Oscillation (ENSO) phenomena. Studying oceanographic patterns and variability in the ETP concurrently with the fauna may reveal regional or local associations.

STUDY AREA AND ITINERARY

The *Jordan* and *McArthur* departed San Diego, California on 28 July 1992. The *Jordan* returned to San Diego on 2 November 1992, while the *McArthur* finished this cruise in Panama on the same date. The cruise was conducted in three legs of approximately 30 days each, with scheduled port calls in Puerto Quetzal, Guatemala and Rodman, Panama. Unscheduled stops were made in Puerto Caldera, Costa Rica for the *Jordan* and Puntarenas, Costa Rica for the *McArthur*. The cruise tracks for both vessels were chosen to maximize coverage of the known range of the central stock of common dolphin (*Delphinus delphis*) in the ETP (Gerrodette et al. 1993).

The itinerary for both ships (unless otherwise indicated) was as follows:

Leg 1

Departure	28 July	San Diego, California
Arrival	26 August	Puerto Quetzal, Guatemala

Leg 2

Departure	31 August	Puerto Quetzal, Guatemala
Arrival/Departure	08/09 September	Puerto Caldera, Costa Rica (<i>Jordan</i>)
Arrival/Departure	17 September	Isla del Coco, Costa Rica (<i>McArthur</i>)
Arrival/Departure	20 September	Isla del Coco, Costa Rica (<i>Jordan</i>)
Arrival	29 September	Rodman, Panama

Leg 3

Departure	04 October	Rodman, Panama
Arrival/Departure	09 October	Isla de Malpelo, Colombia (<i>Jordan</i>)
Arrival/Departure	13 October	Puntarenas, Costa Rica (<i>McArthur</i>)
Arrival	02 November	San Diego, California (<i>Jordan</i>)
Arrival	02 November	Rodman, Panama (<i>McArthur</i>)

MATERIALS AND METHODS

Oceanography

While the ship was underway, temperature and salinity of surface water were measured and recorded continuously in digital form. Sea water was sampled continuously, from a midship intake 3 meters below the surface, by a Sea-Bird (Model SBE 21) Thermosalinograph.¹ These data, as well as GPS position information, were recorded on a data acquisition system which used the PCPluss for Windows™ (Holland 1992) software.

¹ Reference to trade names does not imply endorsement by the NMFS.

Conductivity, temperature and depth (CTD) casts were made each morning using a Sea-Bird 9/11 CTD and General Oceanics rosette system. Each CTD cast lasted approximately 60 minutes. The CTD was lowered to 1000 meters and sensors connected to shipboard computers measured conductivity (salinity), temperature and pressure (depth). Water samples were collected on all morning CTD casts for salinity calibration, nutrient and phytoplankton pigment analysis, as well as for ^{14}C -uptake incubations. Productivity samples were not taken on evening stations that were done when normal morning operations were not possible.

Acid and Micro[®]-washed 1.7-liter General Oceanics Niskin bottles were retrofitted with silicon rubber o-rings in the valves and endcaps. Silicon rubber tubing was used as the closing mechanism. Casts were made to 1000 meters, Niskin bottles #1-#9 were tripped at 7 variable light depths and 2 additional depths less than 200 m as determined by the "ZEPRED" program (see below). Two more bottles were tripped at 500m and 1000m (or bottom) for salinity calibration samples. At every fourth station, another bottle was tripped at 300m for an additional salinity calibration sample. On these stations, salinities were taken from the surface and bottles #8 - #12.

Nine samples from < 200 meters were collected for chlorophyll (275 ml each) and nutrient (20 ml each) analysis at each station. Extracted chlorophyll and phaeophytin were measured with a Turner Designs Model 10-005R fluorometer. Nutrient samples were collected and immediately frozen for analysis following the cruise. Three (or six on every fourth station) 150 ml salinity samples were also collected and analyzed on an AutoSal (Model 8400) salinometer for CTD calibration purposes.

Water samples for determination of dissolved inorganic carbon uptake were collected from depths to which 100, 50, 30, 15, 5, 1 and 0.1% of the incident light penetrated. Light depths were estimated from expected euphotic zone depths calculated from pigment profiles observed on previous ETP cruises (1986-1990) according to Morel (1988). Samples were drawn into screw cap "Vitro" glass 150 ml bottles (Wheaton Corporation) rinsed twice with sample water. 10 μCi of $\text{NaH}^{14}\text{CO}_3$ were added to each sample bottle. The sample bottles were incubated in nickel screens (Perforated Products) in an on-deck seawater-cooled Plexiglass incubator for 24 hours with natural sunlight as the light source. The screens act as neutral density filters, reducing the light intensity to the same level as that occurring at the depth from which the sample was collected. Two extra samples at the 100% and 0.1% light levels were inoculated with radioactive tracer and filtered immediately without incubation to determine abiotic particulate ^{14}C incorporation (Chavez and Barber 1987). For determination of particulate carbon fixation, the water was filtered onto Whatman GF/F filters at <10 psi of vacuum. The filter was acidified with 0.5 N HCl, immersed in 10 ml of CytoScint ES and counted on a liquid scintillation counter following the end of the cruise. The total inorganic carbon activity was determined by adding 1.0 ml of incubated sample water (from the 100% and 30% light levels) to a scintillation vial containing 1 ml of β -phenylethylamine in 20 ml of CytoScint ES scintillation cocktail. An average of these two values was used as the total amount of added activity for each station in the calculation of carbon uptake for each sample.

Sea-Bird (SBE 19) mini-CTD SEACAT profiler casts were made to 200 meters at 0900 and 1500 hours (local time) daily. An additional cast, to 500 meters, was made after mammal operations had ended for the day. Expendable bathythermograph (XBT) drops were made daily at 1200 hours (local time). XBT's were also substituted for mini-CTD casts when the observers were involved in a mammal chase or when helicopter operations were underway on the *Jordan*.

A Shipboard Environmental data Acquisition System (SEAS) was utilized to collect these data. The XBT drops were transmitted to shore via the GOES (Geostationary Operational Environmental Satellite) system. Position, date and time for each drop were recorded on NOAA XBT logs and floppy disks.

An acoustic data acquisition system (ADA) was operated on the *Jordan* for most of the cruise. Acoustic backscatter was recorded using a 38 Khz and a 200 Khz depth sounder. Backscatter was digitized and integrated in 10-meter intervals between the surface and a depth of 500 meters. Thirty pings were averaged every fifteen minutes to reduce data volume.

Biological Observations

Seabird censuses were conducted, on the *Jordan* only, using standard 300 meter strip-transect methodology and hand-held binoculars. Weather permitting, bird observers stood shifts on the flying bridge throughout the daylight hours when the ship was underway. Species identification, numbers and behavior of birds were recorded, as well as associations with marine mammals, fish or flotsam. Flock compositions and occasionally, individual identifications were verified using mounted 25X binoculars.

Manta tows were conducted each evening after dark using a 505 µm-mesh manta net with a mouth opening of 15 cm x 86 cm. A General Oceanics flowmeter was suspended in the center of the net mouth. The net was towed from the starboard hydrographic wire for fifteen minutes. Samples were preserved in formalin, labeled and stored.

Surface organisms were sampled every evening during a one-hour dipnet station to collect information on the occurrence, relative abundance and distribution of flying fishes in the ETP. Two 500-watt lamps were suspended over the side of the ship to attract animals, and a long-handled dipnet was used to collect them. Other information collected during these stations included species observed, relative abundance and pertinent environmental data (e.g., sea surface temperature and salinity, sea state and moon phase).

As part of a long-term study of the distribution and ecology of sea turtles in the ETP, all sightings of marine turtles made incidental to the marine bird and mammal surveys were recorded. Identification, approximate size, and associations with birds, fish, flotsam and other turtles were also recorded. Under normal field conditions, specific identification of sea turtles other than leatherbacks is difficult. Therefore, in order to obtain a sample of identified individuals, the ship was diverted briefly to pass closely by individuals that were close to the trackline to photograph or for experienced observers to identify. Live turtles were captured opportunistically for biological sampling or for the purpose of freeing them from entanglement. A large net with a breakaway netting was used to scoop up turtles rafting at the surface that passed close by the bow. This allowed us to capture turtles for tagging and obtaining blood samples then to release them unharmed. Dead turtles were salvaged to obtain life history data, stomach contents and reproductive tracts. The handling of live turtles and the salvage of dead turtles in international waters are covered by Endangered Species Permit No. 691, Modification No. 1. Importation of endangered species parts is covered by CITES permit US742057.

On the *Jordan*, fish stomach contents were collected opportunistically and analyzed for a food habits study. Fish were caught by rod and reel or trolling. The fish were identified, sexed

and measured. Associations with flotsam, other fish, bird flocks or mammals were recorded. Stomach contents were identified and measured. Unidentifiable stomach contents were preserved in alcohol for later identification. Seabirds were collected opportunistically for gut content analysis.

RESULTS

Gerrodette *et al.* (1993) will report on the dolphin assessment methods and data collected from the 1992 *Jordan* and *McArthur* PODS cruises.

The cruise tracks for the *Jordan* and *McArthur* are plotted in Figure 1. Table 1 lists the total numbers of environmental and biological samples, by category, collected on both ships.

Oceanography

Figure 2 shows the locations of the 52 *Jordan* and 65 *McArthur* CTD casts. Four of the *Jordan* and two of the *McArthur* CTD casts did not have associated bottle data due to rosette malfunctions. The main CTD on the *Jordan* was lost due to the separation of the conducting cable during a cast on Oct. 7th. Following this loss, eleven hydrocasts were made in conjunction with mini-CTD casts.

XBT data were sent by the SEAS to the National Ocean Service, NOAA.² Mini-CTD and digital XBT data were edited at the SWFSC. Figure 3 shows all mini-CTD and XBT deployment locations.

Digital records of continuous surface data from the thermosalinograph are now being analyzed at the SWFSC. Plots of continuous environmental data from previous ETP dolphin surveys have been published in a separate report (Fiedler *et al.* 1990). Sea surface temperatures (Figure 4) were within 0.5°C of normal throughout most of the study area, as shown in Figure 5. The 20°C isotherm (Figure 6) represents thermocline depth in the tropical Pacific (Fiedler 1992).

Discrete chlorophyll samples were analyzed at sea and data were processed at the SWFSC in La Jolla. Results are presented in Appendix A. Surface chlorophyll concentrations from both the *Jordan* and the *McArthur* are mapped in Figure 7.

Selected frozen nutrient samples were shipped to Monterey Bay Aquarium Research Institute to be analyzed. Nutrient and chlorophyll data will be submitted to NOAA/National Oceanographic Data Center.

Primary productivity samples were analyzed and the data were processed after the cruise at the Southwest Fisheries Science Center. This information will be published in a separate paper. Primary productivity data, collected in 1990, has been reported by Fiedler *et al.* 1991.

Acoustic backscatter data will be analyzed at the SWFSC. A couple of weeks (during leg 2)

² Persons wishing to receive copies of these data should write to: National Ocean Service, Universal Bldg. South, Rm. 618, 1825 Connecticut Ave., NW, Washington, D.C., 20235.

of data during the second leg of the cruise were lost due to a system malfunction and computer breakdown.

Biological Observations

A total of 577.4 hours during 87 days was spent on effort for the seabird distribution and abundance survey. During this time, 6682 individuals of 52 species were recorded (Tables 2 and 3).

Abundance of seabirds varied according to the area surveyed and the month, a fact evidenced by the differences in abundance by leg (Tables 2 and 3). In general, the most abundant seabirds were approximately equally represented by the family Sulidae (especially Brown, Red-footed, and Masked Booby), the family Oceanitidae (especially Wedge-rumped and Black Storm-Petrel), and the family Procellariidae (especially Audubon's, Black-vented, Townsend's and Wedge-tailed Shearwater).

Manta tow samples have been sorted and identified at SWFSC.³

Figure 8 shows the locations of the 75 *Jordan* and 63 *McArthur* dipnet stations occupied during the cruise. Tables 4a (*Jordan*) and 4b (*McArthur*) summarize the data and specimens collected during each of the stations. On the *Jordan*, a total of 873 flying fish of at least 10 species were collected, along with 399 *Oxyporhamphus micropterus*, 544 myctophids, 208 scombrids, 353 miscellaneous fishes and 158 squids. On the *McArthur*, a total of 346 flying fish of at least 10 species were collected, along with 203 *Oxyporhamphus micropterus*, 275 myctophids, 27 scombrids, 82 miscellaneous fishes and 7 squids. The flying fish, *Oxyporhamphus* and miscellaneous fishes will be processed and stored at the Los Angeles Museum of Natural History. The scombrids were donated to Inter-American Tropical Tuna Commission researchers. The squids and myctophids will become part of a reference collection at SWFSC.

On the *Jordan*, a total of 491 sea turtles were sighted (Figure 9), including 192 olive ridleys (*Lepidochelys olivacea*), 7 loggerheads (*Caretta caretta*), 1 leatherback (*Dermochelys coriacea*) and 291 unidentified hardshell turtles. A total of 55 olive ridleys were opportunistically captured during the cruise (53 were tagged and released). One olive ridley hatchling, too small to be tagged, was photographed and released. A moribund adult died after being held on board overnight and was brought back frozen so that a necropsy could be performed to determine the cause of death. A total of 43 blood samples were drawn from the captured turtles. The plasma portions were sent to Texas A& M University for hormone studies, while the red and white blood cell components were sent to Dr. Brian Bowen at the University of Florida, Gainesville, for DNA/stock analysis.

On the *McArthur*, 357 turtles were recorded (Figure 9), including 21 olive ridleys that were captured, tagged (all but one) and released and 1 leatherback. Blood samples were obtained from 17 of the captured turtles and distributed (see above) with those from the *Jordan*.

On the *Jordan*, a total of 45 fish were examined for stomach content analysis, including 22

³ Questions concerning these samples may be addressed to Dr. Geoff Moser at the SWFSC.

mahi mahi (*Coryphaena hippurus*) and 23 miscellaneous tuna. A total of 5 birds were collected for gut content analysis.

ACKNOWLEDGEMENTS

Many people contributed to the success of this cruise. We especially wish to thank the following people whose invaluable efforts made this project possible: T. Gerrodette (Chief Scientist) and K. Mangels (Survey Coordinator); the officers and crew of the NOAA ships *David Starr Jordan* and *McArthur* for their considerable time and skilled efforts; the marine mammal observers and other cruise participants for their assistance with data collection on ancillary projects; R. Holland for many of the plots and assisting in procurement and computer logistics; B. Watkins for providing support in procurement and J. Barlow for creating and modifying the Acoustic Data Acquisition system. We are grateful to I. Barrett, R. Neal and D. DeMaster for their continued support during the cruise preparations and during the cruise itself.

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Table 1. Summary of environmental and biological data collected, *David Starr Jordan* and *McArthur*, 28 July - 2 November, 1992¹

LEG #	<i>David Starr Jordan</i>				<i>McArthur</i>				COMBINED TOTALS
	1	2	3	TOTALS	1	2	3	TOTALS	
CTD casts w/rosette	15	24	2	41	17	22	26	65	106
Hydrocasts only	-	-	11	11	-	-	-	0	11
Mini-CTD casts	12	61	55	128	45	77	74	196	324
XBT drops - successful	44	36	44	124	16	33	23	72	196
CTD chlorophyll samples	126	212	97	435	150	190	203	543	978
Surface chlorophyll samples	177	143	143	463	149	169	157	475	938
Primary productivity samples (¹⁴ C uptake)	91	153	77	321	117	152	145	414	735
Nutrient samples	126	212	97	435	150	190	195	535	970
Manta tows	19	19	19	57	12	22	25	59	116
Flying Fish collected	210	192	470	872	68	177	101	346	1,218
Fish stomach samples	6	30	9	45	0	0	0	0	45
Bird stomach samples	0	4	1	5	0	0	0	0	5
Turtle sightings	283	145	62	490	271	38	48	357	847
Turtle captures	20	27	9	56	17	0	4	21	77
Bird sightings	3497	1640	1558	6,695	-	-	-	-	6,695
Bird effort (hours/tot. days)	193.8 /29	205.5 /29	178.1 /29	577.4 /87	-	-	-	-	577.4 /87

¹ Continuous sea surface temperature and salinity was recorded during all three legs on both ships.

Table 2. Number of seabirds recorded from the *Jordan*, 28 July - 2 November 1992, listed by family.

COMMON NAMES	Family (<i>Genus</i>)	Leg Number			TOTAL
		I	II	III	
ALBATROSSES	Diomedidae	0	0	3	3
PETRELS and SHEARWATERS	Procellariidae				
	Pterodroma Petrels	120	25	23	168
	Other Petrels (<i>Bulweria</i> , <i>Procellaria</i> , <i>Fulmarus</i> and <i>Daption</i>)	3	20	9	32
	Shearwaters (<i>Puffinus</i>)	1089	166	229	1,484
STORM-PETRELS	Oceanitidae	924	403	239	1,566
TROPICBIRDS	Phaethontidae	25	25	13	63
PELICANS	Pelecanidae	185	12	1	198
BOOBIES	Sulidae	431	415	498	1,344
CORMORANTS	Phalacrocoracidae	0	0	0	0
FRIGATEBIRDS	Fregatidae	46	55	20	121
PHALAROPES	Phalaropidae	439	216	268	923
JAEGERS	Stercorariidae	95	28	58	181
GULLS, TERNS and NODDIES	Laridae				
	Gulls (<i>Larus</i>)	44	16	17	77
	Terns (<i>Sterna</i> , <i>Chlidonias</i> and <i>Gygis</i>)	55	203	110	368
	Noddies (<i>Anous</i>)	1	16	2	19
ALCIDS	Alcidae	22	0	6	28

Table 3. Identity and numbers of seabirds recorded from the *Jordan*, 28 July - 2 November, 1992.

