A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

EASTROPAC ATLAS

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

CIRCULAR
330
VOLUME 6
DECEMBER
1972

EASTROPAC *Atlas*

Volume 1	Physical oceanographic and meteorological data from principal participating ships, first survey cruise, February-March 1967.	Published June 1972
Volume 2	Biological and nutrient chemistry data from principal participating ships, first survey cruise, February-March 1967.	Published April 1971
Volume 3	Physical oceanographic and meteorological data from principal participating ships, first and second monitor cruises, April-July 1967.	Published September 1971
Volume 4	Biological and nutrient chemistry data from principal participating ships, first and second monitor cruises, April-July 1967.	Published November 1970
Volume 5	Physical oceanographic and meteorological data from principal participating ships, second survey cruise, August-September 1967.	Published September 1972
Volume 6	Biological and nutrient chemistry data from principal participating ships, second survey cruise, August-September 1967.	Published December 1972
Volume 7	Physical oceanographic and meteorological data from principal participating ships and *Oceanographer*, third and fourth monitor cruises, October 1967-January 1968.	In preparation
Volume 8	Biological and nutrient chemistry data from principal participating ships and *Oceanographer*, third and fourth monitor cruises, October 1967-January 1968.	In preparation
Volume 9	Physical oceanographic and meteorological data from principal participating ships, third survey cruise, February-March 1968.	In preparation
Volume 10	Biological and nutrient chemistry data from principal participating ships, third survey cruise, February-March 1968.	In preparation
Volume 11	Data from Latin American cooperating ships and ships of opportunity, all cruises, February 1967-March 1968.	In preparation

Cover. Immature magnificent frigatebirds near Cocos Island.
Photo by John H. Taylor, Scripps Institution of Oceanography.

ABSTRACT

This atlas contains charts depicting the distribution of physical, chemical, and biological oceanographic properties and associated meteorological properties observed during EASTROPAC. EASTROPAC was an international cooperative investigation of the eastern tropical Pacific Ocean (20° N. to 20° S., and from the west coasts of the American continents to 119° W.) which was intended to provide data necessary for a more effective use of the marine resources of the area, especially tropical tunas, and also to increase knowledge of the ocean circulation, air-sea interaction, and ecology. The Bureau of Commercial Fisheries (now National Marine Fisheries Service) was the coordinating agency. The field work, from February 1967 through March 1968, was divided into seven 2-month cruise periods. During each cruise period one or more ships were operating in the study area.

On completion of the field work the data seemed too numerous for a classical data report. Instead, it was decided to produce an 11-volume atlas of the results, with 5 volumes containing physical oceanographic and meteorological data from the principal participating ships, 5 volumes containing biological and nutrient chemistry data from the same ships, and 1 volume containing all data from Latin American cooperating ships and ships of opportunity. Extensive use was made of a computer and automatic plotter in preparation of the atlas charts. Methods used to collect and process the data upon which the atlas is based are described in detail by the contributors of the following categories of charts: temperature, salinity, and derived quantities; thickness of the upper mixed layer; dissolved oxygen; meteorology; nutrient chemistry; phytoplankton standing stocks and production; zooplankton and fish larvae; micronekton; birds, fish schools, and marine mammals.

EASTROPAC Atlas

VOLUME 1

ERRATA Number 2

November 1972

FIGURE 10-O_2Sa-10.	An area of less than 100% saturation centered at 8.5° N., 88° W. should be shaded.
FIGURE 11-T-v5. FIGURE 11-S-v5. FIGURE 11-δ-v5.	The index maps are incorrect. These sections extend only to 13° S. instead of 20° S. as shown.
FIGURE 12-G-v2.	Caption, second sentence: The clause about light shading should be deleted. No flow toward the northwest is shown in this section.

EASTROPAC Atlas

VOLUME 2

ERRATA Number 2

November 1972

FIGURE 10-Ph-150i.	There should be darker shading inside the 40 contour lying just west the Galapagos. There should also be darker shading in the area south of the 20 contour at 14° S., 96° W. The contour at 16° S., 100° W. should be labeled 10.
FIGURE 11-NO_2-v1.	The label on the contour lying between stations 42 and 44 at a depth of 150 m. should read 0.4 instead of 0.6.
FIGURE 11-NO_3-v5.	The small closed contour centered at a depth of 110 m. at station 306 should be labeled 30.
FIGURE 11-NO_2-v5.	The small closed contour centered at a depth of 60 m. at station 303 should be labeled 0.4; the closed contour at 70 m., station 285 should be labeled 0.8; the small closed contour at 110 m., station 228 should be labeled 1.6.
FIGURE 12-NO_3-v2. FIGURE 12-NO_3-v4. FIGURE 12-NO_3-v6.	The dashed contours at or near the tops of these charts indicate 0.1 µg.-at./l. Although the decimal points are there the leading zeros were omitted from the labels. At a quick glance these contours might be mistaken for 1 µg.-at./l.
FIGURE 13-P-v2.	The label on the contour nearest to bottom of the chart at station 36 should read 3.0 instead of 30.
FIGURE 13-Ch-v6.	The label on the contour in the extreme upper right corner is missing. It should read 1.0.

FIGURE 13-Ph-v2. The area below the lower 0.2 contour in the vicinity of stations 64-69 should not be shaded, indicating a concentration of less than 0.2 mg./m.^{3}.

FIGURE 13-Ch-v3. The label on the short contour at extreme lower left should read 0.1 instead of 1.0.

FIGURE 13-Ph-v3. The label on the short contour at extreme lower left should read 0.1 instead of 1.0.

FIGURE 14-NO_3-v3. The small closed contour centered at a depth of 90 m. at station 7 should be labeled 26.

FIGURE 14-NO_3-v6. The longitude scale was omitted from the top of this chart. For the correct position of the 79° W. and 80° W. longitude ticks, see any of the following charts (all found in volume 1): 14-T-v6, 14-S-v6, 14-δ-v6, 14-G-v6, 14-O_2-v6.

FIGURE 14-P-v24. The large closed contour centered at a depth of 100 m. between stations 236 and 238 should be labeled 1.8. The small closed contour centered at 110 m. at station 242 should be labeled 1.6. The small closed contour centered at 50 m. at station 249 should be labeled 1.6.

FIGURE 14-P-v26.
FIGURE 14-NO_3-v26. } Labels for 0, 5 S., and 10 S. should be added to the latitude scale.

FIGURE 14-Ch-v26. The closed contours at station 291 are blurred. The maximum value is 0.87 mg./m.^{3} at a depth of 22 m. The labels on the short contours below the shaded area at stations 287 and 295 should read 0.15 instead of 0.1.

EASTROPAC Atlas

VOLUME 5

ERRATA Number 1

November 1972

FIGURE 46-S-v3. The two intersecting lines at lower left, below the 34.6 contour, are extraneous and should be disregarded.

EASTROPAC Atlas

VOLUME 6

ERRATA Number 1

April 1973

FIGURE 40-FLN.
FIGURE 40-FLD.
FIGURE 40-FE.
FIGURE 40-FS.
FIGURE 40-FA.
FIGURE 40-FC.
FIGURE 40-FMN.
FIGURE 40-FMD.
FIGURE 40-FGN.
FIGURE 40-FGD.

The shading scales were omitted from these fish larvae and fish eggs charts. The shading scheme used is the same as was used on the 10-series fish larvae charts in Volume 2 and the 20- and 30-series charts in Volume 4, and is shown below:

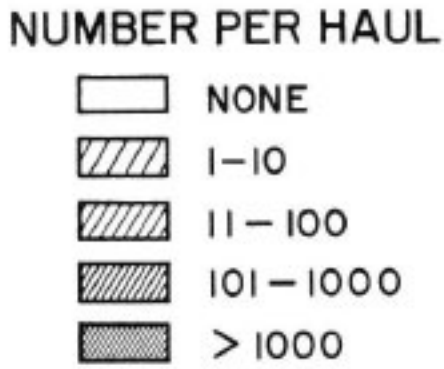

FIGURE 45-Si-v1. The small closed contour at a depth of 210 m. at station 127 should be labeled 28.

FIGURE 46-Si-v3. The small closed contour at a depth of 160 m. at station 82 should be labeled 18.

FIGURE 46-P-v4. The closed contour at a depth of 210 m. at station 183 should be labeled 2.6. The small closed contour at 210 m. at station 153 should be labeled 2.2.

UNITED STATES DEPARTMENT OF COMMERCE
Peter G. Peterson, *Secretary*

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NATIONAL MARINE FISHERIES SERVICE
Philip M. Roedel, *Director*

EASTROPAC ATLAS

VOLUME 6

BIOLOGICAL AND NUTRIENT CHEMISTRY DATA FROM
PRINCIPAL PARTICIPATING SHIPS
SECOND SURVEY CRUISE, AUGUST-SEPTEMBER 1967

CUTHBERT M. LOVE, *Editor*

CIRCULAR 330
WASHINGTON, D.C.
DECEMBER 1972

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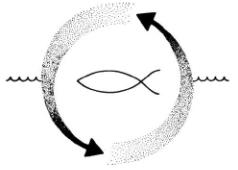


COORDINATOR, EASTROPAC PROJECT

WARREN S. WOOSTER, Scripps Institution of Oceanography, June 27, 1966-May 15, 1967
ALAN R. LONGHURST, National Marine Fisheries Service, May 15, 1967-June 30, 1970

ATLAS CONTRIBUTORS

ELBERT H. AHLSTROM—National Marine Fisheries Service, Fish Larvae
MAURICE BLACKBURN—Scripps Institution of Oceanography, Micronekton
WITOLD L. KLAWE—Inter-American Tropical Tuna Commission, Scombroid Larvae
R. MICHAEL LAURS—National Marine Fisheries Service, Zooplankton, Micronekton, Bird and Mammal Observations
FORREST R. MILLER—Inter-American Tropical Tuna Commission, Meteorology
ROBERT W. OWEN, Jr.—National Marine Fisheries Service, Phytoplankton, Oxygen, Mixed Layer Depth
BRUCE A. TAFT—Scripps Institution of Oceanography, Physical Oceanography
WILLIAM H. THOMAS—Scripps Institution of Oceanography, Nutrient Chemistry
MIZUKI TSUCHIYA—Scripps Institution of Oceanography, Physical Oceanography
BERNT ZEITZSCHEL—Scripps Institution of Oceanography, Phytoplankton

EDITORIAL COMMITTEE

CUTHBERT M. LOVE, National Marine Fisheries Service
BRUCE A. TAFT, Scripps Institution of Oceanography
R. MICHAEL LAURS, National Marine Fisheries Service

National Marine Fisheries Service
Southwest Fisheries Center
La Jolla, California 92037

Scripps Institution of Oceanography
University of California, San Diego
La Jolla, California 92037

Inter-American Tropical Tuna Commission
% Scripps Institution of Oceanography
La Jolla, California 92037

INTRODUCTION

EASTROPAC was an international cooperative investigation of the eastern tropical Pacific Ocean which was intended to provide data necessary for a more effective use of the marine resources of the area, especially tropical tunas, and also to increase knowledge of the ocean circulation, air-sea interaction, and ecology. The National Marine Fisheries Service (NMFS), formerly Bureau of Commercial Fisheries (BCF), was the coordinating agency. The field work, from February 1967 through March 1968, was divided into seven 2-month cruise periods.

At a meeting of the EASTROPAC Coordinating Committee held at La Jolla in April 1968, it was decided that the data derived from the cruises were so numerous as to render classical data reports impractical and that a comprehensive atlas of the physical and biological results of the project should be produced instead. The atlas has been divided into 11 volumes, with five volumes containing physical oceanographic and meteorological data from the principal participating ships, five volumes containing biological and nutrient chemistry data from the same ships, and one volume containing all data from Latin-American cooperating ships and ships of opportunity.

Volume 6 contains biological and nutrient chemistry data collected mainly by the principal participating ships during the second survey cruise period (40-series cruises), August-September 1967. The companion volume presenting the corresponding physical oceanographic and meteorological data is volume 5. The locations of stations occupied by principal participating ships and Latin-American cooperating ships are shown in figures 40-TC-a and 40-TC-b.

Information concerning the history and organization of the EASTROPAC Project, a description of the cruises undertaken, the program of observations, the methods used for preparation of the charts, and remarks on the organization of the atlas are contained in volumes 1 and 4 with descriptions by the contributing scientists of the methods used to collect and process the data upon which the atlas charts are based.

CUTHBERT M. LOVE
Editor

Abbreviations used in figure designation system

Cruise or cruise period	Property represented	Mnemonic to explain choice of letters	Indicator for vertical sections or type of horizontal surface
Numbers 11, 12, 13, etc., indicate principal cruises. See figure 1.	T Temperature		v1, v2, etc., indicate vertical sections.
	S Salinity		Vertical sections are assigned consecutive numbers within each cruise which follow the chronological order in which the ship ran the sections.
Letters or letter-number combinations indicate cruises of Latin American cooperating ships or ships of opportunity, as follows:	δ Thermosteric anomaly (δ_T)		
	G Geostrophic velocity		
	O_2 Oxygen concentration		
	O_2Sa Oxygen saturation		Number 10 or 100 following O_2Sa or horizontal P, Si, NO_3, NO_2, or NH_3 charts indicates distribution at that depth (m.).
	ML Thickness of the mixed layer		
	δ300 300 cl./t. thermosteric anomaly surface		
	AP Acceleration Potential		
	P Phosphate-phosphorus		s Distribution at the sea surface
	Si Silicate-silicon		δ300 Distribution on the surface where δ_T=300 cl./t.
	NO_3 Nitrate-nitrogen		ei Distribution integrated over the euphotic layer
	NO_2 Nitrite-nitrogen		150i Distribution integrated to 150 m. depth
	NH_3 Ammonia-nitrogen		z Depth of a surface
	Ch Chlorophyll-a		
	Ph Phaeophytin		
	PP Primary production		
	EL Thickness of the euphotic layer		
	FCp Fish and cephalopod standing stock		
	Cr Crustacean standing stock		
	Nk Total micronekton standing stock		
	ZhN Zooplankton standing stock from 50-cm. net hauls, night	Zooplankton, half-meter, Night	Number 1 or 2 following SP or SW charts indicates one of two 6-month periods into which those observations were divided.
	Z1N Zooplankton standing stock from 1-m. net hauls, night	Zooplankton, 1-meter, Night	
	ZhD Zooplankton standing stock from 50-cm. net hauls, day	Zooplankton, half-meter, Day	
	Z1D Zooplankton standing stock from 1-m. net hauls, day	Zooplankton, 1-meter, Day	
	FLN Total fish larvae, night hauls	Fish Larvae, Night	Numbers 1 to 4 or 1 to 6 following MT or MW charts indicate one of the approximate 2-week periods into which those observations were divided. For all cruise periods except 40, the MT and MW charts were drawn for four 2-week periods. For the 40 cruise period these charts were drawn for six periods ranging from 12 to 16 days in length, but with several days overlap between some periods. Number 1 or 2 following MC charts indicates one of the monthly periods for which those charts were drawn.
	FLD Total fish larvae, day hauls	Fish Larvae, Day	
	FE Total fish eggs		
	FS Total skipjack tuna larvae	Fish, Skipjack	
	FA Total *Auxis* larvae	Fish, *Auxis*	
	FC Total *Coryphaena* larvae	Fish, *Coryphaena*	
	FMN Total myctophid larvae, night hauls	Fish, Myctophid, Night	
	FMD Total myctophid larvae, day hauls	Fish, Myctophid, Day	
	FGN Total gonostomatid and sternoptychid larvae, night hauls	Fish, Gonostomatid, Night	
	FGD Total gonostomatid and sternoptychid larvae, day hauls	Fish, Gonostomatid, Day	
	BP Relative abundance of plankton-feeding birds	Birds, Plankton-feeding	
	BF Relative abundance of fish and cephalopod-feeding birds	Birds, Fish-feeding	
	SP Porpoise sightings	Sightings, Porpoise	
	SW Whale sightings	Sightings, Whales	
	ST Tuna school sightings, all cruises	Sightings, Tuna	
	UA Upper atmosphere meteorology		
	MW Surface meteorological analysis, winds and pressure	Meteorology, Winds	
	MC Surface meteorological analysis, clouds, dewpoint, temperature	Meteorology, Clouds	
	MT Surface meteorological analysis, sea temperature, sea-air temperature difference, sea temperature anomaly	Meteorology, Temperature	
	RM Reference map		
	TC Track chart		
MZ-4 *Yolanda*, MZ-4			
MZ-5 *Yolanda*, MZ-5			
MZ-6 *Yolanda*, MZ-6			
MZ-7 *Defiance*, MZ-7			
MZ-8 *Tuxpan*, MZ-8			
H1 *Huayaipe*-1			
H2 *Huayaipe*-2			
H3 *Huayaipe*-3			
U1 *Unanue* 6702			
U2 *Unanue* 6708			
U3 *Unanue* 6802			
Y5 *Yelcho* MARCHILE V			
Y6 *Yelcho* MARCHILE VI			
Y7 *Yelcho* MARCHILE VII			
E6 *Esmeralda* BE VI			
OP *Oceanographer*			
CD *Charles H. Davis*			
T3 *Te Vega* 13			
T4 *Te Vega* 14			
T5 *Te Vega* 15			
T6 *Te Vega* 16			
T7 *Te Vega* 17			
Numbers 10, 20, 30, 40, 50, 60, 70, indicate 2-month cruise periods.			

LIST OF FIGURES

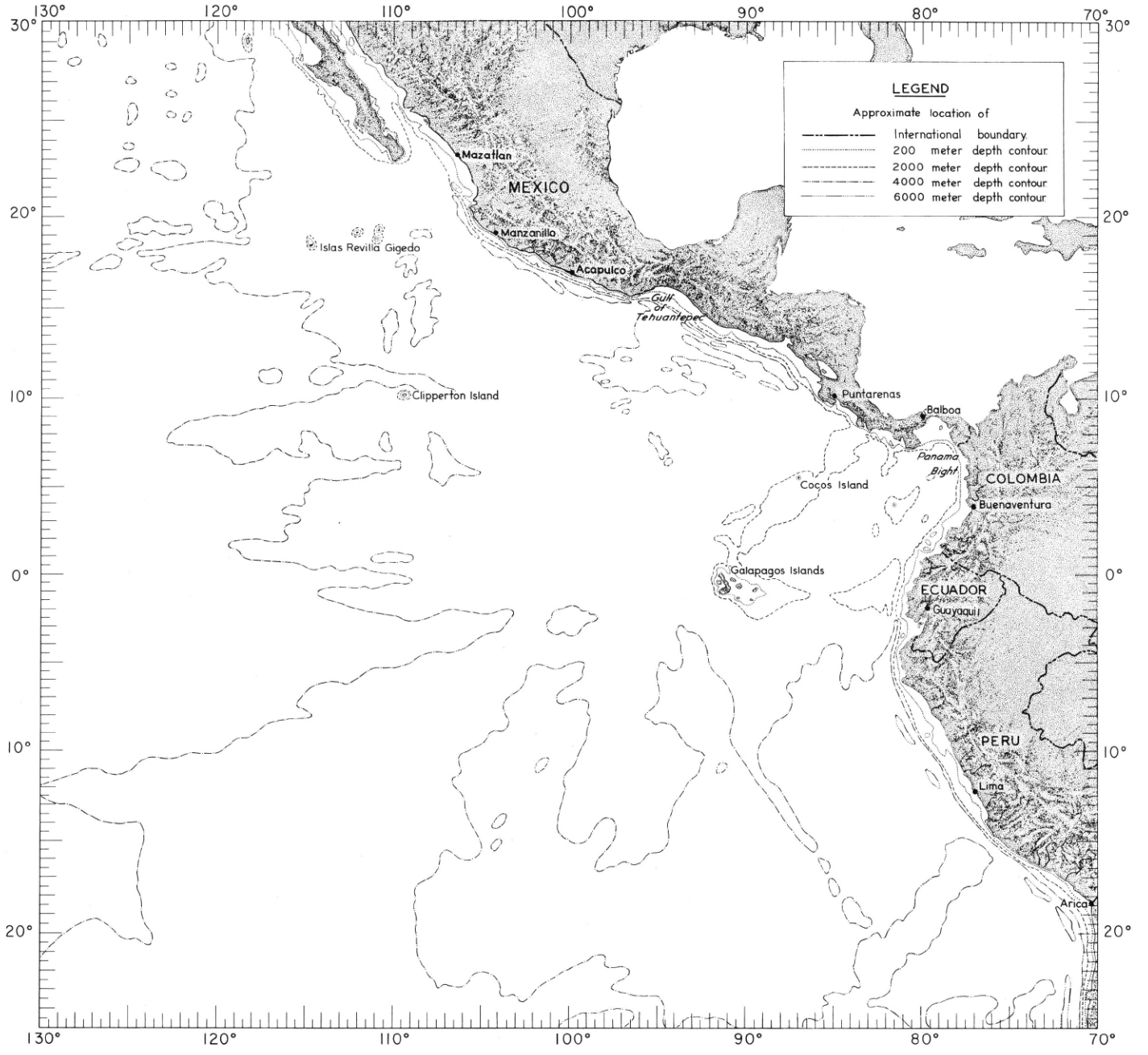
Phytoplankton—Green pages

Nutrient chemistry—White pages

Phytoplankton—Green pages

Nutrient chemistry—White pages

Phytoplankton—Green pages



RM-a.

FIGURE RM-a. — Reference map of the main portion of the EASTROPAC area. The topographic shading and bathymetric contours are approximate only and should not be considered as portraying the latest available information.

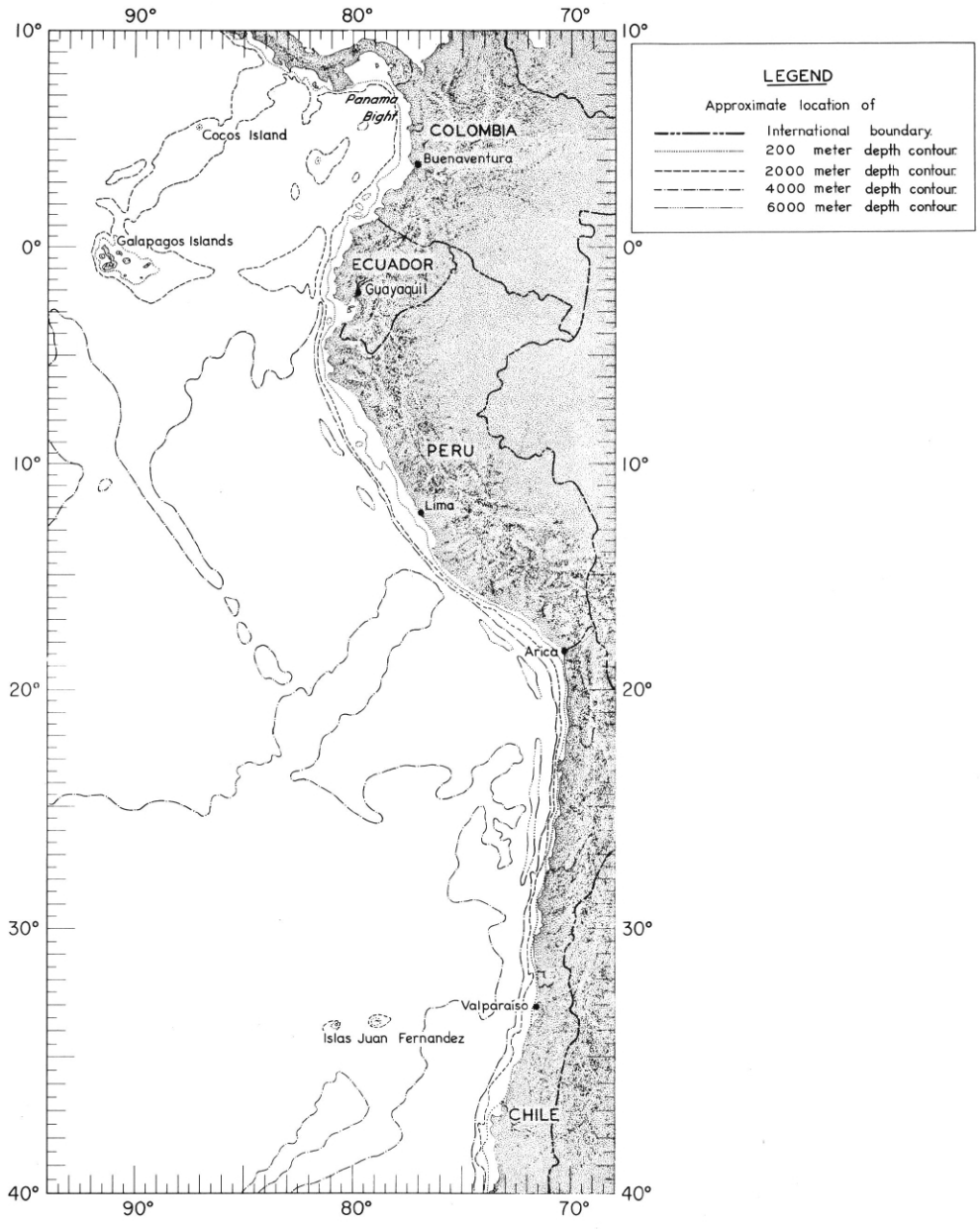
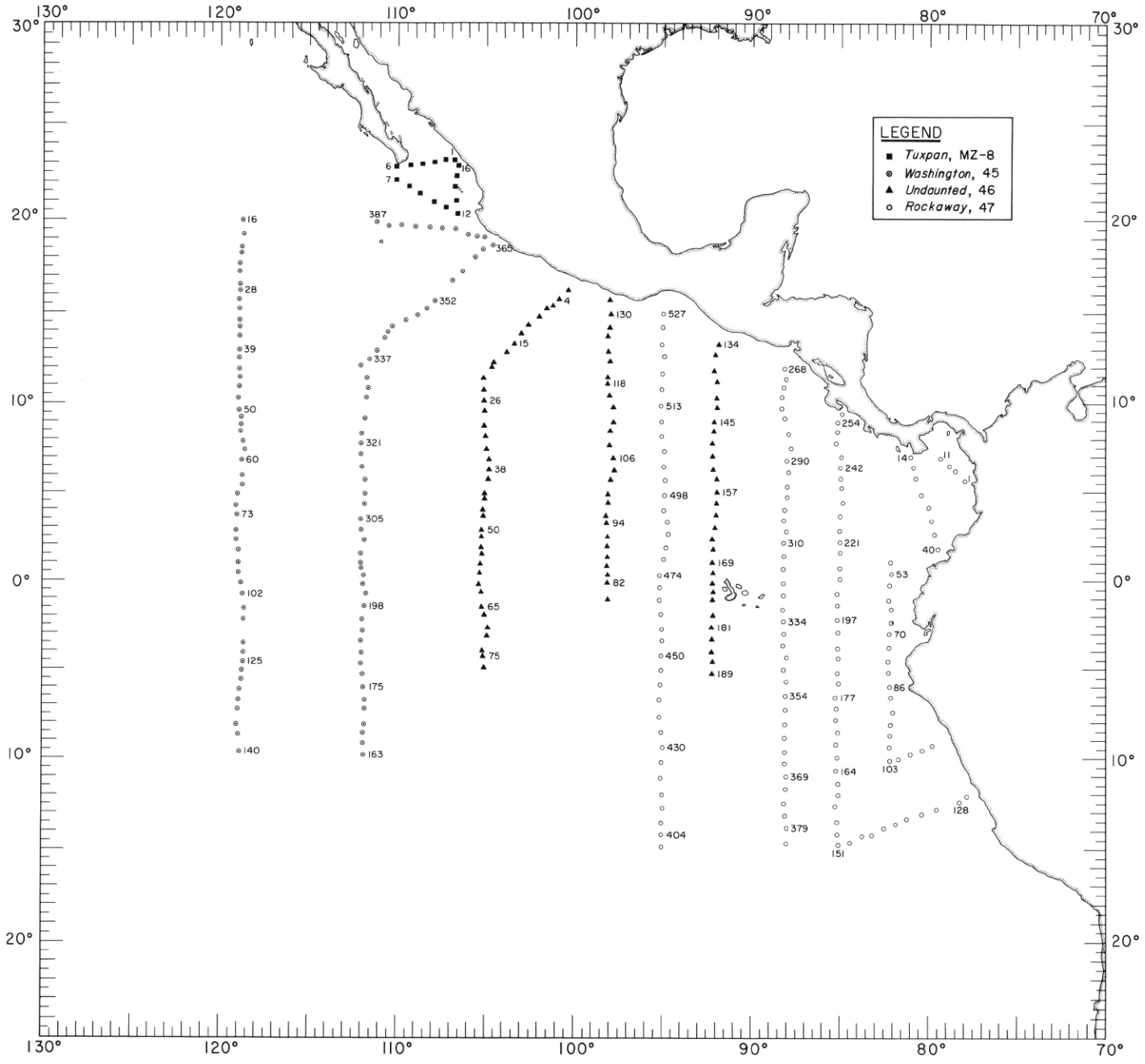
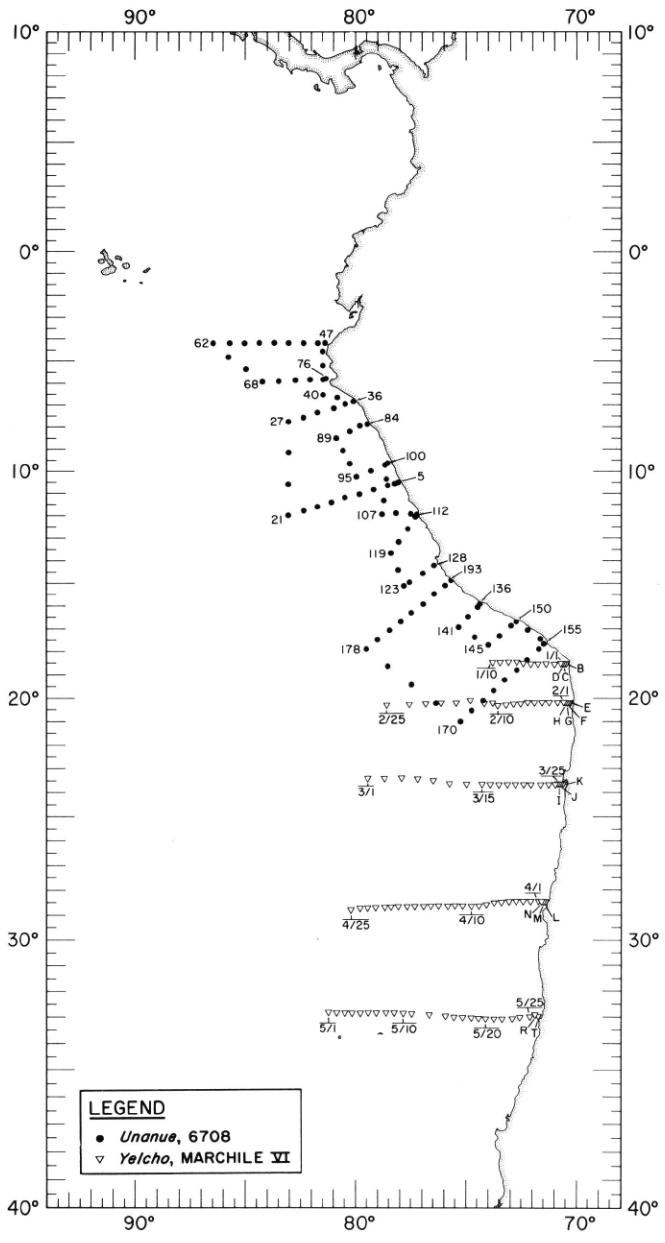


FIGURE RM-b — Reference map of the southern coastal portion of the EASTROPAC area. The topographic shading and bathymetric contours are approximate only and should not be considered as portraying the latest available information.



40-TC-a.

FIGURE 40-TC-a. — Locations of stations occupied by participating ships in the main portion of the EASTROPAC area during the second survey period, August-September 1967.



40-TC-b.

FIGURE 40-TC-b. — Locations of stations occupied by participating ships in the southern coastal portion of the EASTROPAC area during the second survey period, August-September 1967.