Common Name	Scientific Name	I	II	III	TOTAL
Brown Booby	<i>Sula leucogaster</i>	163	212	265	640
Wedge-rumped Storm-Petrel	<i>Oceanodroma tethys</i>	319	203	56	578
Audubon's Shearwater	<i>Puffinus lherminieri</i>	456	70	12	538
Red Phalarope	<i>Phalaropus fulicarius</i>	185	150	145	480
Red-footed Booby	<i>Sula sula</i>	157	177	127	461
Black Storm-Petrel	<i>Oceanodroma melania</i>	320	84	25	429
Unidentified Phalarope	<i>Phalaropus spp.</i>	123	34	113	270
Black-vented Shearwater	<i>Puffinus optisthomelas</i>	228	0	30	258
Townsend's Shearwater	<i>Puffinus auricularis</i>	154	0	96	250
Brown Pelican	<i>Pelecanus occidentalis</i>	185	11	1	197
Northern Phalarope	<i>Phalaropus lobatus</i>	131	32	10	173
Wedge-tailed Shearwater (Light morph)	<i>Puffinus pacificus</i>	96	26	42	164
Masked Booby (Orange-billed race)	<i>Sula dactylatra granti</i>	57	22	82	161
Unidentified Storm-Petrel	<i>Oceanodroma spp.</i>	88	26	41	155
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	87	12	43	142
Unidentified Shorebird		56	50	25	131
Black Tern	<i>Chlidontias niger</i>	17	41	51	109
Arctic Tern	<i>Sterna paradisaea</i>	4	69	35	108
Least Storm-Petrel	<i>Halocryptena microsoma</i>	64	14	17	95
Leach's Storm-Petrel (Dark-rumped)	<i>Oceanodroma leucorhoa</i>	80	2	9	91
Pink-footed Shearwater	<i>Puffinus creatopus</i>	41	17	18	76
Leach's Storm-Petrel (White-rumped)	<i>Oceanodroma leucorhoa</i>	7	2	67	76
Markham's Storm-Petrel	<i>Oceanodroma markhami</i>	40	25	6	71
Juan Fernandez Petrel	<i>Pterodroma externa externa</i>	63	1	0	64
Red-billed Tropicbird	<i>Phaethon aethereus</i>	25	25	12	62
Harcourt's Storm-Petrel	<i>Oceanodroma castro</i>	1	46	13	60
Masked Booby (Unidentified morph)	<i>Sula dactylatra</i>	38	3	19	60
Sooty Tern	<i>Sterna fuscata</i>	3	57	0	60
Tahiti Petrel	<i>Pterodroma rostrata</i>	32	5	21	58
Unidentified Frigatebird	<i>Fregata sp.</i>	10	41	5	56
Unidentified Passerine		8	40	8	56
Unidentified Non-passerine		1	0	51	52
Magnificent Frigatebird	<i>Fregata magnificens</i>	32	7	6	45
Sabine's Gull	<i>Larus sabini</i>	14	8	15	37
Kermadec Petrel	<i>Pterodroma neglecta</i>	23	9	1	33
Sooty Shearwater	<i>Puffinus griseus</i>	32	0	0	32
White Tern	<i>Gygis alba</i>	11	17	4	32

Table 3. continued.

Common Name	Scientific Name	I	II	III	TOTAL
Western Gull	<i>Larus occidentalis</i>	30	0	0	30
Parkinson's Petrel	<i>Procellaria parkinsoni</i>	3	20	4	27
Great Frigatebird	<i>Fregata minor</i>	4	7	9	20
Royal Tern	<i>Sterna maxima</i>	17	3	0	20
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	5	10	4	19
Brown Noddy	<i>Anous stolidus</i>	1	16	2	19
Unidentified Murrelet	<i>Endomychura spp.</i>	14	0	4	18
Bridled Tern	<i>Sterna anaethetus</i>	2	14	1	17
Christmas Shearwater	<i>Puffinus nativitatus</i>	12	2	1	15
Wedge-tailed Shearwater (Dark morph)	<i>Puffinus pacificus</i>	10	1	3	14
Least Tern	<i>Sterna antillarum</i>	0	2	11	13
Blue-footed Booby	<i>Sula nebouxi</i>	10	1	1	12
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	1	3	7	11
Masked Booby (Yellow-billed race)	<i>Sula dactylatra californica</i>	6	0	4	10
Swallow-tailed Gull	<i>Larus furcatus</i>	0	8	2	10
Unidentified Jaeger	<i>Stercorarius spp.</i>	2	3	4	9
Skua	<i>Catharacta sp.</i>	6	0	2	8
Dark-rumped Petrel	<i>Pterodroma phaeopygia</i>	0	5	1	6
Unidentified Shearwater	<i>Puffinus spp.</i>	4	0	2	6
Craveri's Murrelet	<i>Endomychura craveri</i>	4	0	2	6
Northern Fulmar	<i>Fulmarus glacialis</i>	0	0	5	5
Unidentified Tern	<i>Sterna spp.</i>	1	0	4	5
Cook's Petrel	<i>Pterodroma cookii</i>	1	3	0	4
Common Tern	<i>Sterna hirundo</i>	0	0	4	4
Rhinoceros Auklet	<i>Cerorhinca monocerata</i>	4	0	0	4
Waved Albatross	<i>Diomedea irrorata</i>	0	0	3	3
Black-winged Petrel	<i>Pterodroma nigripennis</i>	0	2	0	2
Unidentified Loon	<i>Gavia spp.</i>	0	0	1	1
Arctic Loon	<i>Gavia arctica</i>	1	0	0	1
Juan Fernandez/White-necked Petrel	<i>Pterodroma externa cervicalis</i>	1	0	0	1
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>	0	0	1	1
Unidentified Pelican	<i>Pelecanus spp.</i>	0	1	0	1
TOTALS		3,490	1,639	1,553	6,682

Table 4a. Results of night-light dipnet sampling, *Jordan*, 28 July - 3 November, 1992.

Station ¹ Number	Date Y-M-D	Hours of Effort	L o c a t i o n		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
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¹ - Records without Station Numbers reflect opportunistic or non-standard specimen collections.

² - Beaufort Scale

³ - 1 = quarter moon; 2 = half moon; 3 = ¾ moon; 4 = full moon; 5 = no moon; 6 = new moon.

⁴ - 1 = clear; 2 = partly cloudy; 3 = overcast; 4 = rain; 5 = other or unknown.

⁵ - 005 = Unidentified flying fish

010 = Oxyporhamphus micropterus

015 = Fodiator spp.

020 = Exocetus spp.

030 = Unidentified 4-wing flying fish

060 = Elassichthys

080 = Hemiramphidae (halfbeaks)

090 = Belonidae (needlefish)

100 = Myctophidae (laternfish)

125 = Vinciguernia spp.

200 = Scombridae (tunas)

300 = Gempylidae (snake mackerel)

400 = Coryphaenidae (dolphinfish)

500 = Other

700 = Octopoda (pelagic octopus)

900 = Sea Snake

⁶ - 1 = "a couple" (1-3)

2 = "a few" (4-8); uncommon

3 = "several" (9-15); fairly common

4 = "common" (16-50)

5 = "abundant" (51-150)

6 = "superabundant" (150+)

7 = 1000's

8 = "present"

9 = "possibly present"

⁷ - 1 = Large (mantle length > 8 inches)

2 = Medium (3 inches ≤ mantle length ≤ 8 inches)

3 = Small (mantle length < 3 inches)

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
1	92-07-30	1.0	27 27 N	115 08 W	3.0	5	1	21.3	33.11	30	2	2	1	4	
										90	1		2	1	
										400	1		3	1	
										500	4				
2	92-07-31	1.0	26 17 N	113 49 W	4.0	1	1	23.8	33.25	80	2		1	5	
										90	1		2	2	
										100	3		3	1	
3	92-08-01	1.0	26 00 N	113 35 W	2.0	1	1	28.9	33.81	30		1			
										92-08-02	23 33 N	110 53 W	30		1
3	92-08-02	1.0	22 32 N	108 09 W	2.0	1	1	28.9	33.81	10	3	5	1	3	
										20	1	1	2	2	
										100	3	3	3	1	
										400	2				
										500	3				
										500	1				
4	92-08-03	0.6	21 00 N	105 49 W	2.0	1	2	30.2	33.42	10	4	12	1	3	
										30	2	3	2	2	
										80	2		3	3	
										200	2	4			
										500	1	1			
										500	5	4			
										500	2	3			
										500	1	1			
5	92-08-05	1.0	16 34 N	99 49 W	2.0	2	1	30.0	32.66	10	8	7			
										15	8	10			
										30	8	1			
										200	8	1			
										500	8	9			
										500	8	1			
										500	8	1			
500	8	2													
6	92-08-06	1.0	15 28 N	96 08 W	3.0	3	2	30.1	33.17	10	1	2	1	1	
										15	1	2	2	4	
										30	1	2			
										100	1	1			
										500	2	3			
										500	1	1			
7	92-08-07	1.0	14 28 N	93 06 W	3.0	3	2	29.8	32.94	10	3	4	2	6	
										30	1	1			
										100	1	1			
										500	1	1			
										500	2	4			
										500	3	2			
8	92-08-08	1.0	13 07 N	91 46 W	0.0	3	2	29.2	33.04	10	1	1	1	1	
										20	1	1	2	4	
										30	2	3			
										500	1				
9	92-08-09	1.0	12 07 N	92 57 W	3.0	3	2	28.4	32.80	10	4	14	1	2	
										20	2	5	2	4	
										30	4	10			
										100	2				
9	92-08-09	1.0	12 07 N	92 57 W	3.0	3	2	28.4	32.80	400	3				
10	92-08-10	1.0	10 55 N	94 10 W	0.0	4	1	29.0	32.95	10	4	10	2	4	

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
10	92-08-10	1.0	10 55 N	94 10 W	0.0	4	1	29.0	32.95	20	4	14	3	1	
										30	3	5			
										100	3	2			
										300	1				
										500	1				
11	92-08-11	1.0	09 53 N	95 11 W	0.0	4	1	28.9	32.98	10	3	3	1	2	
										20	3	5	2	4	
										30	3	4	3	1	
										100	3	2			
12	92-08-12	1.0	08 39 N	96 27 W	4.0	5	3	28.6	32.59	10	2	2	1	1	
										20	1	1	2	3	
										30	3	9	3	1	
										100	3	4			
										500	4	1			
13	92-08-13	1.0	07 43 N	97 16 W	4.0	5	3	27.9	32.36	10	1	1	1	4	
										20	1		2	2	
										30	1				
										100	3				
14	92-08-14	1.0	05 59 N	97 29 W	2.0	4	2	27.4	32.11	10	2	2	1	2	
										20	3	10	2	3	
										30	4	13			
										60	1	1			
										100	4	7			
15	92-08-15	1.0	07 02 N	96 00 W	4.0	5	5	28.1	32.40	10	3	6	1	3	
										20	2	3	2	3	
										30	2	4			
										100	3	2			
										300	1				
16	92-08-16	1.0	08 06 N	94 52 W	4.0	5	3	28.0	32.78	10	6	12	1	3	
										20	3	7	2	4	
										30	2	4			
										100	3				
										400	2				
17	92-08-16		08 08 N	94 55 W											
	92-08-17	1.0	09 16 N	93 45 W	4.0	5	3	27.0	33.43	10	6	14	1	4	
										20	1	2	2	3	
										30	1	2			
										100	4	6			
18	92-08-18	1.0	10 20 N	92 41 W	3.0	5	3	28.0	32.83	10	6	15	1	5	
										20	4	11	2	4	
										30	4	7			
										100	4	1			
										300	1				
19	92-08-19	1.0	11 07 N	92 00 W	1.0	5	2	28.5	33.00	10	6	12	1	3	
										20	4	12	2	3	
										30	3	6			
										100	3	1			
										300	1				
20	92-08-20	1.0	12 08 N	92 58 W	2.0	5	1	29.2	33.54	10	6	12	1	2	

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
20	92-08-20	1.0	12 08 N	92 58 W	2.0	5	1	29.2	33.54	20	2	2	2	3	
										30	2	1	3	1	
										100	3	2			
										300	1				
										400	1				
21	92-08-21	1.0	09 50 N	90 52 W	3.0	5	3	28.0	33.31	10	6	11	1	6	
										20	2	3	2	3	
										30	2	3	3	1	
										100	5	19			
										200	2	2			
										300	2				
22	92-08-22	1.0	10 14 N	91 14 W	4.0	5	3	28.4	33.43	400	4				
										500	3	5			
										10	5	12	1	4	
										20	2	4	2	3	
										30	2	3	3	1	
										100	3				
23	92-08-23	1.0	12 09 N	91 02 W	4.0	5	3	29.0	33.49	400	1				
										10	8	11	1	5	
										20	8	6	2	3	
										30	8	2			
										80	1				
										90	1				
										100	3				
										300	1				
										400	1				
										500	3	2			
24	92-08-23		12 08 N	91 07 W						30		1			
	92-08-24	1.0	13 11 N	89 47 W	1.0	5	1	30.0	33.32	30	1	1			
										100	1	1			
										400	2				
										500	1	1			
										500	1	1			
25	92-08-25	1.0	12 59 N	90 18 W	0.0	5	3	30.4	33.42	30	4	14	2	3	
										80	1	1			
										200	4	6			
										400	4				
										500	3	3			
										500	2	2			
										500	1	2			
										500	1	1			
										500	1	1			
										30		1			
26	92-08-25		13 00 N	90 17 W						200	3	1	1	5	
	92-08-31	1.0	13 00 N	90 11 W	4.0	1	2	29.5	33.03	200	3	1	1	5	
										500	2	5	2	3	
27	92-09-01	1.0	11 11 N	89 45 W	3.0	2	2	28.1	32.83	500	1	1	3	2	
										10	1	1	1	2	
										100	4	6	2	5	
27	92-09-01	1.0	11 11 N	89 45 W	3.0	2	2	28.1	32.83	200	4	1	3	2	
										300	1				
										20		1			
28	92-09-02	1.0	10 31 N	90 30 W	3.0	2	1	28.5	32.80	30		1			
										10	3	8	1	2	
										20	1	1	2	3	
										30	1	2	3	2	
										100	2	1			

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
28	92-09-02	1.0	11 32 N	89 34 W	3.0	2	1	28.5	32.80	300	1				
										500	1	1			
29	92-09-03	1.0	10 49 N	87 52 W	5.0	2	1	27.9	32.49	10	1	2	1	2	
										30	2	4	2	2	
										100	2				
										400	1				
										500	1	1			
30	92-09-04	1.0	09 02 N	85 55 W	3.0	5	3	28.2	32.38	10	1		1	3	
										20	1	1	2	6	
										30	2	4			
										100	4	16			
										400	1				
31	92-09-05	1.0	08 27 N	84 37 W	2.0	2	2	28.5	32.04	10	1	1	1	2	
										20	1	2	2	4	
										30	1	1			
										80	1				
										100	4	13			
32	92-09-06	1.0	07 27 N	85 38 W	2.0	3	2	28.1	32.29	20	1	2	1	2	
										30	1	2	2	4	
										100	4	17			
										200	6	107			
										400	3				
33	92-09-07	1.0	06 25 N	86 46 W	4.0	5	4	27.8	32.14	20	2	2	1	2	
										100	4	7	2	4	
										500	1	1			
										900	1				
	92-09-08		07 03 N	86 24 W						30		3			
	92-09-08		09 58 N	84 50 W						15		3			
										80		1			
										500		1			
34	92-09-09	1.0	09 35 N	85 23 W	2.0	5	3	28.8	31.98	30	1	1	1	2	
										90	1		2	6	21
										100	1	1	3	1	
										500	1	1			
										500	1	1			
35	92-09-12	1.0	04 29 N	88 38 W	3.0	5	2	27.4	32.91	10	2	4	1	3	
										20	2	5	2	4	
										30	2	2			
										100	4	15			
										400	1				
										500	1	1			
	92-09-12		04 28 N	88 37 W						30		1			
36	92-09-13	1.0	03 14 N	89 47 W	6.0	5	3	26.6	32.42	10	1	2	1	2	
										20	2	3	2	2	
										30	1	2			
36	92-09-13	1.0	03 14 N	89 47 W	6.0	5	3	26.6	32.42	100	3	3			
37	92-09-14	1.0	02 02 N	90 56 W	3.0	5	3	24.9	33.96	10	1	1	1	3	
										20	1	1	2	4	
										30	1				
										100	6	62			
										300	4				
										400	1				
38	92-09-15	1.0	04 12 N	93 12 W	4.0	5	3	26.7	33.45	20	4	21	1	2	
										30	1	2	2	3	
										100	5	16			
										300	1				

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
38	92-09-15	1.0	04 12 N	93 12 W	4.0	5	3	26.7	33.45	400	2				
	92-09-16		04 29 N	93 29 W						30		1			
39	92-09-16	1.0	03 34 N	92 40 W	4.0	5	3	26.6	33.36	20	3	6	1	4	
										30	1	1	2	3	
										60	1	1			
										100	5	30			
40	92-09-17	1.0	03 08 N	92 10 W	4.0	5	3	24.9	34.01	30		1			
	92-09-17		02 03 N	90 28 W						100	6	47	1	4	
41	92-09-18	1.0	03 08 N	87 59 W	5.0	5	3	26.6	33.04	10	1	1	1	4	
										20	2	5	2	3	
										30	1	1			
										100	4	7			
42	92-09-19	1.0	04 32 N	86 48 W	4.0	5	2	26.7	32.52	300	2				
										500	1	1			
										10	2	3	1	5	
										20	3	9	2	3	
43	92-09-22	1.0	07 46 N	83 15 W	3.0	5	2	28.1	31.08	30	1				
										100	5	15			
										300	1				
										400	2				
44	92-09-23	1.0	08 44 N	83 52 W	2.0	5	3	28.6	31.38	500	1	1			
										10	8	1			
										20	8	14			
										30	8	10			
45	92-09-24	1.0	09 20 N	85 23 W	4.0	5	3	28.6	30.64	500	8	3			
										10	2	4	1	2	
										30	3	4	2	4	
										100	3	5			
46	92-09-25	1.0	07 49 N	84 49 W	4.0	5	4	26.7	32.16	200	6	10			
										300	2				
										400	3				
										500	5	25			
47	92-09-25	1.0	09 11 N	85 40 W	4.0	5	4	26.7	32.16	500	2	4			
										500	8	5			
										500	8	12			
										500	1	1			
48	92-09-25	1.0	07 49 N	84 49 W	4.0	5	4	26.7	32.16	500	1	1			
										900	1				
										20		5			
										30		14			
49	92-09-25	1.0	07 49 N	84 49 W	4.0	5	4	26.7	32.16	500	3	4			
										500	1	1			
										900	1				
										10	2	4	1	4	
50	92-09-25	1.0	09 20 N	85 23 W	4.0	5	3	28.6	30.64	30	1		2	4	
										100	3	2	3	1	
										200	1	1			
										400	1				
51	92-09-25	1.0	09 11 N	85 40 W	4.0	5	4	26.7	32.16	30		1			
										10	4	11	1	3	
										20	4	11	2	4	
										30	1	1	3	2	

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
46	92-09-25	1.0	07 49 N	84 49 W	4.0	5	4	26.7	32.16	100	4	12			
										200	4	19			
										300	2				
										400	1				
47	92-09-26	1.0	05 57 N	83 03 W	4.0	5	3	27.2	32.88	10	2	3	1	4	
										20	4	12	2	4	
										30	2	5			
										100	4	9			
										300	1				
48	92-09-27	1.0	06 20 N	80 53 W	4.0	5	4	27.3	31.00	20	1	1	2	4	
										30	2	5			
										80	1	1			
										90	1				
										90	2				
										100	3	2			
	400	2													
	500	3	1												
	500	3	1												
	92-09-27	06 21 N	80 54 W	20		2									
	30				2										
	100				2										
	200				3										
500				1											
500				35											
500				3											
49	92-09-28	1.0	08 11 N	79 06 W	0.0	5	3	28.0	30.44	30	2	3			
										90	1				
										500	6	33			
										500	3	4			
										500	2	1			
										500	1	1			
										500	1	2			
										500	1	1			
										500	1	1			
										900	2	1			
50	92-10-04	1.0	07 28 N	78 59 W	1.0	2	2	27.5	30.38	30	2	4	2	6	
										200	4	13			
										400	3	2			
50	92-10-04	1.0	07 28 N	78 59 W	1.0	2	2	27.5	30.38	500	1	1			
										500	1	1			
										900	1				
										30		1			
51	92-10-05	1.0	05 01 N	77 57 W	3.0	5	2	27.1	30.90	10	1	1	2	2	
										30	1				
										100	2	2			
										500	1				
52	92-10-06	1.0	04 06 N	78 54 W	3.0	3	1	26.8	31.98	500	1	1			
										10	1	1			
										20	1	1			
										30	1	2			
										100	6	26			
53	92-10-07	1.0	03 08 N	79 54 W	3.0	5	3	26.7	32.55	200	5	4			
										10	2	5	1	3	
										20	3	8	2	4	
										30	3	4			