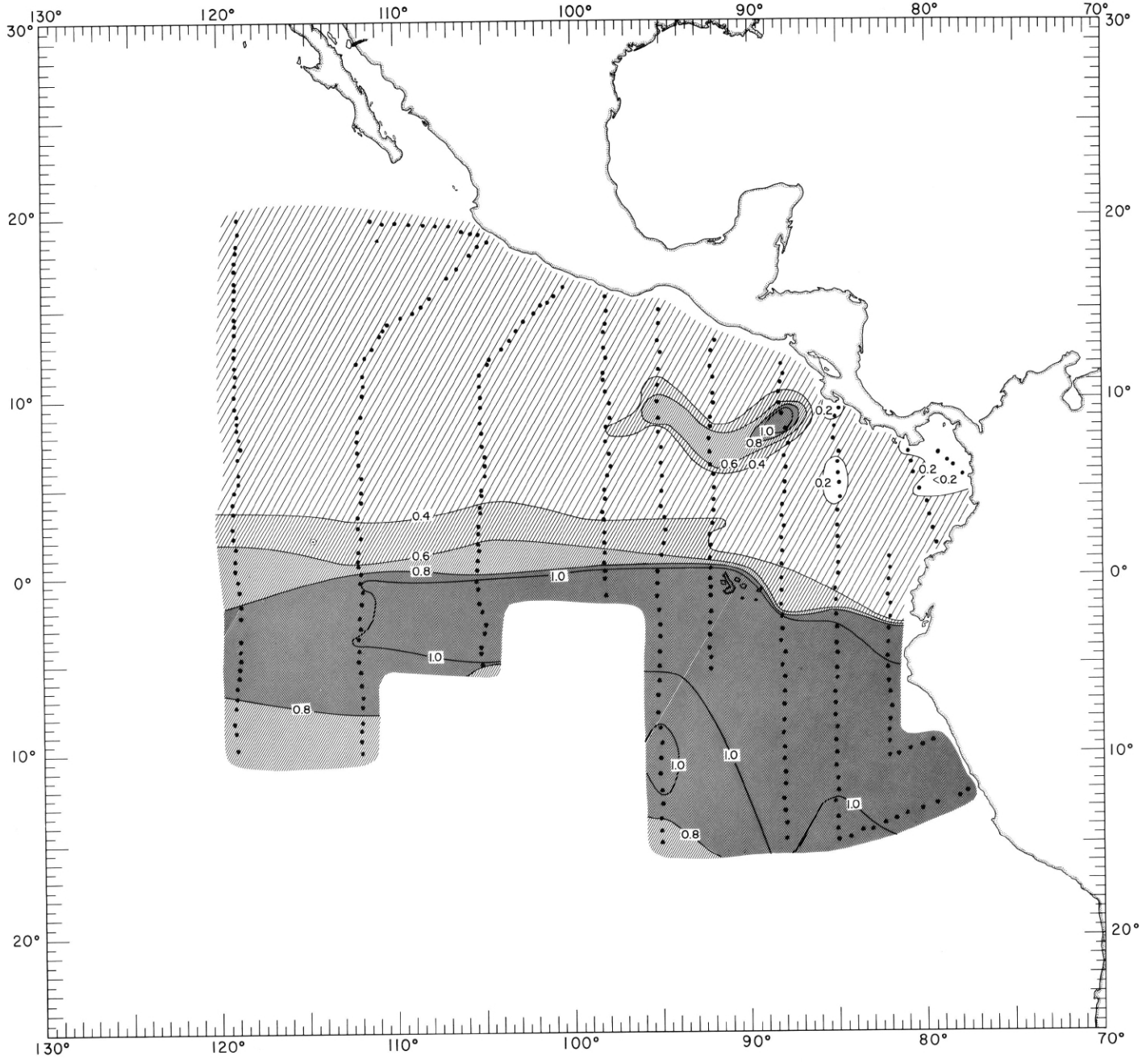
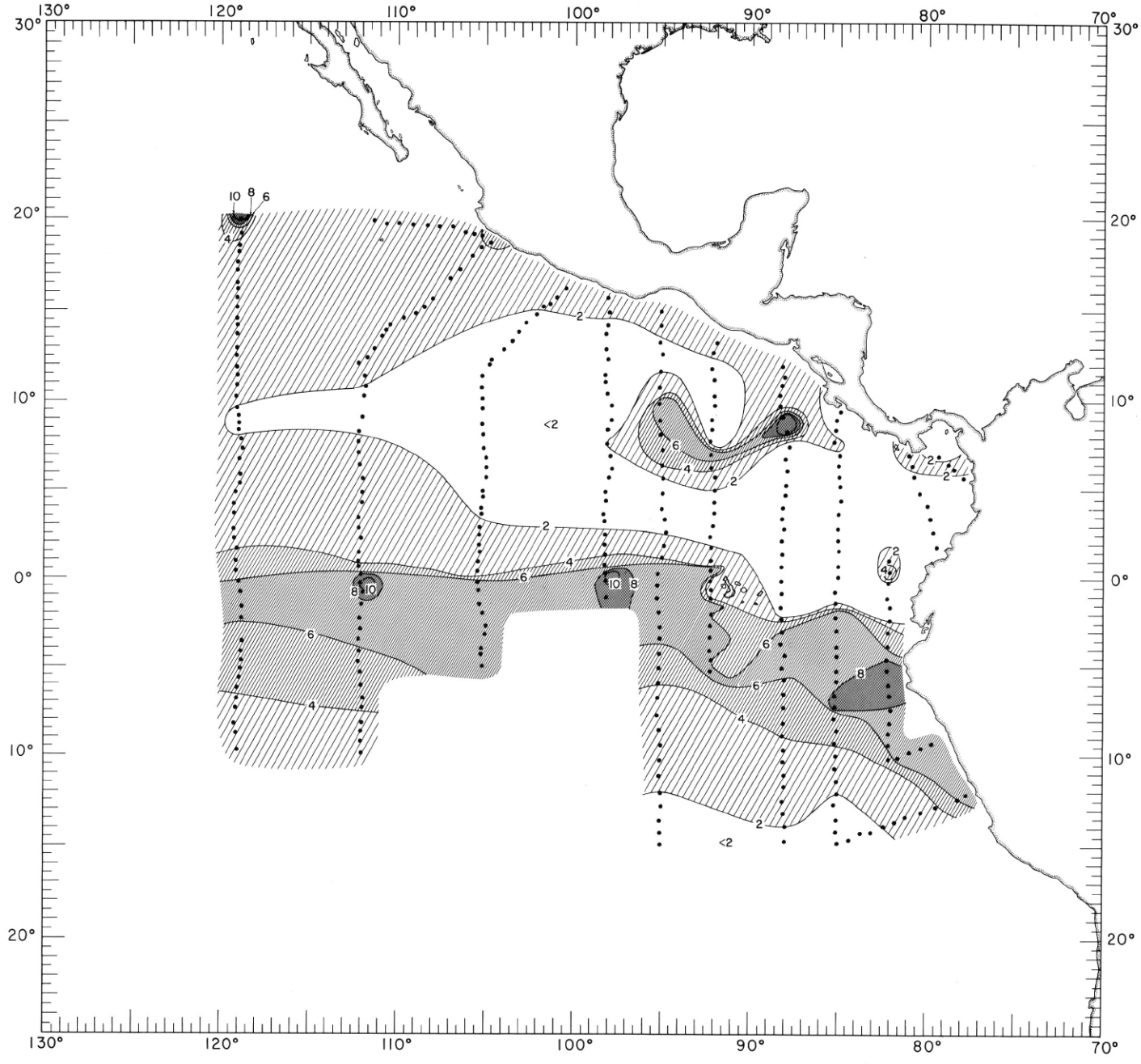
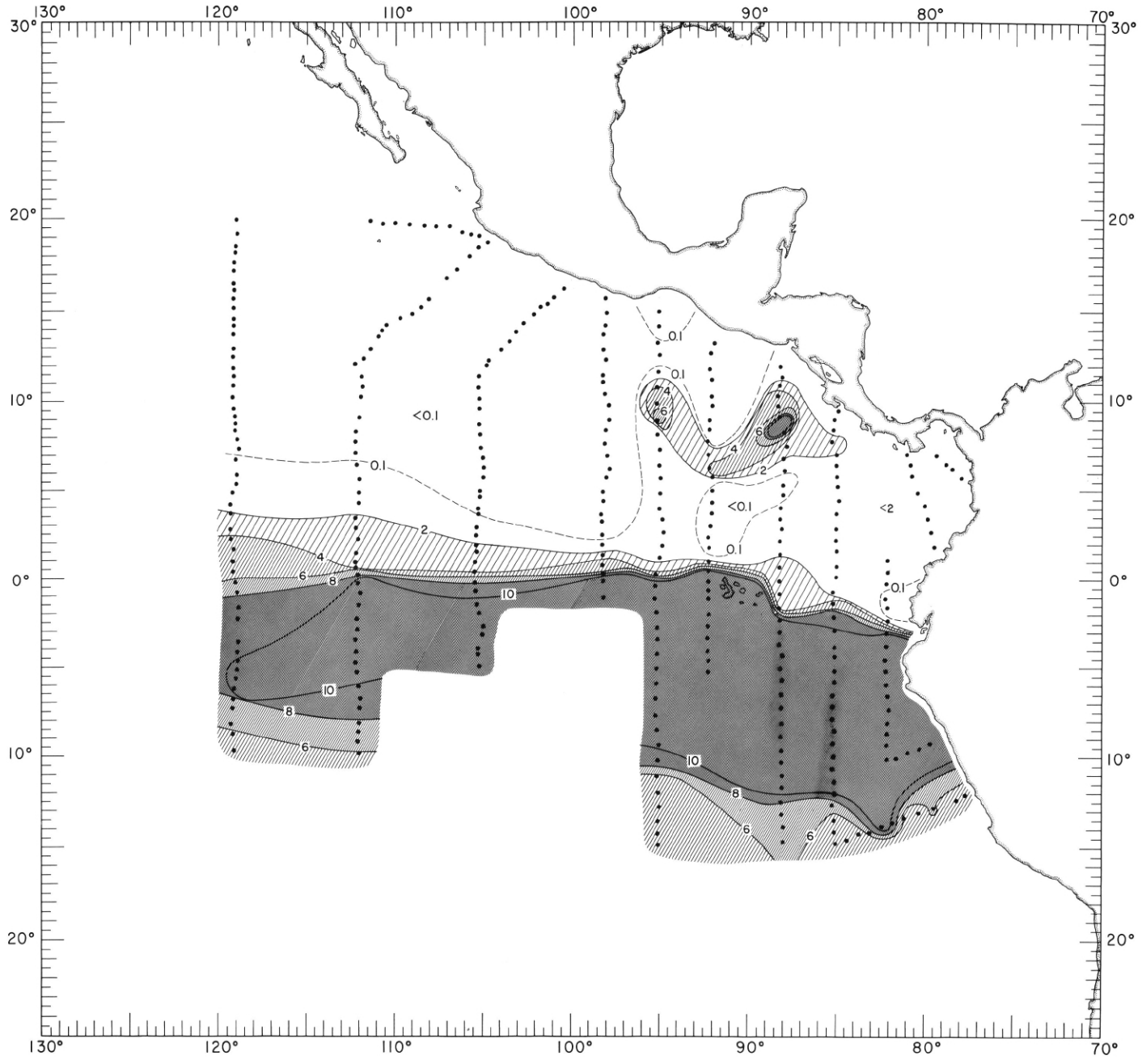


FIGURE 40-P-10.—Phosphate-phosphorus (μg.-at./l.) at 10 meters, August-September 1967.



40-Si-10.

FIGURE 40-Si-10.—Silicate-silicon (μg.-at./l.) at 10 meters, August-September 1967.



40-NO_3-10.

FIGURE 40-NO_3-10.—Nitrate-nitrogen (μg.-at./l.) at 10 meters, August-September 1967.

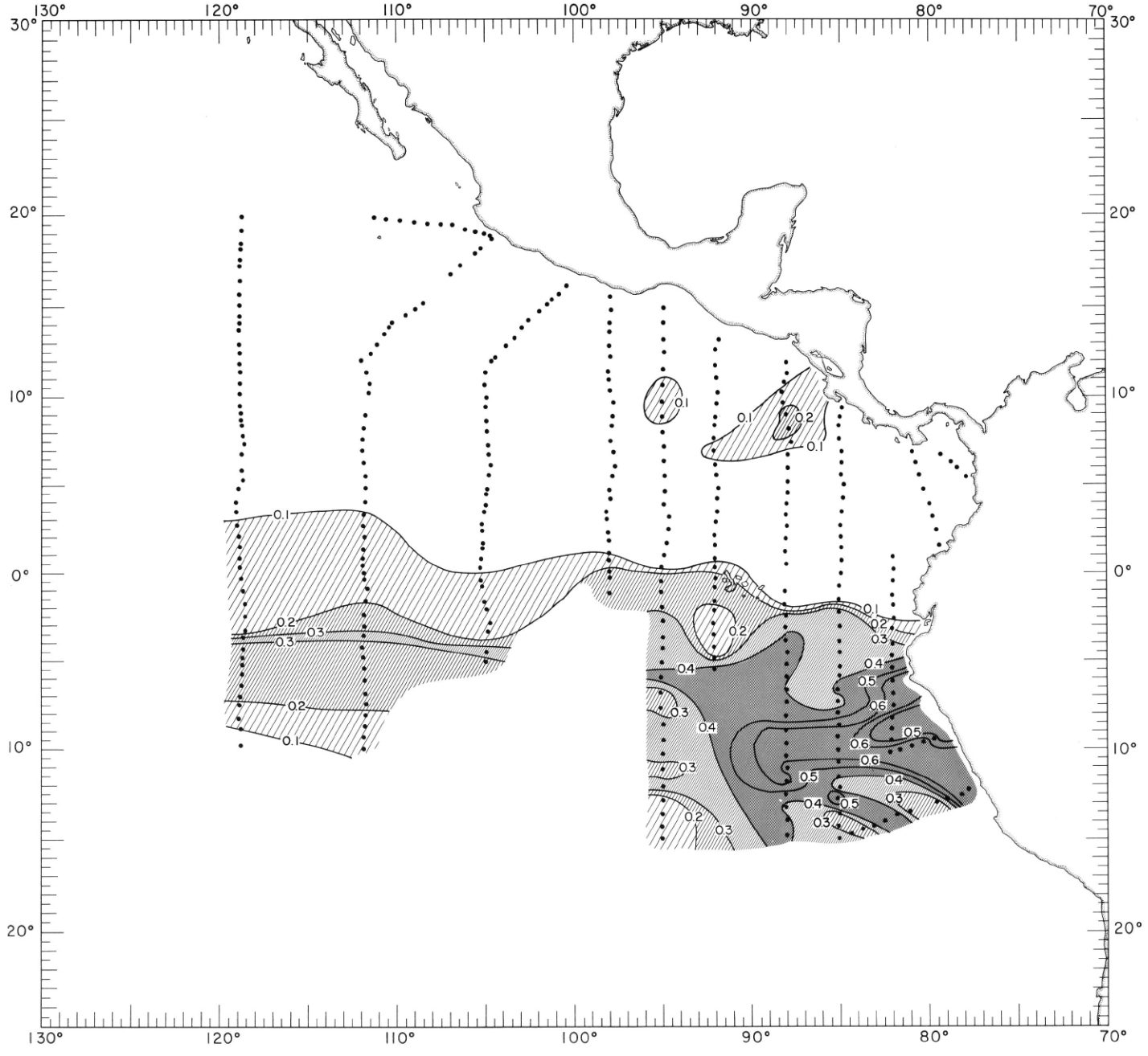
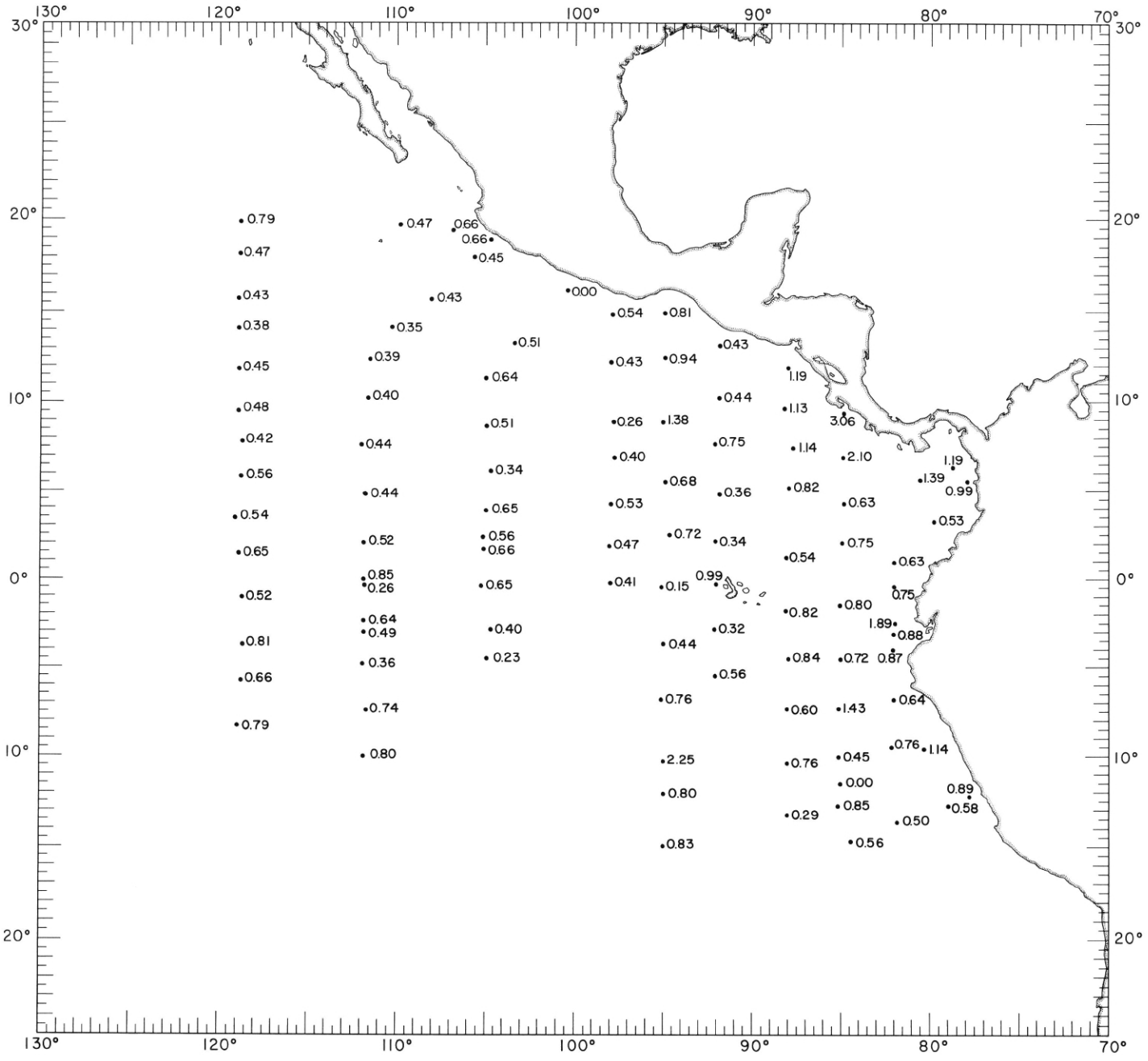
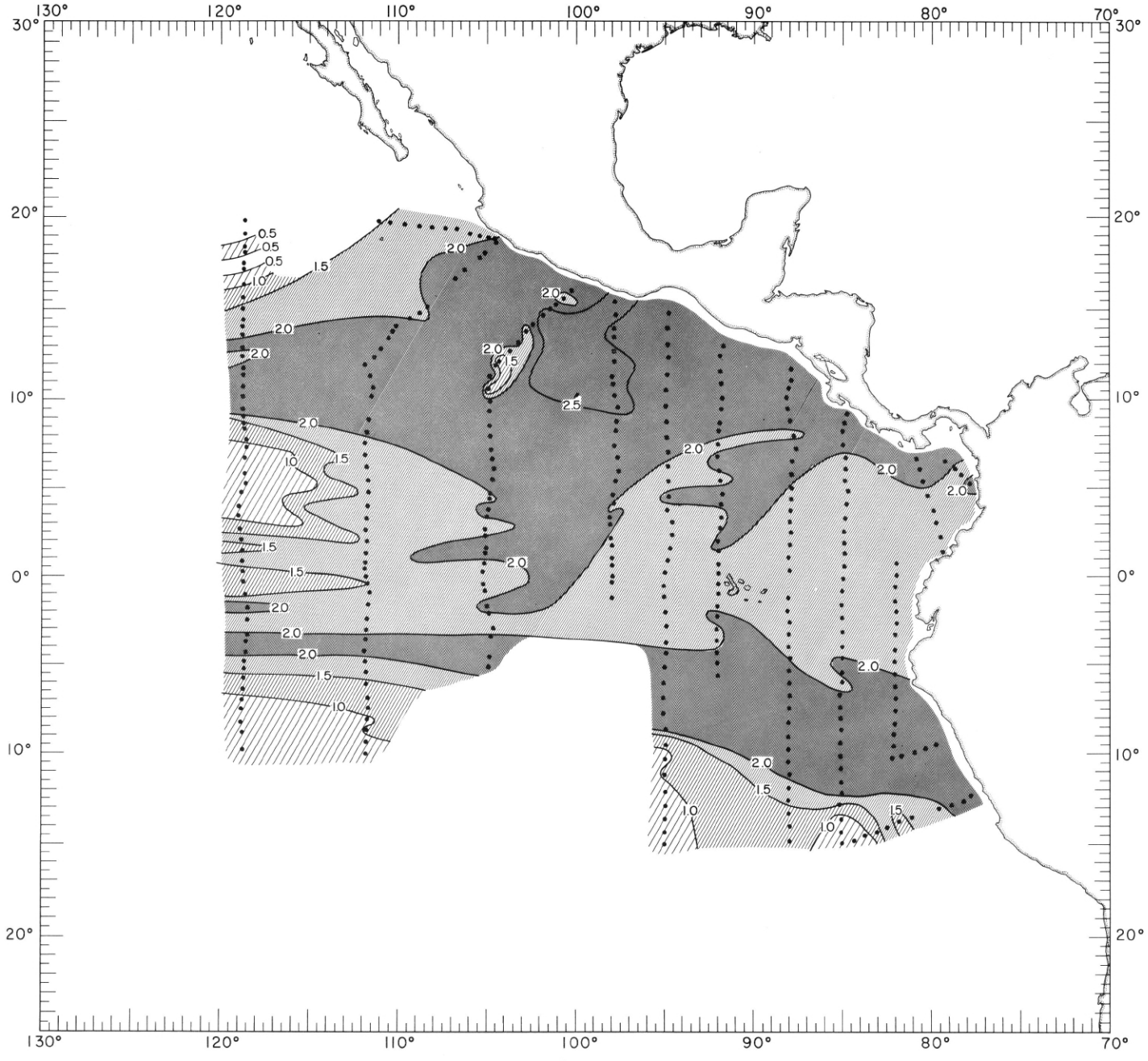


FIGURE 40-NO_2-10.—Nitrite-nitrogen (μg.-at./l.) at 10 meters, August-September 1967.



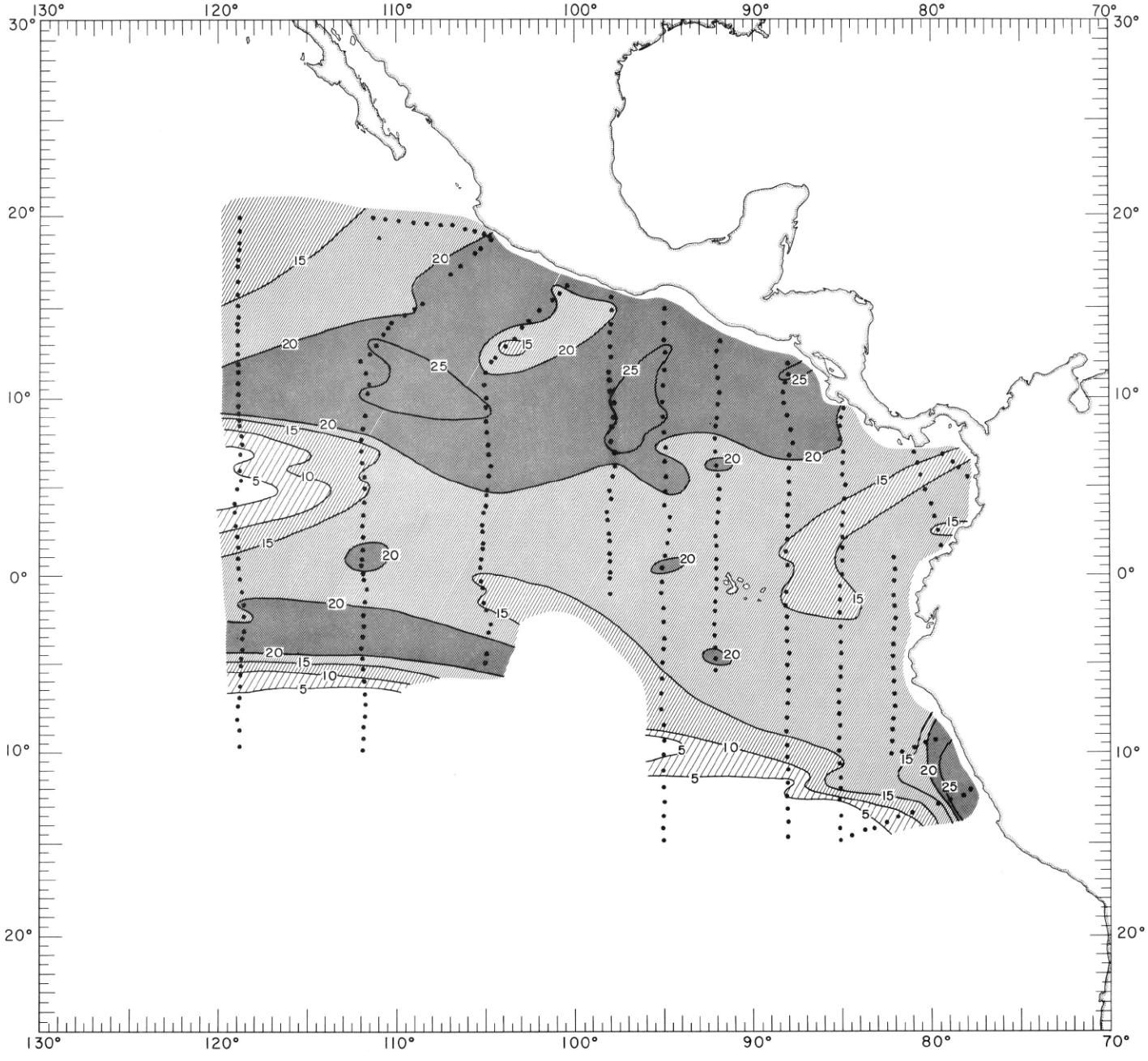
40-NH3-10.

FIGURE 40-NH3-10.—Ammonia-nitrogen (μg.-at./l.) at 10 meters, August-September 1967. Because the distribution is so irregular no contours have been drawn. Instead, the concentration at each station is shown.



40-P-100.

FIGURE 40-P-100.—Phosphate-phosphorus (μg.-at./l.) at 100 meters, August-September 1967.



40-Si-100.

FIGURE 40-Si-100.—Silicate-silicon (μg.-at./l.) at 100 meters, August-September 1967.

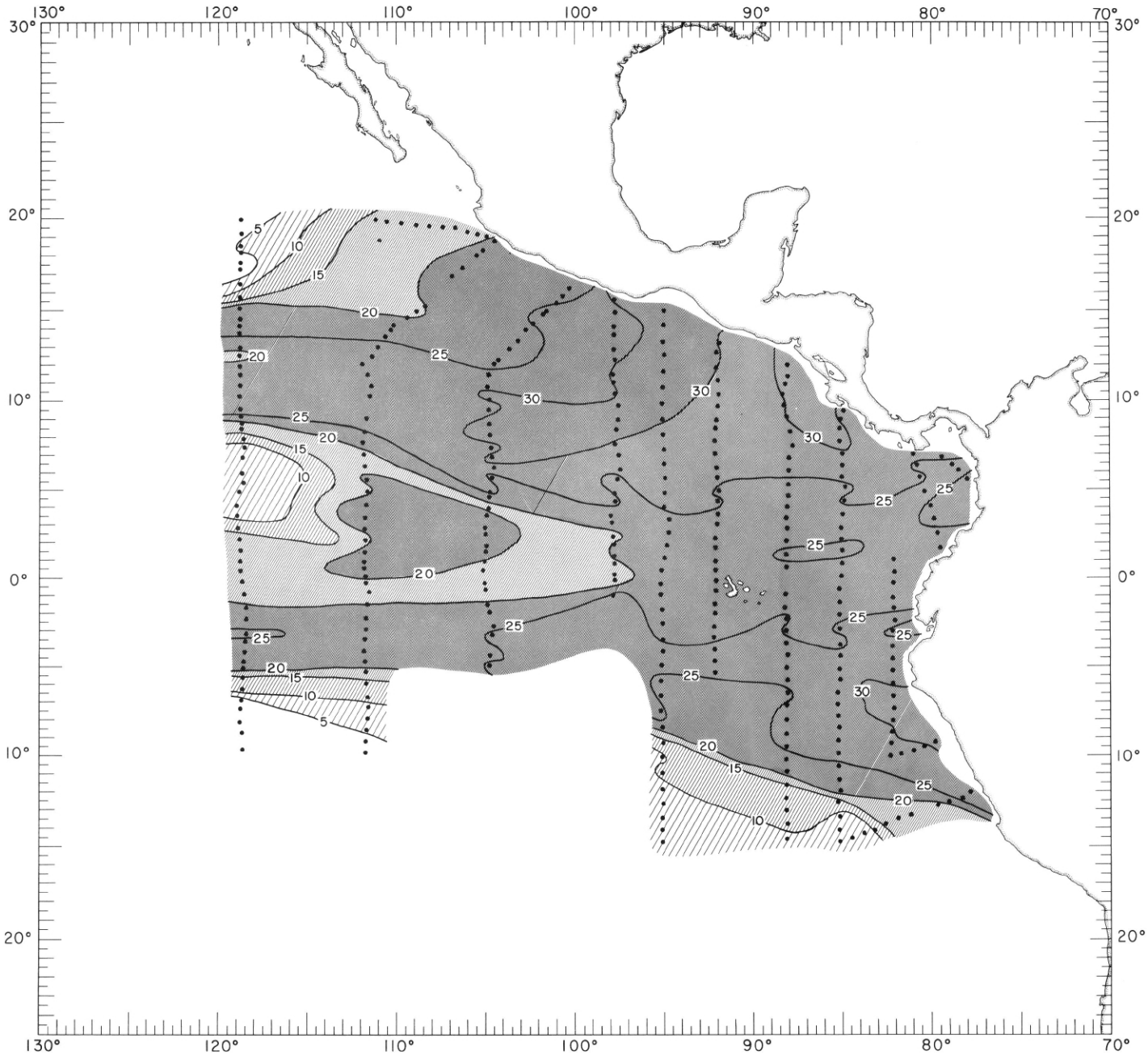
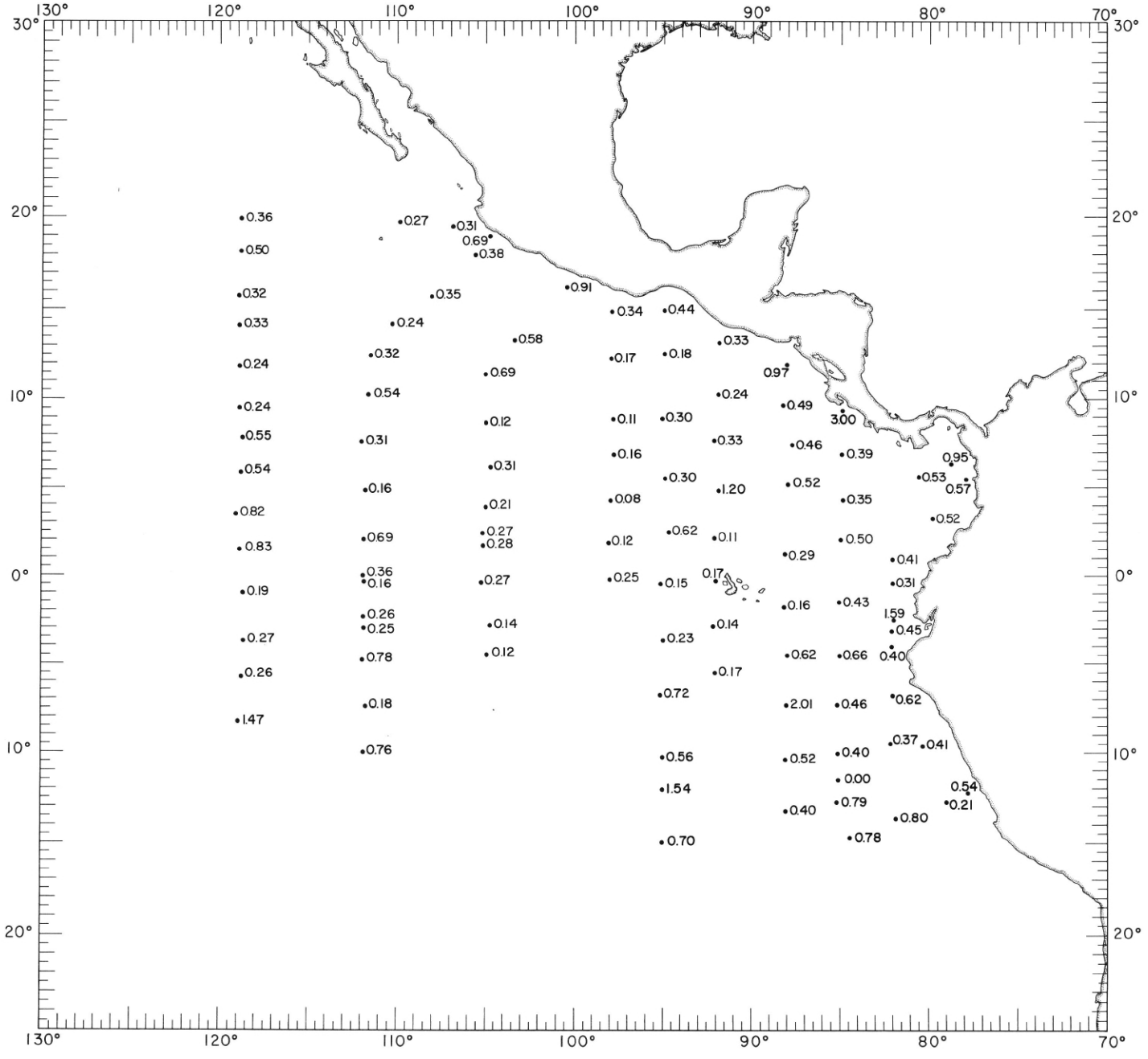


FIGURE 40-NO_3-100.—Nitrate-nitrogen (μg.-at./L) at 100 meters, August-September 1967.