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
53	92-10-07	1.0	03 08 N	79 54 W	3.0	5	3	26.7	32.55	100	5	20			
										400	1				
	92-10-07		03 09 N	79 54 W						20		2			
54	92-10-08	1.0	02 15 N	80 57 W	3.0	5	3	26.5	33.11	30		4			
										10	2	3	1	3	
										20	3	8	2	3	
55	92-10-10	1.0	02 51 N	83 53 W	3.0	5	3	26.3	33.04	30	2	3			
										100	4	11			
										10	1	1	1	2	
56	92-10-11	1.0	02 01 N	85 18 W	3.0	5	3	25.6	33.35	20	3	10	1	3	
										20	2	3	2	4	
										30	1				
57	92-10-12	1.0	03 05 N	88 02 W	3.0	4	2	26.0	33.39	100	4	15			
										10	2	4	1	3	
										20	2	4	2	4	
58	92-10-13	1.0	04 54 N	89 42 W	3.0	5	1	26.7	33.09	100	5	23	3	2	
										300	1				
										500	1	1			
59	92-10-14	1.0	06 04 N	90 56 W	1.0	5	2	27.2	32.68	10	2	4	1	3	
										20	3	7	2	4	
										100	6	30			
60	92-10-15	1.0	08 16 N	93 19 W	3.0	5	1	27.5	32.80	300	1				
										400	1				
										30		1			
61	92-10-16	1.0	10 24 N	95 30 W	3.0	5	1	28.5	33.47	10	6	15	1	5	
										20	4	27	2	3	
										30	2	2			
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	100	5	11			
										300	1				
										400	2				
60	92-10-15	1.0	08 16 N	93 19 W	3.0	5	1	27.5	32.80	500	5	3			
										10	6	12	1	5	
										20	5	23	2	5	
61	92-10-16	1.0	10 24 N	95 30 W	3.0	5	1	28.5	33.47	30	4	14			
										100	5	6			
										400	2				
61	92-10-16	1.0	10 24 N	95 30 W	3.0	5	1	28.5	33.47	500	1	1			
										10	3	3	1	4	
										20	3	6	2	4	
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	30	4	14	3	2	
										80	1	1			
										100	4	5			
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	300	2				
										400	2				
										500	1	1			
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	10	6	16	1	6	
										20	4	10	2	5	
										30	3	5	3	3	
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	100	4	6			
										300	1				
										400	2	1			

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
62	92-10-17	1.0	09 41 N	97 12 W	3.0	5	3	27.8	33.26	500	1	2			
										500	1	2			
	92-10-17		09 40 N	97 12 W						20		4			
										30		20			
63	92-10-18	1.0	08 46 N	98 02 W	3.0	5	2	27.7	32.98	10	8	8	1	8	
										20	8	21	2	8	
										30	8	5			
										100	8	3			
										300	1				
										500	1	1			
64	92-10-19	1.0	10 23 N	98 51 W	3.0	5	2	27.9	33.13	10	6	14	1	4	
										20	3	6	2	4	
										30	4	22			
										100	5	3			
										300	2				
65	92-10-21	1.0	12 00 N	95 20 W	3.0	1	1	28.0	33.60	10	5	12	1	3	
										20	3	6	2	4	
										80	1	1			
										90	1				
										300	1				
										500	4	5			
66	92-10-21	1.0	11 06 N	96 03 W	6.0	5	3	28.5	33.44	10	5	14	1	2	
										20	3	4	2	3	
										30	4	8			
										400	1				
67	92-10-22	1.0	10 28 N	98 55 W	3.0	5	3	28.1	33.41	30		2			
										10	5	20	1	4	
	92-10-22									20	3	5	2	5	
										30	3	6	3	1	
										100	4	4			
										400	1				
92-10-23			11 15 N	99 27 W					10		3				
									20		11				
68	92-10-23	1.0	11 57 N	98 48 W	2.0	5	3	28.7	33.18	30		47			
										10	4	8	1	2	
	92-10-23										20	2	4	2	3
											30	4	24	3	3
											80	2	4		
											90	1	1		
											100	1	1		
											300	2			
											400	4			
											500	1	2		
											500	1			
500	1	1													
500	1	2													
92-10-23			11 58 N	98 48 W						30		4			
										20		18			
										30		41			
69	92-10-24	1.0	13 14 N	98 31 W	1.0	5	2	29.2	32.99	10	6	12	2	6	
										20	2	2	3	3	
										30	2	2			
										80	1	1			

Table 4a. *Jordan* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
69	92-10-24	1.0	13 14 N	98 31 W	1.0	5	2	29.2	32.99	100	4	3			
										400	2				
										500	2	4			
70	92-10-25	1.0	15 48 N	100 13 W	1.0	5	2	29.3	32.42	10	4	8	2	6	
										20	3	6	3	3	
										30	2	3			
										100	3	1			
										300	2				
										400	2				
										500	6	9			
										500	1				
										500	1				
										500	1	1			
71	92-10-26	1.0	17 39 N	102 30 W	1.0	5	2	29.2	33.44	10	2	2	1	4	
										30	1	2	2	4	
										100	2	3	3	2	
										200	1	1			
										400	2				
										500	2	4			
72	92-10-27	1.0	19 36 N	105 25 W	4.0	5	3	30.2	33.91	15	1	3	3	5	
										30	1	3			
										80	1	1			
										90	1	1			
										200	6	35			
										400	1				
										500	4	11			
										500	3	1			
										500	1	1			
										500	1	1			
73	92-10-28	1.0	21 52 N	107 09 W	0.0	1	1	30.0	34.06	10	4	8	2	4	
										30	4	16	3	3	
										80	3	5			
										90	2	1			
										100	2	1			
										400	2				
										500	6	75			
										500	3	2			
										500	2	3			
										500	1	1			
74	92-10-29	1.0	23 12 N	110 28 W	1.0	5	3	27.4	34.40	10	4	9	1	1	
										20	1	2	2	2	
										30	3	7	3	1	
										80	1	1			
										90	1	2			
										100	3	4			
										400	1				
75	92-10-30	1.0	25 22 N	113 08 W	5.0	1	2	25.3	34.33	10	1	2	1	1	
										20	1	2	2	3	
										80	1				
										100	4	9			
										200	1				

Table 4b. Results of night-light dipnet sampling, *McArthur*, 28 July - 3 November, 1992.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁵ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
1	92-08-08	1.0	11 11 N	87 52 W	4.0	1	5	28.6	33.70	5	1	0	2	3	
										10	1	2			
										100	1	1			
2	92-08-09	1.0	10 13 N	88 51 W	3.0	3	2	22.2	33.35	10	3	3	2	3	
										20	3	7			
										30	2	1			
										100	3	2			
										300	1				
3	92-08-10	1.0	9 26 N	89 41 W	0.0	3	2	29.2	33.40	10	2	4	2	5	
										100	3				
										300	1				
										400	1	2			
										500	1				
4	92-08-11	1.0	8 16 N	90 32 W	2.0	5	3	28.3	32.60	10	3	4	2	5	
										30	1	2			
										100	5				
5	92-08-12	1.0	7 41 N	91 12 W	6.0	5	3	27.6	33.77	10	1				
6	92-08-13	1.0	6 31 N	92 18 W	3.0	5	3	27.7	32.80	5	1		2	2	
										100	2				
7	92-08-14	1.0	5 33 N	93 25 W	4.0	4	3	27.8	33.10	20	2	3	2	4	
										30	1				
										100	3	1			
8	92-08-18	1.0	5 40 N	95 10 W	4.0	5	3	27.4	32.90	10	1		2	2	
										20	2	1			
										100	1				
										300	1				
										500	1				
9	92-08-19	1.0	6 35 N	94 15 W	3.0	5	2	27.8	33.10	5	1	1	1	2	
										10	3	4			
										20	3	11			
										100	4	8			
										300	1				
10	92-08-20	1.0	7 57 N	93 06 W	1.0	5	2	28.3	33.00	10	2		2	6	
										20	2	1			
										30	2	2			
										100	5	11			
										300	2				
11	92-08-21	1.0	8 17 N	92 40 W	5.0	5	4	27.8	32.40	10	2	2	1	2	
										20	1	1			
										30	1	1			
										100	2				
										300	1				
12	92-08-22	1.0	9 22 N	91 34 W	3.0	5	2	27.9	33.20	400	2	1	1	4	
										10	6	17			
										20	5	18			
										30	5	19			
										100	4				
13	92-09-01	1.0	12 03 N	88 55 W	3.0	1	2	27.8	33.30	400	3	12	2	4	
										10	3	6			
										20	2	1			
										30	3	3			
										90	4	3			
14	92-09-03	1.0	10 16 N	86 40 W	3.0	1	2	28.3	32.60	100	4	1	2	4	
										500	1	1			
										10	2	1			
										20	4	14			
										20	4	3			

Table 4b. *McArthur* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
14	92-09-03	1.0	10 16 N	86 40 W	3.0	1	2	28.3	32.60	30	1	1			
										90	1	1			
										100	5	2			
15	92-09-04	1.0	10 32 N	87 27 W	5.0	5	3	27.9	33.10	10	2	2	2	3	
										20	2		3	1	
										30	1				
16	92-09-05	1.0	8 39 N	88 15 W	2.0	2	2	28.4	32.60	100	2	1			
										10	1	1	2	2	
										20	1	2	3	4	
										30	2	3			
17	92-09-06	1.0	7 43 N	89 20 W	4.0	5	3	28.1	32.90	100	5	11			
										300	1				
										20	1	4	2	4	
										30	1	1	3	2	
										100	4				
18	92-09-07	0.6	6 32 N	90 16 W	5.0	2	4	27.7	33.00	300	1				
										500	3				
										5	1		1	1	
										10	2	1	2	2	
19	92-09-08	1.0	5 24 N	91 32 W	5.0	5	4	27.3	33.30	100	2		3	3	
										30	2	1			
										100	2				
20	92-09-09	1.0	4 24 N	92 42 W	5.0	3	2	27.0	33.30	300	1				
										10	1		2	2	
										20	2	3	3	4	
										100	4				
21	92-09-10	1.0	3 01 N	93 52 W	4.0	5	3	26.3	33.10	400	1				
										10	1		1	2	
										100	2		2	2	
22	92-09-11	1.0	2 04 N	94 49 W	4.0	4	2	25.1	33.60	10	6	13	2	2	
										20	4	6	3	4	
										30	2	2			
										100	5				
										300	1				
23	92-09-12	1.0	2 29 N	92 30 W	4.0	5	3	25.8	33.30	500	1	1			
										30	1		2	3	
										100	5	9	3	2	
										300	1				
24	92-09-13	1.0	3 00 N	91 57 W	5.0	5	3	26.4	33.10	20	1	1	2	2	
										30	1		3	1	
										80	1				
										100	3				
25	92-09-14	1.0	4 18 N	90 45 W	5.0	5	3	27.1	33.00	5	1				
										20	1				
										100	2				
26	92-09-15	1.0	5 45 N	89 11 W	5.0	5	3	27.3	32.70	10	2	2	3	1	
										20	2				
										30	1	1			
										100	2				
27	92-09-17	0.8	5 38 N	87 01 W	4.0	5	3	27.2	32.30	400	1		2	3	
										500	1		3	3	
28	92-09-18	0.5	07 01 N	87 54 W	5.0	5	3	27.4	32.30	10	1		2	2	
										20	1	3			
										100	2				
29	92-09-19	0.7	08 52 N	89 46 W	4.0	5	4	27.4	32.20	300	1				
										10	2		2	3	

Table 4b. *McArthur* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
29	92-09-19	0.7	08 52 N	89 46 W	4.0	5	4	27.4	32.20	20	3	1	3	4	
										30	1				
										100	3				
										500	4	4			
30	92-09-20	1.0	9 37 N	91 08 W	3.0	5	3	27.2	33.40	10	5	13	2	4	
										20	6	40	3	3	
										30	3	5			
										100	3	1			
										300	1				
										400	2				
31	92-09-21	1.0	7 49 N	88 46 W	4.0	5	4	27.1	32.20	10	2	4	2	1	
										20	5	33			
										30	2	2			
										100	2				
										300	1				
										500	1	1			
32	92-09-22	1.0	6 46 N	87 46 W	4.0	5	3	27.2	32.43	10	4	7	1	3	
										20	4	3	2	3	
										30	1				
										100	2				
										300	1				
33	92-09-23	1.0	7 54 N	87 08 W	1.0	5	2	27.5	32.20	10	4	5	2	2	
										20	1	1	3	4	
										30	1				
										100	6	2			
										300	1				
34	92-09-24	1.0	8 44 N	86 05 W	4.0	5	3	27.8	31.97	10	2		1	2	
										30	1		2	2	
										100	3		3	2	
										300	1				
35	92-09-25	1.0	7 16 N	84 11 W	4.0	5	2	27.2		10	5	11	2	3	
										20	4	7	3	4	
										30	3	5			
										100	5				
										300	1				
										400	1	1			
36	92-09-26	1.0	4 55 N	81 51 W	4.0	5	3	27.2		10	3	1	1	2	
										20	3	7	2	4	
										30	2	6	3	2	
										100	4				
										300	1				
										500	1	1			
37	92-09-28	1.0	8 13 N	78 41 W	2.0	5	3	27.8		30	4	17	3	3	
										90	1	2			
										500	4	14			
										900	1				
38	92-10-04	1.0	7 58 N	78 54 W	0.0	1	2	27.9	29.10	10	1	2			
										80	1	2			
										500	5	20			
39	92-10-05	1.0	6 08 N	78 48 W	1.0	1	2	27.2	30.52	20	1	2	1	2	
										100	3	9	2	1	
										300	2	5			
										500	5	1			

Table 4b. *McArthur* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁸ Abundance (Squid)	Number Collected (Squid)
40	92-10-06	1.0	5 09 N	79 52 W	4.0	2	2	27.0	31.11	20	1	2	1	4	
										80	4	5	2	3	
										100	3	7	3	5	
										500	8	1			
41	92-10-07	1.0	3 59 N	81 10 W	4.0	3	2	26.8	32.53	30	2	1	1	4	
										100	4	1	3	4	
42	92-10-08	1.0	5 02 N	81 55 W	4.0	4	2	27.3	32.07	10	4	10	1	1	
										20	2	4	2	4	
										30	1	1	3	3	
										100	4	10			
43	92-10-09	1.0	3 44 N	83 04 W	5.0	4	2	26.6	32.79	10	4	2			
										30	3	2			
										100	3	5			
44	92-10-10	1.0	2 53 N	83 52 W	4.0	4	3	26.3	33.07	20	1	1			
										100	1	2			
45	92-10-11	1.0	4 06 N	85 17 W	4.0	4	3	26.6	32.77	10	1	1	1	4	
										20	2	3			
										100	5	25			
46	92-10-14	1.0	6 45 N	84 12 W	0.0	4	1	27.4	32.18	10	4	24	1	1	
										20	1	1	3	2	
										30	1	2			
										100	5	29			
										300	1				
47	92-10-15	1.0	5 01 N	85 55 W	5.0	5	3	26.8	32.42	10	2	1	1	4	
										20	1	1	3	3	
										30	1	1			
										100	4	5			
										300	1				
48	92-10-16	0.3	3 36 N	86 47 W	5.0	5	3	26.3	32.97	10	1	1			
										20	2	4			
										30	1	1			
49	92-10-17	1.0	3 16 N	85 37 W	5.0	5	1	26.3	32.72	10	1		1	2	
										20	3	5			
										30	1	1			
50	92-10-18	1.0	4 22 N	84 32 W	4.0	5	3	26.5	32.10	10	2		1	2	
										20	1		3	2	
										30	1				
51	92-10-19	1.0	5 31 N	83 35 W	5.0	5	3	27.2	31.29	100	4	2			
										10	2	2	1	3	
										20	3	3	3	2	
										30	2	1			
52	92-10-20	1.0	6 33 N	82 30 W	4.0	5	3	28.1	30.32	100	4	4			
										10	1		2	1	
										20	2	1			
53	92-10-22	1.0	6 06 N	79 05 W	0.0	5	3	27.8	31.10	100	1				
										10	5	41			
										20	2	4			
										30	2	2			
										90	2				
										100	4	9			
										200	2	6			
										400	3				
500	2	2													
900	1														

Table 4b. *McArthur* - continued.