40-NH3-100.

FIGURE 40-NH3-100.—Ammonia-nitrogen (μg.-at./l.) at 100 meters, August-September 1967. Because the distribution is so irregular no contours have been drawn. Instead, the concentration at each station is shown.

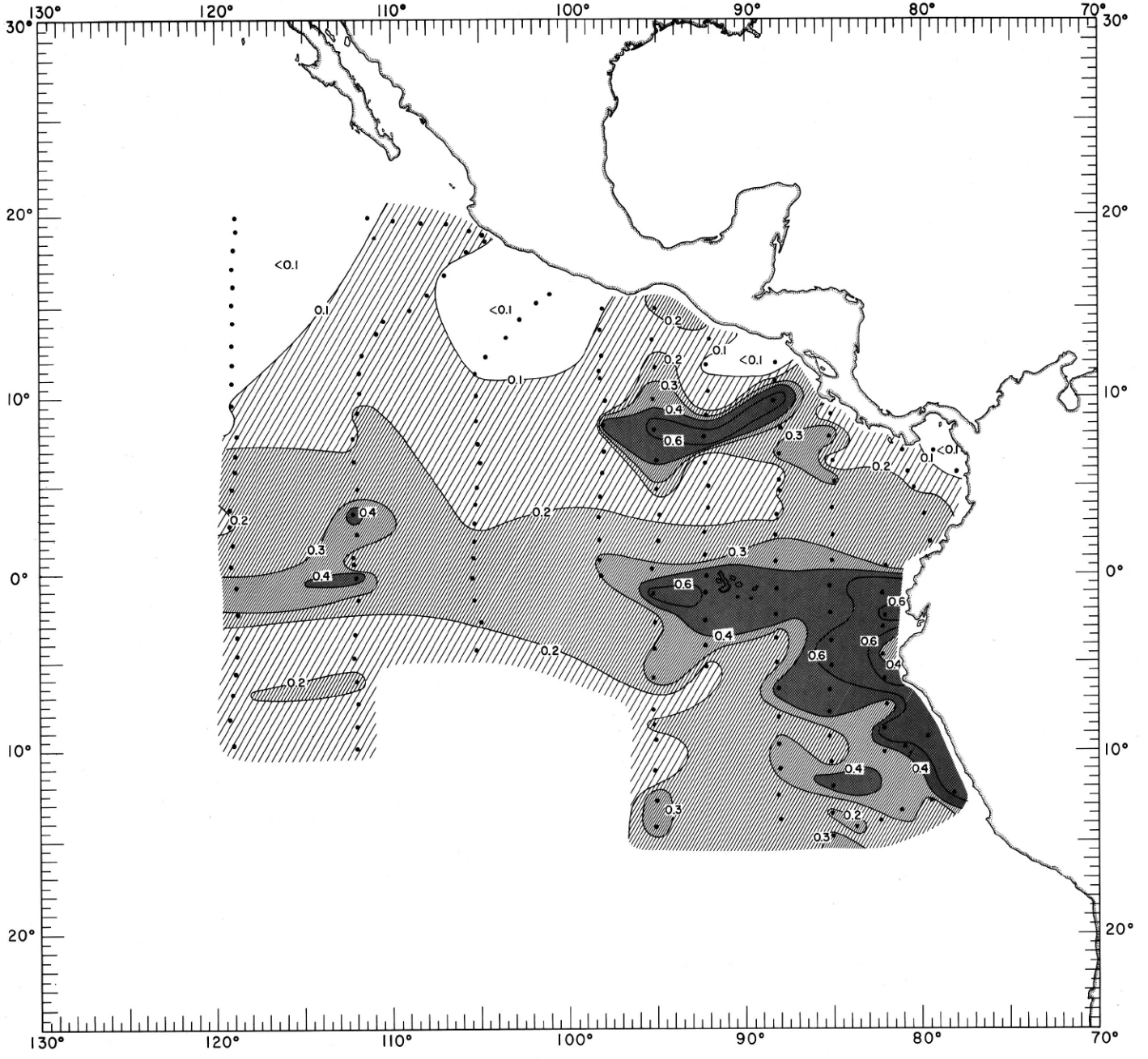
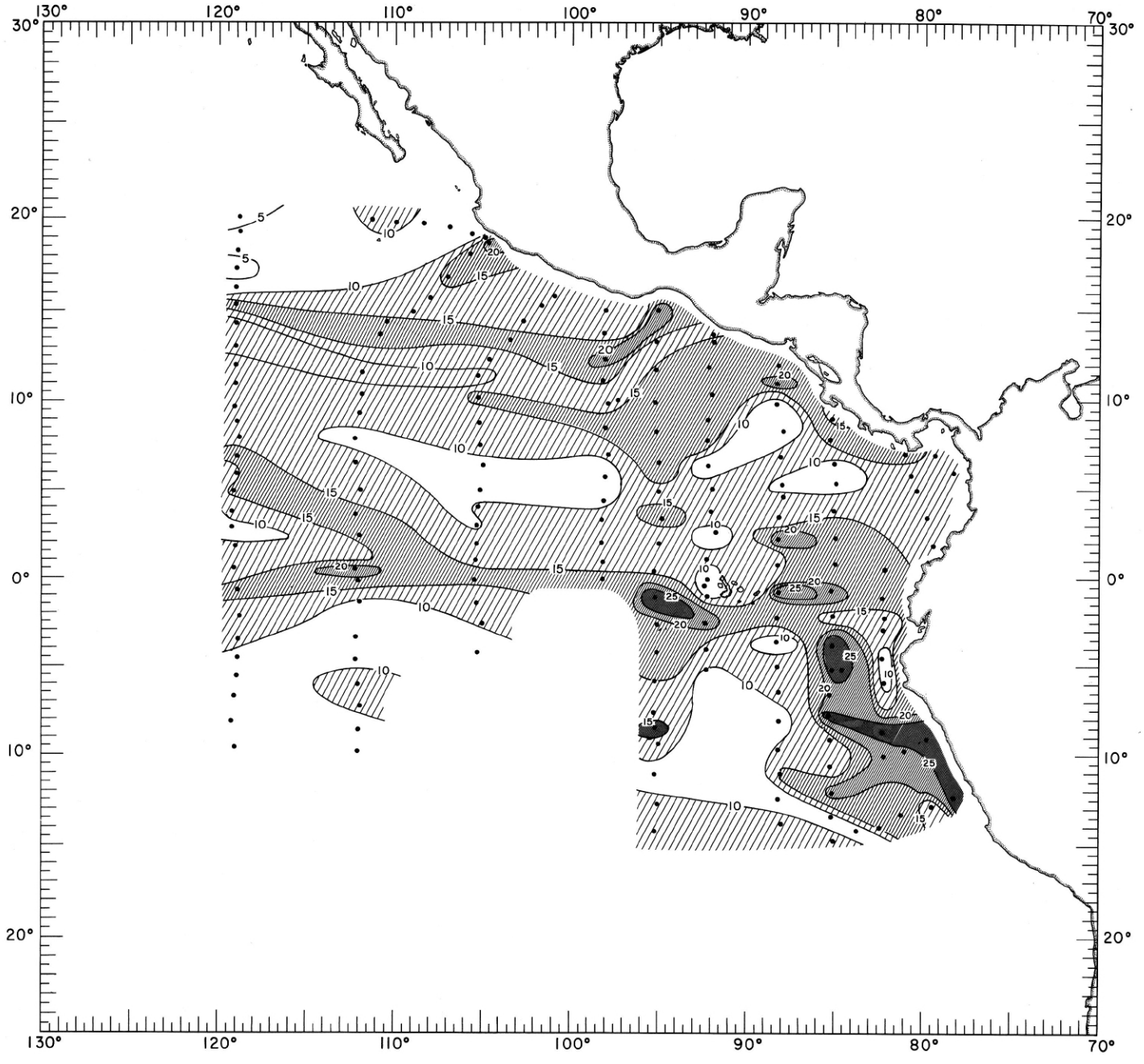
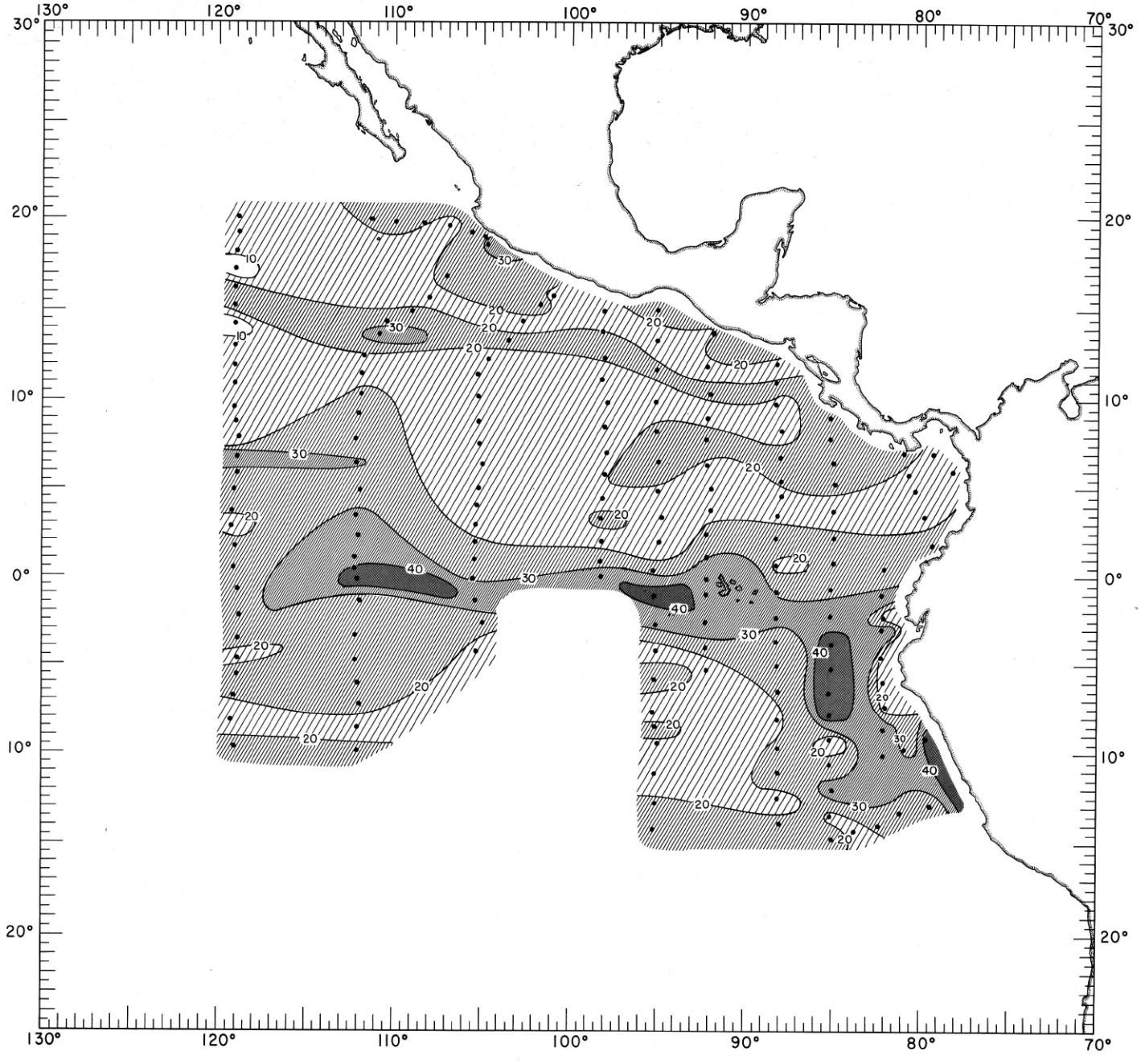


FIGURE 40-Ch-s.—Chlorophyll-a (mg./m.^{3}) at the sea surface, August-September 1967.



40-Ch-ei.

FIGURE 40-Ch-ei.—Chlorophyll-a (mg./m.^{2}) integrated over the euphotic layer, August-September 1967.



40-Ch-150i.

FIGURE 40-Ch-150i.—Chlorophyll-a (mg./m.^{2}) integrated from the sea surface to 150 meters depth, August-September 1967.

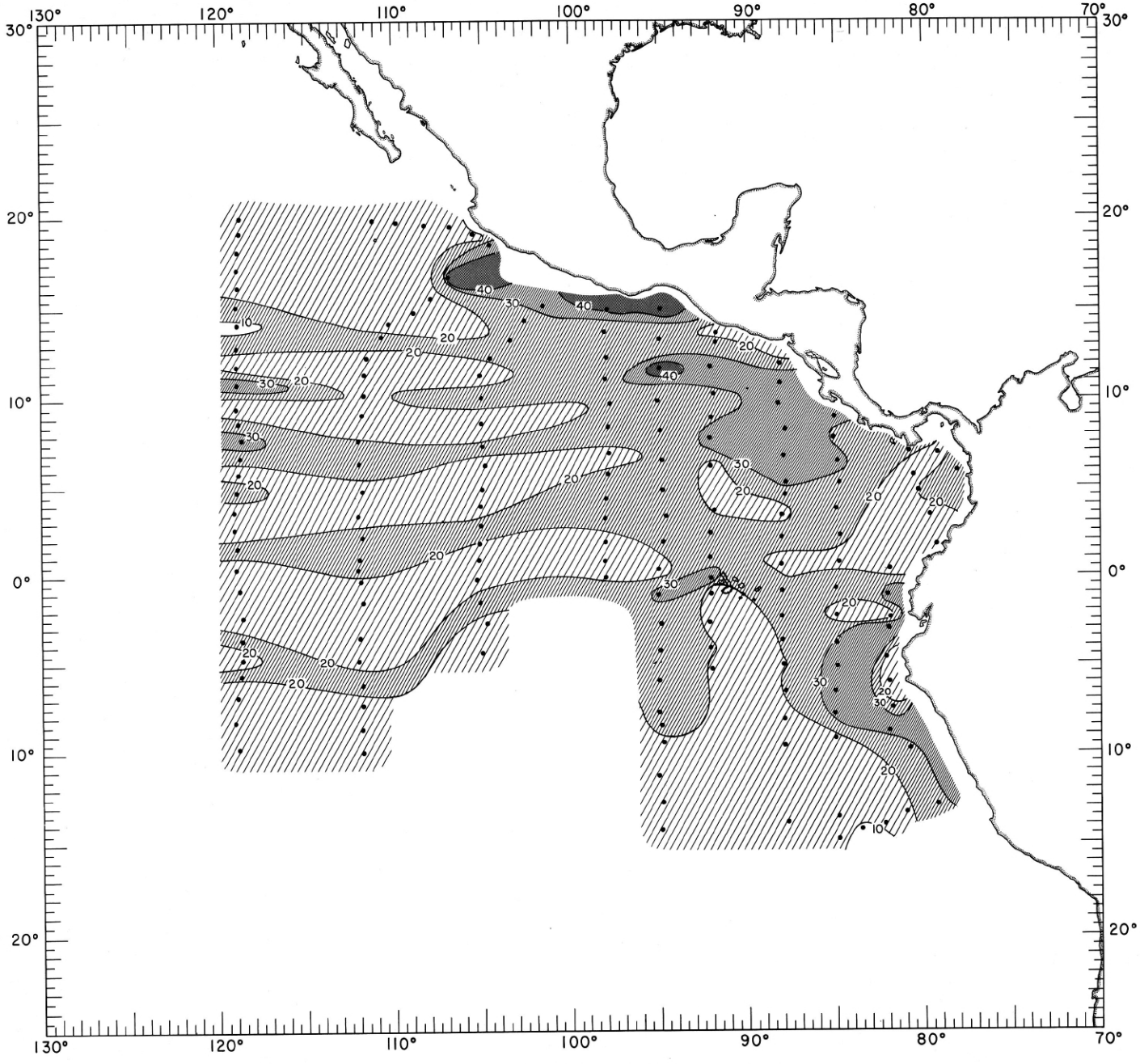
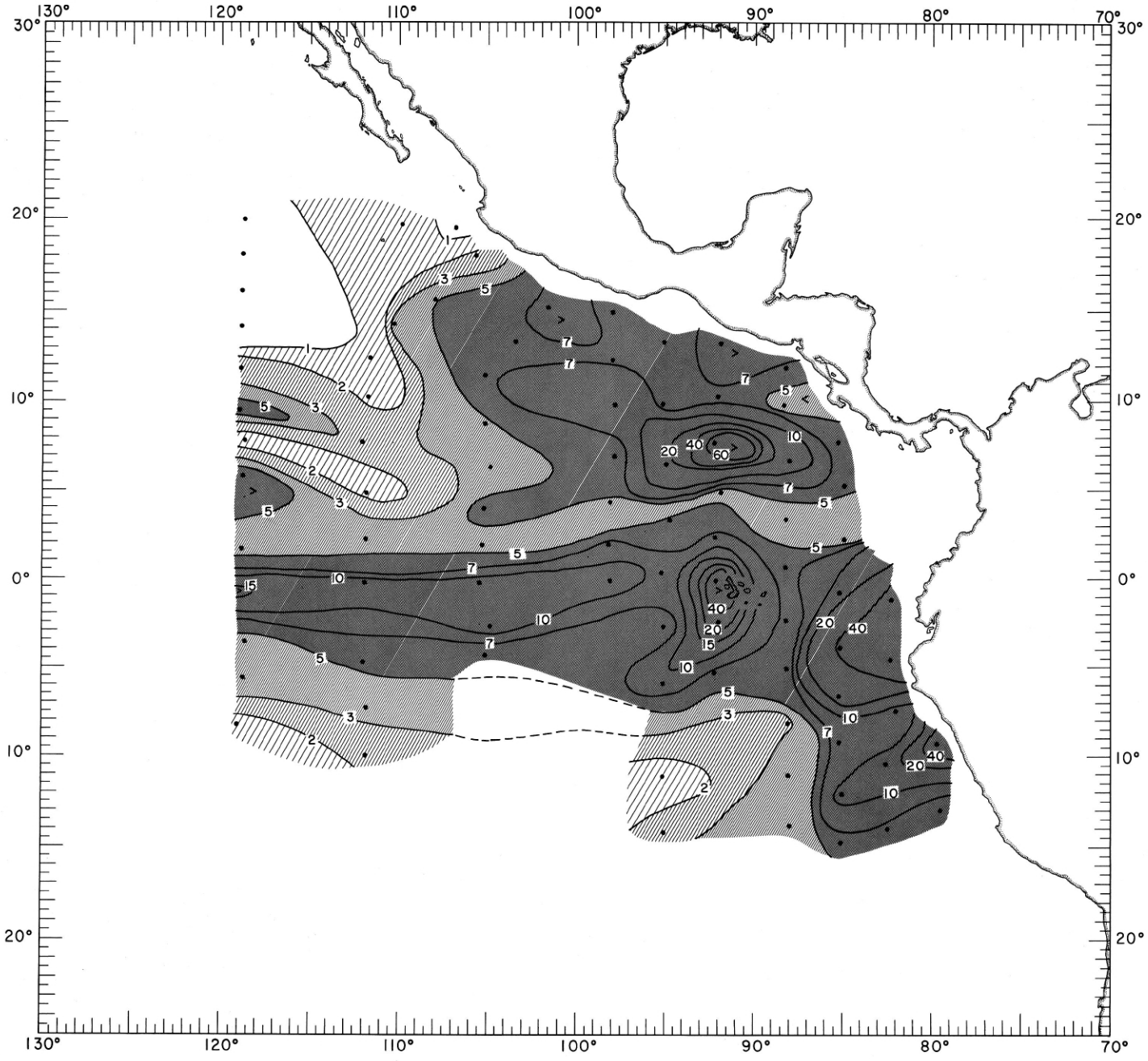


FIGURE 40-Ph-150i.—Phaeophytin (mg./m.^{2}) integrated from the sea surface to 150 meters depth, August-September 1967.



40-PP-s.

FIGURE 40-PP-s.—Primary production (mg. C/m.^{3}/day) at the sea surface, August-September 1967.

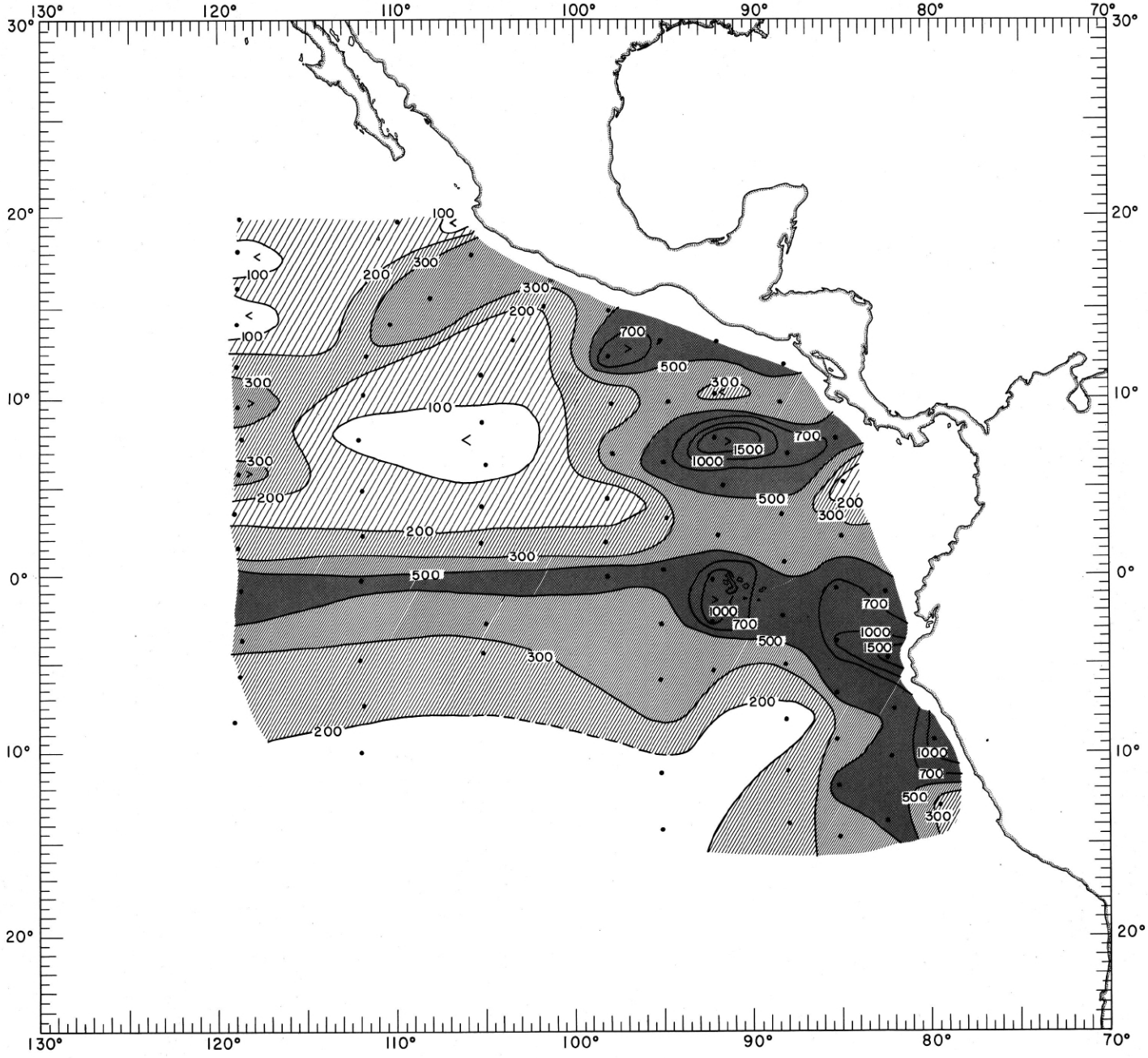


FIGURE 40-PP-ei.—Primary production (mg. C/m.^{2}/day) integrated over the euphotic layer, August-September 1967.

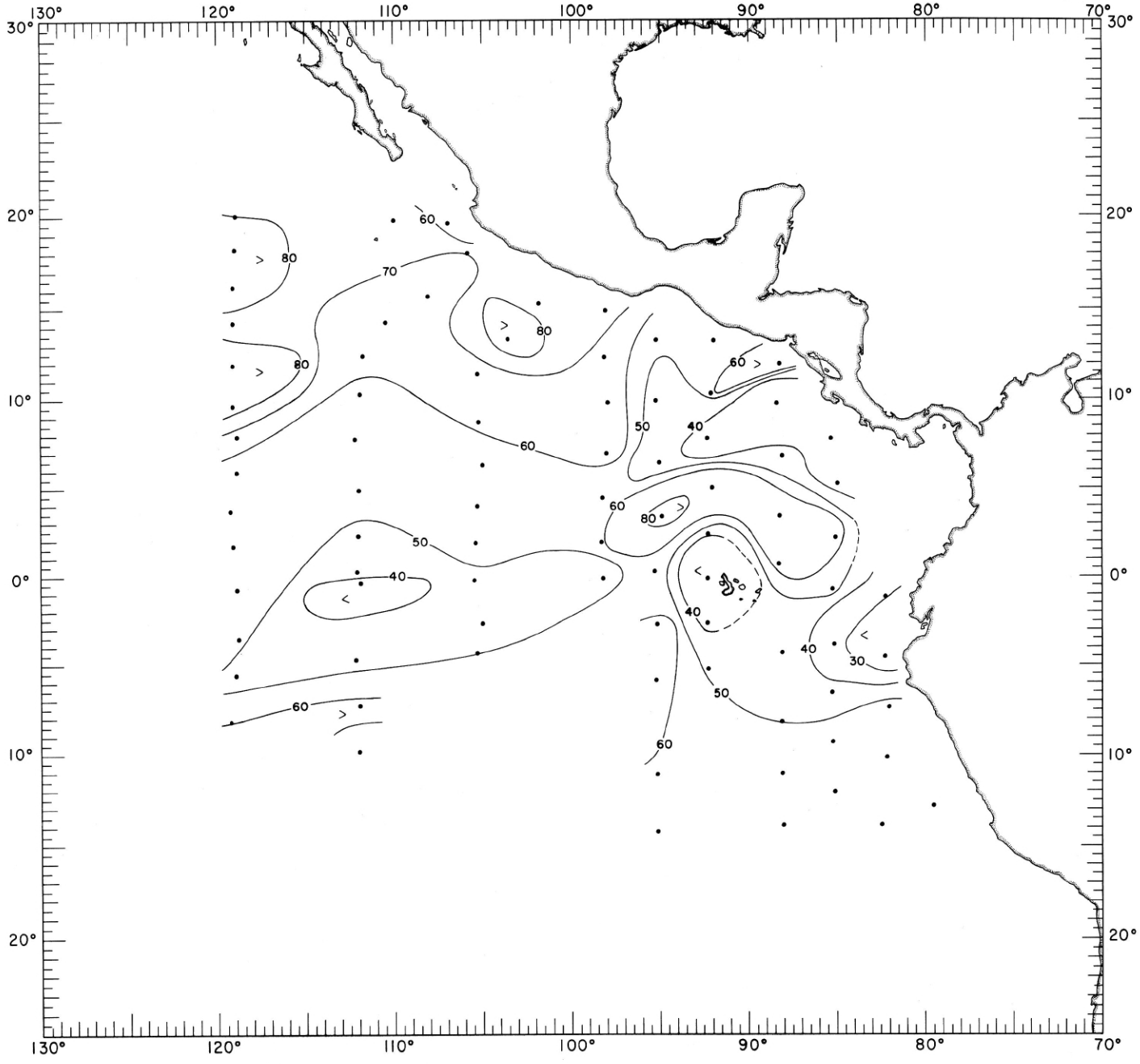


FIGURE 40-EL.—Thickness of the euphotic layer in meters, August-September 1967.

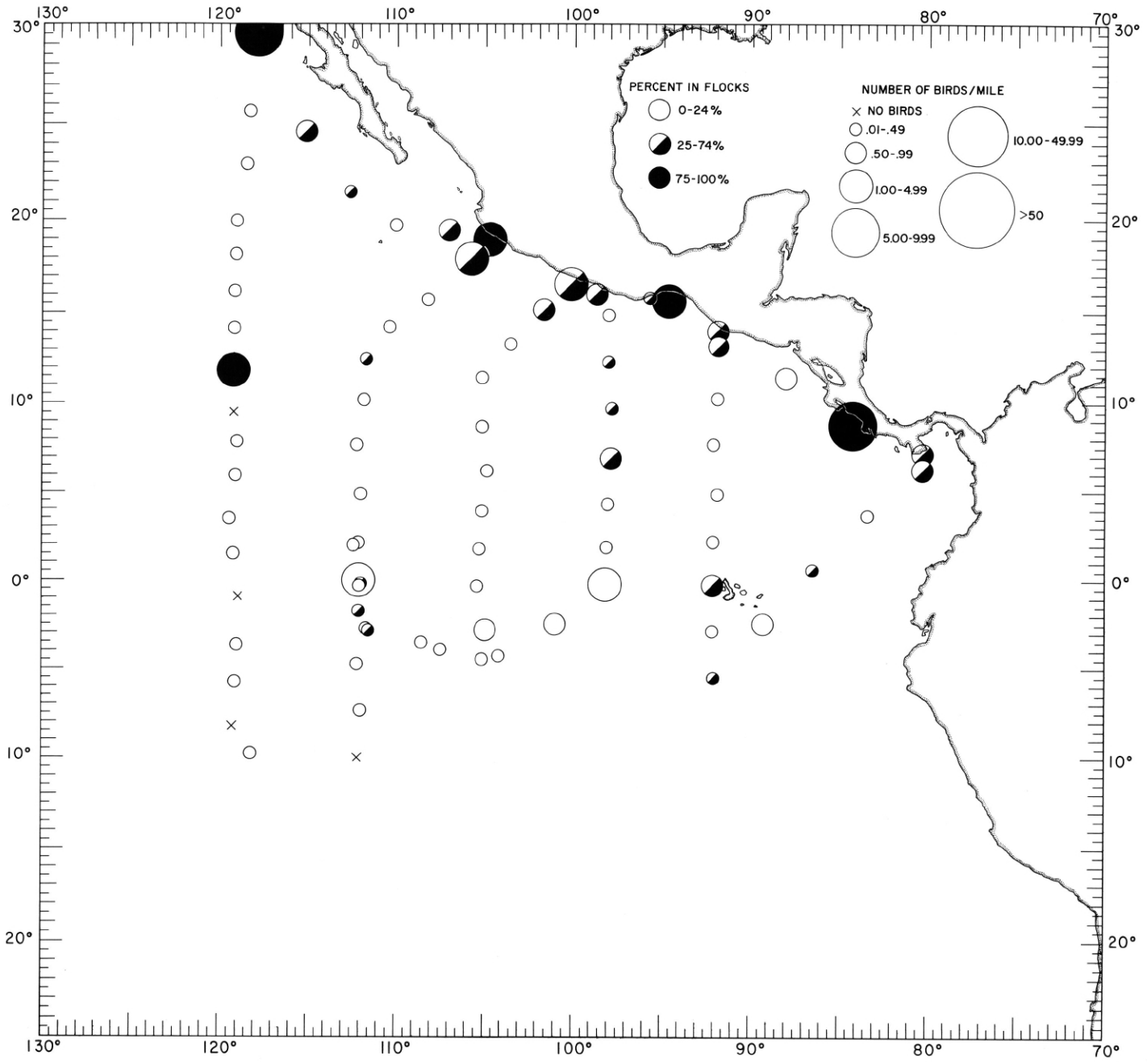


FIGURE 40-BP.—Relative abundance of plankton-feeding birds (birds/mile), August-September 1967.

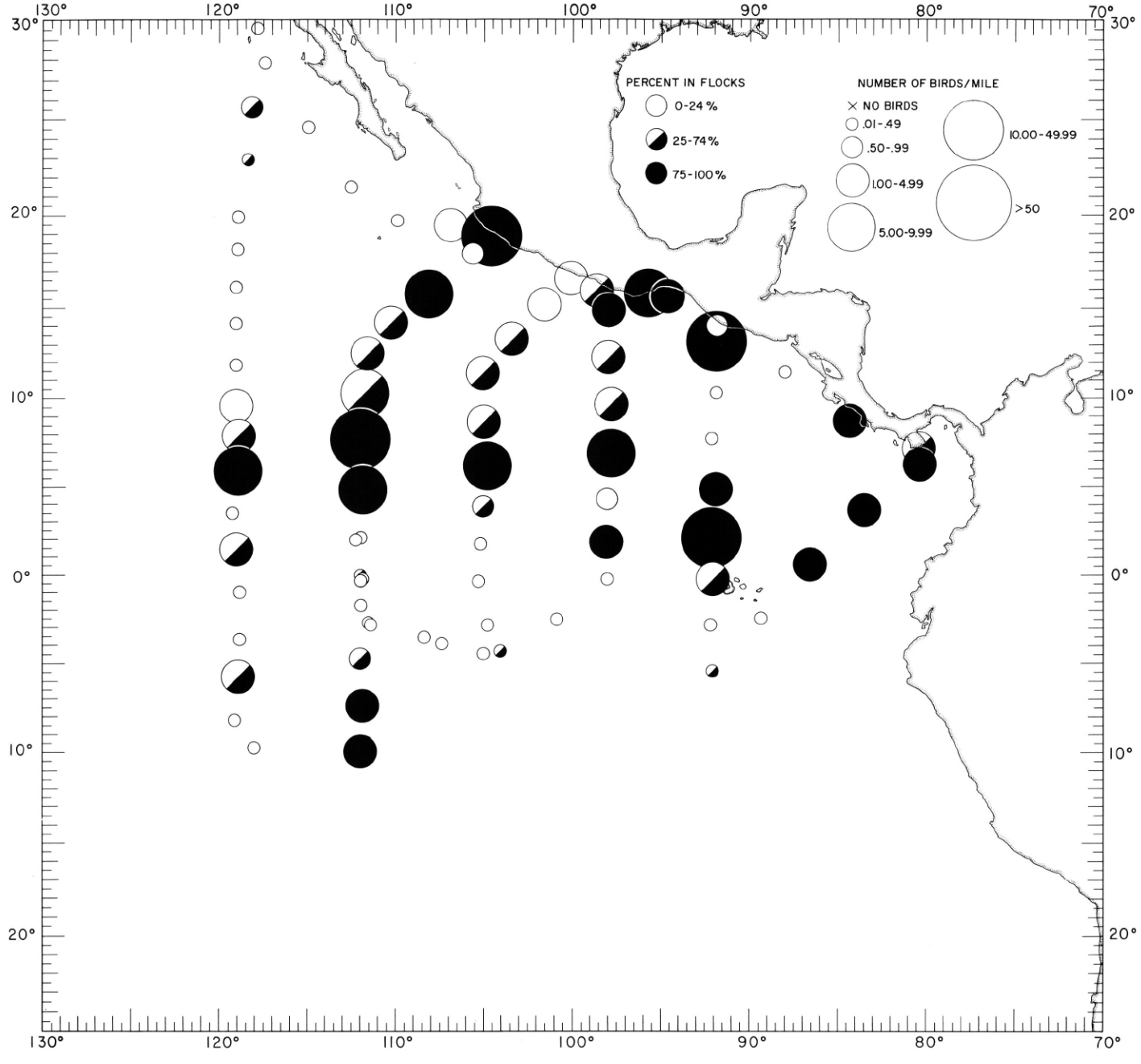


FIGURE 40-BF.—Relative abundance of fish and cephalopod-feeding birds (birds/mile), August-September 1967.

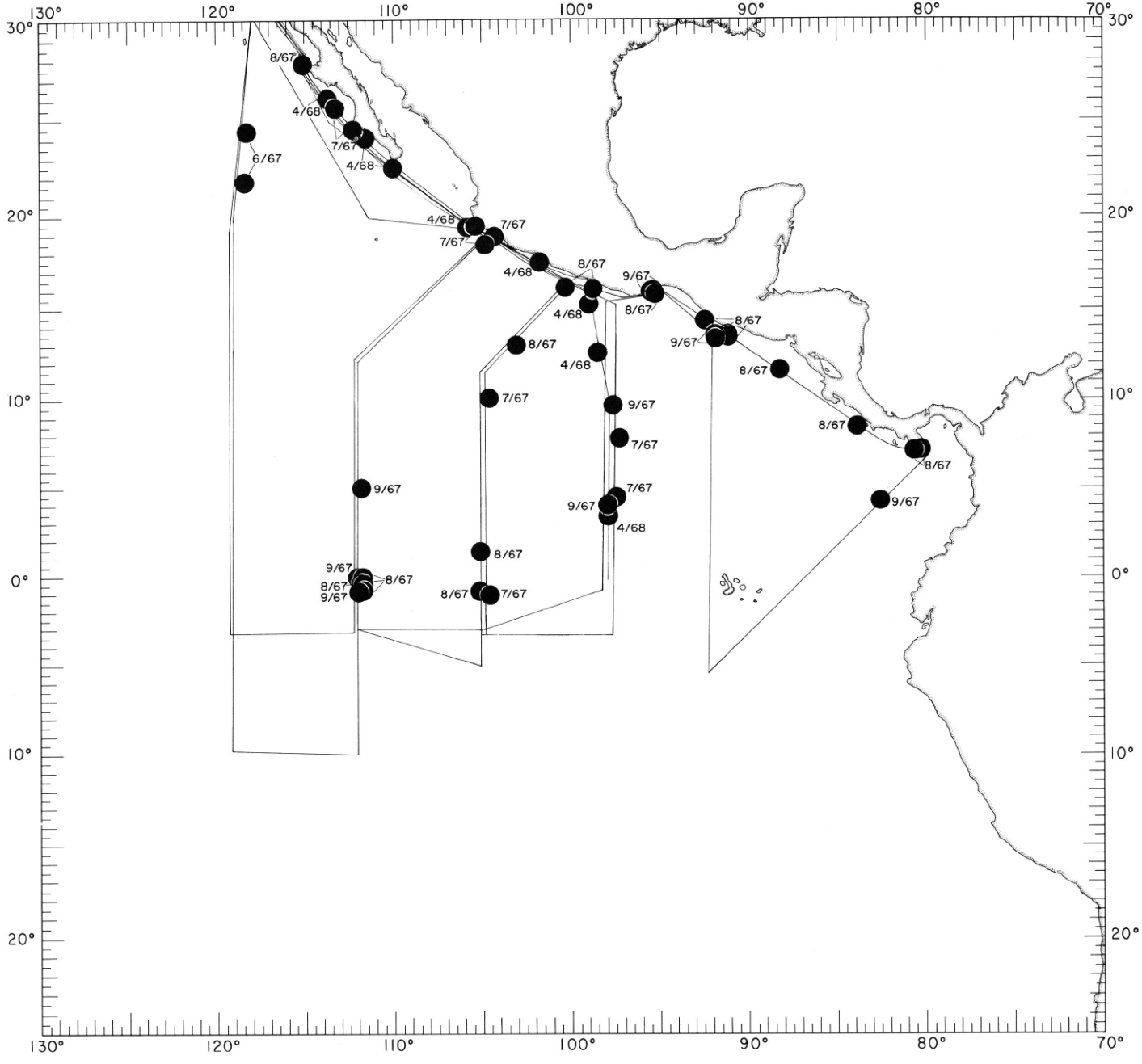
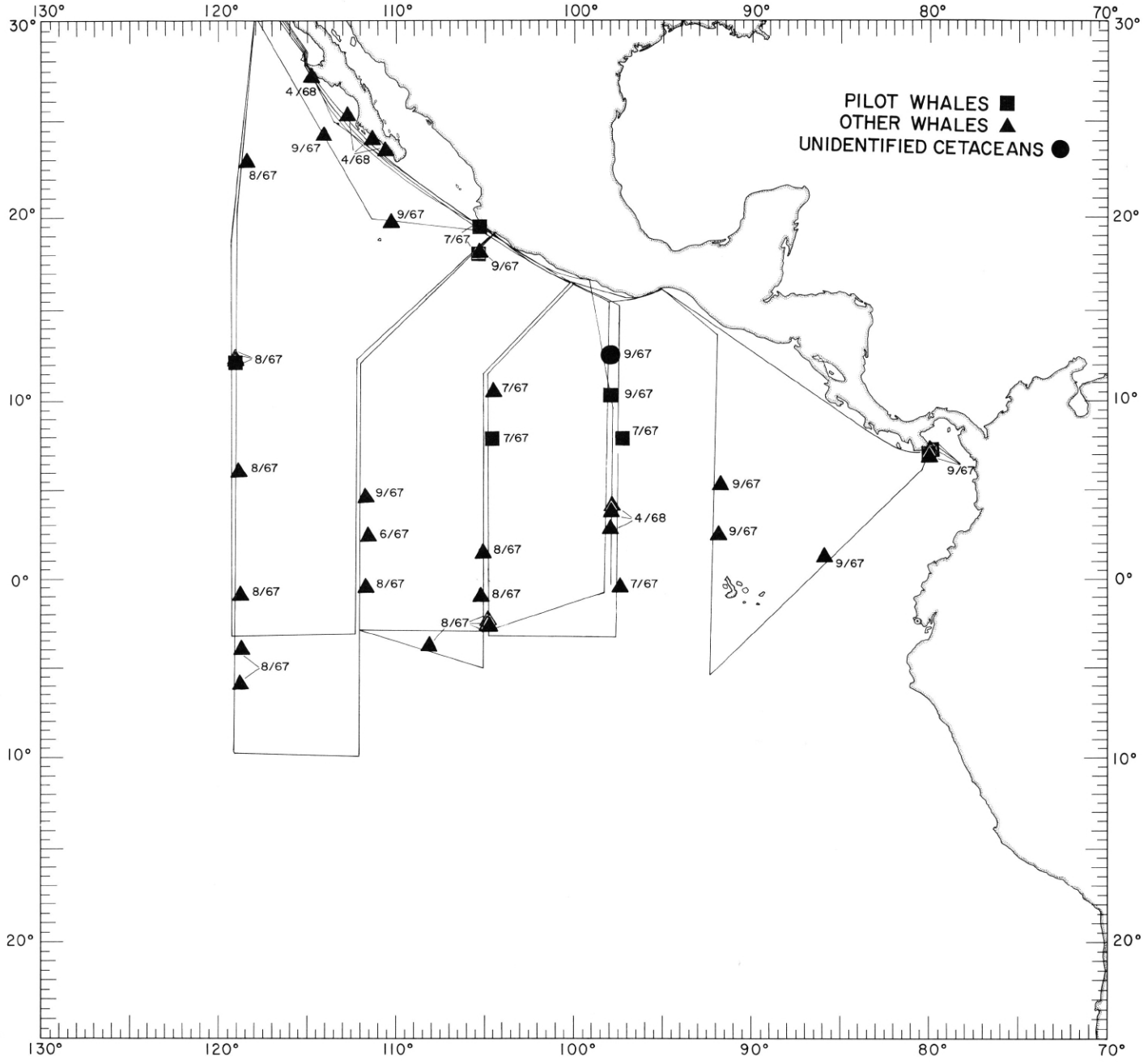
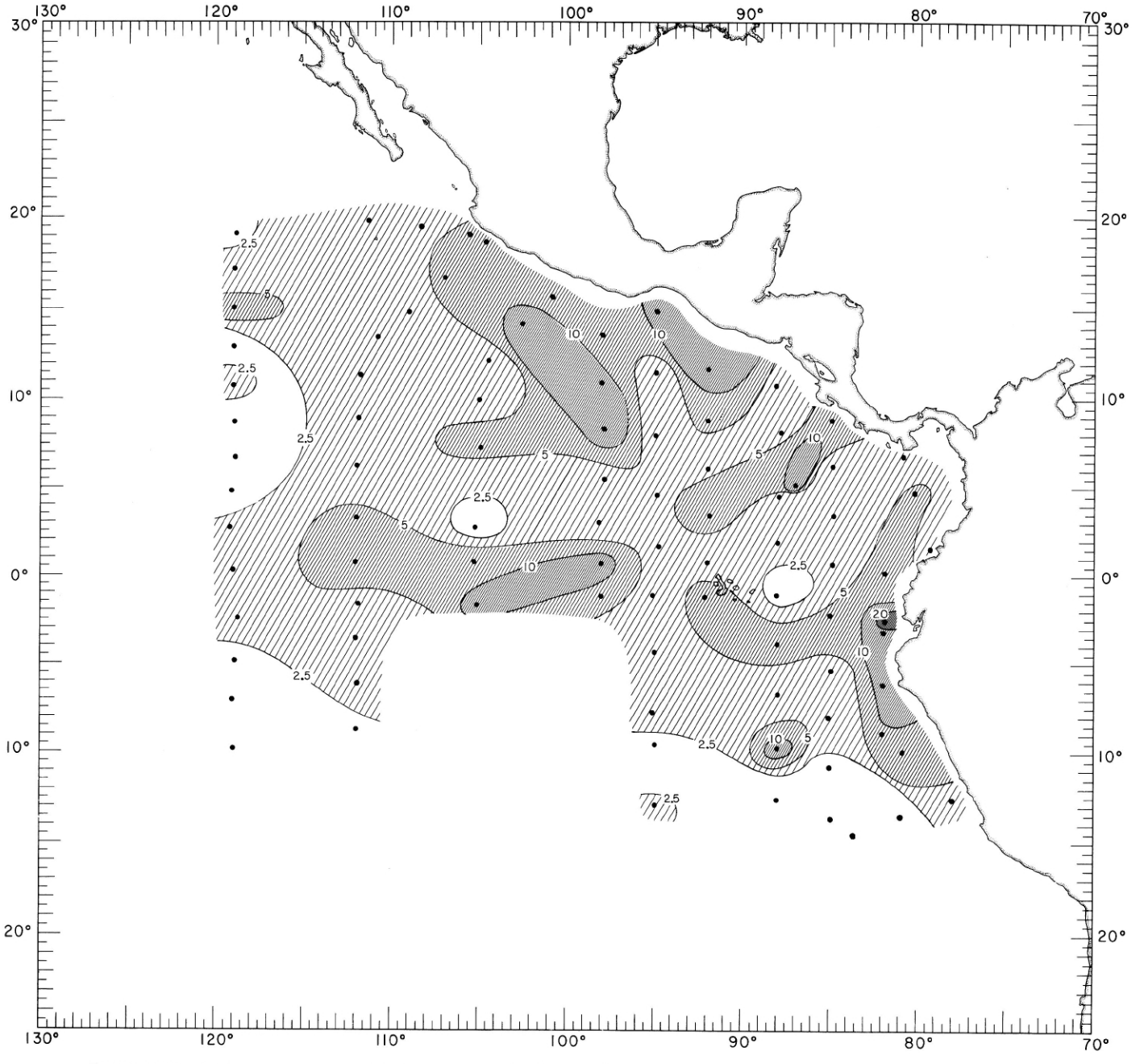


FIGURE SP-2.—Sightings of porpoise made aboard EASTROPAC ships during the months April through September. Month and year of sighting are indicated beside the symbol; cruise tracks are shown by lines.



SW-2.

FIGURE SW-2.—Sightings of whales made aboard EASTROPAC ships during the months April through September. Month and year of sighting are indicated beside the symbol; cruise tracks are shown by lines.



40-FCp.

FIGURE 40-FCp.—Distribution of standing stock (ml./1,000 m.^{3}) of total fish and cephalopods taken in night micronekton hauls during August-September 1967.

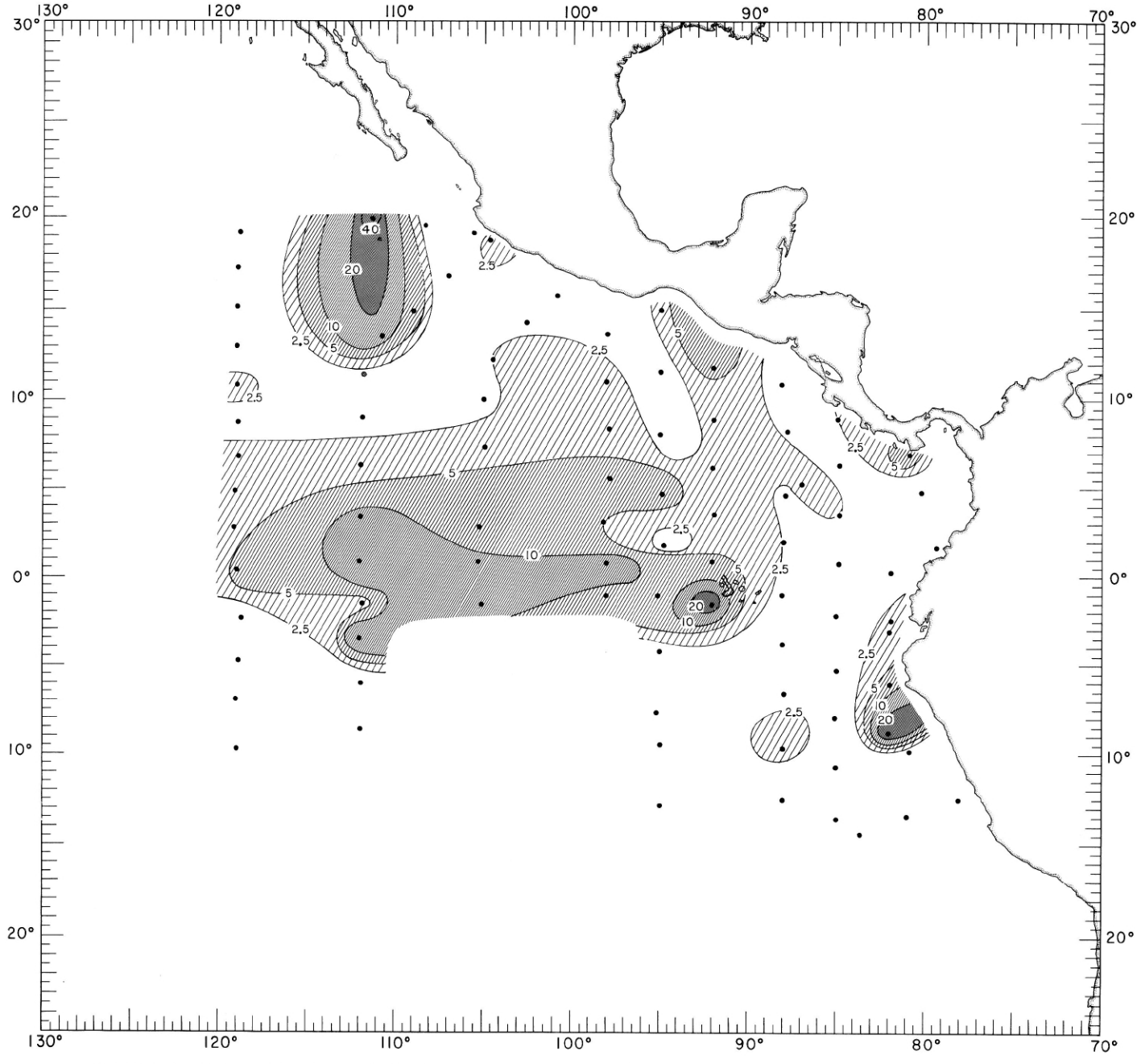


FIGURE 40-Cr.—Distribution of standing stock (ml./1,000 m.^{3}) of total crustaceans taken in night micronekton hauls during August-September 1967.

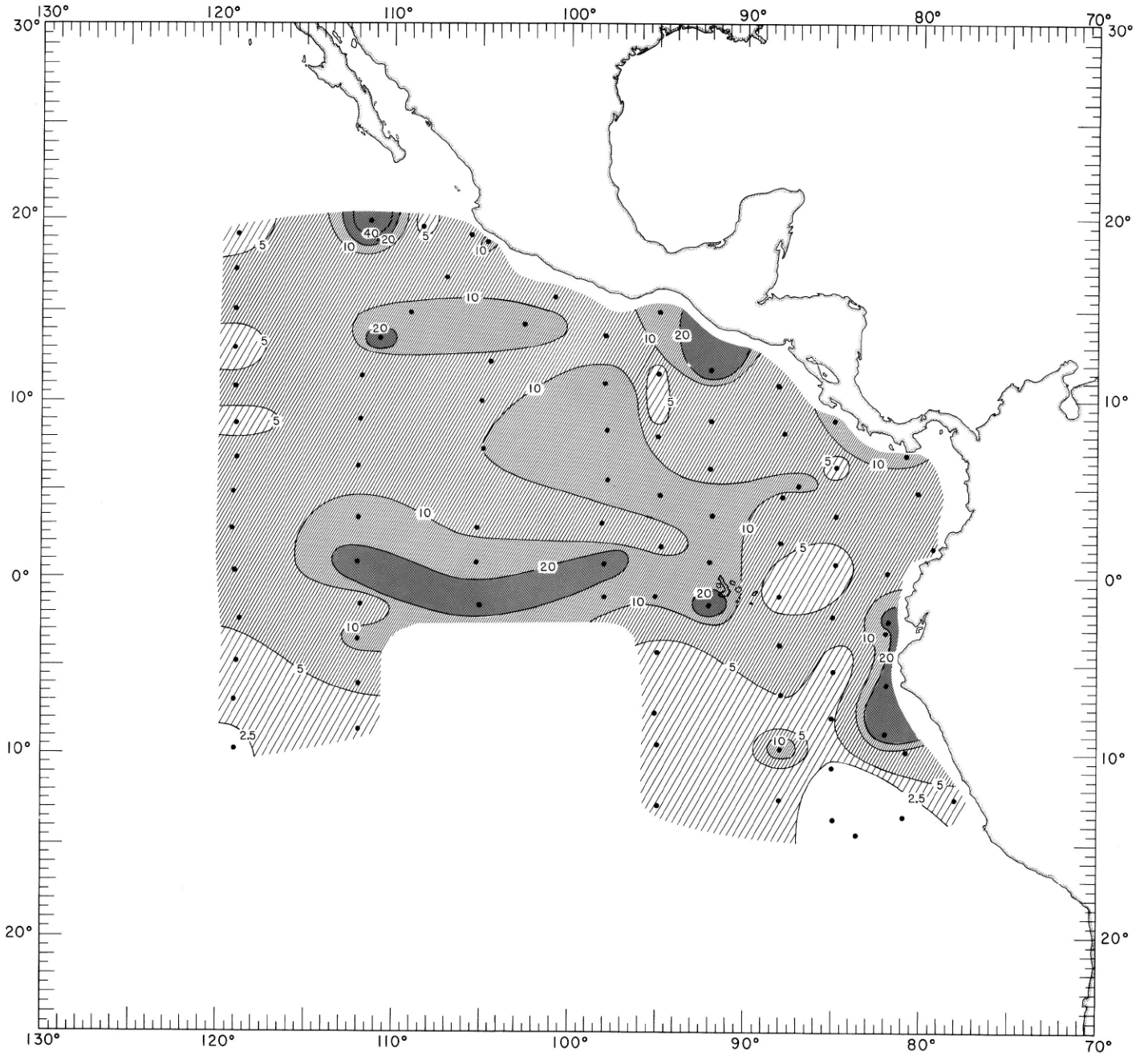
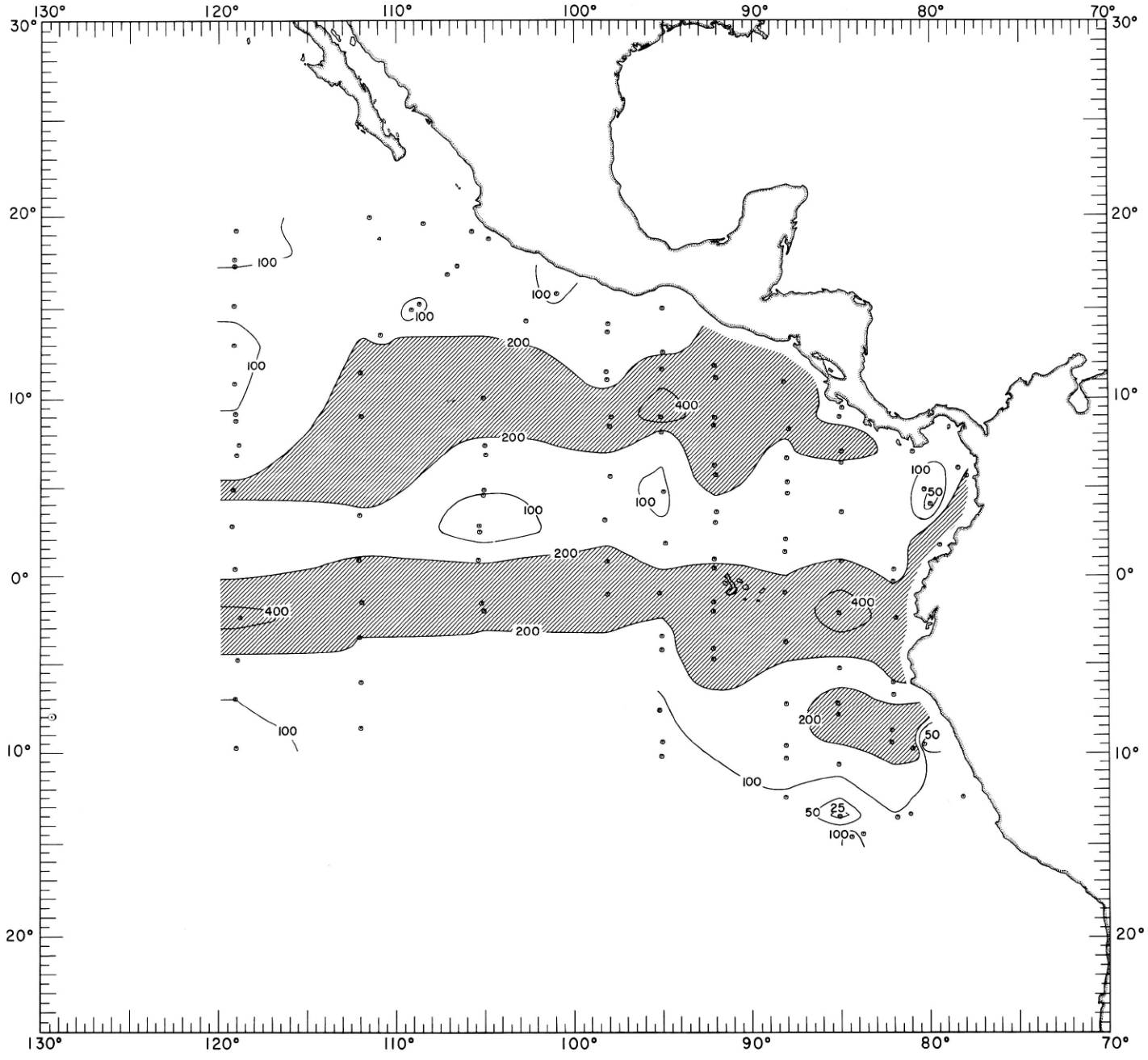
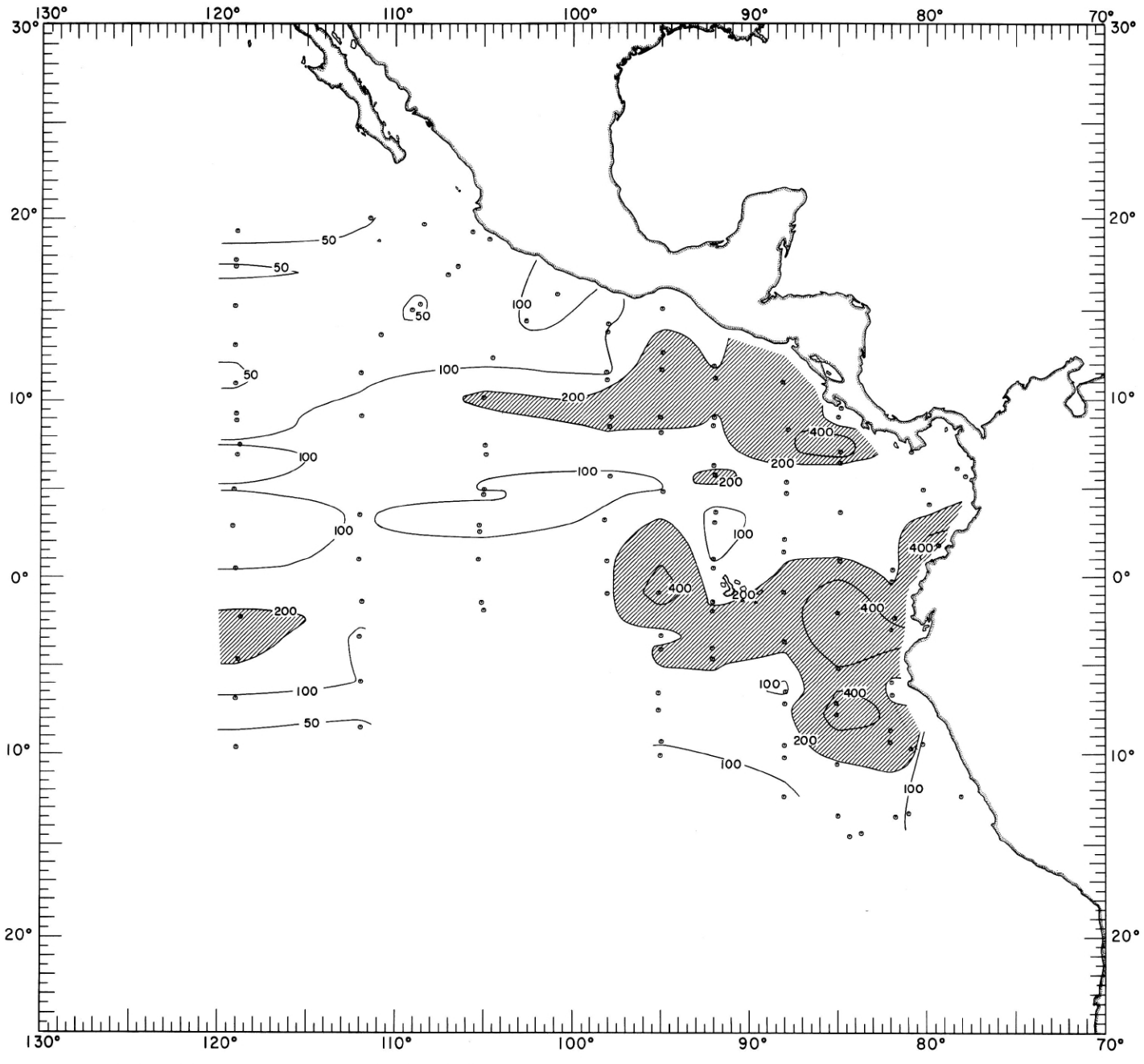


FIGURE 40-Nk.—Distribution of standing stock (ml./1,000 m.^{3}) of total micronekton taken in night micronekton hauls during August-September 1967.



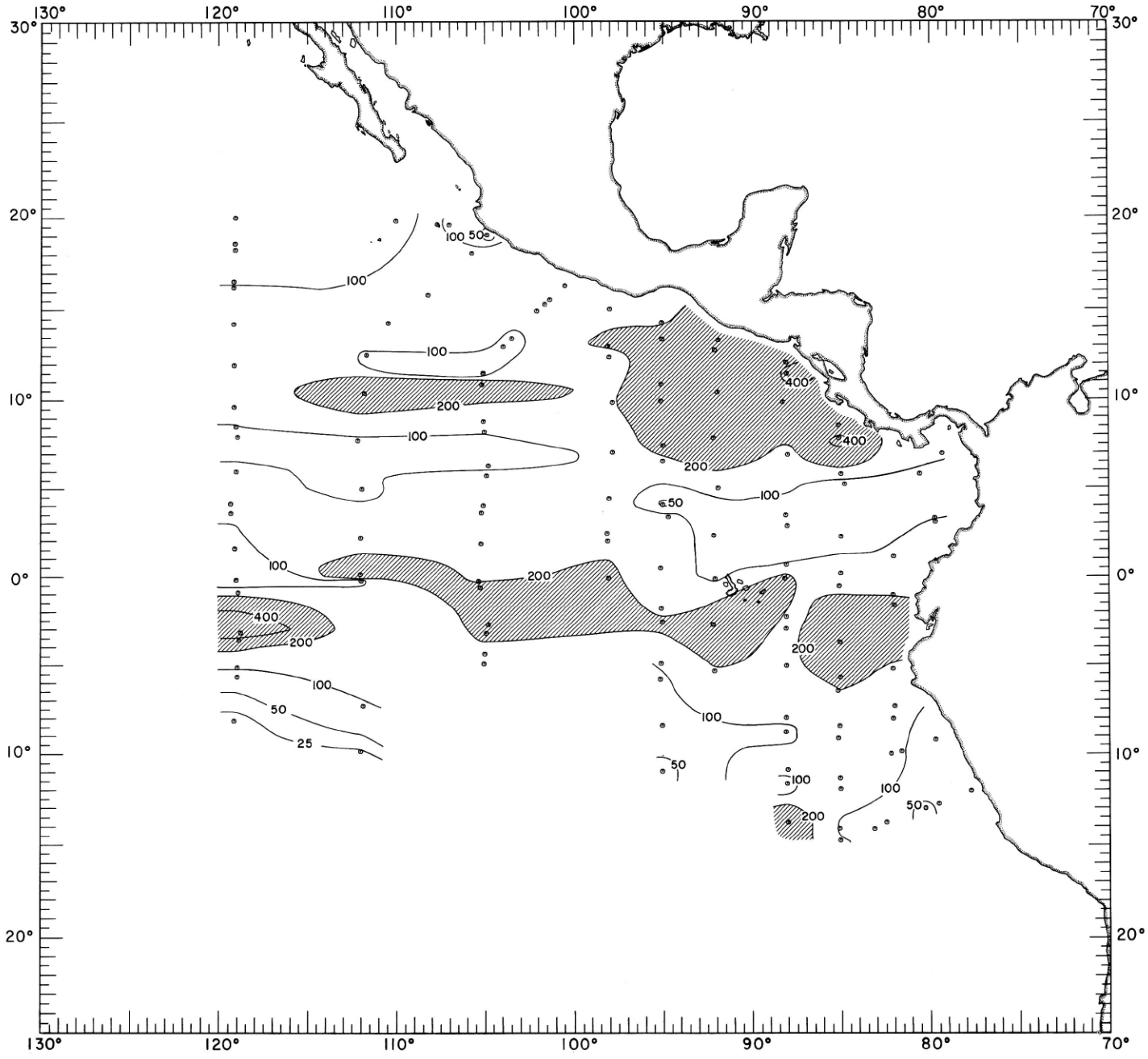
40-ZhN.