Station ¹ Number	Date Y-M-D	Hours of Effort	Location		Sea ² State	Moon ³ Phase	Sky ⁴ Cond.	SST (°C)	SSS (ppt)	Fish ⁵ Species	Relative ⁶ Abundance (Fish)	Number Collected (Fish)	Squid ⁷ Type	Relative ⁶ Abundance (Squid)	Number Collected (Squid)
54	92-10-23	1.0	5 31 N	78 31 W	5.0	5	3	26.8	31.45	10	3	3			
										20	2	3			
										90	2				
										100	2	3			
										200	1	1			
										300	1				
										400	2				
55	92-10-24	1.0	4 13 N	77 50 W	0.0	5	1	27.1	27.50	200	2	3			
										300	1				
										400	4				
										500	3	11			
56	92-10-25	1.0	3 12 N	78 09 W	4.0	5	5	27.0	30.14	200	1	2	3	3	
										300	1				
										500	1	2			
57	92-10-26	1.0	2 26 N	78 39 W	3.0	5	3	27.2	30.81	15	2	4	3	5	
										30	4	24			
										500	6	13			
58	92-10-27	1.0	2 44 N	79 48 W	2.0	6	2	27.2	31.69	10	2	3	1	4	
										20	2	1			
										30	2	1			
										100	5	65			
										400	1				
59	92-10-28	1.0	3 52 N	81 04 W	5.0	1	1	26.6	32.50	10	3	2			
										20	1	1			
										30	2	2			
										100	4	11			
60	92-10-29	1.0	2 36 N	82 25 W	5.0	1	2	26.1	33.05	20	4	10	1	3	
										30	3	6			
										100	4	16			
										300	1				
61	92-10-30	1.0	3 23 N	81 42 W	5.0	5	3	26.4	32.89	10	2	2	1	4	
										20	3	4			
										30	2	1			
										100	4	18			
										300	1				
62	92-11-01	0.8	5 52 N	80 36 W	4.0	5	2	27.2	30.81	500	1	1	2	4	
										20	1	2			
										30	1				
										90	3				
										90	3				
63	92-11-01	1.0	7 35 N	79 27 W	0.0	2	2	27.9	28.96	500	1	1			
										30	1	1			
										100	2	3			
										200	4	15			
										400	4	4			
	500	3	7												

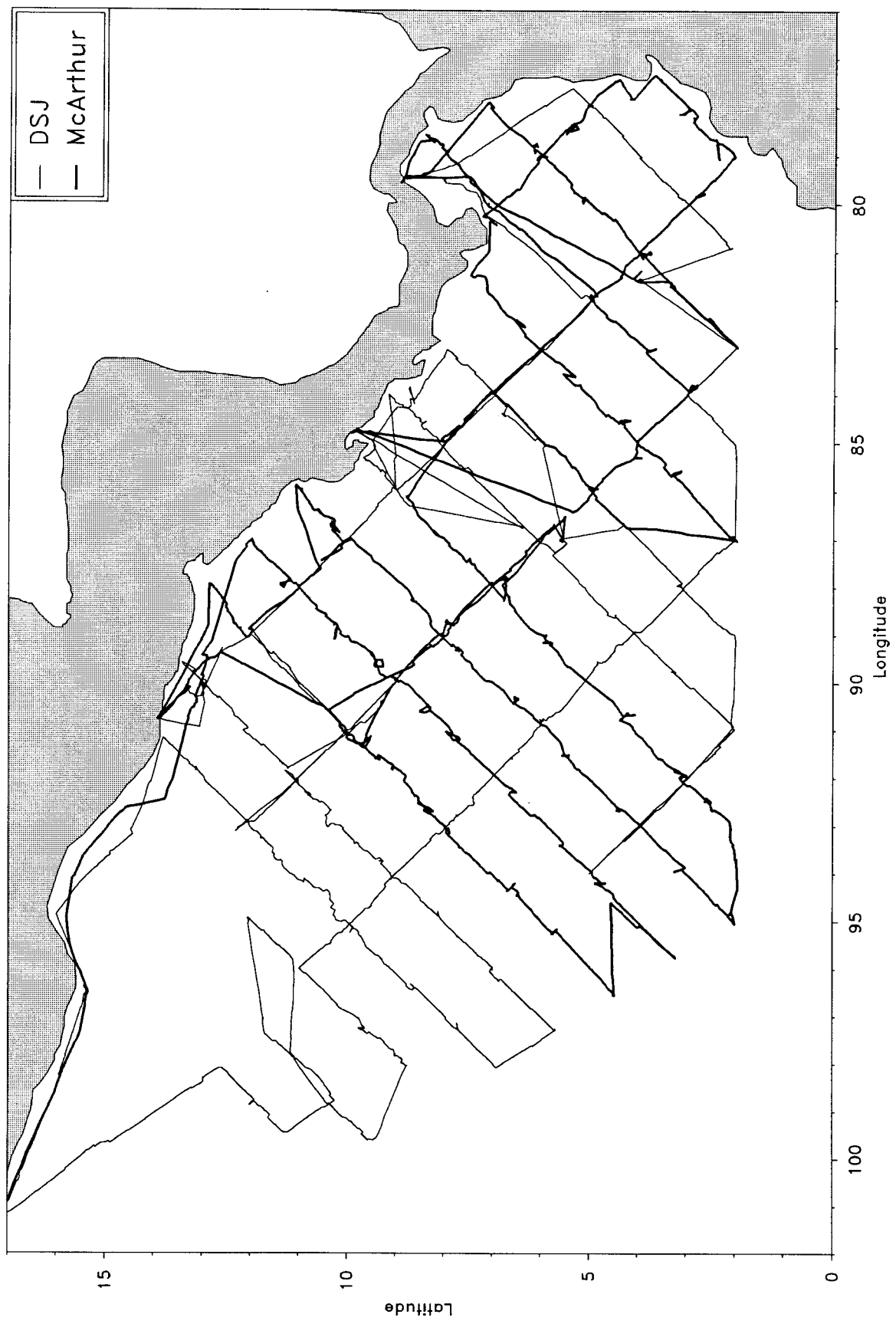


Figure 1. Cruise tracks, *Jordan* and *McArthur*, 28 July - 2 November, 1992.

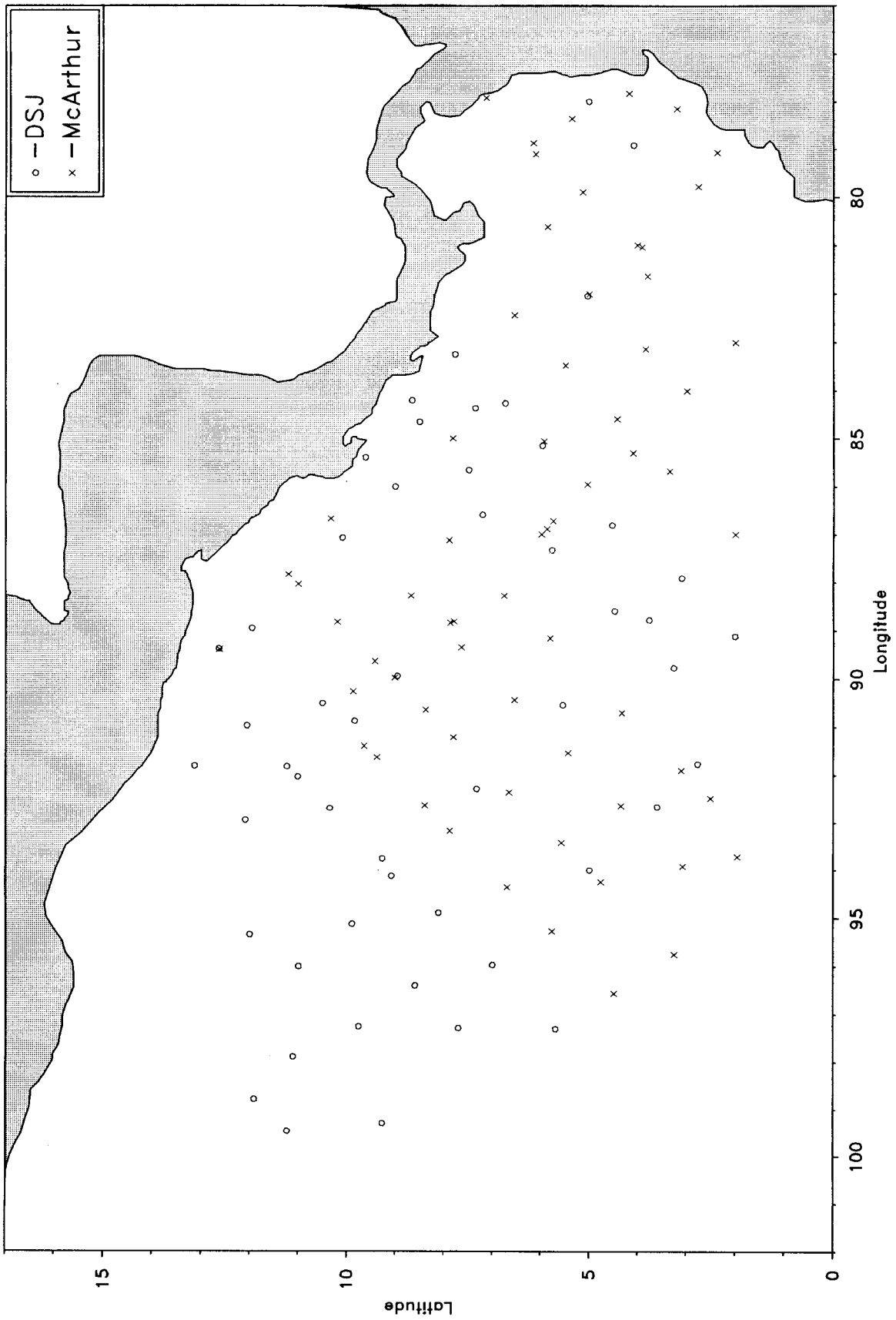


Figure 2. CTD stations, *Jordan* and *McArthur*, 28 July - 2 November, 1992.

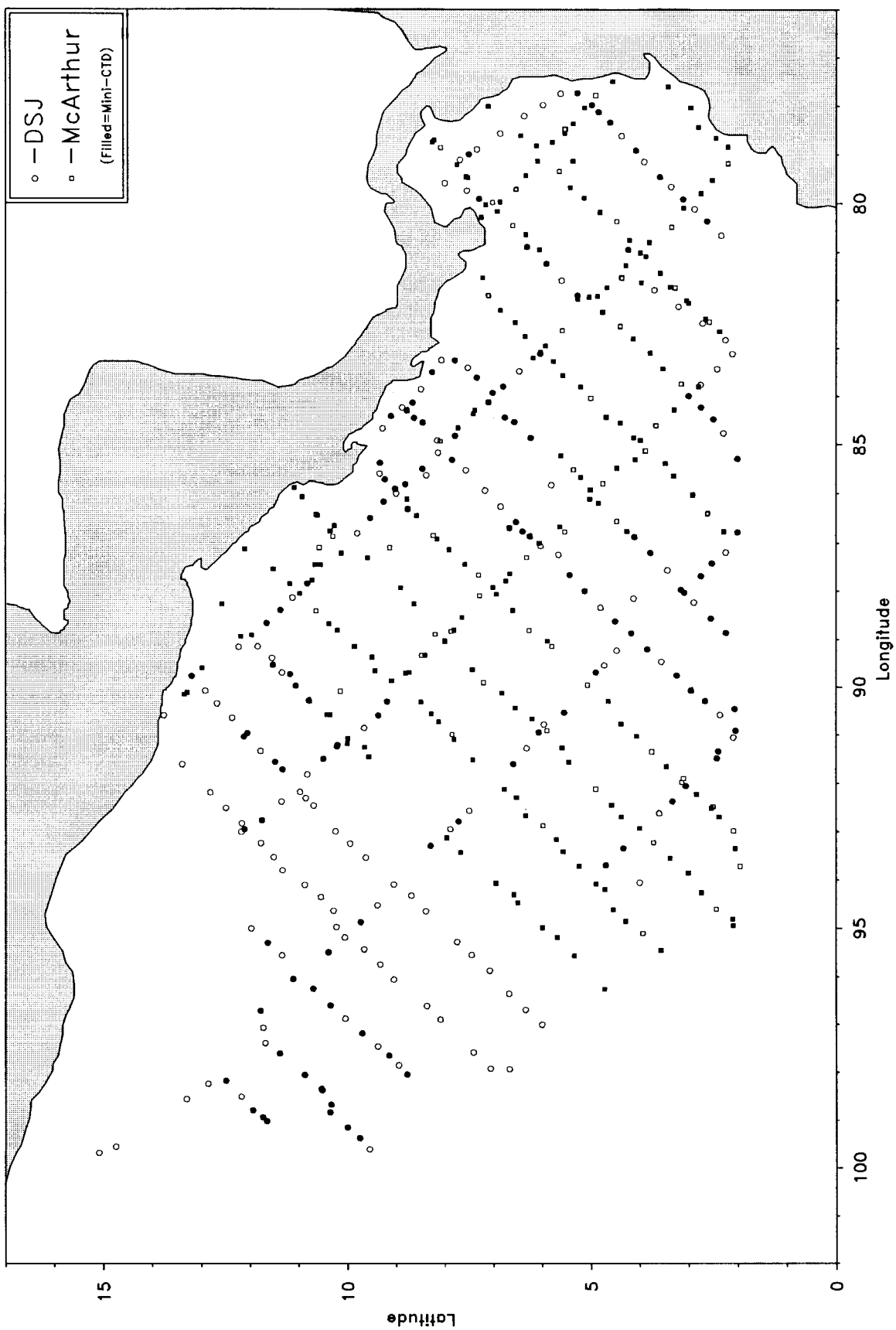


Figure 3. Mini-CTD stations and XBT deployments, *Jordan* and *McArthur*, 28 July - 2 November, 1992.

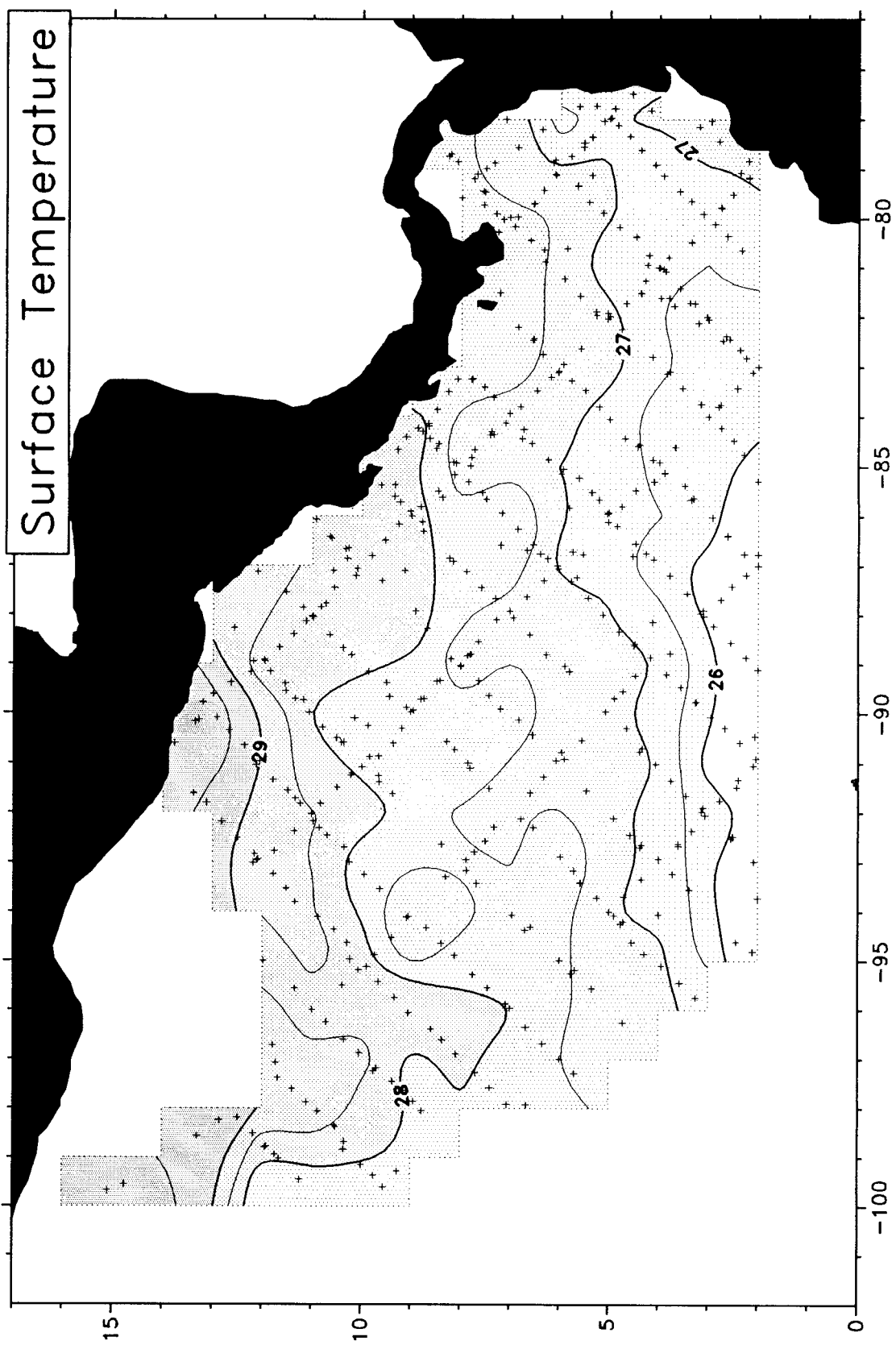


Figure 4. Sea surface temperature (°C), from CTD, XBT and mini-CTD drops.

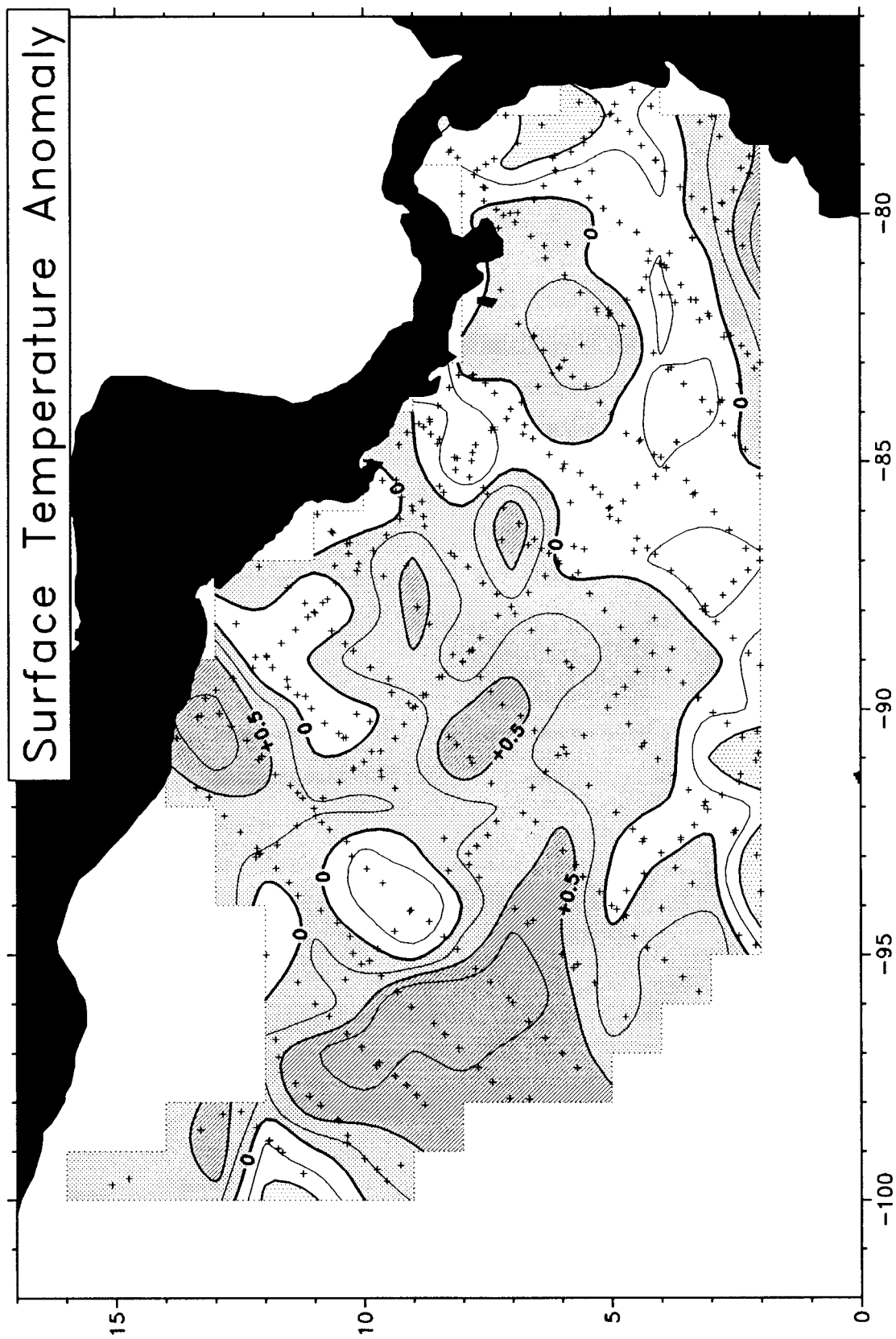


Figure 5. Sea surface temperature anomaly ($^{\circ}\text{C}$), compared to August - October mean for 1960-1990 (Fiedler 1992).