FIGURE 40-ZhN.—Distribution of standing stock (ml./1,000 m.^{3}) of zooplankton taken in 50-cm. net hauls at night, August-September 1967.



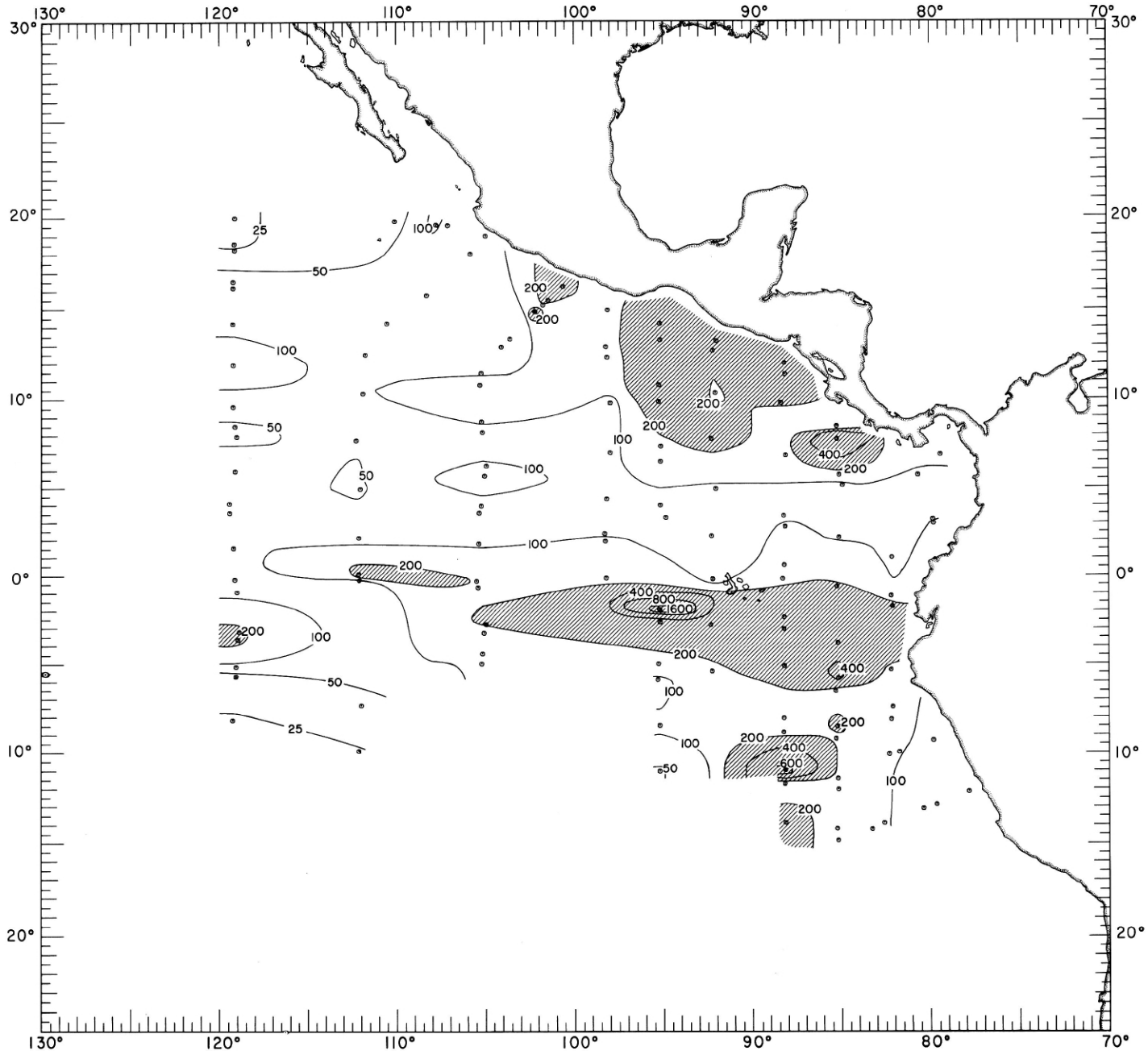
40-Z1N.

FIGURE 40-Z1N.—Distribution of standing stock (ml./1,000 m.^{3}) of zooplankton taken in 1-m. net hauls at night, August-September 1967.



40-ZhD.

FIGURE 40-ZhD.—Distribution of standing stock (ml./1,000 m.^{3}) of zooplankton taken in 50-cm. net hauls during the day, August-September 1967.



40-Z1D.

FIGURE 40-Z1D.—Distribution of standing stock (ml./1,000 m.^{3}) of zooplankton taken in 1-m. net hauls during the day, August-September 1967.

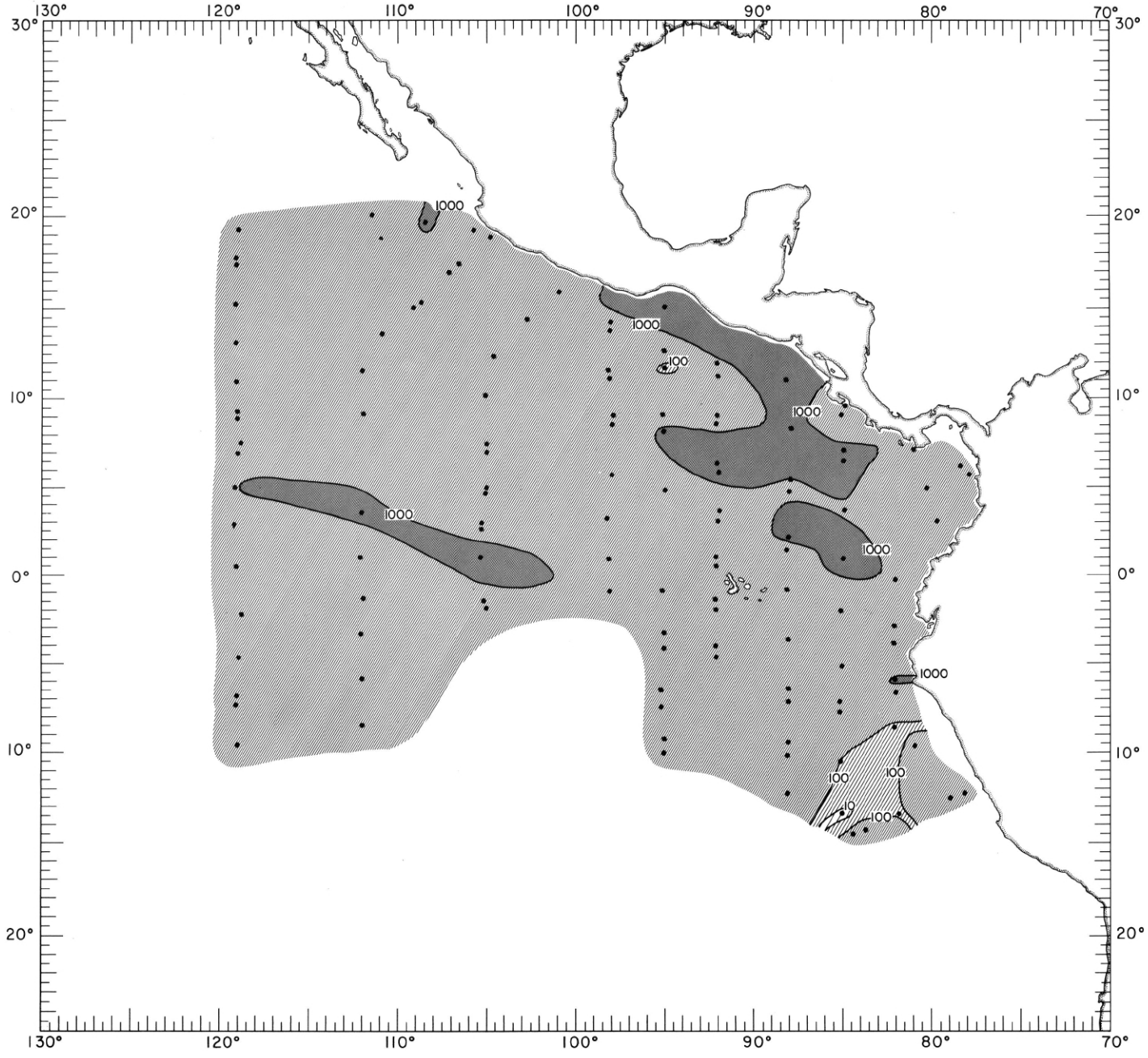


FIGURE 40-FLN.—Total fish larvae (number/haul) taken in 1-m. oblique plankton hauls at night during August-September 1967.

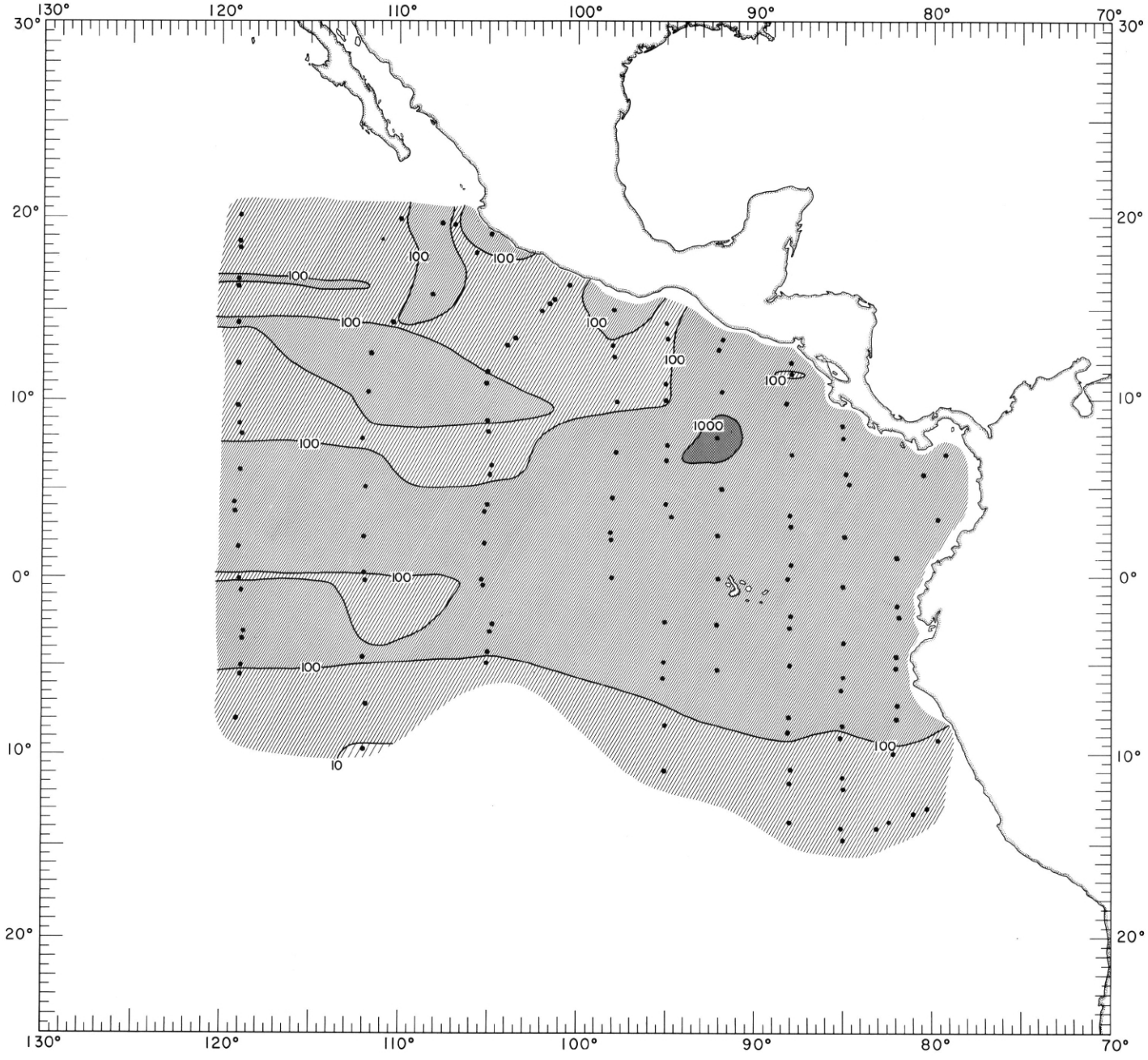


FIGURE 40-FLD.—Total fish larvae (number/haul) taken in 1-m. oblique plankton hauls during the day, August-September 1967.

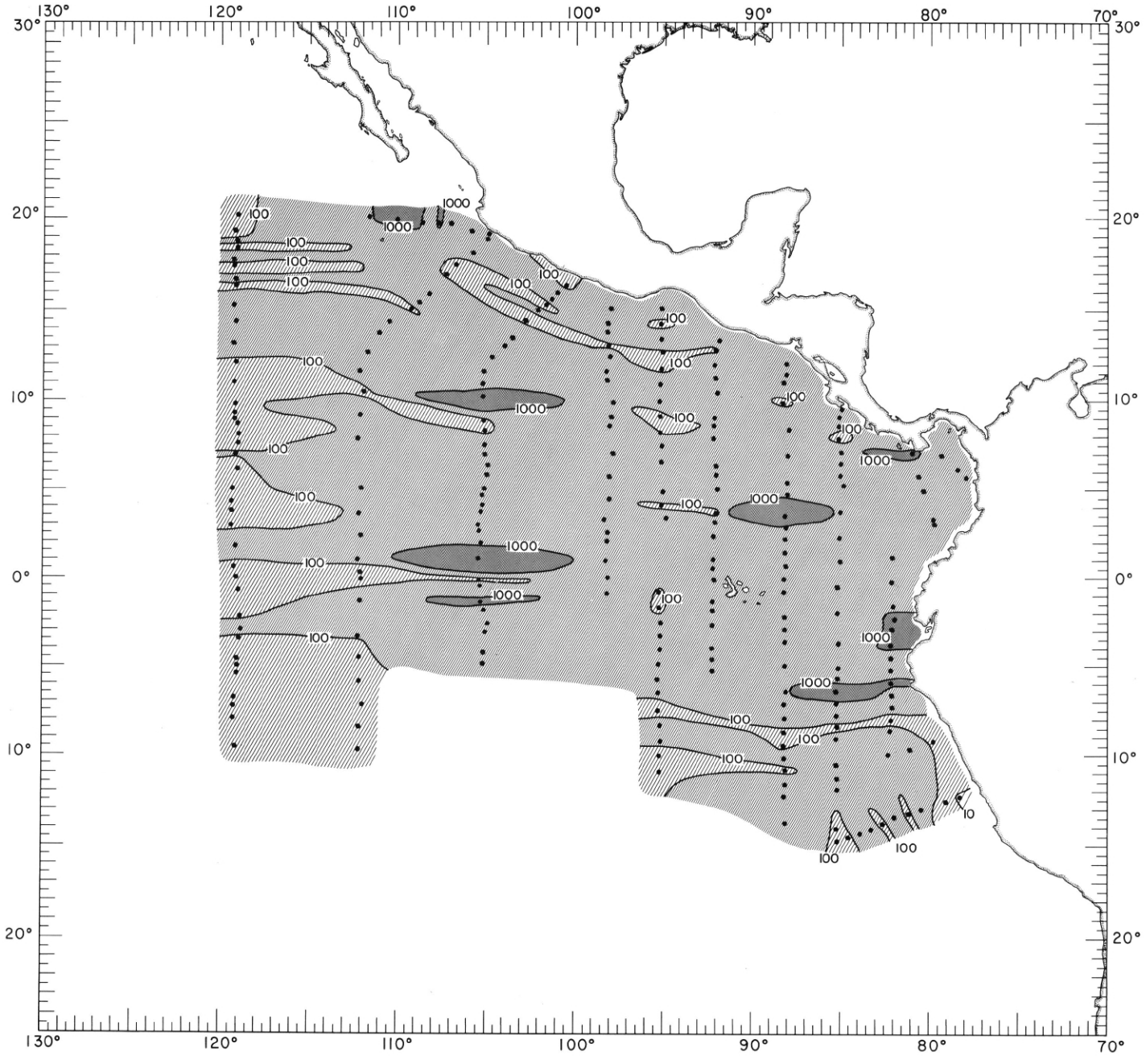


FIGURE 40-FE.—Total fish eggs (number/haul) taken in 1-m. oblique plankton hauls during August-September 1967.

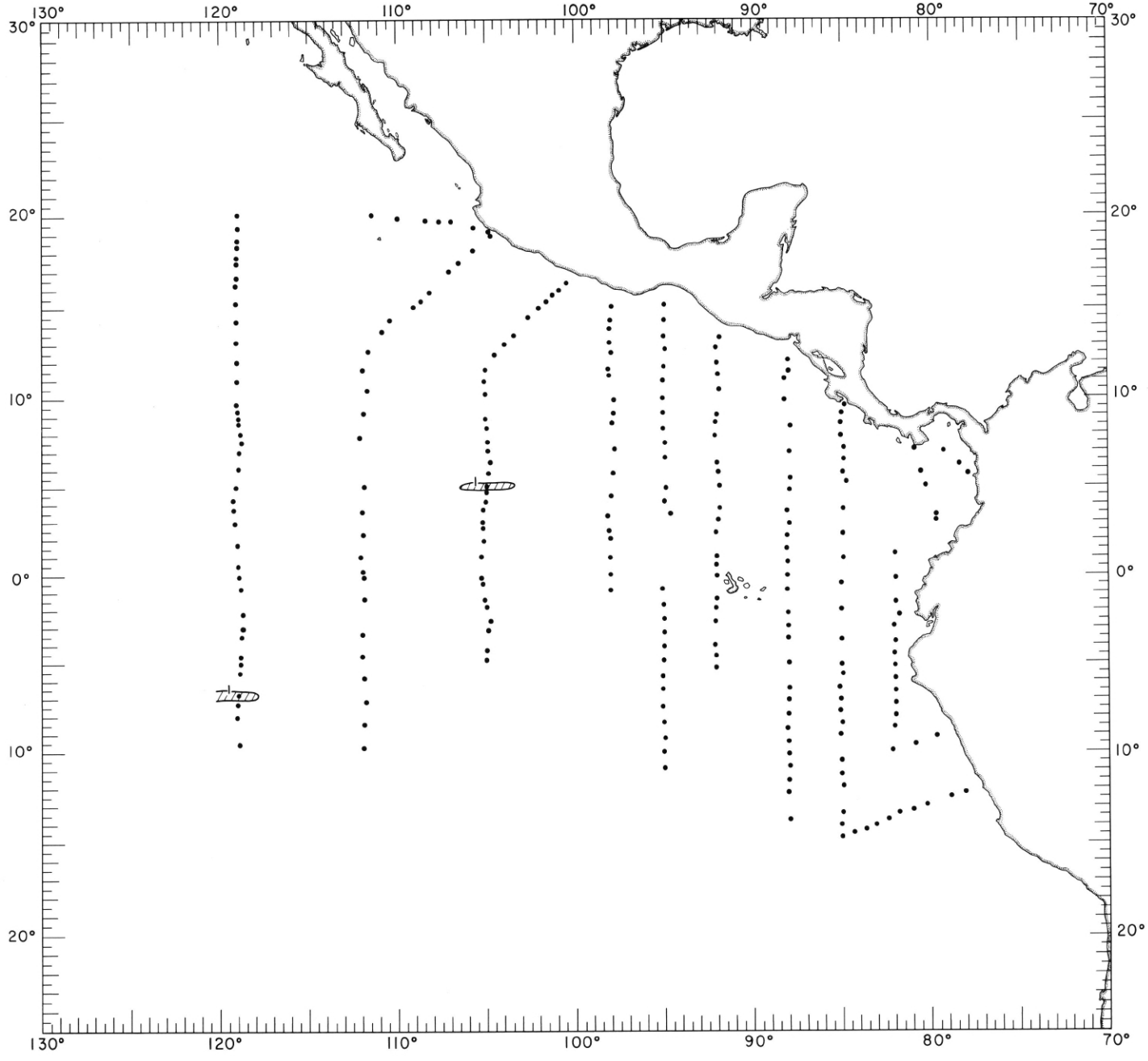


FIGURE 40-FS.—Total skipjack tuna, *Katsuwonus pelamis*, larvae (number/haul) taken in 1-m. oblique plankton hauls during August-September 1967.

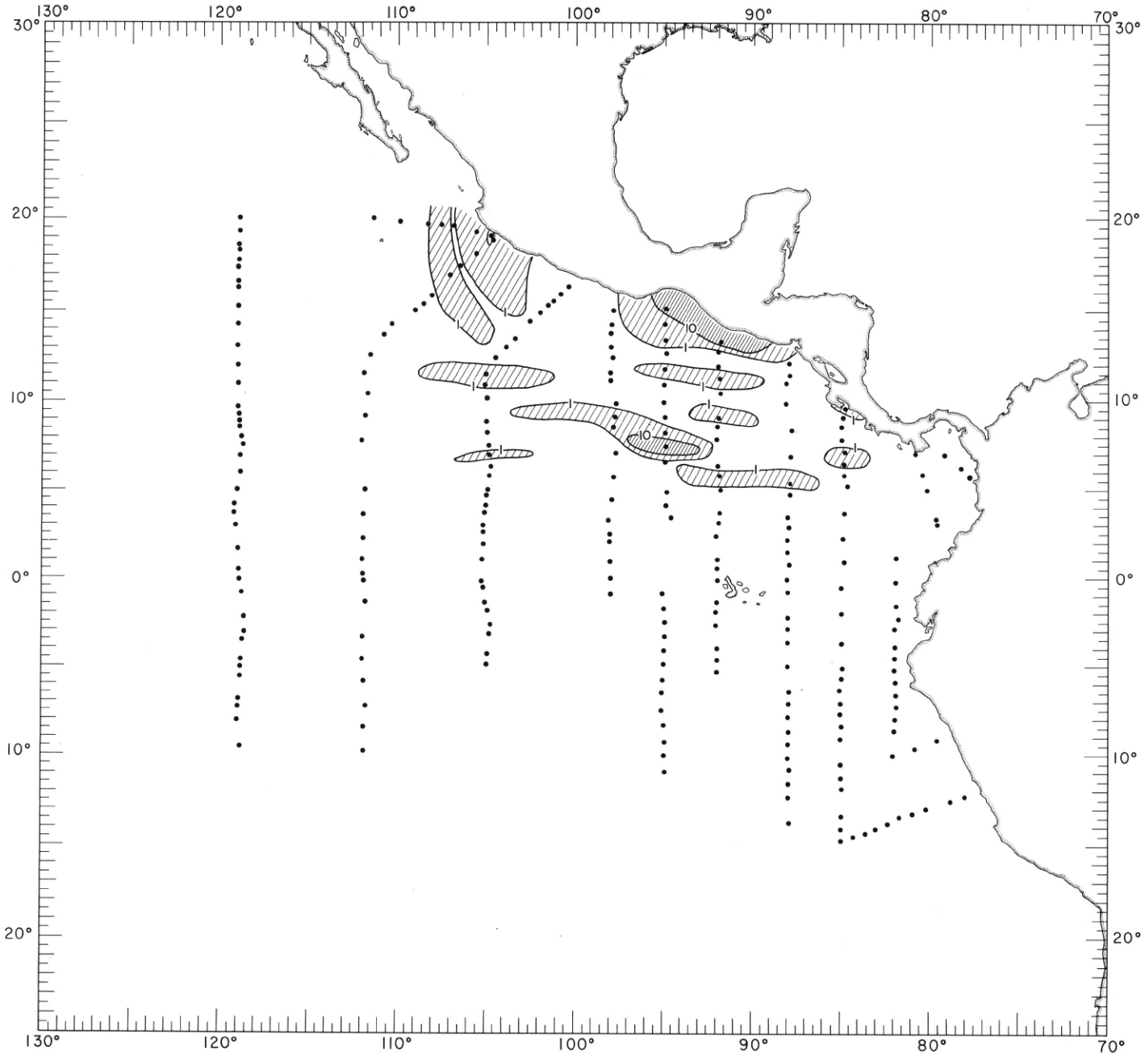


FIGURE 40-FA.—Total frigate mackerel, *Auxis*, larvae (number/haul) taken in 1-m. oblique plankton hauls during August-September 1967.

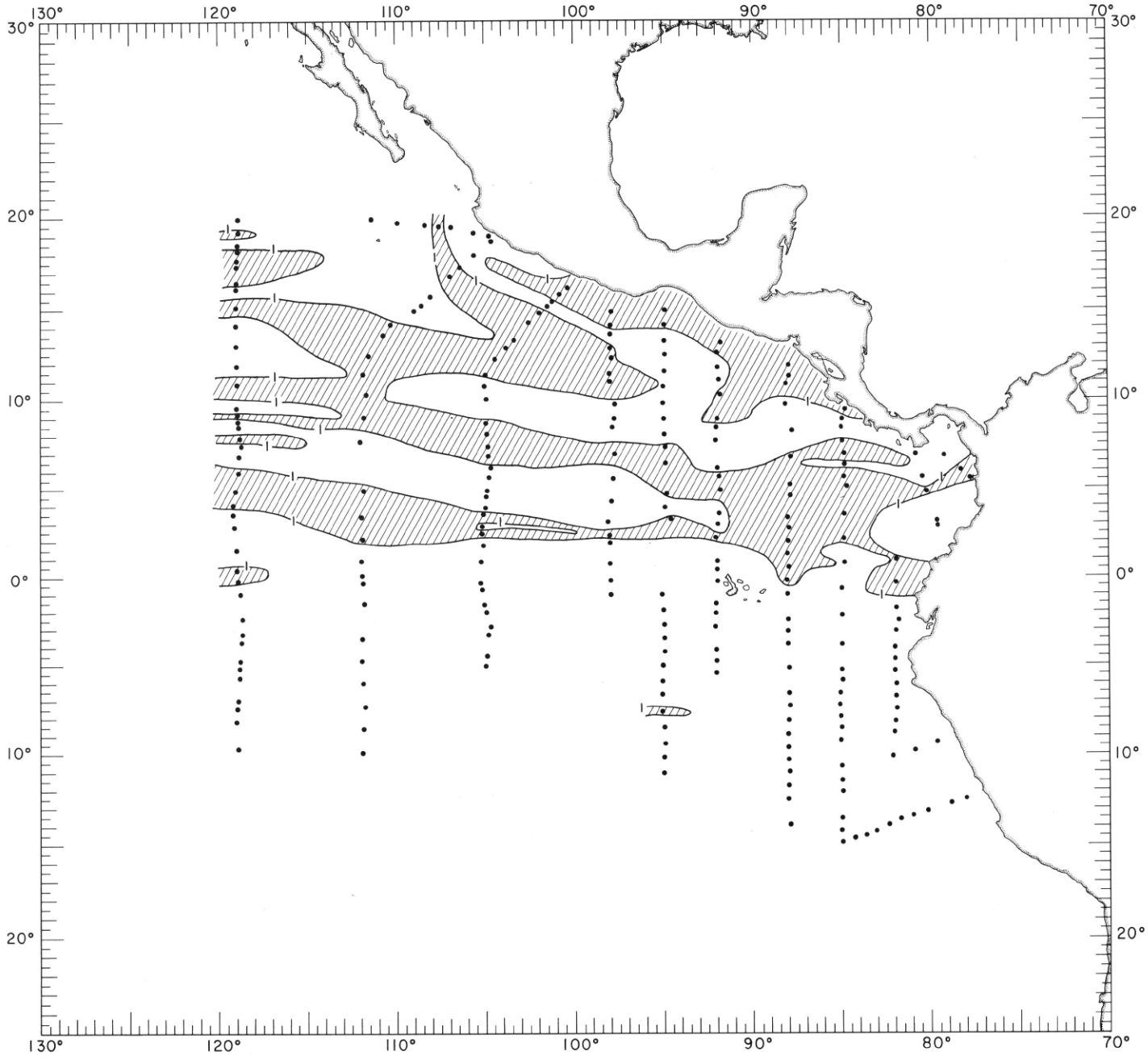


FIGURE 40-FC.—Total dolphin (fish), *Coryphaena*, larvae (number/haul) taken in 1-m. oblique plankton hauls during August-September 1967.