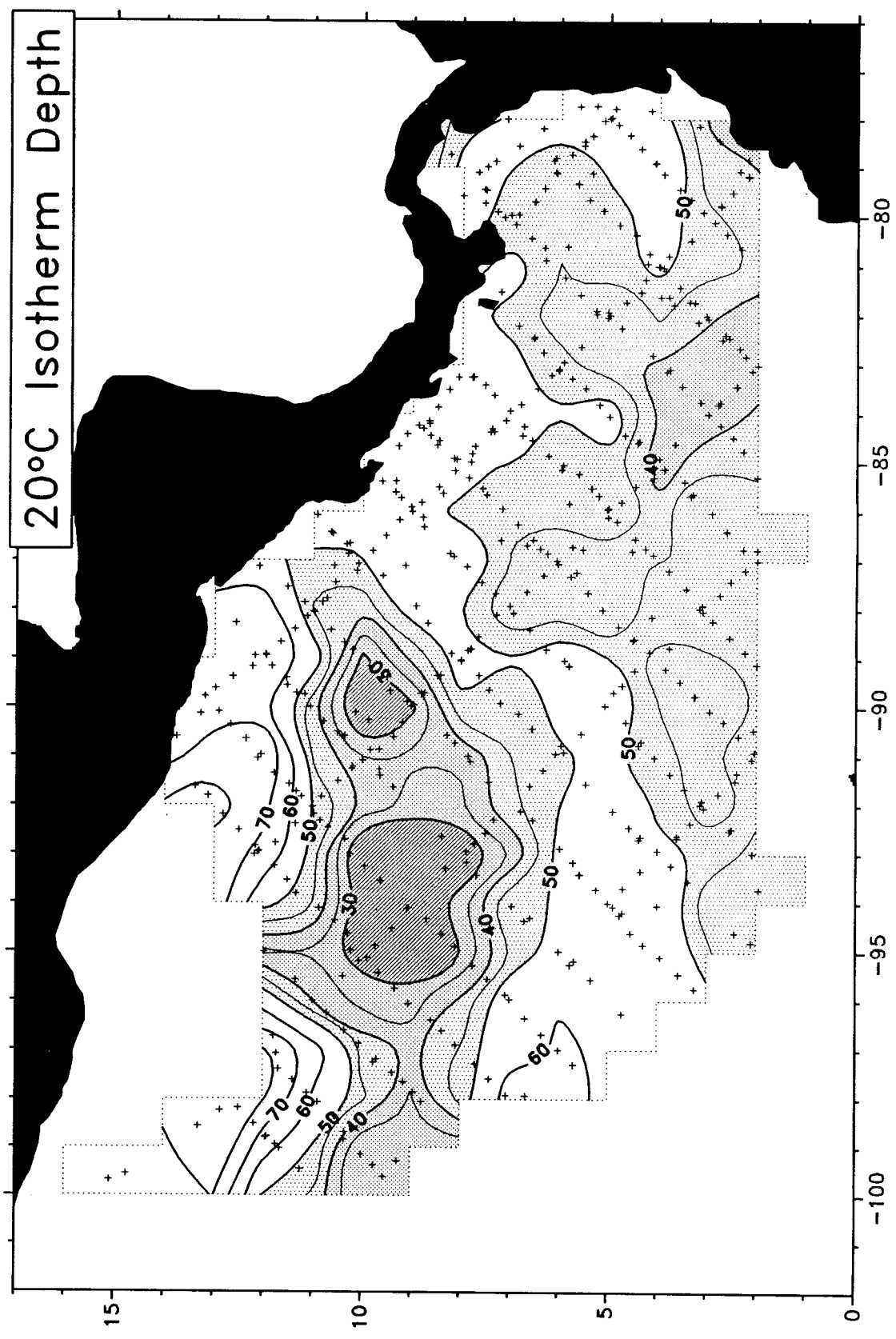


Figure 6. 20°C isotherm depth (= thermocline depth, meters), from CTD, XBT and mini-CTD drops.

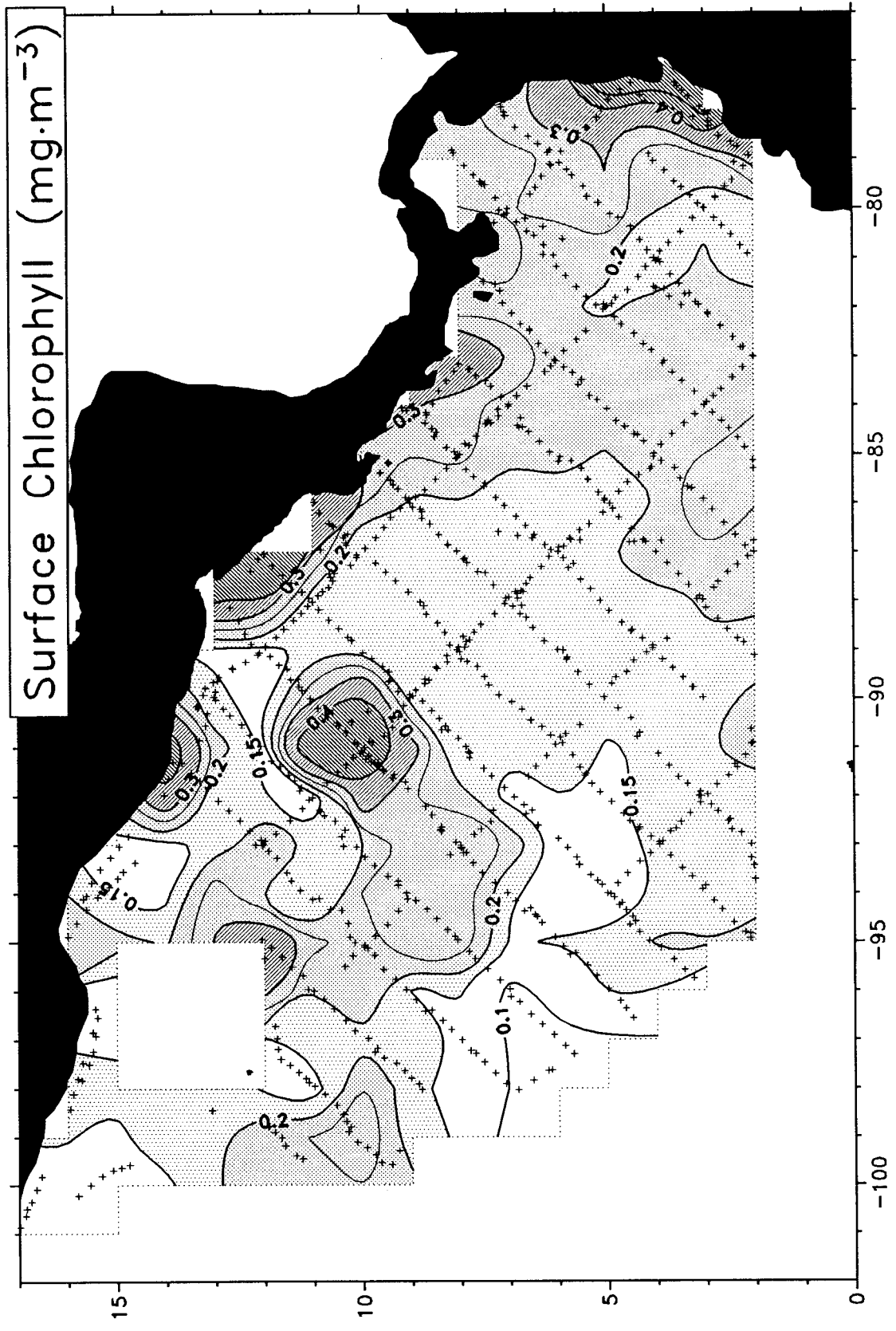


Figure 7. Surface chlorophyll *a* concentration ($\text{mg}\cdot\text{m}^{-3}$), from productivity stations and underway samples.

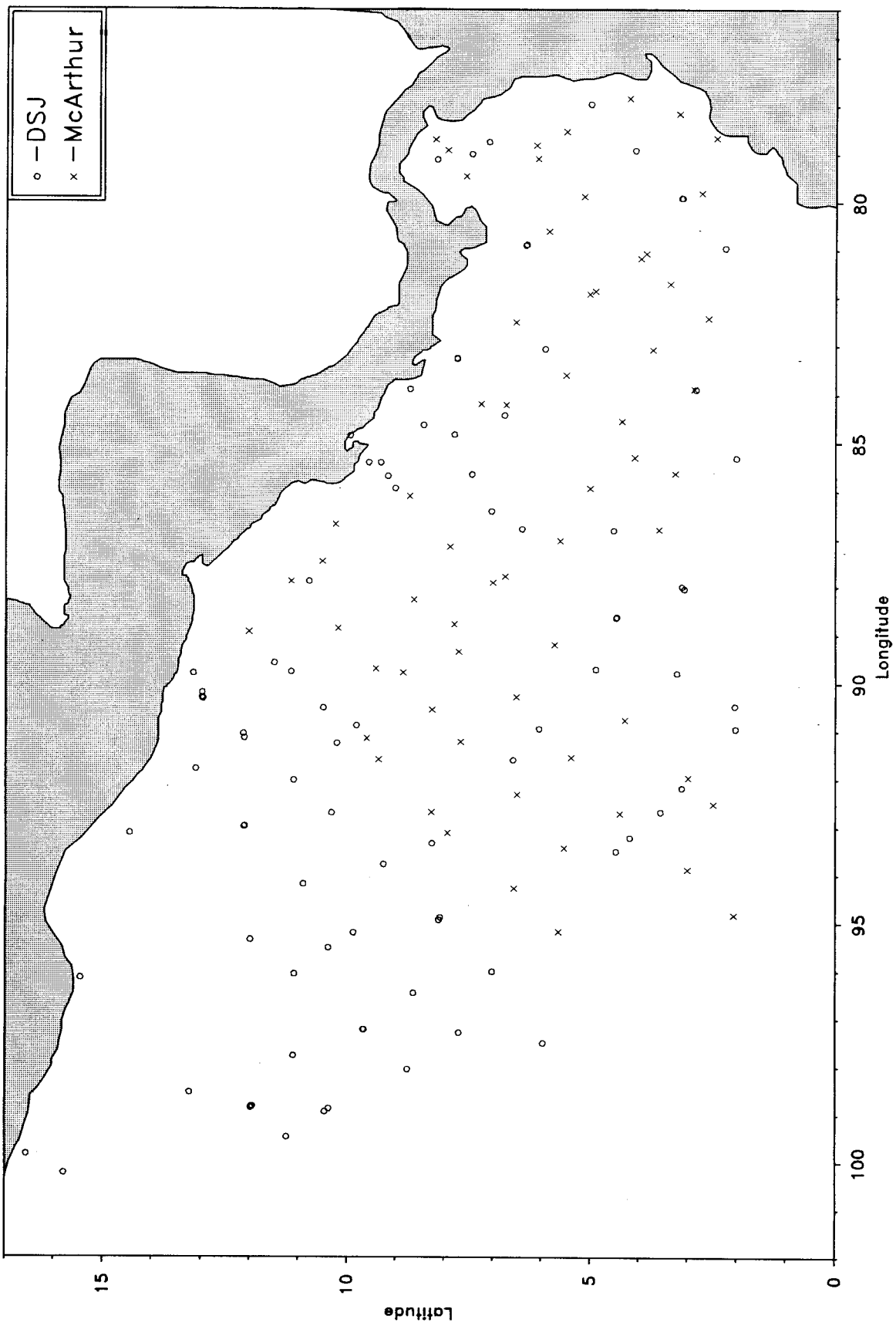


Figure 8. Locations of night-light dipnet stations, Jordan and McArthur, 28 July - 2 November, 1992.

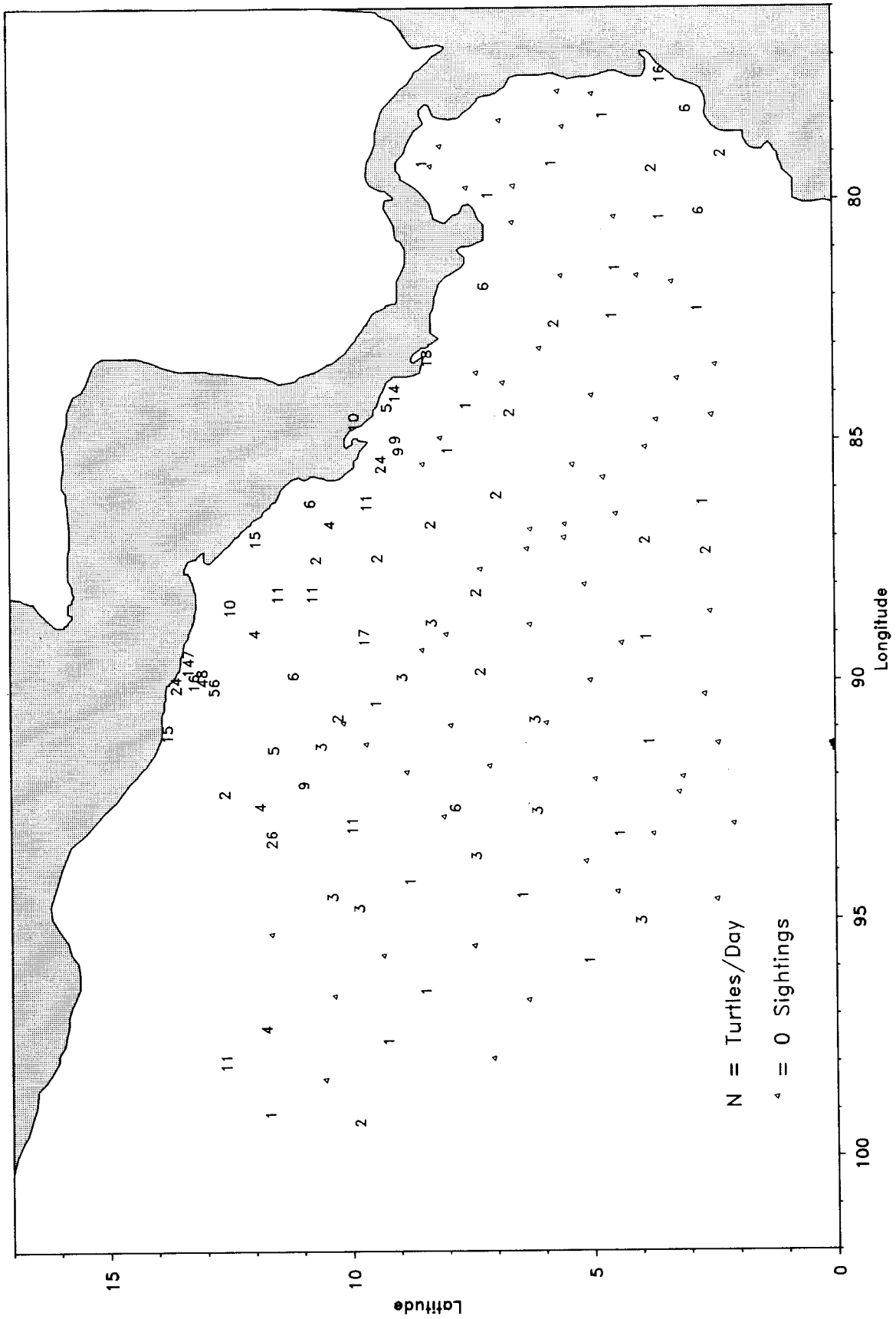


Figure 9. Locations of turtle sightings, Jordan and McArthur, 28 July - 2 November, 1992.

APPENDIX A-1
(Jordan)

Station No.	1-001	Date - GMT	08/09/92
Station Name	J921-001	Time - GMT	1107
Latitude	13. 7.9 N	Date - LOC	08/09/92
Longitude	91.48.4 W	Time - LOC	0507

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.12	0.12	0.08
7	3.73	0.13	0.08
12	3.46	0.16	0.12
18	6.95	0.33	0.26
29	6.58	0.33	0.27
44	1.28	0.48	0.47
66	--	0.32	0.60
80	--	0.09	0.22
100	--	0.00	0.13

Station No.	1-003	Date - GMT	08/12/92
Station Name	J921-003	Time - GMT	1046
Latitude	9.53.6 N	Date - LOC	08/12/92
Longitude	95. 7.2 W	Time - LOC	0446

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	22.26	0.24	0.16
6	33.31	0.31	0.29
11	20.31	0.55	0.65
18	8.32	0.33	0.65
28	0.66	0.24	0.28
43	0.32	0.08	0.18
64	0.17	0.04	0.10
80	--	0.02	0.08
100	--	0.00	0.06

Station No.	1-004	Date - GMT	08/13/92
Station Name	J921-004	Time - GMT	1102
Latitude	8.35.5 N	Date - LOC	08/13/92
Longitude	96.23.8 W	Time - LOC	0502

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.56	0.12	0.06
8	5.02	0.12	0.06
13	3.75	0.13	0.06
21	4.24	0.13	0.09
33	3.20	0.30	0.41
51	0.94	0.28	0.41
76	0.17	0.04	0.17
100	--	0.01	0.28
125	--	0.00	0.13

Station No.	1-005	Date - GMT	08/14/92
Station Name	J921-005	Time - GMT	1102
Latitude	7.41.9 N	Date - LOC	08/14/92
Longitude	97.16.8 W	Time - LOC	0502

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	0.77	0.12	0.06
8	2.72	0.12	0.07
14	3.29	0.12	0.07
22	4.01	0.11	0.07
34	7.53	0.32	0.32
53	1.24	0.31	0.41
79	0.17	0.09	0.18
100	--	0.04	0.10
125	--	0.00	0.03

Station No.	1-006	Date - GMT	08/15/92
Station Name	J921-006	Time - GMT	1056
Latitude	5.41.6 N	Date - LOC	08/15/92
Longitude	97.17.7 W	Time - LOC	0456

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.33	0.08	0.04
9	2.98	0.08	0.04
16	6.77	0.19	0.16
25	4.56	0.34	0.48
39	0.43	0.12	0.20
60	0.37	0.03	0.08
90	0.11	0.00	0.05
125	--	0.00	0.08
150	--	0.00	0.02

Station No.	1-007	Date - GMT	08/16/92
Station Name	J921-007	Time - GMT	1059
Latitude	6.59.8 N	Date - LOC	08/16/92
Longitude	95.58.2 W	Time - LOC	0459

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.01	0.12	0.08
8	3.87	0.11	0.08
14	2.81	0.11	0.06
21	1.90	0.12	0.07
34	1.72	0.15	0.10
52	0.52	0.22	0.33
78	0.42	0.15	0.30
100	--	0.00	0.45
125	--	0.02	0.16

Station No.	1-008	Date - GMT	08/17/92
Station Name	J921-008	Time - GMT	1052
Latitude	8. 6.8 N	Date - LOC	08/17/92
Longitude	94.53.4 W	Time - LOC	0452

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.22	0.25	0.19
7	11.57	0.25	0.17
12	11.55	0.24	0.17
20	10.85	0.26	0.19
31	9.50	0.65	0.56
48	2.31	0.45	0.56
72	0.15	0.13	0.15
100	--	0.06	0.10
125	--	0.01	0.06

Station No.	1-009	Date - GMT	08/18/92
Station Name	J921-009	Time - GMT	1100
Latitude	9.16.2 N	Date - LOC	08/18/92
Longitude	93.45.1 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	25.36	0.60	0.37
6	36.13	0.55	0.36
11	37.80	0.52	0.35
18	5.90	0.57	0.62
28	2.75	0.49	0.72
42	0.65	0.21	0.33
64	0.24	0.10	0.14
80	--	0.06	0.11
100	--	0.05	0.08

Station No.	1-010	Date - GMT	08/19/92
Station Name	J921-010	Time - GMT	1059
Latitude	10.21.1 N	Date - LOC	08/19/92
Longitude	92.41.6 W	Time - LOC	0459

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	12.95	0.22	0.17
7	16.50	0.24	0.17
12	21.16	0.22	0.17
19	23.27	0.39	0.38
30	7.23	0.48	0.70
45	1.11	0.32	0.71
68	0.09	0.09	0.22
80	--	0.07	0.11
100	--	0.04	0.08

Station No.	1-011	Date - GMT	08/20/92
Station Name	J921-011	Time - GMT	1100
Latitude	11. 1.0 N	Date - LOC	08/20/92
Longitude	92. 2.0 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.90	0.15	0.08
7	10.69	0.26	0.17
12	13.60	0.38	0.30
19	2.15	0.30	0.39
30	0.30	0.07	0.16
47	0.12	0.02	0.08
70	0.18	0.00	0.07
100	--	0.00	0.03
125	--	0.00	0.12

Station No.	1-012	Date - GMT	08/22/92
Station Name	J921-012	Time - GMT	0125
Latitude	9.50.6 N	Date - LOC	08/21/92
Longitude	90.52.3 W	Time - LOC	1925

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.29	0.18
10	--	0.27	0.17
15	--	0.26	0.17
20	--	0.29	0.17
25	--	0.26	0.16
30	--	0.67	0.55
40	--	0.48	0.63
50	--	0.44	0.46
100	--	0.00	0.06

Station No.	1-013	Date - GMT	08/22/92
Station Name	J921-013	Time - GMT	1059
Latitude	8.57.5 N	Date - LOC	08/22/92
Longitude	89.56.6 W	Time - LOC	0459

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.99	0.22	0.18
7	13.56	0.24	0.18
12	7.45	0.22	0.16
19	4.73	0.41	0.67
30	1.50	0.30	0.51
45	0.31	0.18	0.29
68	0.22	0.07	0.12
80	--	0.03	0.09
100	--	0.00	0.04

Station No.	1-014	Date - GMT	08/23/92
Station Name	J921-014	Time - GMT	1039
Latitude	11.14.4 N	Date - LOC	08/23/92
Longitude	91.49.3 W	Time - LOC	0439

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.19	0.16	0.09
6	4.57	0.16	0.08
11	5.80	0.17	0.09
18	3.67	0.18	0.11
28	3.09	0.22	0.17
43	2.21	0.52	0.42
65	0.10	0.23	0.36
80	--	0.17	0.30
100	--	0.08	0.13

Station No.	1-015	Date - GMT	08/24/92
Station Name	J921-015	Time - GMT	1055
Latitude	12. 3.6 N	Date - LOC	08/24/92
Longitude	90.57.9 W	Time - LOC	0455

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.09	0.17	0.11
7	3.54	0.15	0.09
12	3.66	0.15	0.10
19	3.07	0.16	0.10
30	2.71	0.17	0.11
45	0.65	0.28	0.21
68	0.26	0.23	0.50
80	--	0.12	0.23
100	--	0.05	0.10

Station No.	2-016	Date - GMT	09/01/92
Station Name	J922-016	Time - GMT	1128
Latitude	12.38.4 N	Date - LOC	09/01/92
Longitude	89.22.8 W	Time - LOC	0528

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.57	0.13	0.08
7	9.35	0.13	0.07
12	9.71	0.12	0.07
20	5.08	0.13	0.07
31	0.00	--	--
47	0.69	0.17	0.36
71	0.57	0.03	0.11
100	--	0.01	0.07
125	--	0.00	0.09

Station No.	2-017	Date - GMT	09/02/92
Station Name	J922-017	Time - GMT	1057
Latitude	10.30.5 N	Date - LOC	09/02/92
Longitude	90.30.2 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	68.57	0.92	0.98
6	93.08	1.11	0.88
11	118.24	1.02	0.96
18	12.95	0.48	0.47
28	9.98	0.37	0.66
42	1.93	0.20	0.35
64	0.12	0.07	0.13
80	--	0.05	0.09
100	--	0.02	0.06

Station No.	2-018	Date - GMT	09/03/92
Station Name	J922-018	Time - GMT	1106
Latitude	11.57.4 N	Date - LOC	09/03/92
Longitude	88.56.9 W	Time - LOC	0506

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.17	0.09
7	3.78	0.16	0.09
12	3.89	0.15	0.10
18	3.09	0.15	0.10
29	3.87	0.16	0.11
44	1.03	0.16	0.10
66	0.27	0.25	0.41
80	--	0.17	0.33
100	--	0.03	0.26

Station No.	2-019	Date - GMT	09/04/92
Station Name	J922-019	Time - GMT	1123
Latitude	10. 5.6 N	Date - LOC	09/04/92
Longitude	87. 4.0 W	Time - LOC	0523

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.13	0.06
6	--	0.12	0.07
10	--	0.30	0.19
16	--	0.34	0.23
26	--	0.45	0.67
40	--	0.27	0.38
59	--	0.09	0.16
80	--	0.01	0.12
100	--	0.00	0.04

Station No.	2-020	Date - GMT	09/06/92
Station Name	J922-020	Time - GMT	1059
Latitude	8.29.9 N	Date - LOC	09/06/92
Longitude	84.38.7 W	Time - LOC	0459

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.69	0.21	0.14
13	3.00	0.19	0.16
23	4.28	0.34	0.25
37	6.17	0.36	0.38
58	0.79	0.20	0.46
89	0.10	0.06	0.15
133	0.06	0.01	0.08
200	--	0.00	0.03

Station No.	2-021	Date - GMT	09/07/92
Station Name	J922-021	Time - GMT	1057
Latitude	7.29.3 N	Date - LOC	09/07/92
Longitude	85.39.1 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.77	0.19	0.10
13	4.27	0.20	0.12
23	7.31	0.31	0.18
36	2.12	0.30	0.48
57	1.16	0.42	0.40
87	0.39	0.17	0.27
130	0.10	0.02	0.11
200	--	0.00	0.04

Station No.	2-022	Date - GMT	09/10/92
Station Name	J922-022	Time - GMT	1044
Latitude	9.36.9 N	Date - LOC	09/10/92
Longitude	85.23.1 W	Time - LOC	0444

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.93	0.16	0.09
13	3.25	0.17	0.12
23	3.06	0.25	0.17
37	7.28	0.47	0.47
58	1.54	0.34	0.66
89	0.71	0.12	0.30
133	0.18	0.00	0.07
200	--	0.00	0.05

Station No.	2-023	Date - GMT	09/11/92
Station Name	J922-023	Time - GMT	1052
Latitude	7.12.1 N	Date - LOC	09/11/92
Longitude	86.35.3 W	Time - LOC	0452

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.67	0.17	0.12
14	4.97	0.21	0.17
24	7.26	0.30	0.30
38	3.56	0.30	0.45
60	0.87	0.24	0.37
92	0.17	0.04	0.10
138	0.09	0.00	0.03
200	--	0.00	0.05

Station No.	2-024	Date - GMT	09/12/92
Station Name	J922-024	Time - GMT	1057
Latitude	5.46.1 N	Date - LOC	09/12/92
Longitude	87.19.2 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.92	0.35	0.32
12	2.72	0.37	0.55
22	0.68	0.24	0.37
34	0.35	0.10	0.18
54	0.16	0.01	0.07
83	0.10	0.01	0.04
124	0.17	0.00	0.03
150	--	0.00	0.02
200	--	0.00	0.04

Station No.	2-025	Date - GMT	09/13/92
Station Name	J922-025	Time - GMT	1152
Latitude	4.28.6 N	Date - LOC	09/13/92
Longitude	88.35.4 W	Time - LOC	0552

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.38	0.15	0.08
13	9.33	0.14	0.08
22	9.26	0.14	0.08
35	19.43	0.46	0.43
55	2.95	0.30	0.40
85	0.39	0.07	0.14
127	0.10	0.01	0.04
150	--	0.00	0.02
200	--	0.00	0.02

Station No.	2-026	Date - GMT	09/14/92
Station Name	J922-026	Time - GMT	1057
Latitude	3.15.6 N	Date - LOC	09/14/92
Longitude	89.46.5 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.79	0.17	0.09
12	3.53	0.16	0.09
21	9.24	0.15	0.09
33	5.49	0.28	0.29
51	3.45	0.26	0.32
79	0.76	0.19	0.28
118	0.09	0.06	0.09
150	--	0.01	0.03
200	--	0.00	0.03

Station No.	2-027	Date - GMT	09/15/92
Station Name	J922-027	Time - GMT	1055
Latitude	2.46.2 N	Date - LOC	09/15/92
Longitude	91.45.8 W	Time - LOC	0455

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.86	0.17	0.08
11	6.49	0.16	0.08
19	6.36	0.16	0.09
30	6.90	0.16	0.09
48	3.31	0.20	0.26
74	1.12	0.20	0.31
111	0.65	0.10	0.15
150	--	0.04	0.08
200	--	0.01	0.02

Station No.	2-028	Date - GMT	09/16/92
Station Name	J922-028	Time - GMT	1111
Latitude	4.59.9 N	Date - LOC	09/16/92
Longitude	93.59.7 W	Time - LOC	0511

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.24	0.16	0.10
12	3.67	0.16	0.10
21	3.68	0.16	0.10
34	1.96	0.25	0.57
53	0.59	0.08	0.18
82	0.10	0.01	0.06
123	0.20	0.00	0.04
150	--	0.00	0.03
200	--	0.00	0.04

Station No.	2-029	Date - GMT	09/17/92
Station Name	J922-029	Time - GMT	0024
Latitude	3.36.0 N	Date - LOC	09/16/92
Longitude	92.40.0 W	Time - LOC	1824

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.12	0.06
20	--	0.13	0.06
40	--	0.17	0.08
50	--	0.43	0.40
60	--	0.38	0.42
80	--	0.32	0.50
100	--	0.21	0.35
150	--	0.04	0.10
200	--	0.00	0.03

Station No.	2-030	Date - GMT	09/18/92
Station Name	J922-030	Time - GMT	1058
Latitude	2. 0.1 N	Date - LOC	09/18/92
Longitude	89. 6.8 W	Time - LOC	0458

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.89	0.21	0.13
12	6.79	0.20	0.12
21	4.93	0.21	0.13
33	3.41	0.20	0.12
52	2.93	0.34	0.50
80	0.53	0.16	0.30
120	0.11	0.01	0.07
150	--	0.00	0.04
200	--	0.00	0.03

Station No.	2-031	Date - GMT	09/19/92
Station Name	J922-031	Time - GMT	1054
Latitude	3. 5.9 N	Date - LOC	09/19/92
Longitude	87.54.3 W	Time - LOC	0454

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.78	0.23	0.11
12	7.01	0.22	0.11
21	6.04	0.21	0.11
33	5.02	0.21	0.10
52	3.65	0.30	0.34
80	0.65	0.19	0.26
120	0.10	0.04	0.10
150	--	0.01	0.05
200	--	0.00	0.04

Station No.	2-032	Date - GMT	09/20/92
Station Name	J922-032	Time - GMT	0055
Latitude	4.31.6 N	Date - LOC	09/19/92
Longitude	86.48.3 W	Time - LOC	1855

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.24	0.12
10	--	0.24	0.12
20	--	0.41	0.35
30	--	0.52	0.61
40	--	0.31	0.48
60	--	0.14	0.27
80	--	0.00	0.04
150	--	0.00	0.03
200	--	0.00	0.02

Station No.	2-033	Date - GMT	09/21/92
Station Name	J922-033	Time - GMT	1057
Latitude	5.58.1 N	Date - LOC	09/21/92
Longitude	85. 8.5 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.04	0.31	0.56
11	7.08	0.22	0.15
20	6.76	0.22	0.15
31	5.91	0.30	0.21
49	11.14	0.66	1.38
76	0.30	0.10	0.22
114	0.07	0.02	0.09
150	--	0.00	0.03
200	--	0.00	0.02

Station No.	2-034	Date - GMT	09/22/92
Station Name	J922-034	Time - GMT	1052
Latitude	6.44.1 N	Date - LOC	09/22/92
Longitude	84.15.7 W	Time - LOC	0452

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.18	0.27	0.17
11	7.87	0.25	0.18
20	8.35	0.31	0.20
31	16.41	0.52	0.61
49	6.30	0.42	0.68
75	0.31	0.12	0.27
112	0.22	0.00	0.14
150	--	0.01	0.07
200	--	0.00	0.05

Station No.	2-035	Date - GMT	09/23/92
Station Name	J922-035	Time - GMT	1101
Latitude	7.46.0 N	Date - LOC	09/23/92
Longitude	83.14.6 W	Time - LOC	0501

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.47	0.25	0.15
12	5.90	0.25	0.21
21	7.28	0.30	0.28
33	12.57	0.50	0.55
51	1.84	0.22	0.46
79	0.26	0.04	0.12
118	0.09	0.00	0.06
150	--	0.00	0.05
200	--	0.00	0.03

Station No.	2-036	Date - GMT	09/24/92
Station Name	J922-036	Time - GMT	1010
Latitude	8.39.3 N	Date - LOC	09/24/92
Longitude	84.12.2 W	Time - LOC	0510

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.45	0.18	0.12
12	6.62	0.45	0.45
21	1.35	0.27	0.47
33	0.47	0.09	0.20
53	0.18	0.00	0.06
81	0.08	0.00	0.05
121	0.35	0.00	0.04
150	--	0.00	0.03
200	--	0.00	0.05

Station No.	2-037	Date - GMT	09/25/92
Station Name	J922-037	Time - GMT	1011
Latitude	9. 0.1 N	Date - LOC	09/25/92
Longitude	86. 0.0 W	Time - LOC	0511

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.05	0.19	0.13
12	4.56	0.18	0.14
22	5.54	0.25	0.16
34	7.34	0.35	0.29
54	2.06	0.27	0.48
83	0.20	0.09	0.18
124	0.06	0.01	0.06
150	--	0.00	0.04
200	--	0.00	0.04

Station No.	2-038	Date - GMT	09/26/92
Station Name	J922-038	Time - GMT	1009
Latitude	7.20.9 N	Date - LOC	09/26/92
Longitude	84.21.7 W	Time - LOC	0509

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.15	0.22	0.12
12	6.92	0.22	0.12
20	7.32	0.22	0.13
32	19.51	0.43	0.57
50	6.48	0.36	0.52
77	0.18	0.02	0.10
115	0.10	0.01	0.07
150	--	0.00	0.03
200	--	0.00	0.03

Station No.	2-039	Date - GMT	09/27/92
Station Name	J922-039	Time - GMT	1008
Latitude	5. 2.4 N	Date - LOC	09/27/92
Longitude	82. 2.6 W	Time - LOC	0508

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.30	0.28	0.31
11	6.31	0.14	0.09
20	12.58	0.32	0.27
31	8.02	0.40	0.40
49	2.77	0.32	0.57
75	0.30	0.07	0.17
112	0.20	0.01	0.18
150	--	0.00	0.04
200	--	0.00	0.03

Station No.	3-042	Date - GMT	10/13/92
Station Name	J923-042	Time - GMT	1005
Latitude	3.46.0 N	Date - LOC	10/13/92
Longitude	88.46.8 W	Time - LOC	0405

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.15	0.06
13	--	0.14	0.07
23	--	0.15	0.06

Station No.	3-043	Date - GMT	10/14/92
Station Name	J923-043	Time - GMT	1030
Latitude	5.32.8 N	Date - LOC	10/14/92
Longitude	90.32.5 W	Time - LOC	0430

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.45	0.15	0.09
14	1.72	0.15	0.10
24	6.44	0.15	0.09
38	6.23	0.22	0.16
92	0.26	0.08	0.21
149	0.10	0.00	0.05
200	--	0.02	0.10

Station No.	3-044	Date - GMT	10/15/92
Station Name	J923-044	Time - GMT	1106
Latitude	7.19.5 N	Date - LOC	10/15/92
Longitude	92.17.3 W	Time - LOC	0506

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	19.67	0.38	0.20
12	12.63	0.39	0.26
22	26.83	0.41	0.48
34	9.38	0.40	0.84
54	1.02	0.10	0.21
82	0.20	0.05	0.15
124	0.09	0.00	0.08
150	--	0.00	0.06
200	--	0.00	0.05

Station No.	3-045	Date - GMT	10/16/92
Station Name	J923-045	Time - GMT	1107
Latitude	9. 5.1 N	Date - LOC	10/16/92
Longitude	94. 7.1 W	Time - LOC	0507

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	39.57	0.50	0.28
12	37.31	0.50	0.28
20	35.62	0.48	0.46
32	2.42	0.23	0.32
51	1.32	0.21	0.35
77	0.20	0.08	0.22
116	0.08	0.00	0.04
150	--	0.00	0.07
200	--	0.00	0.04

Station No.	3-046	Date - GMT	10/17/92
Station Name	J923-046	Time - GMT	1100
Latitude	10.59.9 N	Date - LOC	10/17/92
Longitude	96. 0.0 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.01	0.25	0.12
9	11.81	0.25	0.13
16	17.96	0.30	0.17
26	26.34	0.60	0.47
41	3.07	0.22	0.63
62	0.41	0.12	0.04
94	0.11	0.02	0.12
125	--	0.01	0.07
150	--	0.00	0.10

Station No.	3-047	Date - GMT	10/18/92
Station Name	J923-047	Time - GMT	1108
Latitude	9.45.5 N	Date - LOC	10/18/92
Longitude	97.14.7 W	Time - LOC	0508