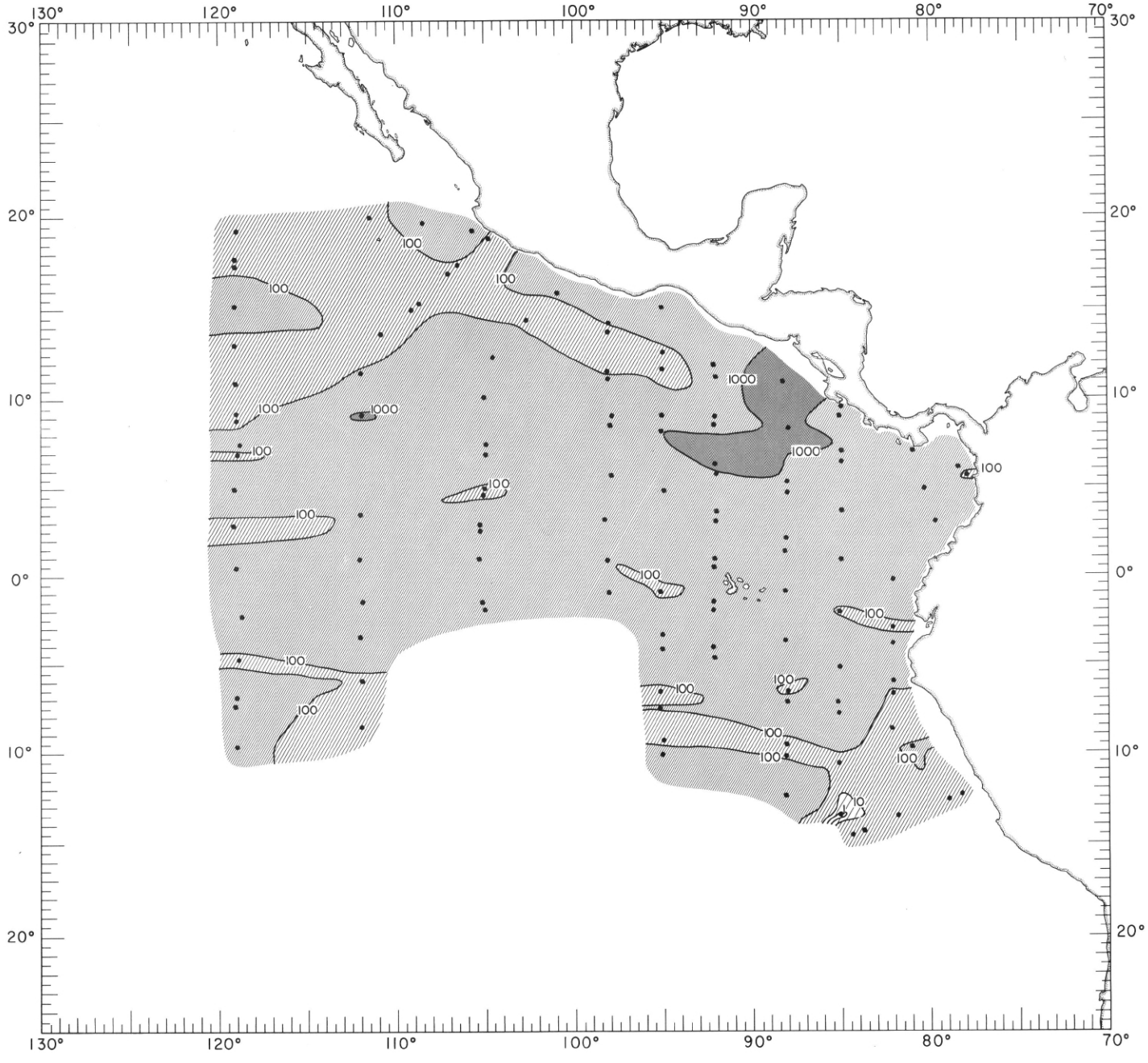
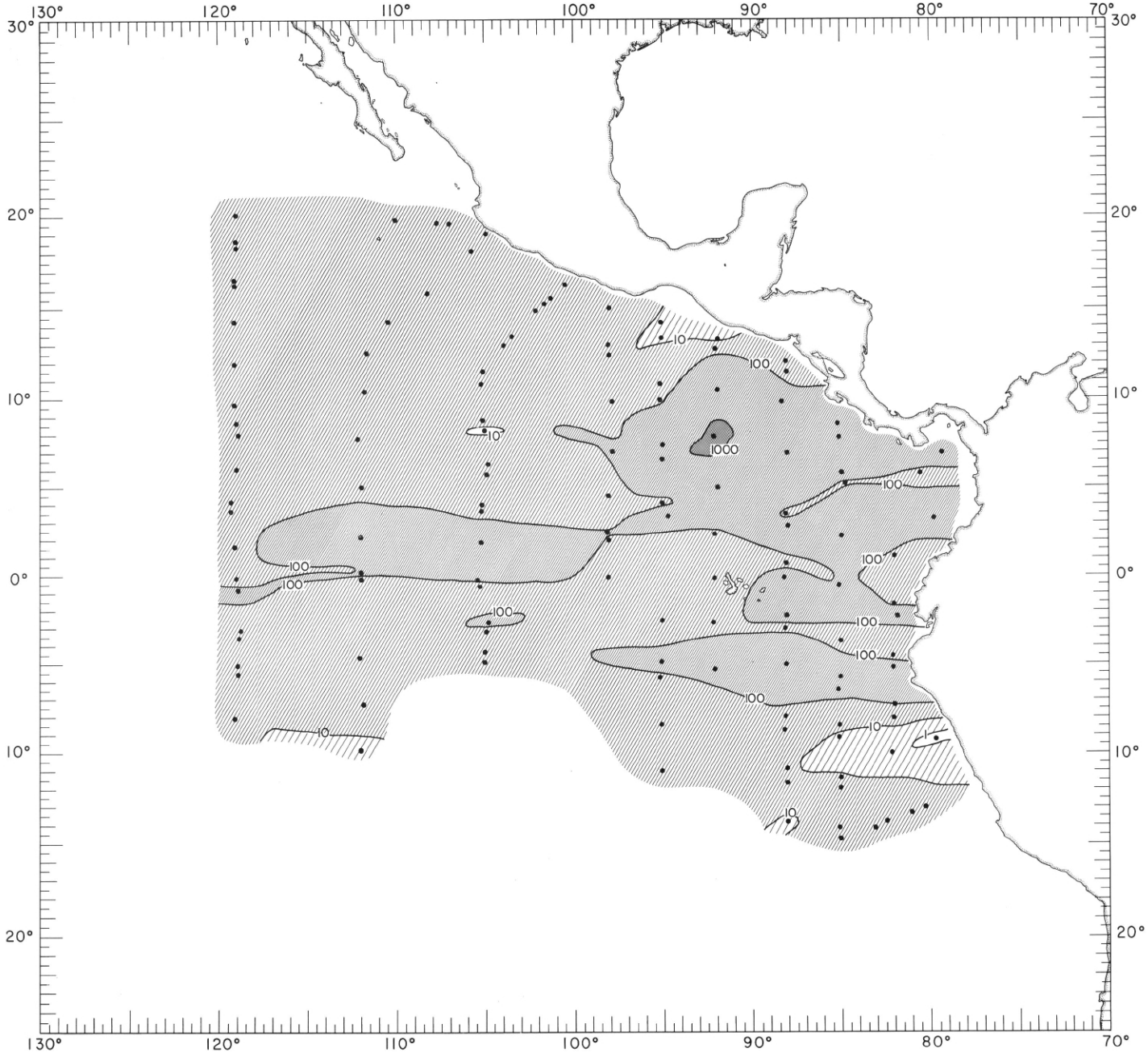
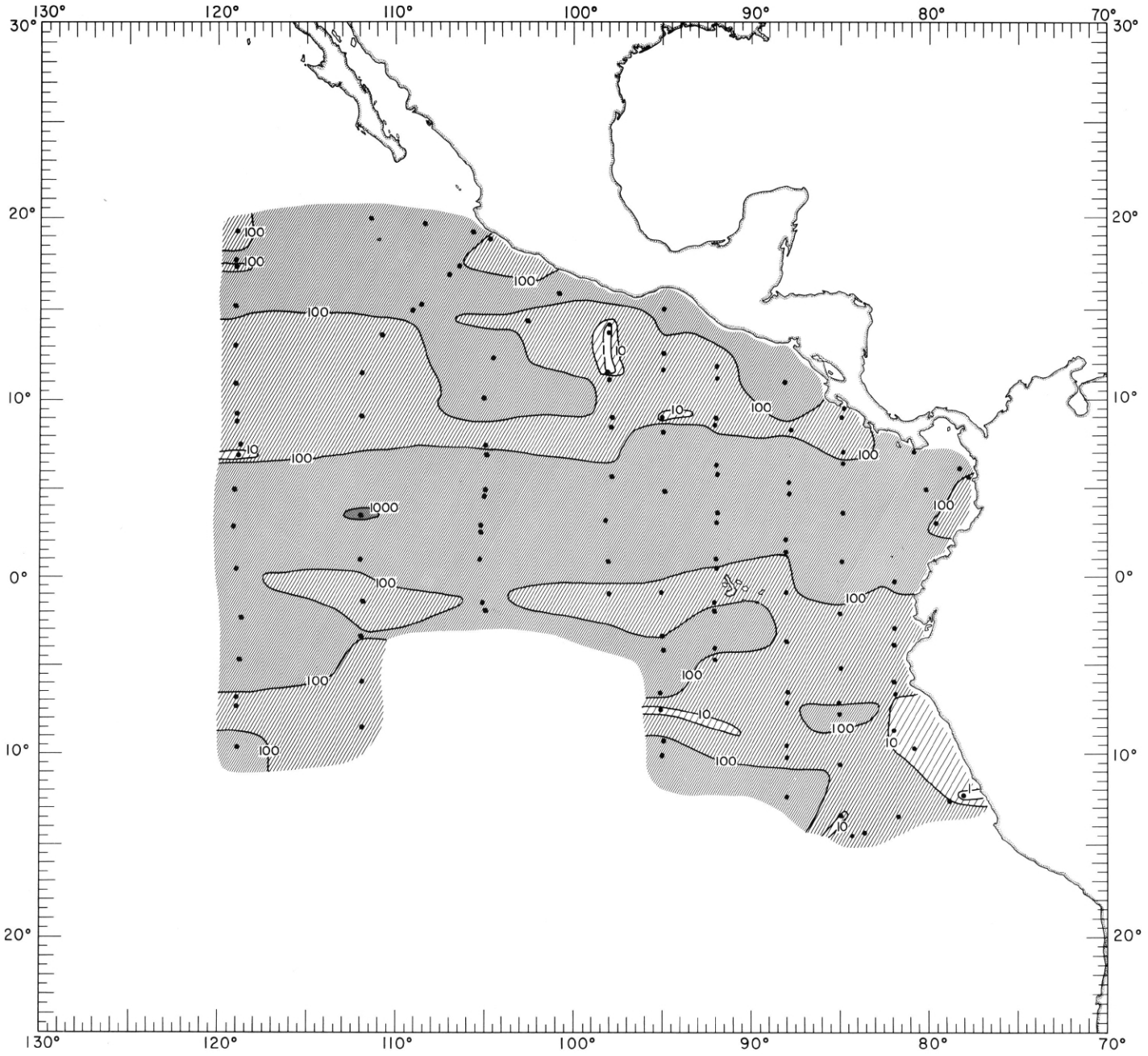


FIGURE 40-FMN.—Total myctophid larvae (number/haul) taken in 1-m. oblique plankton hauls at night during August-September 1972.



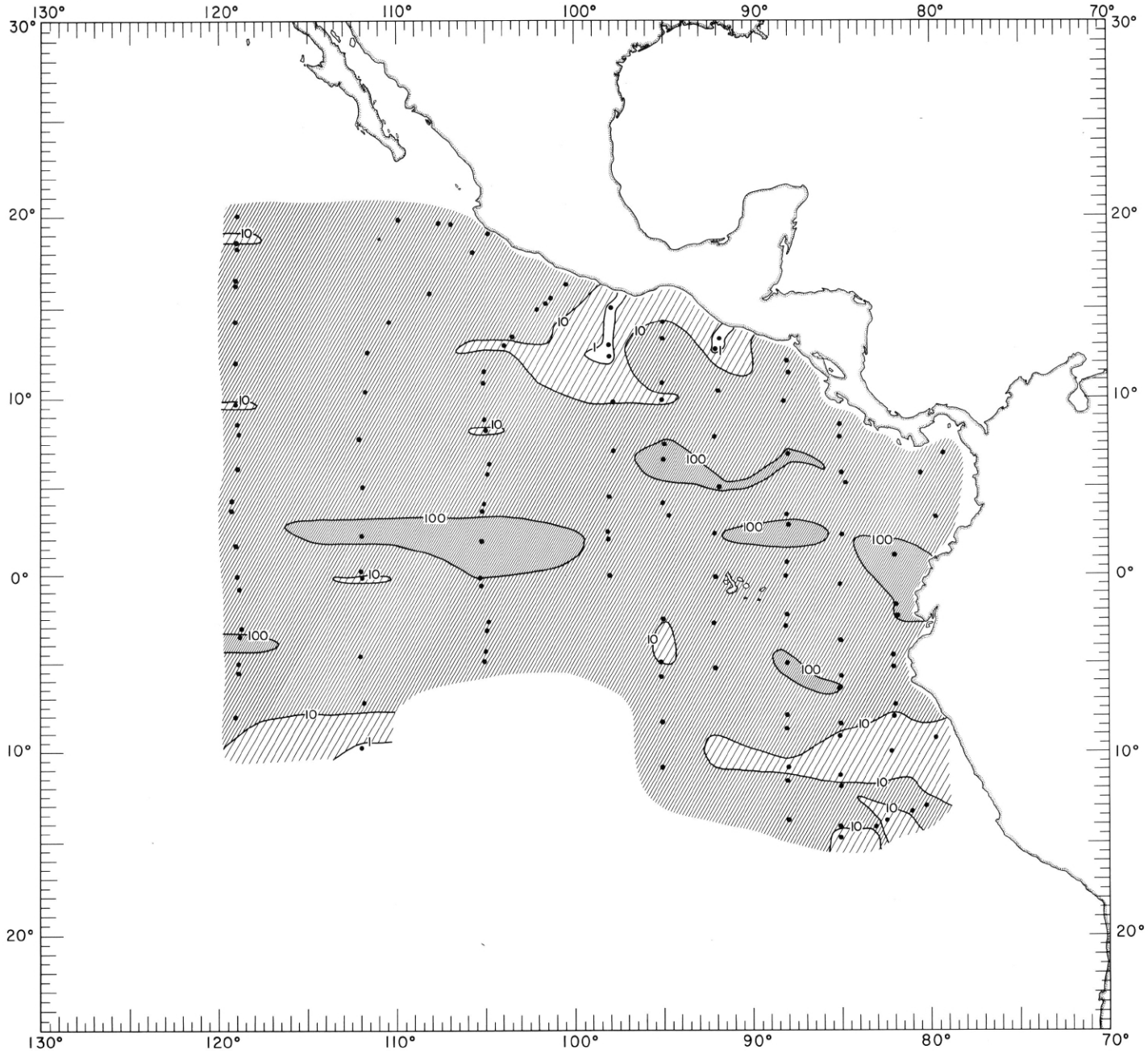
40-FMD.

FIGURE 40-FMD.—Total myctophid larvae (number/haul) taken in 1-m. oblique plankton hauls during the day, August-September 1967.



40-FGN.

FIGURE 40-FGN.—Total gonostomatid and sternoptychid larvae (number/haul) taken in 1-m. oblique plankton hauls at night during August-September 1967.



40-FGD.

FIGURE 40-FGD.—Total gonostomatid and sternoptychid larvae (number/haul) taken in 1-m. oblique plankton hauls during the day, August-September 1967.

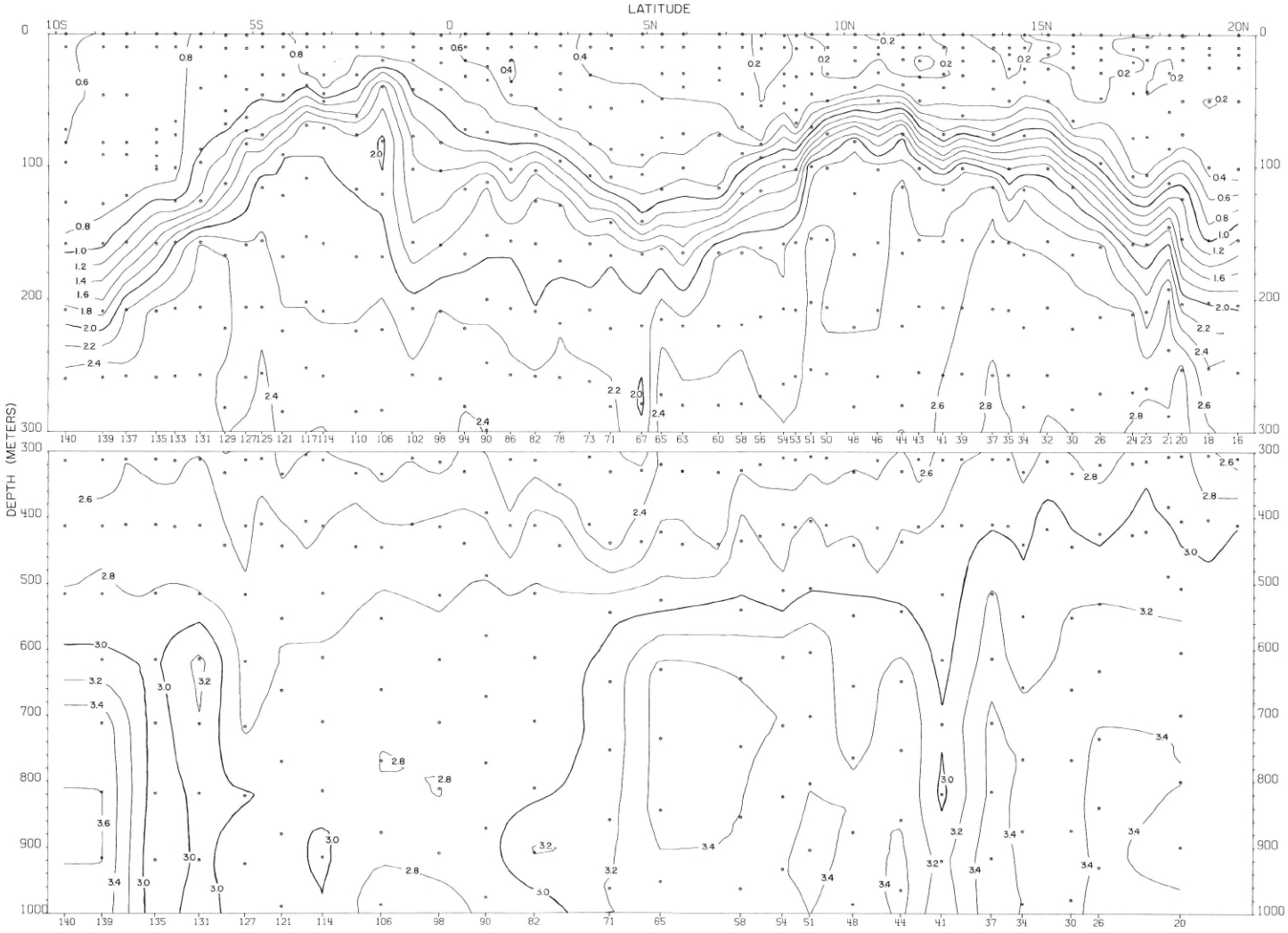
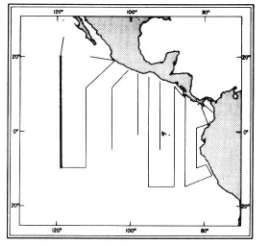


FIGURE 45-P-v1.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 119° W., August 7-20, 1967.



45-P-v1.

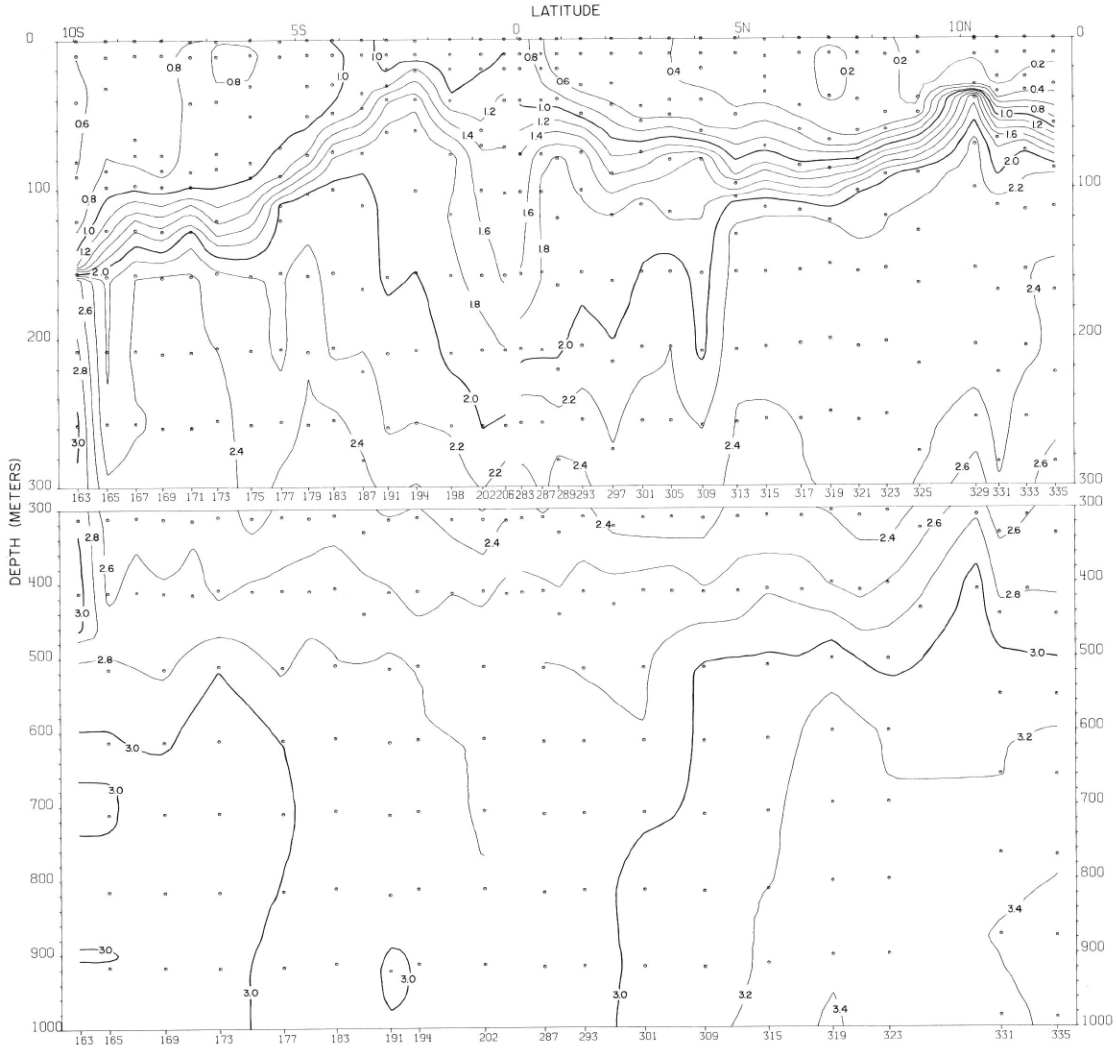
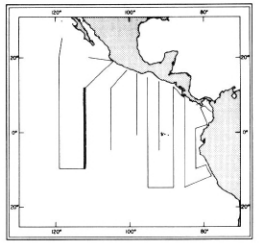


FIGURE 45-P-v3.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 112° W., August 23-September 7, 1967. The interruption in the contours indicates a 5-day interval between Stations 206 and 283 in the upper (0-500 m.) portion of the section, or between Stations 202 and 287 in the lower portion.



45-P-v3.

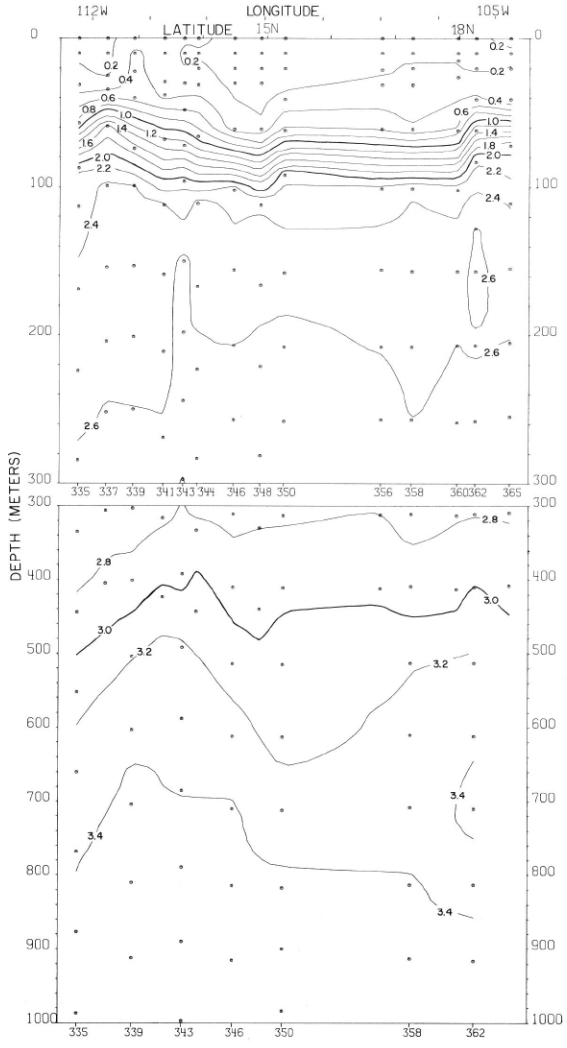


FIGURE 45-P-v5.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

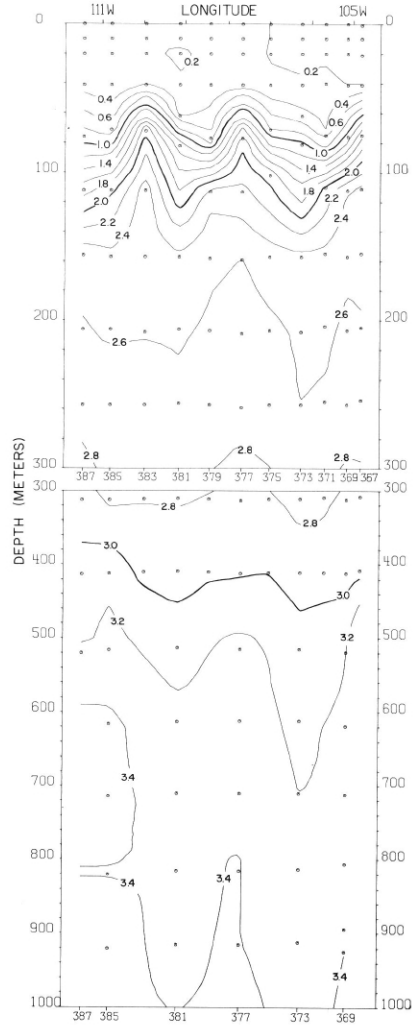
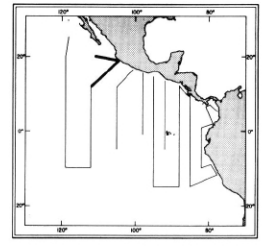


FIGURE 45-P-v6.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 19°30′ N. from Manzanillo to 111°25′ W., September 13-15, 1967.



45-P-v5.

45-P-v6.

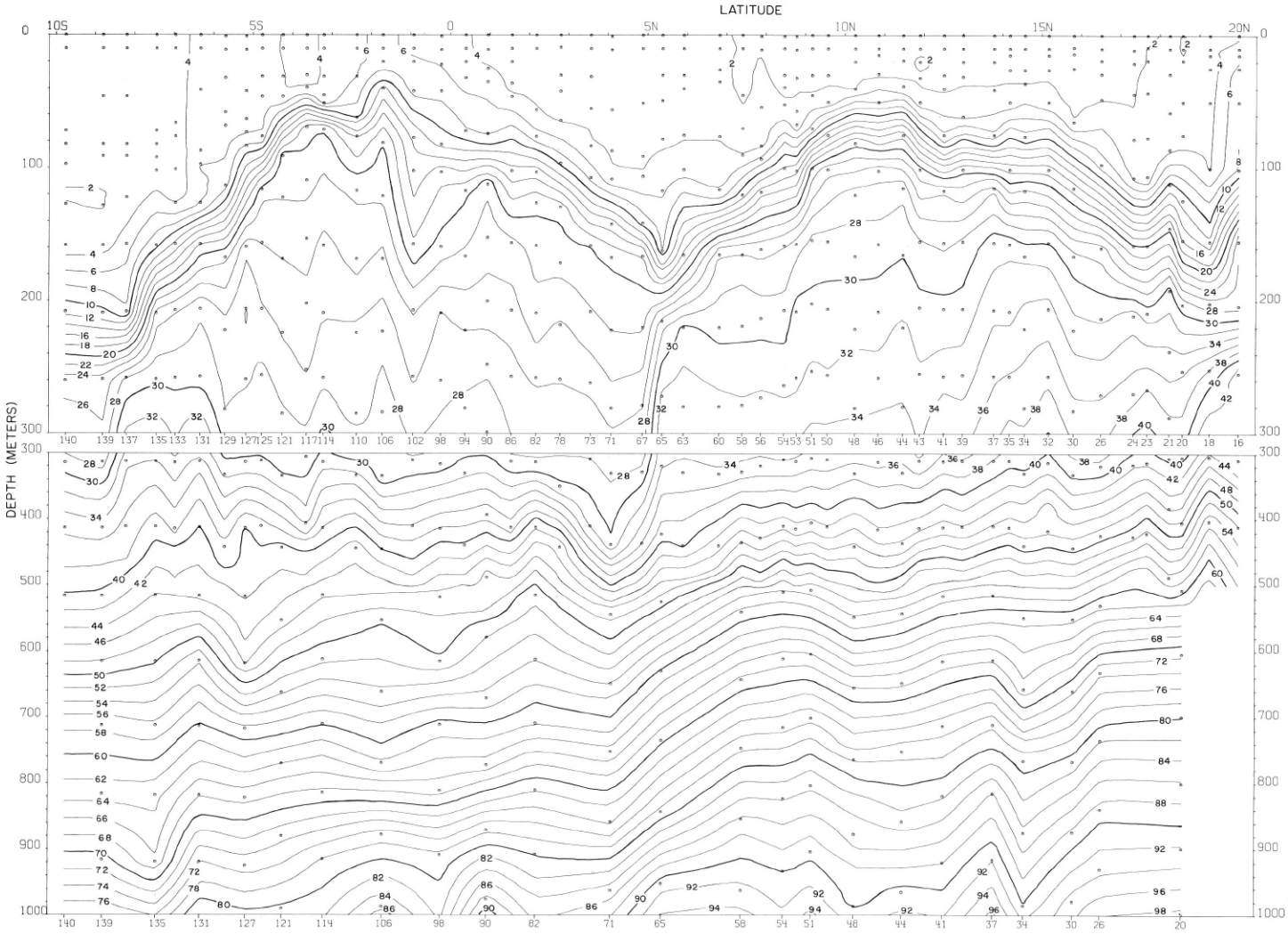
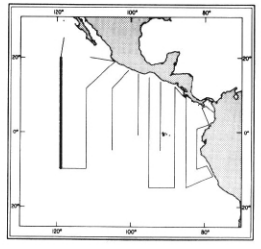


FIGURE 45-Si-v1.—Vertical distribution of silicate-silicon (μg.-at./l.) along 119° W., August 7-20, 1967.



45-Si-v1.

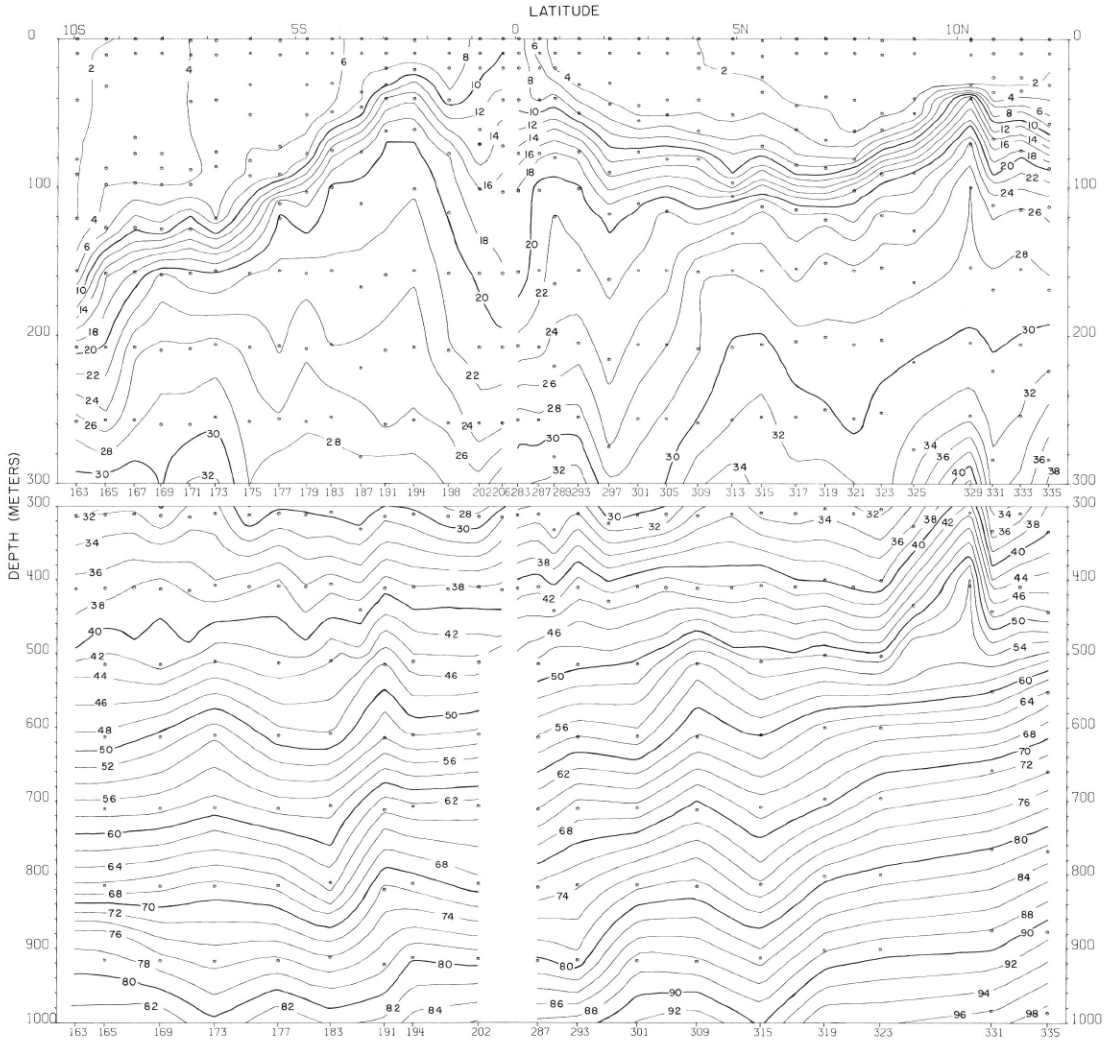
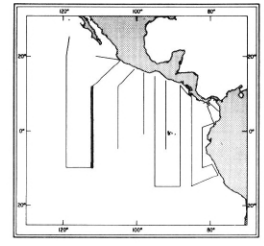


FIGURE 45-Si-v3.—Vertical distribution of silicate-silicon (μg.-at./l.) along 112° W., August 23-September 7, 1967. The interruption in the contours indicates a 5-day interval between Stations 206 and 283 in the upper (0-500 m.) portion of the section, or between Stations 202 and 287 in the lower portion.



45-Si-v3.

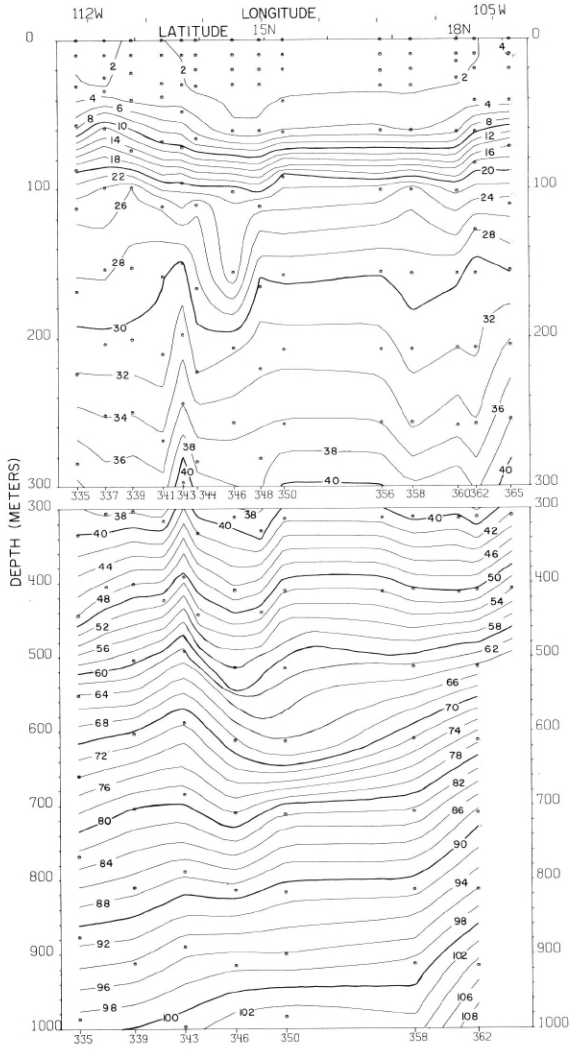


FIGURE 45-Si-v5.—Vertical distribution of silicate-silicon (μg.-at./l.) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

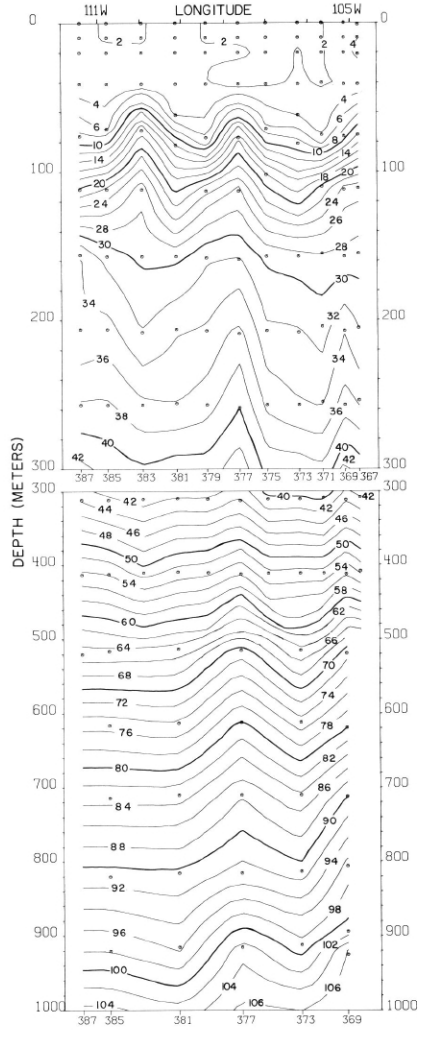
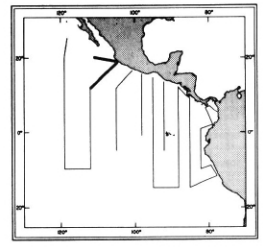


FIGURE 45-Si-v6.—Vertical distribution of silicate-silicon (μg.-at./l.) along 19°30′ N. from Manzanillo to 111°25′ W., September 13-15, 1967.



45-Si-v5.

45-Si-v6.

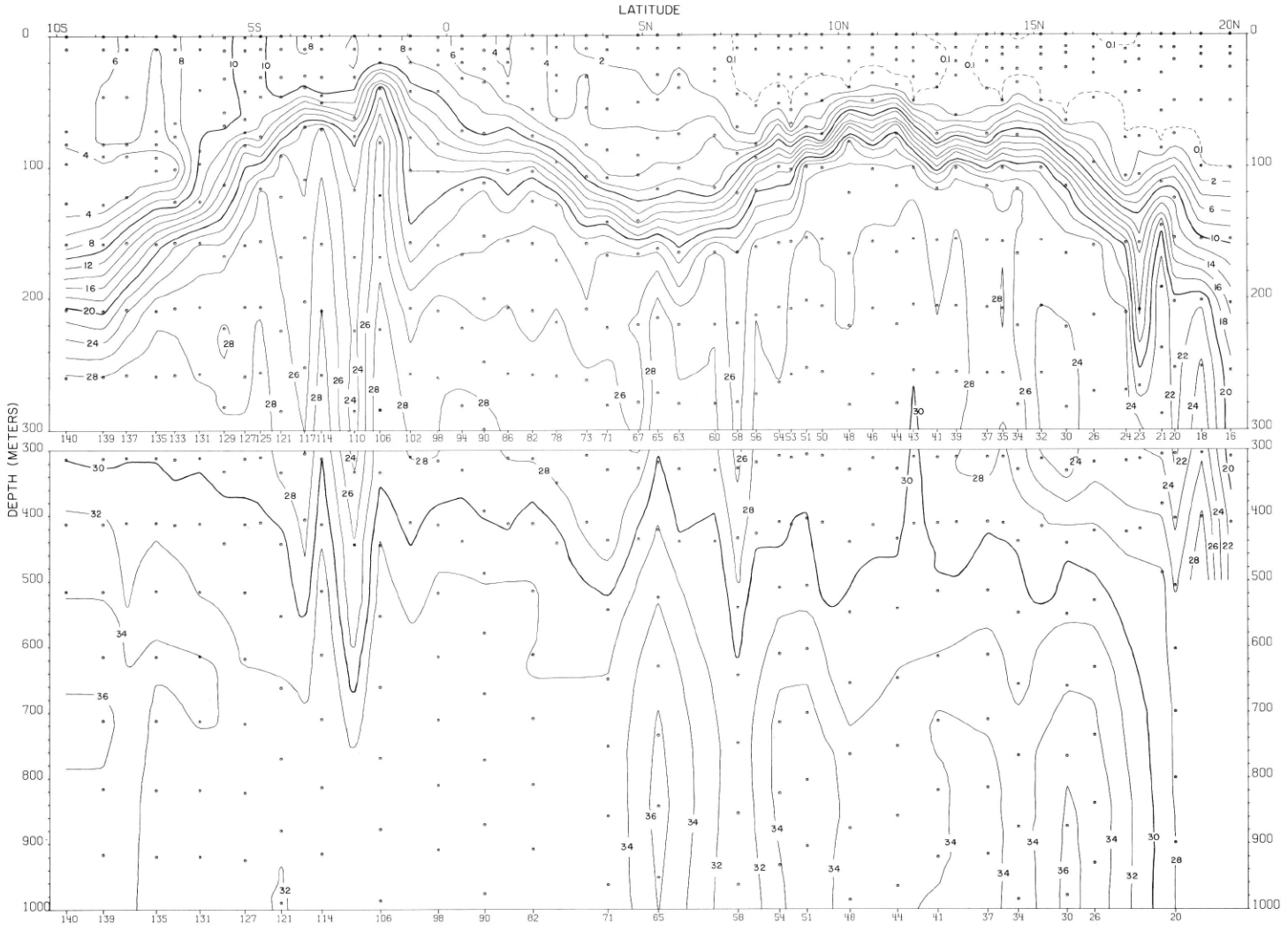
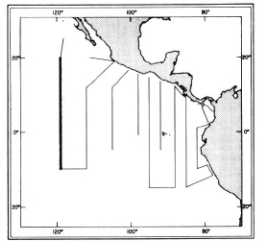


FIGURE 45-NO_3-v1.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 119° W., August 7-20, 1967.



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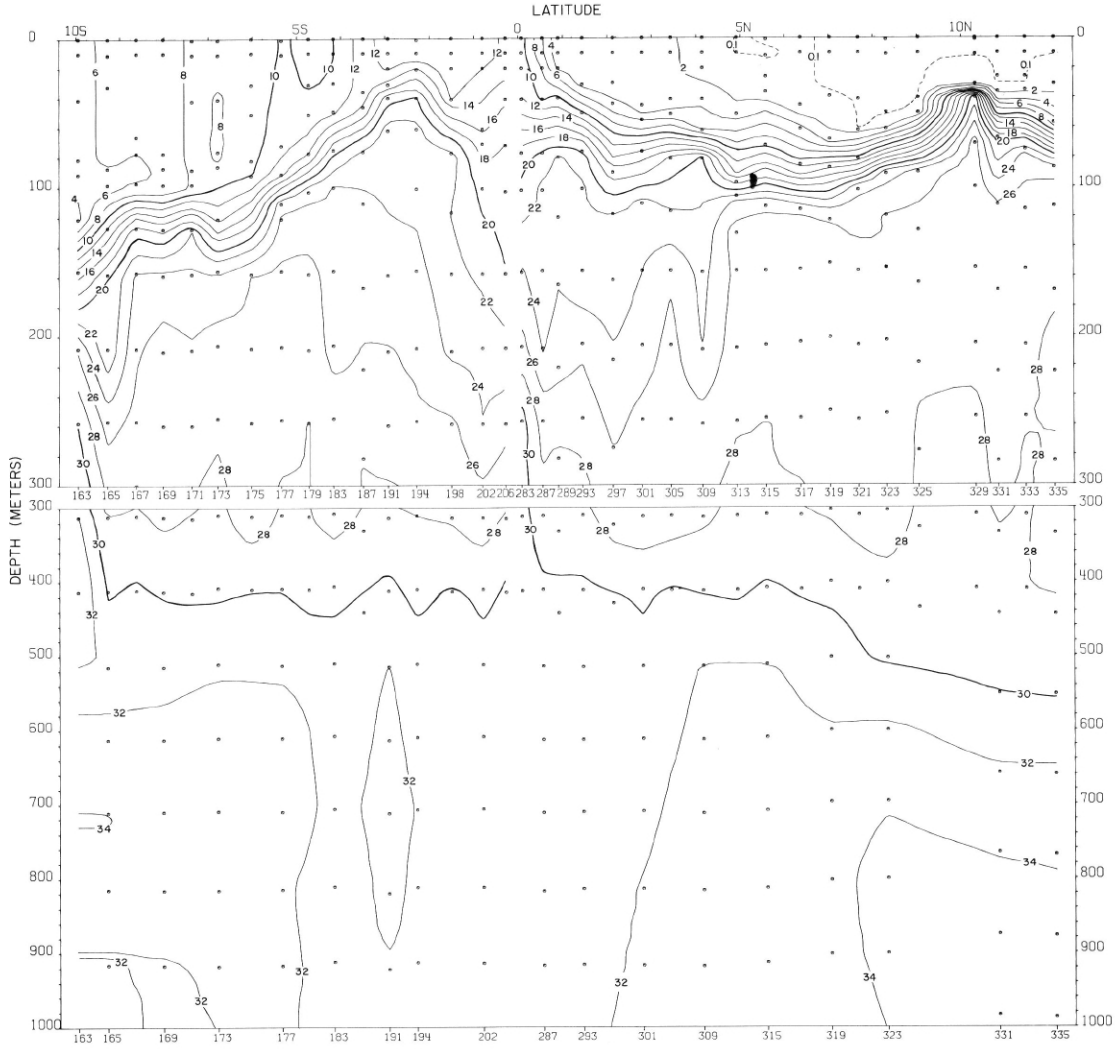
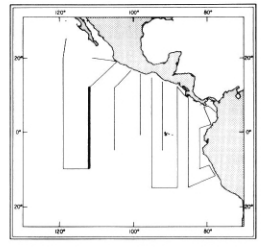


FIGURE 45-NO_3-v3.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 112° W., August 23-September 7, 1967. The interruption in the contours indicates a 5-day interval between Stations 206 and 283 in the upper (0-500 m.) portion of the section, or between Stations 202 and 287 in the lower portion.



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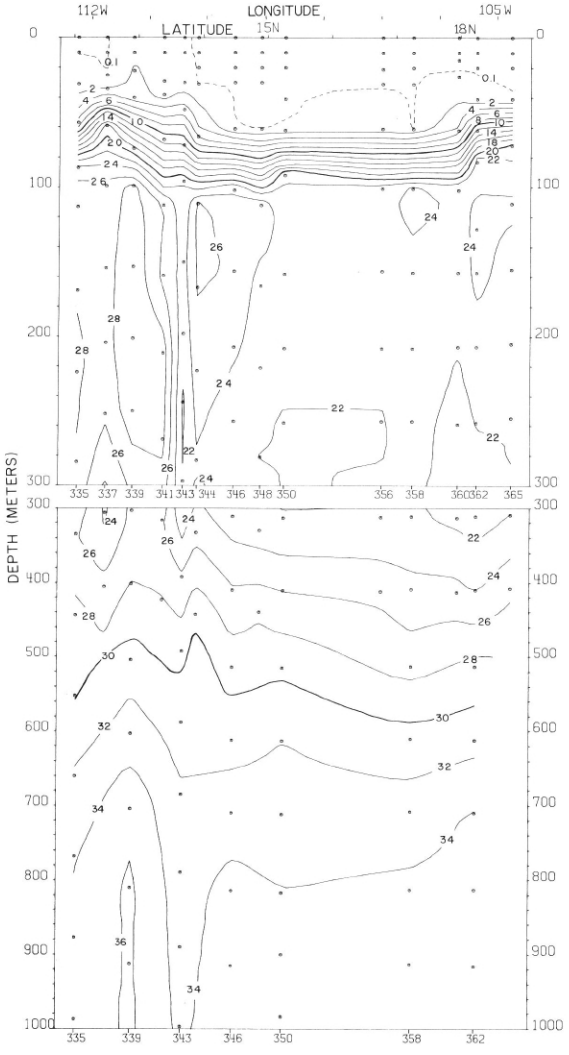


FIGURE 45-NO_3-v5.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

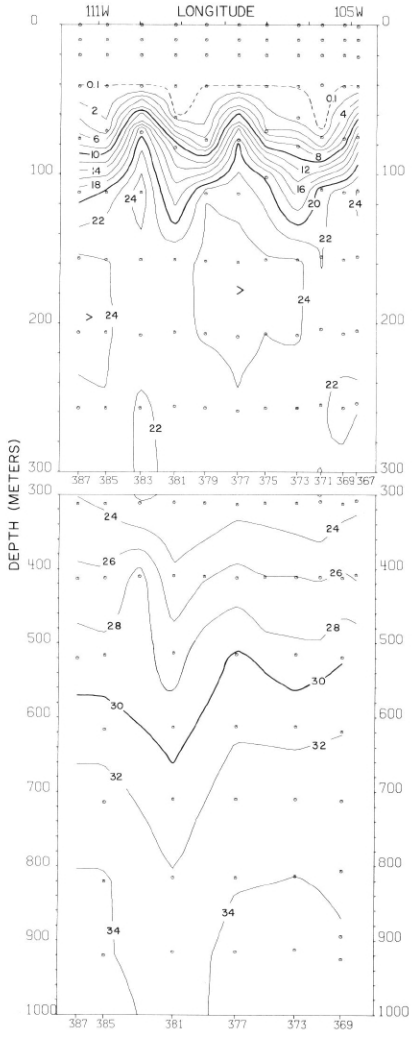
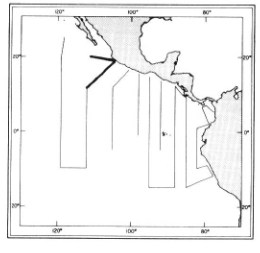


FIGURE 45-NO_3-v6.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 19°30′ N. from Manzanillo to 111°25′ W., September 13-15, 1967.



45-NO_3-v5.

45-NO_3-v6.

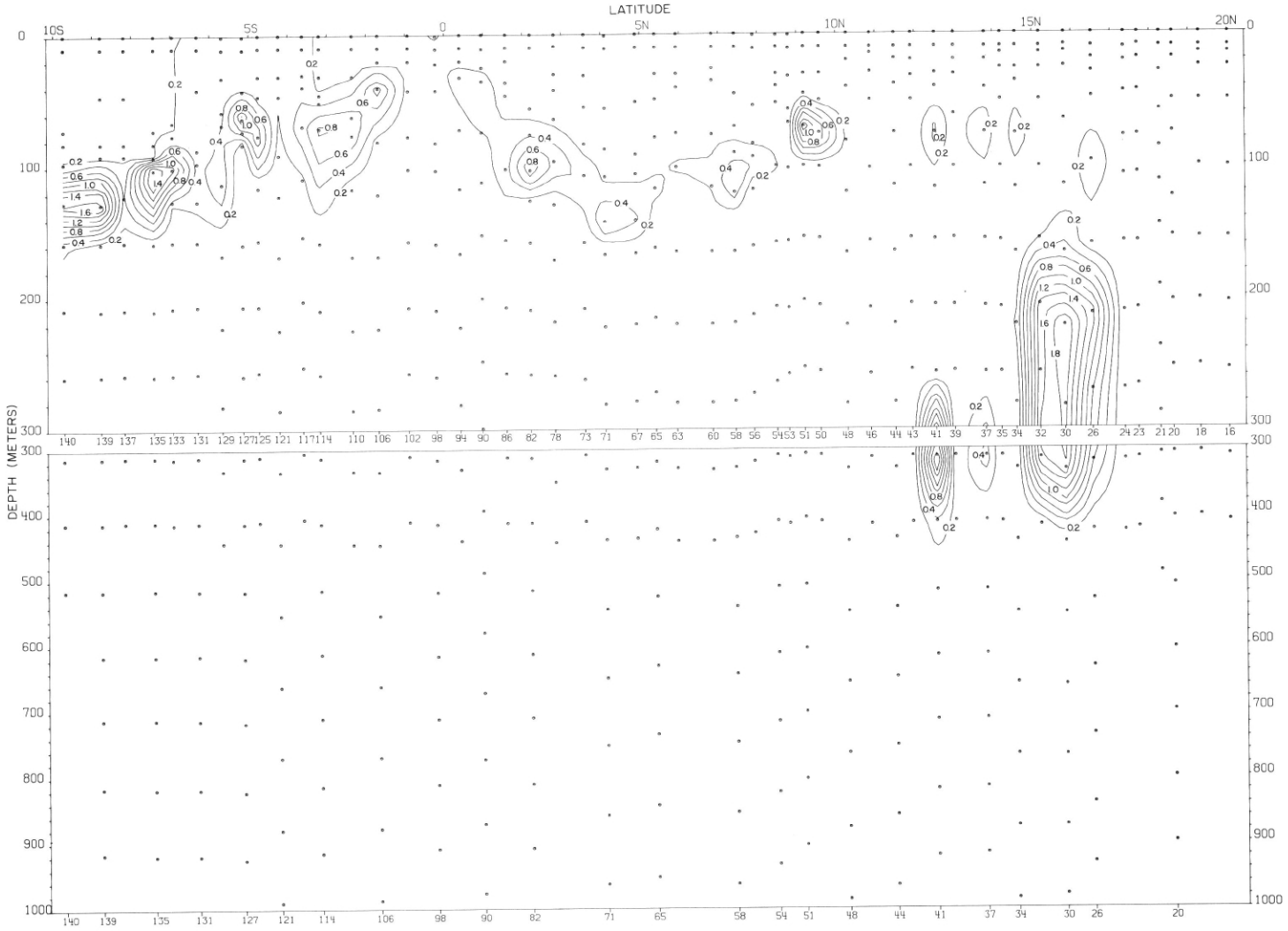
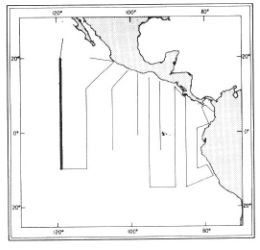


FIGURE 45-NO_2-v1.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 119° W., August 7-20, 1967.



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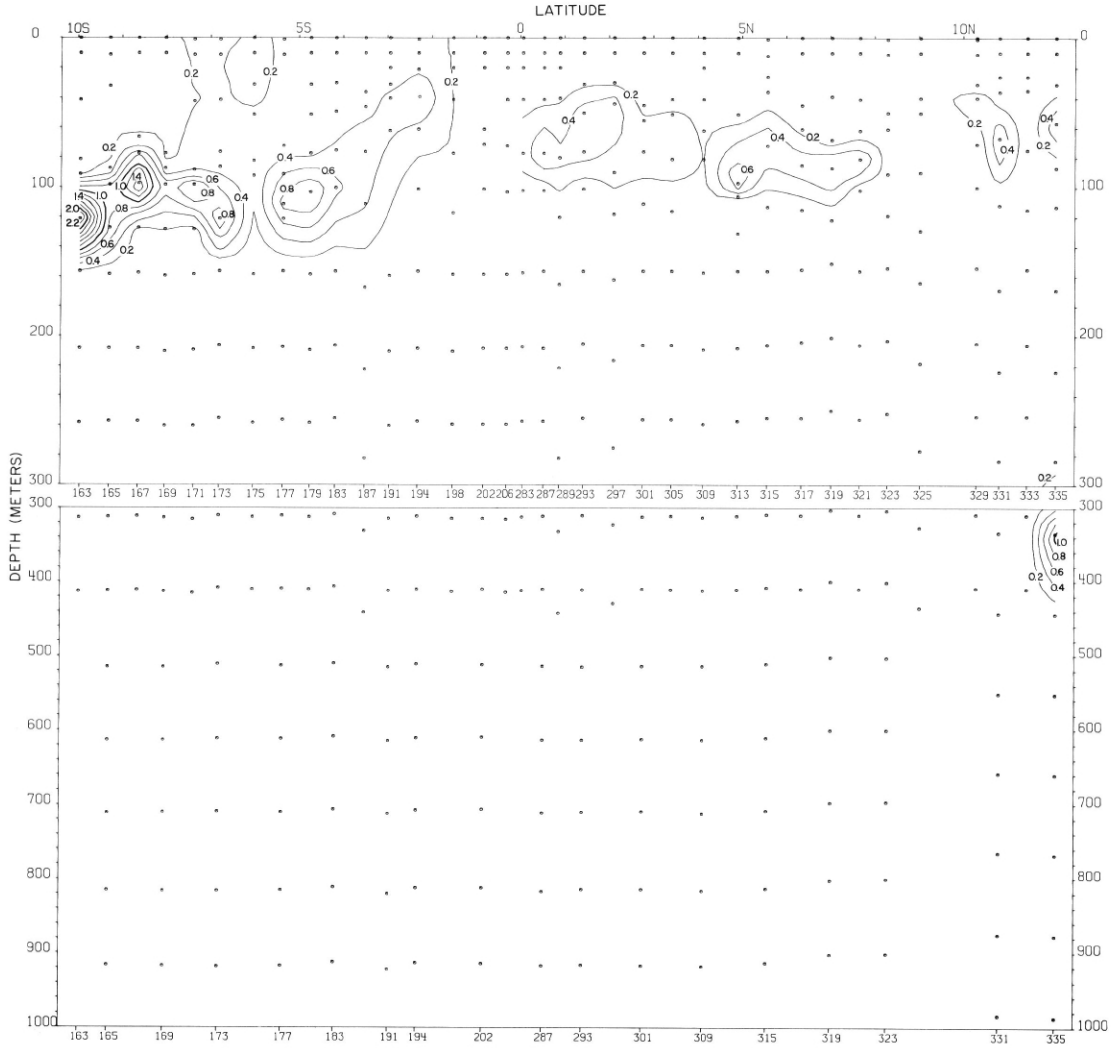
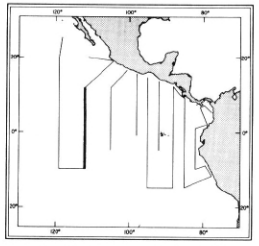


FIGURE 45-NO_2-v3.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 112° W., August 23-September 7, 1967. The interruption in the contours indicates a 5-day interval between Stations 206 and 283 in the upper (0-500 m.) portion of the section, or between Stations 202 and 287 in the lower portion.



45-NO_2-v3.

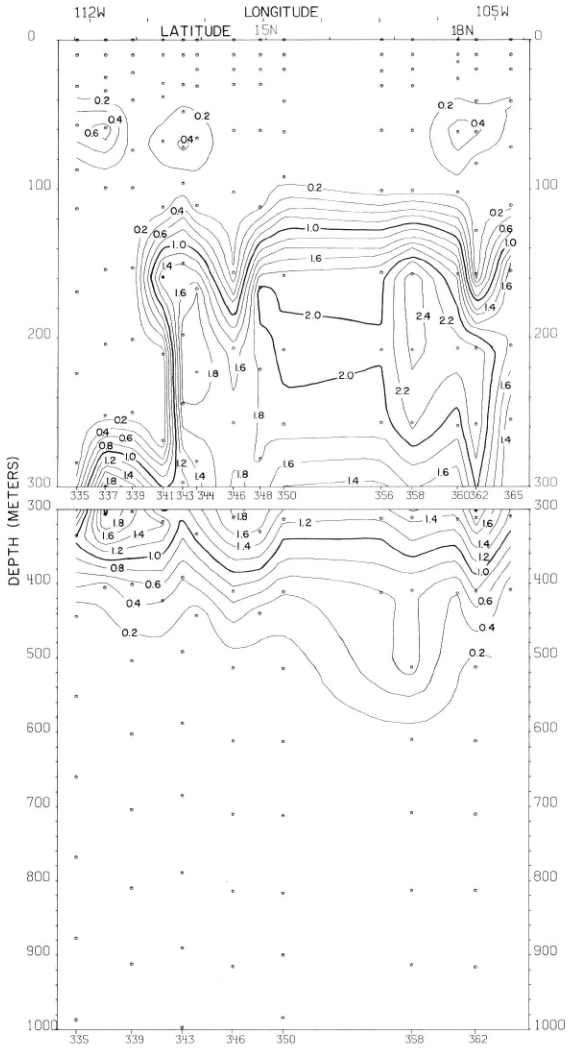


FIGURE 45-NO_2-v5.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

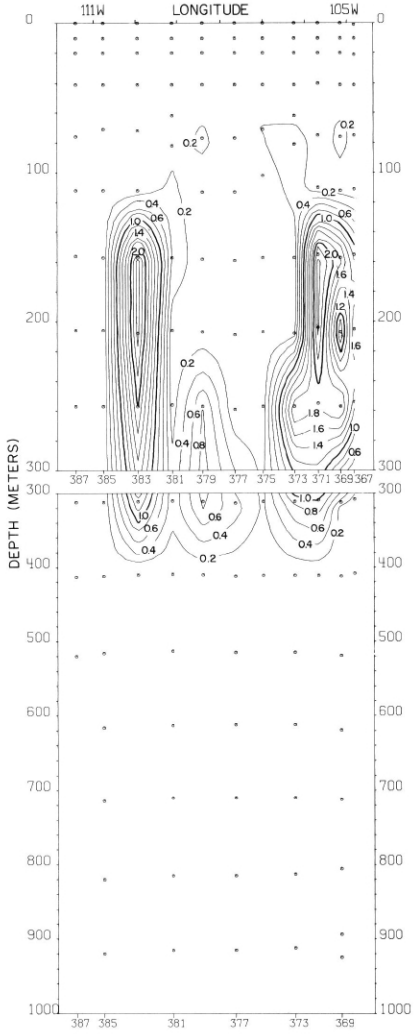
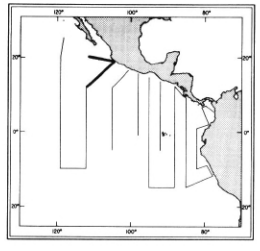


FIGURE 45-NO_2-v6.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 19°30′ N. from Manzanillo to 111°25′ W., September 13-15, 1967.



45-NO_2-v5.

45-NO_2-v6.

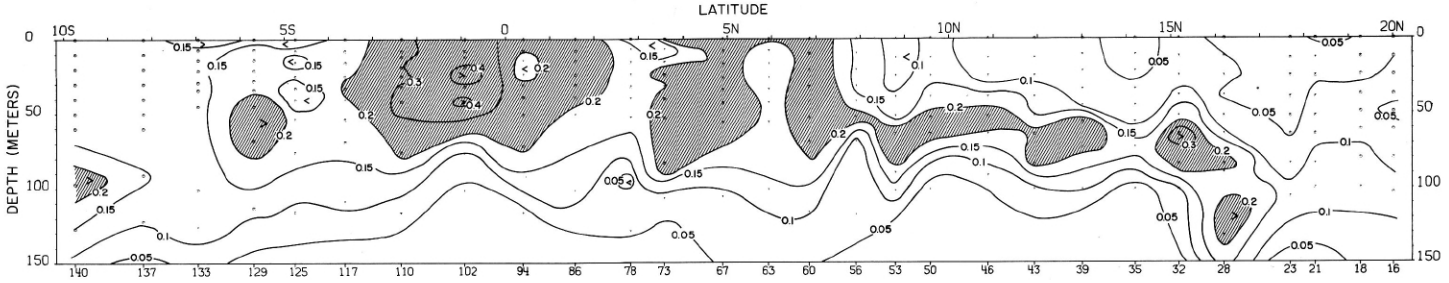


FIGURE 45-Ch-v1.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 119° W., August 7-20, 1967.

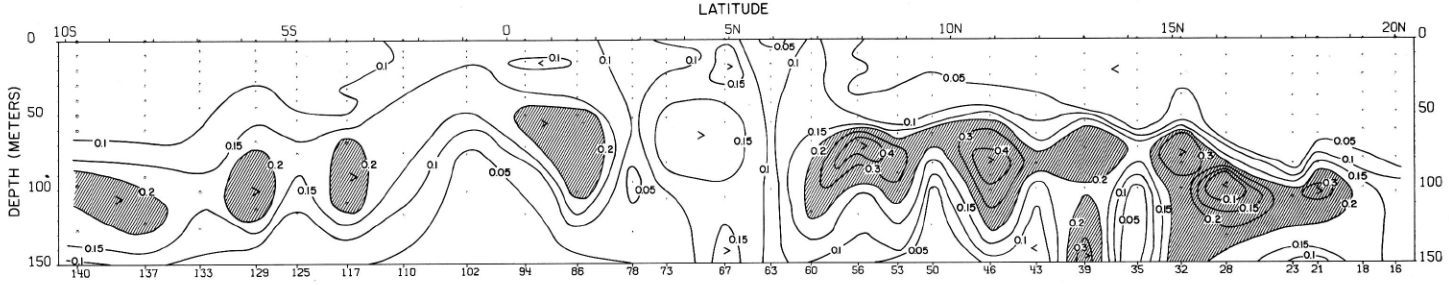


FIGURE 45-Ph-v1.—Vertical distribution of phaeophytin (mg./m.^{3}) along 119° W., August 7-20, 1967.

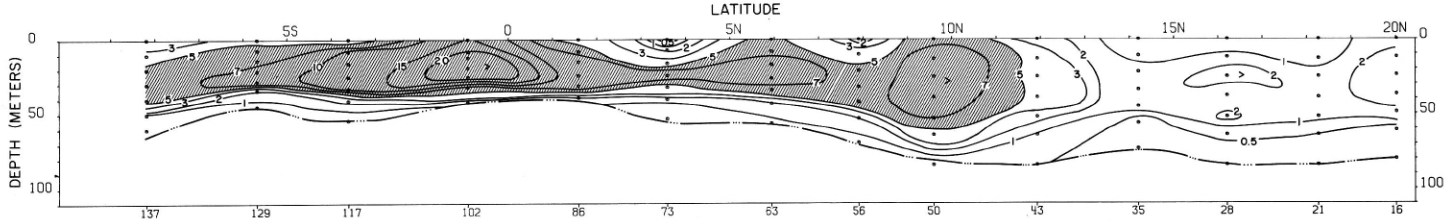
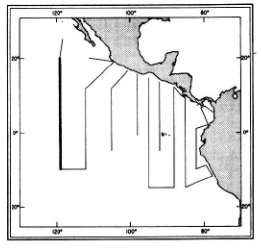


FIGURE 45-PP-v1.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 119° W., August 7-20, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



45-Ch-v1.

45-Ph-v1.

45-PP-v1.

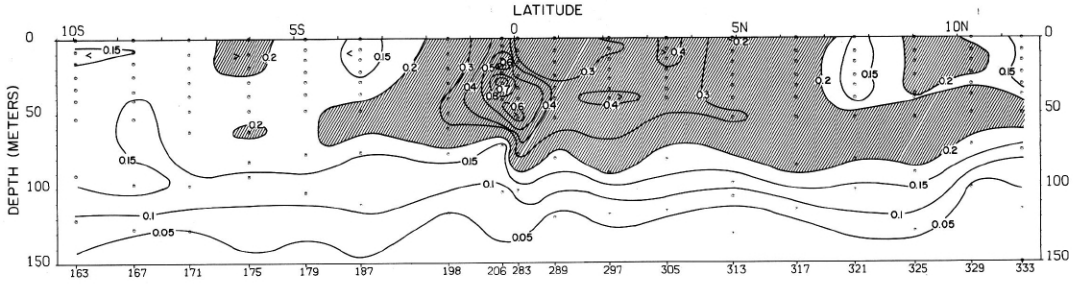


FIGURE 45-Ch-v3.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 112° W., August 23-September 7, 1967.

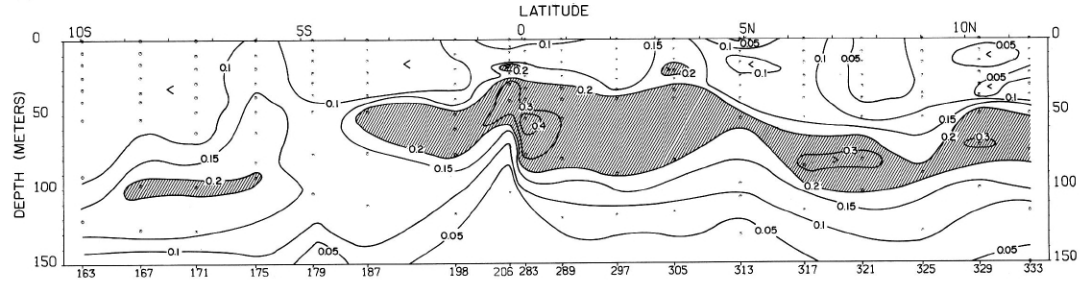


FIGURE 45-Ph-v3.—Vertical distribution of phaeophytin (mg./m.^{3}) along 112° W., August 23-September 7, 1967.