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	13.16	0.42	0.22
12	15.81	0.42	0.20
22	36.09	0.53	0.29
34	9.12	0.38	0.57
54	0.89	0.12	0.25
82	0.36	0.05	0.25
124	0.19	0.01	0.09
150	--	0.00	0.11

Station No.	3-048	Date - GMT	10/19/92
Station Name	J923-048	Time - GMT	1131
Latitude	9.16.3 N	Date - LOC	10/19/92
Longitude	99.16.8 W	Time - LOC	0531

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.15	0.18	0.09
14	4.69	0.18	0.10
24	8.22	0.23	0.13
38	12.68	0.44	0.57
61	2.02	0.21	0.63
92	0.24	0.09	0.08
149	0.19	0.00	0.07
200	--	0.00	0.06

Station No.	3-049	Date - GMT	10/20/92
Station Name	J923-049	Time - GMT	1141
Latitude	11. 6.6 N	Date - LOC	10/20/92
Longitude	97.52.7 W	Time - LOC	0541

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	1.99	0.10	0.05
12	1.72	0.10	0.05
20	4.27	0.10	0.04
32	2.85	0.11	0.07
51	8.25	0.44	0.57
77	0.51	0.21	0.53
116	0.08	0.05	0.10
150	--	0.02	0.07

Station No.	3-050	Date - GMT	10/21/92
Station Name	J923-050	Time - GMT	1122
Latitude	12. 0.0 N	Date - LOC	10/21/92
Longitude	95.20.2 W	Time - LOC	0522

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	40.28	0.63	0.26
12	21.30	0.44	0.24
20	25.61	0.49	0.36
32	4.99	0.32	0.58
51	0.78	0.12	0.98
77	0.19	0.03	0.18
116	0.14	0.00	0.04
150	--	0.00	0.05
200	--	0.00	0.13

Station No.	3-051	Date - GMT	10/23/92
Station Name	J923-051	Time - GMT	1144
Latitude	11.14.2 N	Date - LOC	10/23/92
Longitude	99.27.1 W	Time - LOC	0544

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.36	0.20	0.10
12	4.44	0.18	0.09
20	8.62	0.18	0.11
32	7.79	0.23	0.15
51	0.70	0.10	0.64
77	0.27	0.06	0.55
116	0.25	0.02	0.08
150	--	0.00	0.06
200	--	0.00	0.05

Station No.	3-052	Date - GMT	10/24/92
Station Name	J923-052	Time - GMT	1138
Latitude	11.54.9 N	Date - LOC	10/24/92
Longitude	98.46.4 W	Time - LOC	0538

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.64	0.21	0.13
12	3.86	0.22	0.12
20	5.99	0.22	0.12
32	5.74	0.22	0.13
51	5.72	0.41	0.43
77	0.75	0.22	0.77
116	0.16	0.05	0.28
150	--	0.02	0.13
200	--	0.00	0.06

APPENDIX A-2
(McArthur)

Station No.	1-001	Date - GMT	08/09/92
Station Name	M921-001	Time - GMT	1121
Latitude	11.12.3 N	Date - LOC	08/09/92
Longitude	087.49.7 W	Time - LOC	0521

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	14.18	0.38	0.09
7	23.45	0.40	0.09
12	16.39	0.35	0.10
19	43.62	0.55	0.13
45	0.68	3.75	2.12
67	1.08	0.20	0.30
80	--	0.17	0.17
100	--	0.04	0.10

Station No.	1-002	Date - GMT	08/10/92
Station Name	M921-002	Time - GMT	1014
Latitude	10.12.0 N	Date - LOC	08/10/92
Longitude	088.49.0 W	Time - LOC	0414

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.74	0.19	0.08
6	13.85	0.17	0.07
11	15.74	0.16	0.08
17	8.53	0.18	0.07
27	10.67	0.52	0.31
42	0.81	0.40	0.36
65	0.13	0.12	0.21
80	--	0.13	0.17
100	--	0.06	0.12

Station No.	1-003	Date - GMT	08/11/92
Station Name	M921-003	Time - GMT	1020
Latitude	09.25.5 N	Date - LOC	08/11/92
Longitude	089.38.3 W	Time - LOC	0420

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	26.37	0.26	0.06
7	27.00	0.22	0.06
12	43.04	0.24	0.09
19	107.83	1.58	0.56
30	6.74	0.56	0.53
46	1.38	0.41	0.76
69	0.34	0.20	0.21
100	--	0.06	0.12
125	--	0.01	0.07

Station No.	1-004	Date - GMT	08/12/92
Station Name	M921-004	Time - GMT	1006
Latitude	08.22.5 N	Date - LOC	08/12/92
Longitude	090.38.4 W	Time - LOC	0409

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.03	0.13	0.06
7	6.88	0.12	0.06
11	7.42	0.12	0.06
18	3.65	0.12	0.06
29	2.21	0.15	0.08
44	0.63	0.40	0.38
66	0.09	0.28	0.27
80	--	0.17	0.20
100	--	0.02	0.03

Station No.	1-005	Date - GMT	08/13/92
Station Name	M921-005	Time - GMT	1022
Latitude	07.48.2 N	Date - LOC	08/13/92
Longitude	091.12.4 W	Time - LOC	0422

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.48	0.13	0.08
7	9.21	0.14	0.07
12	8.90	0.13	0.07
19	7.60	0.13	0.08
31	4.53	0.14	0.08
47	0.96	0.34	0.31
70	0.18	0.26	0.33
100	--	0.07	0.12
125	--	0.01	0.04

Station No.	1-006	Date - GMT	08/14/92
Station Name	M921-006	Time - GMT	1058
Latitude	06.39.2 N	Date - LOC	08/14/92
Longitude	092.21.6 W	Time - LOC	0458

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.75	0.18	0.09
8	6.93	0.17	0.08
14	6.80	0.17	0.09
22	5.46	0.17	0.08
34	3.00	0.17	0.09
52	0.92	0.47	0.54
79	0.12	0.25	0.38
100	--	0.14	0.25

Station No.	1-007	Date - GMT	08/15/92
Station Name	M921-007	Time - GMT	1100
Latitude	05.34.6 N	Date - LOC	08/15/92
Longitude	093.25.1 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.48	0.12	0.07
9	6.71	0.12	0.08
15	5.85	0.10	0.07
24	3.86	0.12	0.07
38	1.87	0.15	0.09
59	0.55	0.35	0.54
88	0.12	0.21	0.26
125	--	0.06	0.13
150	--	0.01	0.04

Station No.	1-008	Date - GMT	08/16/92
Station Name	M921-008	Time - GMT	1057
Latitude	04.45.7 N	Date - LOC	08/16/92
Longitude	094.14.6 W	Time - LOC	0457

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.52	0.16	0.09
9	6.22	0.16	0.08
16	0.18	0.05	0.09
25	3.99	0.17	0.09
40	5.43	0.41	0.21
62	1.07	0.41	0.46
92	0.05	0.20	0.21
125	--	0.02	0.08
150	--	0.01	0.03

Station No.	1-009	Date - GMT	08/17/92
Station Name	M921-009	Time - GMT	1053
Latitude	03.14.9 N	Date - LOC	08/17/92
Longitude	095.44.8 W	Time - LOC	0453

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.94	0.21	0.11
9	8.88	0.21	0.08
15	9.21	0.23	0.10
24	7.32	0.21	0.09
38	5.43	0.37	0.22
58	1.00	0.43	0.50
88	0.07	0.19	0.21
125	--	0.05	0.07
150	--	0.01	0.03

Station No.	1-010	Date - GMT	08/18/92
Station Name	M921-010	Time - GMT	1052
Latitude	04.29.1 N	Date - LOC	08/18/92
Longitude	096.33.6 W	Time - LOC	0452

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.05	0.15	0.11
9	8.37	0.15	0.12
16	7.87	0.16	0.12
26	4.95	0.16	0.12
41	2.30	0.16	0.12
62	1.24	0.52	0.69
94	0.04	0.16	0.26
125	--	0.05	0.10
150	--	0.02	0.07

Station No.	1-011	Date - GMT	08/19/92
Station Name	M921-011	Time - GMT	1051
Latitude	05.46.3 N	Date - LOC	08/19/92
Longitude	095.15.9 W	Time - LOC	0451

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.18	0.13	0.11
8	7.79	0.14	0.11
15	6.94	0.14	0.11
23	5.31	0.14	0.10
37	2.04	0.10	0.08
56	0.89	0.27	0.28
85	0.09	0.20	0.22
100	--	0.14	0.23
125	--	0.02	0.05

Station No.	1-012	Date - GMT	08/20/92
Station Name	M921-012	Time - GMT	1100
Latitude	06.41.6 N	Date - LOC	08/20/92
Longitude	094.21.6 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.09	0.22	0.11
7	10.70	0.22	0.11
13	11.27	0.20	0.19
20	7.47	0.22	0.10
31	5.61	0.23	0.11
48	1.75	0.41	0.45
72	0.12	0.20	0.31
100	--	0.10	0.20
125	--	0.04	0.08

Station No.	1-013	Date - GMT	08/21/92
Station Name	M921-013	Time - GMT	1111
Latitude	07.52.7 N	Date - LOC	08/21/92
Longitude	093.10.1 W	Time - LOC	0511

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	7.48	0.17	0.09
7	5.75	0.19	0.04
12	3.86	0.17	0.09
18	1.93	0.18	0.09
29	1.52	0.52	0.27
45	0.32	0.41	0.43
67	0.10	0.23	0.32
80	--	0.13	0.20
100	--	0.06	0.11

Station No.	1-014	Date - GMT	08/22/92
Station Name	M921-014	Time - GMT	1107
Latitude	08.23.3 N	Date - LOC	08/22/92
Longitude	092.38.4 W	Time - LOC	0507

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.80	0.26	0.09
7	14.01	0.25	0.11
12	7.33	0.28	0.17
19	11.48	0.35	0.18
30	3.39	0.36	0.43
46	0.97	0.26	0.29
70	0.12	0.10	0.48
100	--	0.07	0.14
125	--	0.02	0.04

Station No.	1-015	Date - GMT	08/23/92
Station Name	M921-015	Time - GMT	1103
Latitude	09.22.5 N	Date - LOC	08/23/92
Longitude	091.37.6 W	Time - LOC	0503

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	13.79	0.27	0.12
7	14.43	0.29	0.12
12	12.62	0.34	0.18
18	13.57	0.68	0.36
29	2.94	0.60	0.82
45	0.56	0.30	0.38
67	0.05	0.11	0.18
80	--	0.06	0.15
100	--	0.01	0.08

Station No.	1-016	Date - GMT	08/24/92
Station Name	M921-016	Time - GMT	1109
Latitude	09.38.9 N	Date - LOC	08/24/92
Longitude	091.23.4 W	Time - LOC	0509

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.56	0.28	0.17
7	20.80	0.27	0.16
11	2.69	0.16	0.26
18	17.19	0.32	0.23
29	4.22	0.39	0.45
44	1.18	0.27	0.42
66	0.08	0.11	0.21
100	--	0.01	0.08

Station No.	1-017	Date - GMT	08/25/92
Station Name	M921-017	Time - GMT	1106
Latitude	12.37.8 N	Date - LOC	08/25/92
Longitude	089.23.5 W	Time - LOC	0506

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.20	0.13	0.06
7	14.50	0.14	0.06
12	13.22	0.15	0.07
20	8.71	0.14	0.06
31	4.33	0.16	0.09
47	2.83	0.57	0.52
71	0.18	0.18	0.34
100	--	0.04	0.10
125	--	0.02	0.08

Station No.	2-018	Date - GMT	09/02/92
Station Name	M922-018	Time - GMT	1100
Latitude	11. 0.3 N	Date - LOC	09/02/92
Longitude	088. 1.9 W	Time - LOC	0500

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	7.23	0.23	0.12
7	13.09	0.22	0.11
12	17.33	0.24	0.12
19	12.58	0.23	0.12
29	13.68	0.49	0.22
45	2.64	0.68	0.74
80	--	0.10	0.14
100	--	0.02	0.11

Station No.	2-019	Date - GMT	09/04/92
Station Name	M922-019	Time - GMT	1108
Latitude	10.20.0 N	Date - LOC	09/04/92
Longitude	086.40.0 W	Time - LOC	0508

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.58	0.17	0.11
6	14.68	0.15	0.10
10	0.79	0.15	0.10
16	10.69	0.15	0.10
26	10.14	0.42	0.34
39	0.40	0.55	0.72
59	0.10	0.25	0.37
100	--	0.07	0.06

Station No.	2-020	Date - GMT	09/05/92
Station Name	M922-020	Time - GMT	1058
Latitude	05.59.0 N	Date - LOC	09/05/92
Longitude	086.59.5 W	Time - LOC	0458

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.85	0.14	0.10
11	13.10	0.20	0.13
19	13.82	0.22	0.17
30	0.42	0.11	0.26
47	1.61	0.31	0.60
72	0.47	0.09	0.24
108	0.04	0.04	0.20
150	--	0.12	0.18
200	--	0.06	0.20

Station No.	2-021	Date - GMT	09/06/92
Station Name	M922-021	Time - GMT	1047
Latitude	08.40.5 N	Date - LOC	09/06/92
Longitude	088.16.6 W	Time - LOC	0447

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	9.29	0.14	0.09
12	8.78	0.13	0.11
22	7.54	0.13	0.11
34	4.43	0.27	0.22
54	1.09	0.23	0.43
83	0.22	0.01	0.04
124	0.10	0.01	0.06
150	--	0.01	0.04
200	--	0.00	0.03

Station No.	2-022	Date - GMT	09/07/92
Station Name	M922-022	Time - GMT	1127
Latitude	07.38.2 N	Date - LOC	09/07/92
Longitude	089.20.9 W	Time - LOC	0527

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.10	0.23	0.17
12	12.28	0.23	0.18
22	12.77	0.34	0.36
34	6.23	0.31	0.44
54	1.88	0.10	0.27
83	0.40	0.11	0.25
124	0.20	0.22	0.17
150	--	0.01	0.05
200	--	0.06	0.17

Station No.	2-023	Date - GMT	09/08/92
Station Name	M922-023	Time - GMT	1034
Latitude	06.32.6 N	Date - LOC	09/08/92
Longitude	090.26.1 W	Time - LOC	0434

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.08	0.18	0.11
13	12.08	0.18	0.12
22	13.12	0.20	0.18
35	15.44	0.30	0.23
55	2.54	0.26	0.37
84	0.28	0.12	0.22
126	0.03	0.04	0.09
150	--	--	--
200	--	--	--

Station No.	2-024	Date - GMT	09/09/92
Station Name	M922-024	Time - GMT	1050
Latitude	05.25.8 N	Date - LOC	09/09/92
Longitude	091.32.1 W	Time - LOC	0450

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.11	0.15	0.09
12	6.40	0.15	0.10
21	0.19	0.03	0.09
34	5.09	0.15	0.09
53	5.35	0.41	0.40
82	0.44	0.21	0.38
123	0.10	0.07	0.14
150	--	0.02	0.09
200	--	0.01	0.06

Station No.	2-025	Date - GMT	09/10/92
Station Name	M922-025	Time - GMT	1041
Latitude	04.20.8 N	Date - LOC	09/10/92
Longitude	092.39.0 W	Time - LOC	0441

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	4.01	0.14	0.10
12	7.53	0.14	0.10
20	1.12	0.07	0.16
32	4.51	0.13	0.10
50	5.74	0.49	0.26
77	0.79	0.24	0.43
115	0.13	0.08	0.20
200	--	0.01	0.03

Station No.	2-026	Date - GMT	09/11/92
Station Name	M922-026	Time - GMT	1045
Latitude	03. 4.4 N	Date - LOC	09/11/92
Longitude	093.55.0 W	Time - LOC	0445

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.48	0.17	0.11
11	15.22	0.17	0.11
20	12.82	0.17	0.11
31	16.98	0.31	0.17
49	9.76	0.38	0.36
76	1.38	0.26	0.39
114	0.20	0.07	0.13
150	--	0.06	0.13
200	--	0.01	0.03

Station No.	2-027	Date - GMT	09/12/92
Station Name	M922-027	Time - GMT	1101
Latitude	01.57.5 N	Date - LOC	09/12/92
Longitude	093.42.7 W	Time - LOC	0501

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	16.67	0.33	0.15
9	25.07	0.34	0.16
16	21.74	0.33	0.19
26	29.35	0.33	0.16
41	12.27	0.48	0.29
63	1.14	0.37	0.34
94	0.15	0.16	0.23
125	--	0.05	0.12
150	--	0.03	0.03

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Station No.      2-028                      Date - GMT      09/13/92
Station Name     M922-028                      Time - GMT      1059
Latitude         02.30.2 N                          Date - LOC      09/13/92
Longitude        092.28.9 W                       Time - LOC      0459
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Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	9.40	0.17	0.13
11	12.95	0.17	0.12
19	0.53	0.06	0.09
30	7.90	0.22	0.16
47	4.00	0.23	0.17
73	0.86	0.21	0.38
109	0.16	0.07	0.15
150	--	0.03	0.05
200	--	0.00	0.03

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Station No.      2-029                      Date - GMT      09/14/92
Station Name     M922-029                      Time - GMT      1052
Latitude         03. 6.1 N                          Date - LOC      09/14/92
Longitude        091.54.1 W                       Time - LOC      0452
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Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	2.62	0.21	0.11
10	14.14	0.21	0.12
17	1.38	0.09	0.16
27	7.68	0.20	0.11
42	4.73	0.33	0.27
65	0.75	0.30	0.40
97	0.21	0.13	0.22
125	--	0.10	0.16
150	--	0.05	0.11

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Station No.      2-030                      Date - GMT      09/15/92
Station Name     M922-030                      Time - GMT      1050
Latitude         04.19.8 N                          Date - LOC      09/15/92
Longitude        090.41.8 W                       Time - LOC      0450
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Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	3.37	0.17	0.12
11	8.47	0.16	0.12
19	0.16	0.15	0.15
30	5.72	0.17	0.12
48	3.95	0.45	0.42
74	0.84	0.26	0.48
111	0.06	0.05	0.16
150	--	0.01	0.02
200	--	0.01	0.03

Station No.	2-031	Date - GMT	09/16/92
Station Name	M922-031	Time - GMT	1033
Latitude	05.48.3 N	Date - LOC	09/16/92
Longitude	089. 9.3 W	Time - LOC	0533

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.37	0.16	0.14
10	9.79	0.21	0.14
18	0.75	0.08	0.16
28	6.36	0.23	0.15
45	3.33	0.22	0.16
69	1.06	0.38	0.26
103	0.27	0.26	0.44
150	--	0.12	0.24

Station No.	2-032	Date - GMT	09/17/92
Station Name	M922-032	Time - GMT	1027
Latitude	05.52.1 N	Date - LOC	09/17/92
Longitude	086.52.9 W	Time - LOC	0527

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.96	0.18	0.12
10	11.89	0.18	0.12
18	17.68	0.27	0.15
28	11.46	0.42	0.27
45	3.35	0.37	0.53
69	0.66	0.21	0.39
103	0.14	0.04	0.07
125	--	0.05	0.11
150	--	0.01	0.03

Station No.	2-033	Date - GMT	09/18/92
Station Name	M922-033	Time - GMT	1022
Latitude	05.44.6 N	Date - LOC	09/18/92
Longitude	086.42.9 W	Time - LOC	0522

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	9.58	0.23	0.13
10	15.67	0.23	0.13
18	15.53	0.22	0.13
28	14.42	0.36	0.27
44	6.14	0.45	0.58
67	0.73	0.17	0.35
100	0.27	0.09	0.19
125	--	--	--
150	--	0.03	0.01

Station No.	2-034	Date - GMT	09/19/92
Station Name	M902-034	Time - GMT	1019
Latitude	07.52.0 N	Date - LOC	09/19/92
Longitude	088.50.2 W	Time - LOC	0519

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	5.49	0.17	0.13
11	8.27	0.17	0.11
19	7.50	0.17	0.12
30	6.40	0.31	0.26
47	3.54	0.45	0.73
72	0.39	0.15	0.41
108	0.01	0.06	0.17
150	--	0.06	0.13
200	--	0.01	0.04

Station No.	2-035	Date - GMT	09/20/92
Station Name	M922-035	Time - GMT	1017
Latitude	09.52.6 N	Date - LOC	09/20/92
Longitude	090.15.4 W	Time - LOC	0517

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	73.54	0.73	0.19
8	92.83	0.79	0.24
15	99.91	2.19	0.91
23	9.10	0.30	0.35
36	3.42	0.35	0.44
56	0.20	0.10	0.18
84	0.09	0.08	0.28
100	--	0.08	0.17
125	--	0.02	0.04

Station No.	2-036	Date - GMT	09/21/92
Station Name	M922-036	Time - GMT	1027
Latitude	09. 0.6 N	Date - LOC	09/21/92
Longitude	089.58.7 W	Time - LOC	0527

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	21.39	0.29	0.17
10	24.75	0.29	0.17
17	24.96	0.29	0.17
27	12.69	0.29	0.17
43	3.50	0.40	0.55
99	0.05	0.02	0.05
125	--	0.02	0.06
150	--	0.01	0.03

Station No.	2-037	Date - GMT	09/22/92
Station Name	M922-037	Time - GMT	1021
Latitude	07.47.7 N	Date - LOC	09/22/92
Longitude	088.48.2 W	Time - LOC	0521

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	13.38	0.20	0.14
12	11.97	0.20	0.14
20	9.00	0.20	0.14
32	11.44	0.74	0.54
50	2.31	0.36	0.60
76	1.45	0.14	0.33
115	0.11	0.04	0.08
150	--	0.02	0.02
200	--	0.01	0.03

Station No.	2-038	Date - GMT	09/23/92
Station Name	M922-038	Time - GMT	1016
Latitude	06.45.3 N	Date - LOC	09/23/92
Longitude	088.16.2 W	Time - LOC	0516

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	12.66	0.15	0.11
11	10.50	0.15	0.10
20	6.78	0.16	0.11
31	7.67	0.43	0.48
49	2.21	0.31	0.48
75	0.31	0.16	0.33
112	0.11	0.16	0.34
150	--	0.01	0.03
200	--	0.02	0.02

Station No.	2-039	Date - GMT	09/24/92
Station Name	M922-039	Time - GMT	1021
Latitude	07.53.2 N	Date - LOC	09/24/92
Longitude	087. 7.3 W	Time - LOC	0521

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	16.65	0.17	0.13
10	11.94	0.17	0.13
18	8.07	0.21	0.16
28	7.43	0.36	0.27
45	2.59	0.38	0.56
69	0.57	0.29	0.29
103	0.11	0.06	0.15
125	--	0.05	0.14
150	--	0.01	0.05

Station No.	3-042	Date - GMT	10/06/92
Station Name	M923-042	Time - GMT	0953
Latitude	06. 9.4 N	Date - LOC	10/06/92
Longitude	078.52.0 W	Time - LOC	0453

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	21.12	0.24	0.14
11	18.32	0.26	0.17
19	18.90	0.30	0.17
30	13.84	0.76	0.81
48	3.30	0.42	0.87
74	0.98	0.16	0.31
111	0.08	0.01	0.04
150	--	0.01	0.03
200	--	0.00	0.03

Station No.	3-043	Date - GMT	10/07/92
Station Name	M923-043	Time - GMT	0955
Latitude	05. 8.2 N	Date - LOC	10/07/92
Longitude	079.53.0 W	Time - LOC	0455

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.60	--	--
12	21.17	--	--
21	23.42	--	--
33	16.42	--	--
51	2.95	--	--
79	--	--	--
118	0.09	--	--
150	--	--	--
200	--	--	--

Station No.	3-044	Date - GMT	10/08/92
Station Name	M923-044	Time - GMT	0945
Latitude	04. 0.7 N	Date - LOC	10/08/92
Longitude	080.59.7 W	Time - LOC	0445

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	13.77	0.28	0.16
11	17.98	0.26	0.14
19	14.63	0.26	0.15
30	11.42	0.39	0.23
48	6.14	0.53	0.68
74	0.67	0.17	0.26
111	0.09	0.01	0.04
150	--	0.01	0.03
200	--	0.03	0.00

Station No.	3-045	Date - GMT	10/09/92
Station Name	M923-045	Time - GMT	0949
Latitude	05. 0.0 N	Date - LOC	10/09/92
Longitude	081.59.6 W	Time - LOC	0449

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	15.08	0.18	0.12
11	12.44	0.17	0.11
19	14.99	0.28	0.16
30	--	--	--
48	5.81	0.46	0.49
74	0.86	0.16	0.26
111	0.11	0.03	0.06
150	--	0.00	0.04
200	--	0.01	0.02

Station No.	3-046	Date - GMT	10/10/92
Station Name	M923-046	Time - GMT	1006
Latitude	03.50.5 N	Date - LOC	10/10/92
Longitude	083. 8.3 W	Time - LOC	0506

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.50	0.22	0.13
12	17.72	0.21	0.13
20	14.78	0.22	0.12
32	24.57	0.65	0.43
50	8.60	0.69	0.87
77	0.74	0.19	0.35
115	0.10	0.03	0.06
150	--	0.01	0.03
200	--	0.01	0.03

Station No.	3-047	Date - GMT	10/11/92
Station Name	M923-047	Time - GMT	1010
Latitude	02.59.7 N	Date - LOC	10/11/92
Longitude	084. 0.0 W	Time - LOC	0510

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	15.20	0.29	0.15
10	19.10	0.30	0.15
18	19.46	0.30	0.16
28	12.63	0.31	0.16
44	8.74	0.74	0.71
68	1.49	0.27	0.38
102	0.09	0.12	0.17
125	--	0.02	0.05
150	--	0.03	0.03

Station No.	3-048	Date - GMT	10/12/92
Station Name	M923-048	Time - GMT	1023
Latitude	04. 6.1 N	Date - LOC	10/12/92
Longitude	085.17.9 W	Time - LOC	0523

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	9.35	0.20	0.12
11	17.33	0.20	0.12
20	16.15	0.21	0.12
31	0.55	0.07	0.10
49	5.24	0.38	0.48
75	1.34	0.23	0.60
112	0.11	0.10	0.20
150	--	0.02	0.05
200	--	0.01	0.02

Station No.	3-049	Date - GMT	10/15/92
Station Name	M923-049	Time - GMT	1015
Latitude	05.55.9 N	Date - LOC	10/15/92
Longitude	085. 2.8 W	Time - LOC	0515

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.68	0.15	0.09
11	8.25	0.16	0.09
19	6.07	0.21	0.12
29	8.23	0.60	0.46
46	2.55	0.53	0.75
71	1.03	0.22	0.43
106	0.07	0.09	0.17
125	--	0.04	0.05
150	--	0.02	0.04

Station No.	3-050	Date - GMT	10/16/92
Station Name	M923-050	Time - GMT	1022
Latitude	05. 2.1 N	Date - LOC	10/16/92
Longitude	085.56.7 W	Time - LOC	0522

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	10.89	0.23	0.10
11	15.02	0.18	0.09
19	13.76	0.24	0.12
30	11.76	0.38	0.22
47	4.66	0.35	0.31
73	0.66	0.23	0.36
109	--	--	--
150	--	0.02	0.08
200	--	0.03	0.03

Station No.	3-051	Date - GMT	10/17/92
Station Name	M923-051	Time - GMT	1023
Latitude	01.59.9 N	Date - LOC	10/17/92
Longitude	086.59.8 W	Time - LOC	0523

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.91	0.30	0.17
10	17.04	0.29	0.17
18	16.01	0.29	0.17
28	12.01	0.30	0.18

Station No.	3-052	Date - GMT	10/18/92
Station Name	M923-052	Time - GMT	1022
Latitude	03.20.7 N	Date - LOC	10/18/92
Longitude	085.40.2 W	Time - LOC	0522

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	16.96	0.26	0.11
11	20.70	0.26	0.11
20	17.84	0.29	0.11
31	11.67	0.27	0.11
49	4.69	0.44	0.52
75	--	--	--
112	0.11	0.04	0.05
150	--	0.01	0.03
200	--	0.01	0.02

Station No.	3-053	Date - GMT	10/19/92
Station Name	M923-053	Time - GMT	1020
Latitude	04.25.5 N	Date - LOC	10/19/92
Longitude	084.35.4 W	Time - LOC	0520

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	12.42	0.20	0.12
11	13.22	0.19	0.13
20	11.30	0.21	0.11
31	17.33	0.56	0.47
49	6.43	0.58	0.76
76	1.50	0.23	0.40
114	0.02	0.04	0.11
150	--	0.02	0.06
200	--	0.01	0.02

Station No.	3-054	Date - GMT	10/20/92
Station Name	M923-054	Time - GMT	1022
Latitude	05.29.4 N	Date - LOC	10/20/92
Longitude	083.28.3 W	Time - LOC	0522

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	18.09	0.21	0.11
11	21.03	0.20	0.11
19	20.26	0.24	0.15
30	16.31	0.56	0.51
48	3.48	0.34	0.49
74	0.91	0.09	0.19
111	0.18	0.06	0.13
150	--	0.02	0.06
200	--	0.01	0.02

Station No.	3-055	Date - GMT	10/21/92
Station Name	M923-055	Time - GMT	1021
Latitude	06.32.5 N	Date - LOC	10/21/92
Longitude	082.26.0 W	Time - LOC	0521

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	15.93	0.23	0.13
11	20.05	0.21	0.12
19	17.94	0.28	0.15
30	25.27	0.98	0.68
48	3.68	0.40	0.51
74	0.94	0.12	0.21
111	--	--	--
150	--	0.02	0.04
200	--	0.02	0.03

Station No.	3-056	Date - GMT	10/23/92
Station Name	M923-056	Time - GMT	0945
Latitude	06. 6.6 N	Date - LOC	10/23/92
Longitude	079. 6.0 W	Time - LOC	0445

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	21.96	0.27	0.18
11	--	0.34	0.23
19	12.27	0.34	0.23
30	4.60	0.44	0.38
48	2.30	0.36	0.59
74	1.07	0.10	0.24
111	0.04	0.04	0.07
150	--	0.01	0.04
200	--	0.00	0.03

Station No.	3-057	Date - GMT	10/24/92
Station Name	M923-057	Time - GMT	0954
Latitude	05.21.9 N	Date - LOC	10/24/92
Longitude	078.20.8 W	Time - LOC	0454

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	20.76	0.41	0.22
12	20.17	0.40	0.25
21	17.88	0.39	0.24
33	10.08	0.34	0.26
51	4.06	0.33	0.42
79	0.48	0.15	0.28
118	0.15	0.04	0.06
150	--	0.01	0.04
200	--	0.01	0.03

Station No.	3-058	Date - GMT	10/25/92
Station Name	M923-058	Time - GMT	0025
Latitude	04.10.8 N	Date - LOC	10/24/92
Longitude	077.49.3 W	Time - LOC	1925

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.42	0.16
8	--	0.43	0.17
14	--	0.45	0.24
23	--	0.51	0.29
36	--	0.31	0.33
55	--	0.34	0.21
82	--	0.25	0.40
100	--	0.07	0.12
125	--	0.06	0.12

Station No.	3-059	Date - GMT	10/26/92
Station Name	M923-059	Time - GMT	0132
Latitude	03.12.0 N	Date - LOC	10/25/92
Longitude	078. 8.8 W	Time - LOC	2032

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	--	0.16	0.10
9	--	0.17	0.10
15	--	0.19	0.12
23	--	0.26	0.15
37	--	0.82	0.59
57	--	0.24	0.37
85	--	0.16	0.23
100	--	0.02	0.10
125	--	0.03	0.09

Station No.	3-060	Date - GMT	10/27/92
Station Name	M923-060	Time - GMT	0950
Latitude	02.22.5 N	Date - LOC	10/27/92
Longitude	079. 4.2 W	Time - LOC	0450

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	11.37	0.18	0.11
12	14.40	0.19	0.11
21	13.98	0.22	0.12
34	11.76	0.28	0.15
53	2.89	0.39	0.37
82	0.14	0.03	0.13
123	0.07	0.01	0.10
150	--	0.02	0.09
200	--	0.01	0.08

Station No.	3-061	Date - GMT	10/28/92
Station Name	M923-061	Time - GMT	0947
Latitude	02.45.8 N	Date - LOC	10/28/92
Longitude	079.46.2 W	Time - LOC	0447

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	6.12	0.19	0.13
12	12.28	0.18	0.12
21	10.93	0.23	0.14
33	28.34	0.97	0.62
53	1.25	0.20	0.39
81	0.33	0.07	0.18
121	0.21	0.04	0.14
150	--	--	--
200	--	0.01	0.05

Station No.	3-062	Date - GMT	10/29/92
Station Name	M923-062	Time - GMT	0958
Latitude	03.54.9 N	Date - LOC	10/29/92
Longitude	081. 1.9 W	Time - LOC	0458

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.14	0.19	0.12
12	12.23	0.19	0.12
21	11.64	0.21	0.12
34	12.01	0.34	0.21
53	8.94	0.64	0.75
82	0.89	0.25	0.40
123	0.16	0.01	0.04
150	--	0.02	0.04
200	--	0.02	0.04

Station No.	3-063	Date - GMT	10/30/92
Station Name	M923-063	Time - GMT	1002
Latitude	02. 0.0 N	Date - LOC	10/30/92
Longitude	083. 0.0 W	Time - LOC	0502

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.25	0.19	0.12
13	12.39	0.20	0.13
22	12.85	0.20	0.12
35	11.24	0.23	0.14
55	2.64	0.30	0.37
84	0.33	0.05	0.18
126	0.05	0.01	0.04
150	--	0.00	0.03
200	--	0.00	0.03

Station No.	3-064	Date - GMT	10/31/92
Station Name	M923-064	Time - GMT	1003
Latitude	03.48.2 N	Date - LOC	10/31/92
Longitude	081.37.5 W	Time - LOC	0503

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	8.15	0.17	0.11
12	12.96	0.16	0.11
22	11.87	0.17	0.11
34	11.76	0.20	0.11
54	4.68	0.37	0.52
83	0.39	0.04	0.08
124	0.87	0.01	0.06
150	--	0.01	0.05
200	--	0.01	0.03

Station No.	3-065	Date - GMT	11/01/92
Station Name	M923-065	Time - GMT	1009
Latitude	05.51.7 N	Date - LOC	11/01/92
Longitude	080.36.8 W	Time - LOC	0509

Depth (m)	Productivity (mgC/m3/day)	Chlorophyll (mg/m3)	Phaeophytin (mg/m3)
0	19.20	0.17	0.10
13	19.29	0.21	0.13
23	18.29	0.55	0.51
36	10.66	0.48	0.59
57	4.44	0.47	0.63
87	0.24	0.07	0.17
130	0.09	0.00	0.04
150	--	0.01	0.04
200	--	0.01	0.03

APPENDIX B

SCIENTIFIC PERSONNEL

Cruise Leaders

Dr. Jay Barlow, SWFSC
 Dr. Paul Fiedler, SWFSC
 Dr. Tim Gerrodette, SWFSC
 James Gilpatrick, SWFSC
 Mark Lowry, SWFSC
 Lt. Karl Mangels, NOAA Corps, SWFSC
 Dr. Barbara Taylor, SWFSC

Ship (Leg #s)

D.S. Jordan (3)
 McArthur (1)
 D.S. Jordan (1)
 D.S. Jordan (2)
 McArthur (2)
 D.S. Jordan (2)
 McArthur (3)

Marine Mammal Identification Experts

Scott Benson, SWFSC
 James Cotton, SWFSC
 Richard Rowlett, SWFSC
 Brian Smith, SWFSC

D.S. Jordan (3) McArthur (1,2)
 D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (3) McArthur (1,2)

Marine Mammal Observers

Terry Farley, SWFSC
 Douglas Kinsey, SWFSC
 Mary Lycan, SWFSC
 Scott Miller, SWFSC
 Elizabeth Mitchell, SWFSC
 Paula Olson, SWFSC
 Jennifer Quan, SWFSC
 Julie Rivers, SWFSC

D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (3) McArthur (1,2)
 D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (1,2) McArthur (3)
 D.S. Jordan (3) McArthur (1,2)
 D.S. Jordan (3) McArthur (1,2)
 D.S. Jordan (3) McArthur (1,2)

Bird Observers

Michael Force, Contractor
 Robert Pitman, SWFSC

D.S. Jordan (1-3)
 D.S. Jordan (1-3)

Oceanographer

Valerie Philbrick, SWFSC

D.S. Jordan (1-3)

Environmental Data Collection

Jet Glavin, NOAA Ship *McArthur*
 Robert Holland, SWFSC
 Richard LeDuc, SWFSC
 Deanna Niemer, NOAA Ship *McArthur*
 Joyce Sisson, SWFSC

McArthur (1-3)
 D.S. Jordan (2)
 D.S. Jordan (1)
 McArthur (1-3)
 D.S. Jordan (3)

Foreign/Guest Observers

Jose Luis Aguilar, Mexico
 Kevin Bentler, IATTC
 Susana Mungaray, Mexico
 John Nicolas, NEFSC
 Pedro Ulloa Ramirez, Mexico
 Renate Sponer, Austria

McArthur (1)
 McArthur (3)
 McArthur (1)
 McArthur (2)
 McArthur (1)
 McArthur (2,3)

Photogrammetrists

James Gilpatrick, SWFSC
 Carrie LeDuc, SWFSC
 Morgan Lynn, SWFSC
 Robin Westlake, SWFSC

D.S. Jordan (2)
 D.S. Jordan (3)
 D.S. Jordan (1,3)
 D.S. Jordan (1,2)

Helicopter Support

Lt. Dave Gardiner, NOAA Corps, OAO
 Ron Helgeson, OAO
 Lt. Robert S. Pape, NOAA Corps, OAO

D.S. Jordan (3)
 D.S. Jordan (1-3)
 D.S. Jordan (1,2)