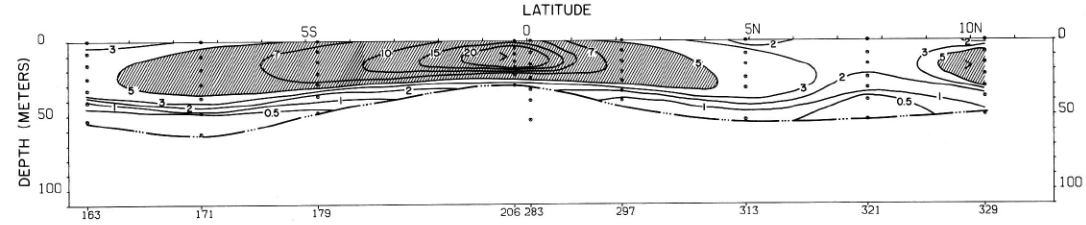
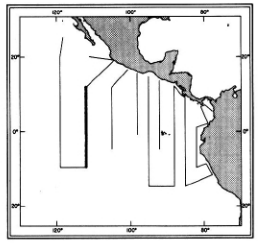


FIGURE 45-PP-v3.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 112° W., August 23-September 7, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



45-Ch-v3.

45-Ph-v3.

45-PP-v3.

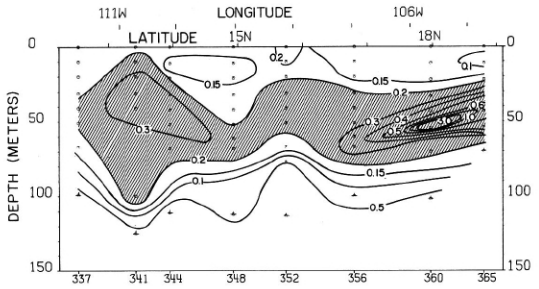


FIGURE 45-Ch-v5.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

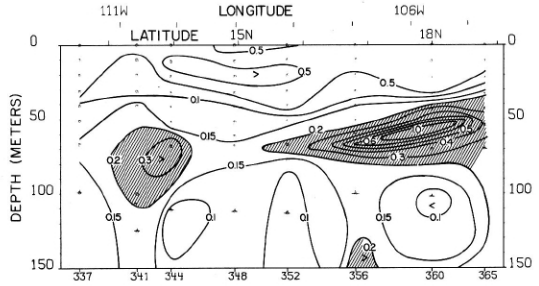


FIGURE 45-Ph-v5.—Vertical distribution of phaeophytin (mg./m.^{3}) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967.

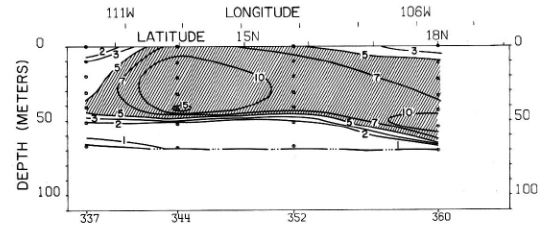


FIGURE 45-PP-v5.—Vertical distribution of primary production (mg. C/m.^{3}-/day) along a section from 12° N., 112° W. to Manzanillo, September 7-10, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.

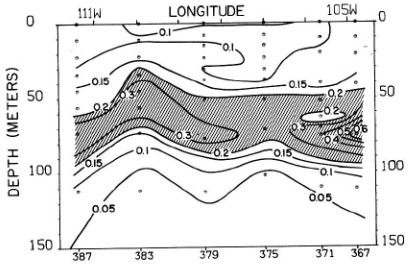


FIGURE 45-Ch-v6.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 19°30′ N., from Manzanillo to 111°25′ W., September 13-15, 1967.

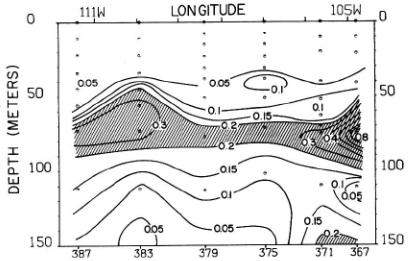


FIGURE 45-Ph-v6.—Vertical distribution of phaeophytin (mg./m.^{3}) along 19°30′ N., from Manzanillo to 111°25′ W., September 13-15, 1967.

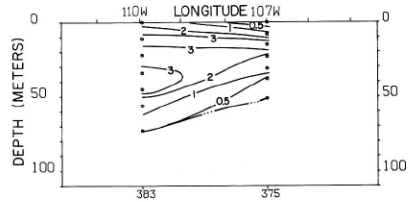
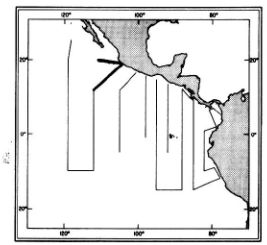


FIGURE 45-PP-v6.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 19°30′ N., from Manzanillo to 111°25′ W., September 13-15, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



45-Ch-v5.

45-Ph-v5.

45-PP-v5.

45-Ch-v6.

45-Ph-v6.

45-PP-v6.

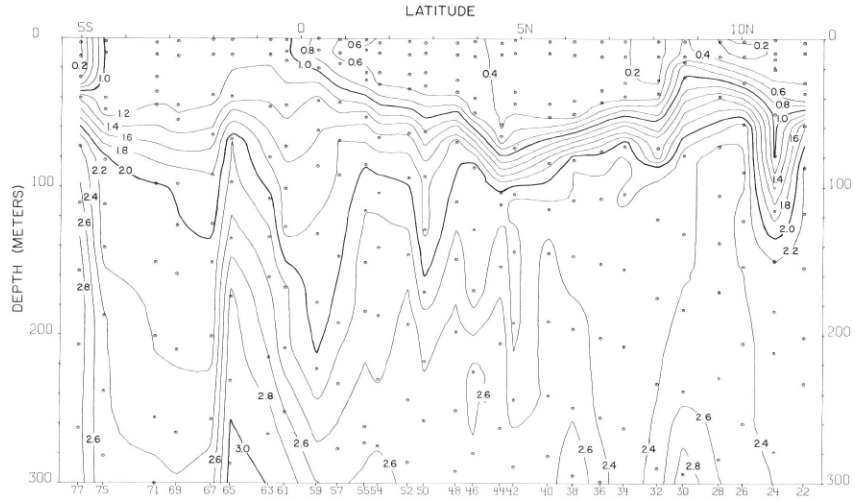


FIGURE 46-P-v2.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 105° W., August 19-28, 1967.

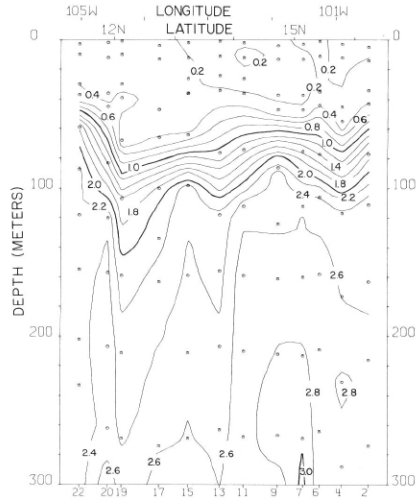


FIGURE 46-P-v1.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967.

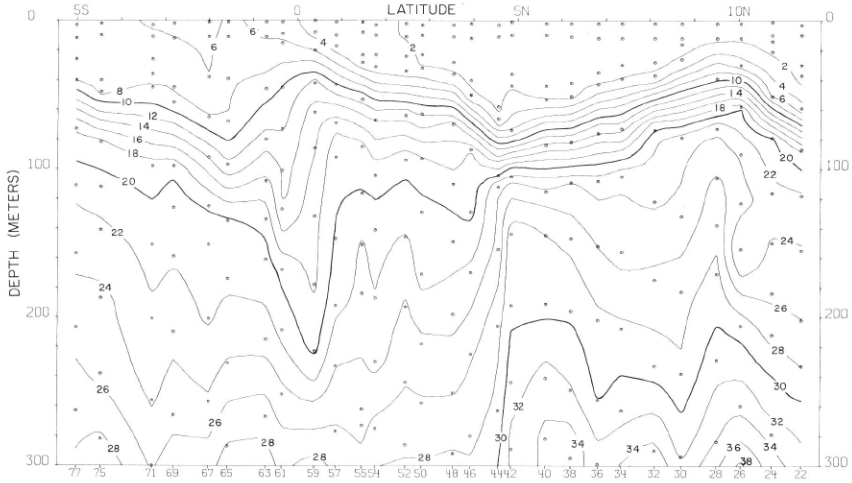


FIGURE 46-Si-v2.—Vertical distribution of silicate-silicon (μg.-at./l.) along 105° W., August 19-28, 1967.

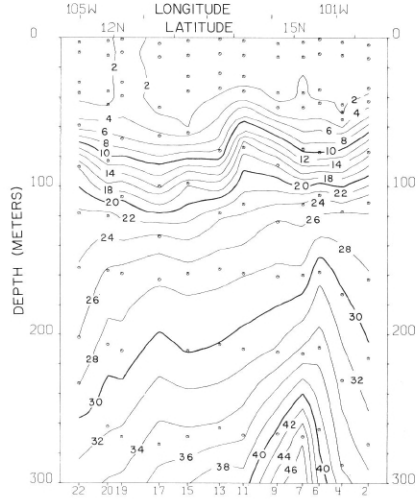
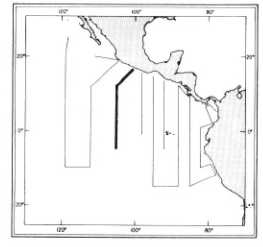


FIGURE 46-Si-v1.—Vertical distribution of silicate-silicon (μg.-at./l.) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967.



46-P-v1.

46-Si-v1.

46-P-v2.

46-Si-v2.

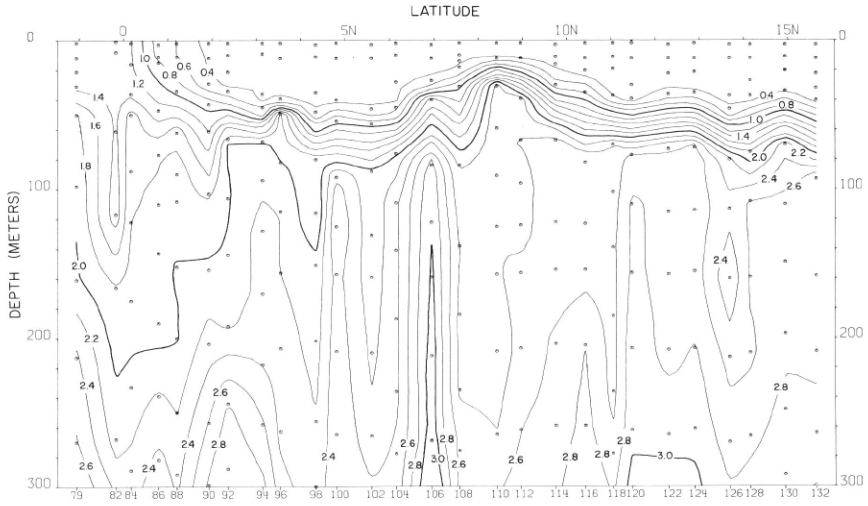


FIGURE 46-P-v3.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 98° W., August 31-September 6, 1967.

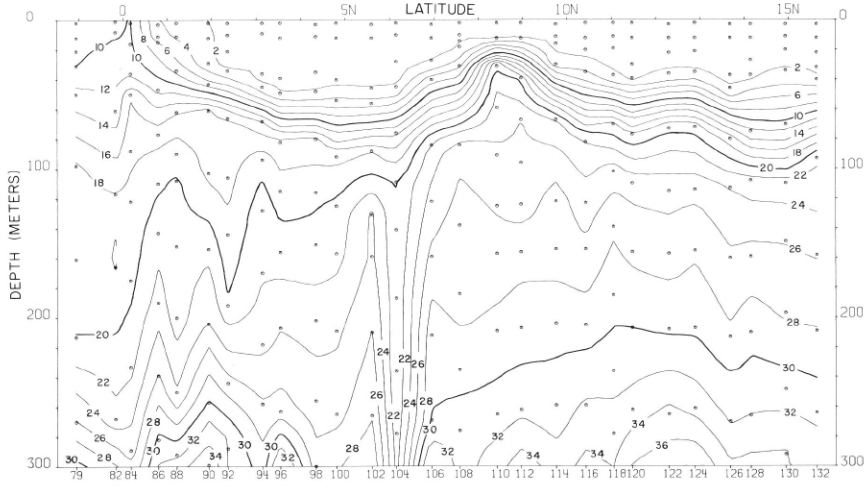
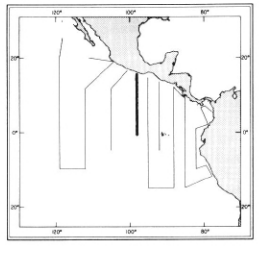


FIGURE 46-Si-v3.—Vertical distribution of silicate-silicon (μg.-at./l.) along 98° W., August 31-September 6, 1967.



46-P-v3.

46-Si-v3.

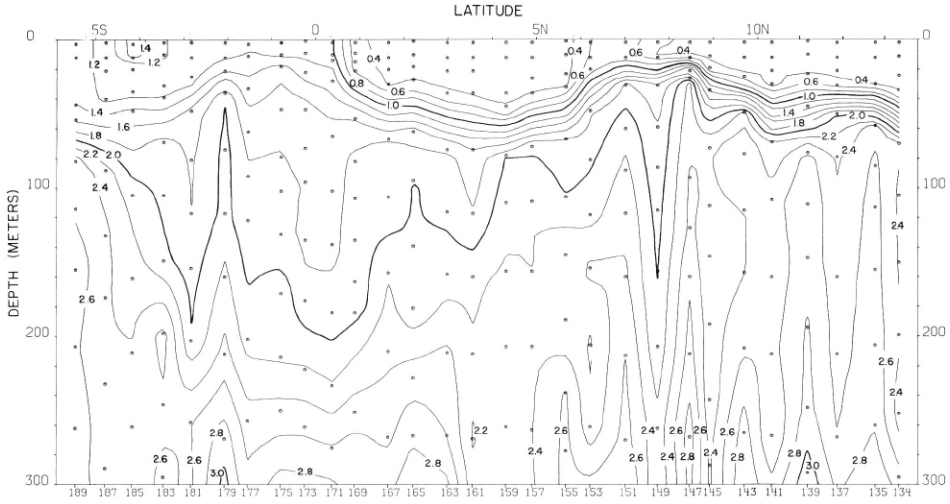


FIGURE 46-P-v4.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 92° W., September 15-22, 1967.

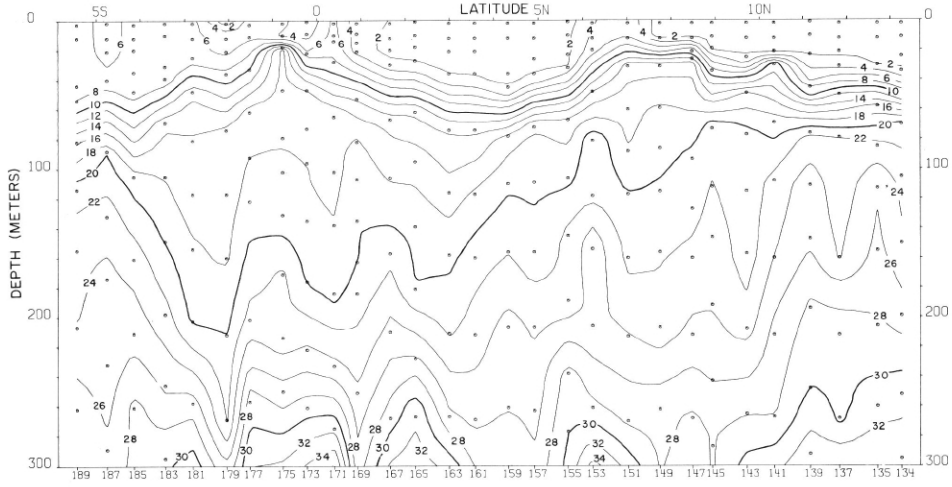
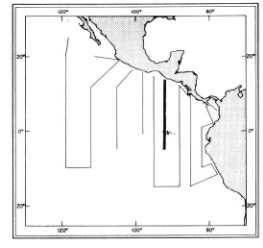


FIGURE 46-Si-v4.—Vertical distribution of silicate-silicon (μg.-at./l.) along 92° W., September 15-22, 1967.



46-P-v4.

46-Si-v4.

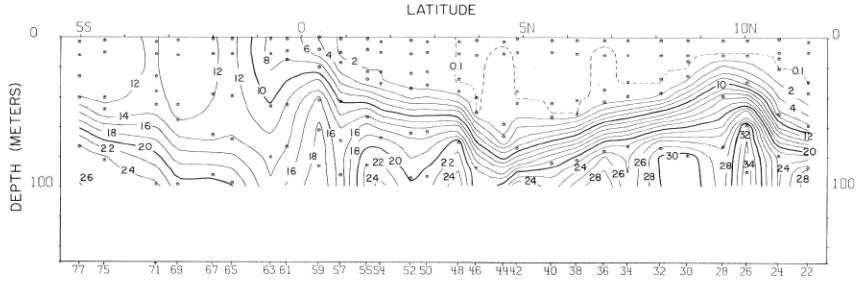


FIGURE 46-NO_3-v2.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 105° W., August 19-28, 1967. This section extends only to 100 meters depth because the deeper data are considered to be invalid.

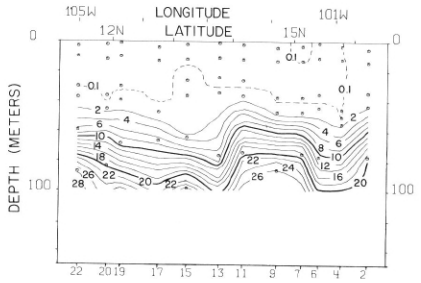


FIGURE 46-NO_3-v1.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967. This section extends only to 100 meters depth because the deeper data are considered to be invalid.

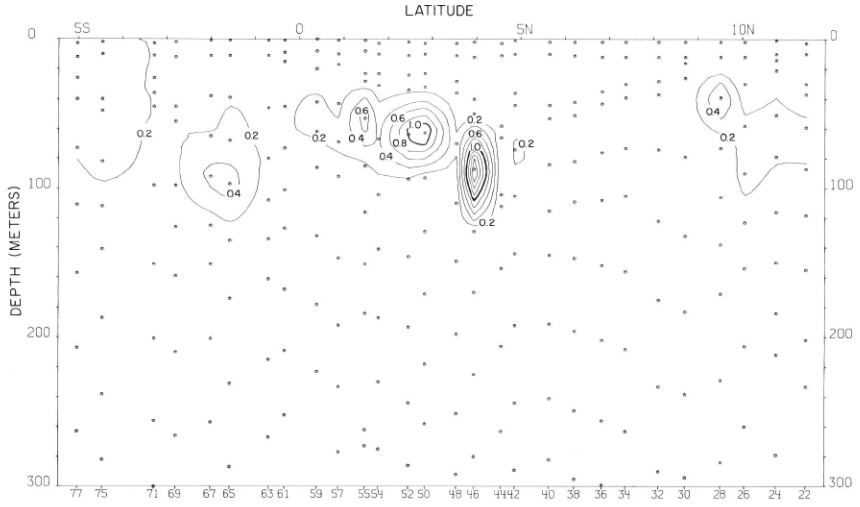


FIGURE 46-NO_2-v2.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 105° W., August 19-28, 1967.

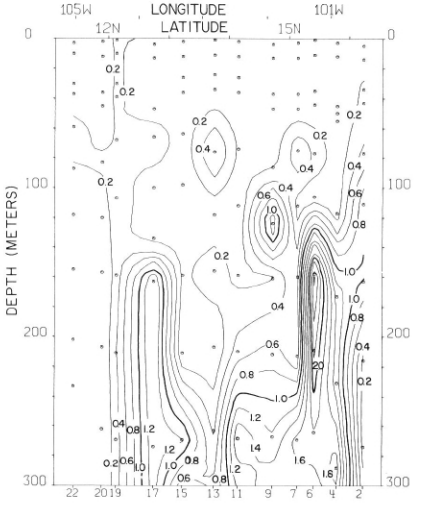
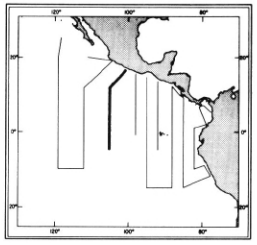


FIGURE 46-NO_2-v1.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967.



46-NO_3-v1.

46-NO_2-v1.

46-NO_3-v2.

46-NO_2-v2.

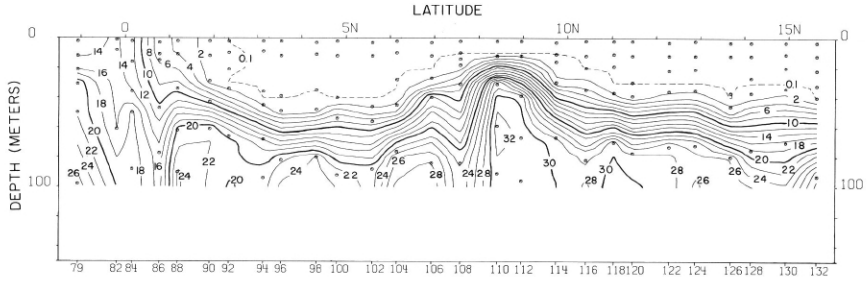


FIGURE 46-NO_3-v3.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 98° W., August 31-September 6, 1967. This section extends only to 100 meters depth because the deeper data are considered to be invalid.

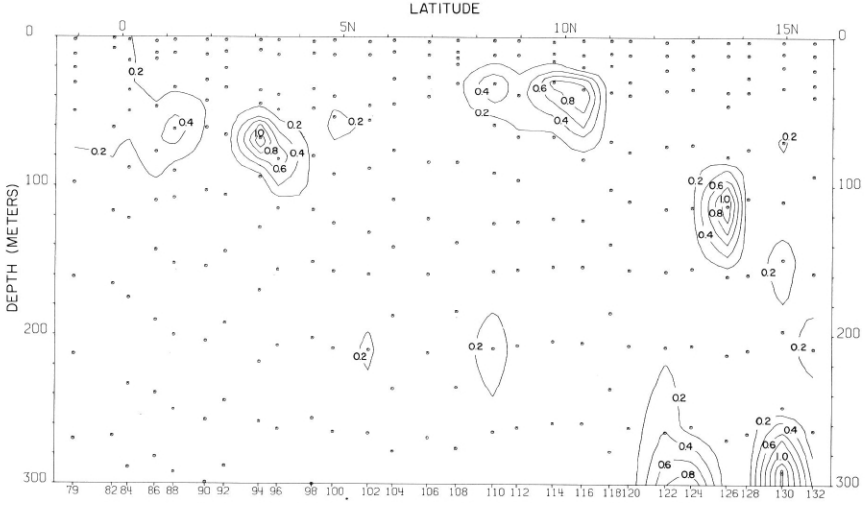
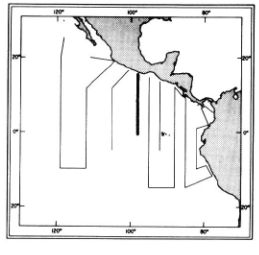


FIGURE 46-NO_2-v3.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 98° W., August 31-September 6, 1967.



46-NO_3-v3.

46-NO_2-v3.

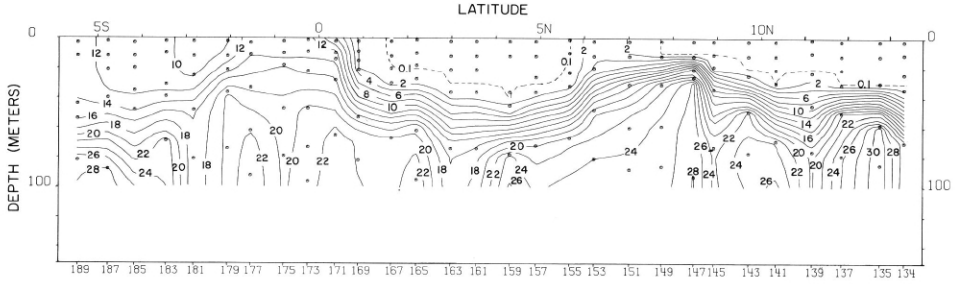


FIGURE 46-NO_3-v4.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 92° W., September 15-22, 1967. This section extends only to 100 meters depth because the deeper data are considered to be invalid.

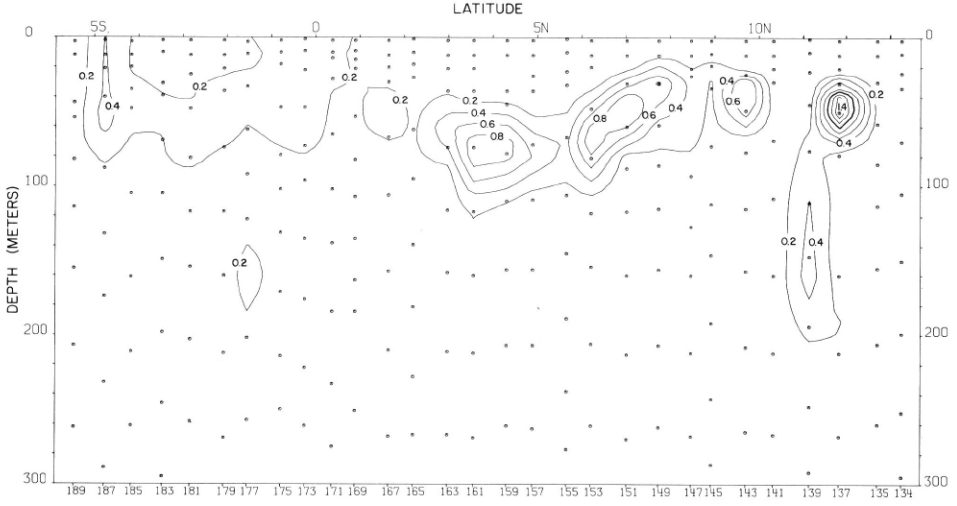
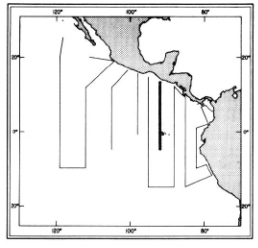


FIGURE 46-NO_2-v4.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 92° W., September 15-22, 1967.



46-NO_3-v4.

46-NO_2-v4.

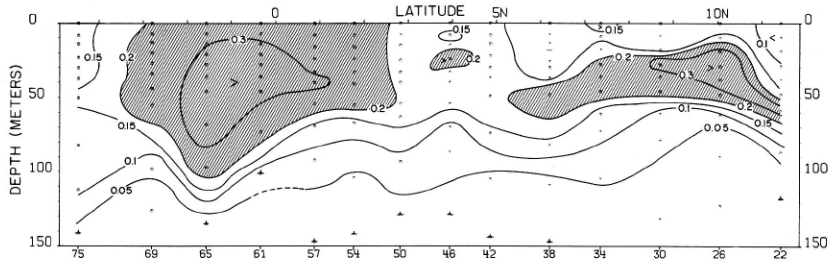


FIGURE 46-Ch-v2.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 105° W., August 19-28, 1967.

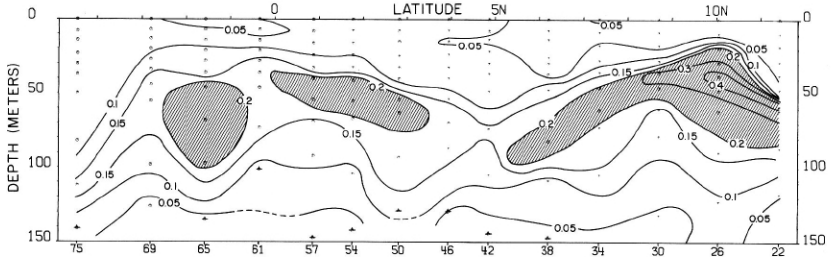


FIGURE 46-Ph-v2.—Vertical distribution of phaeophytin (mg./m.^{3}) along 105° W., August 19-28, 1967.

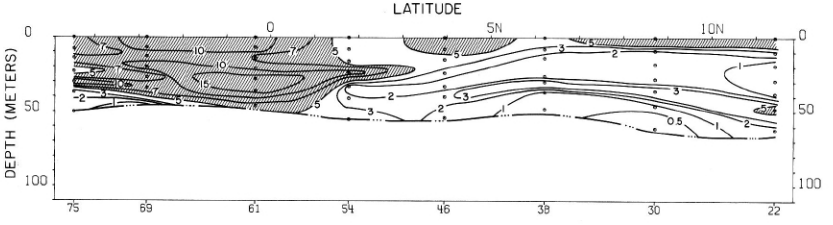


FIGURE 46-PP-v2.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 105° W., August 19-28, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.

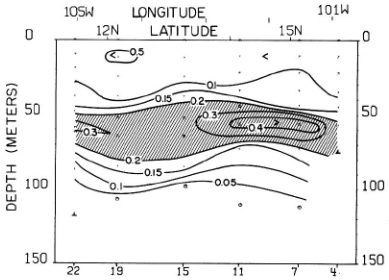


FIGURE 46-Ch-v1.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967.

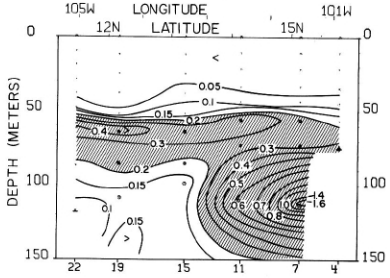


FIGURE 46-Ph-v1.—Vertical distribution of phaeophytin (mg./m.^{3}) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967.

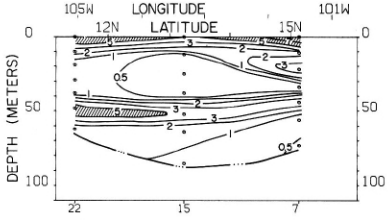
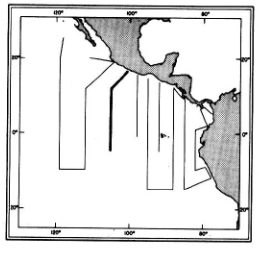


FIGURE 46-PP-v1.—Vertical distribution of primary production (mg. C/m.^{3}/day) along a section from Acapulco to 12° N., 105° W., August 16-19, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



46-Ch-v1.

46-Ph-v1.

46-PP-v1.

46-Ch-v2.

46-Ph-v2.

46-PP-v2.

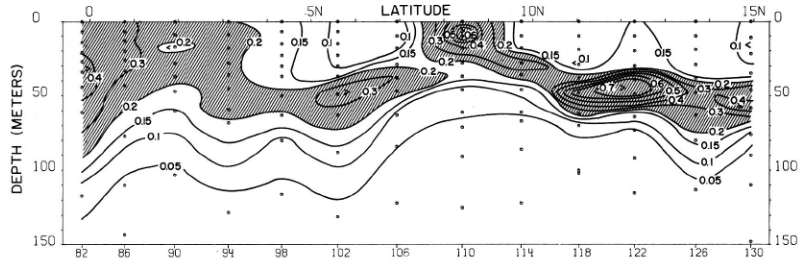


FIGURE 46-Ch-v3.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 98° W., August 31-September 6, 1967.

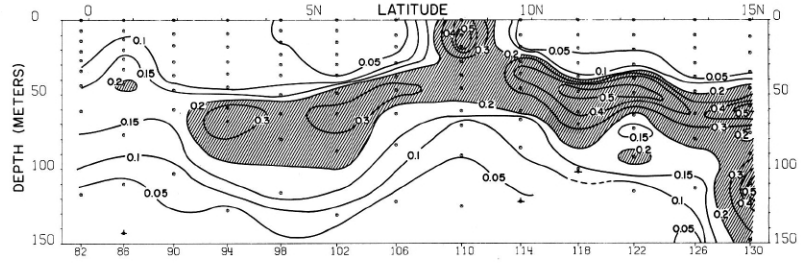


FIGURE 46-Ph-v3.—Vertical distribution of phaeophytin (mg./m.^{3}) along 98° W., August 31-September 6, 1967.

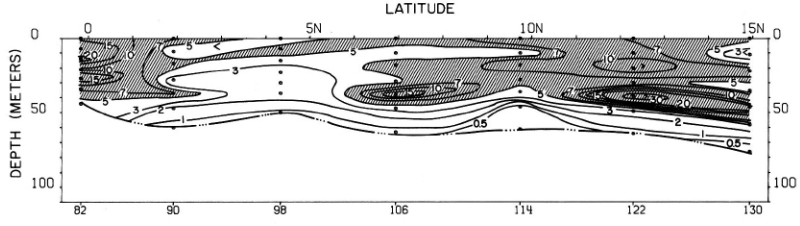
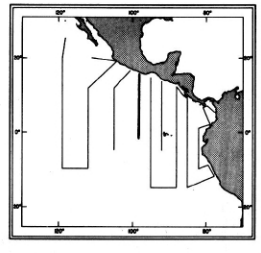


FIGURE 46-PP-v3.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 98° W., August 31-September 6, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



46-Ch-v3.

46-Ph-v3.

46-PP-v3.

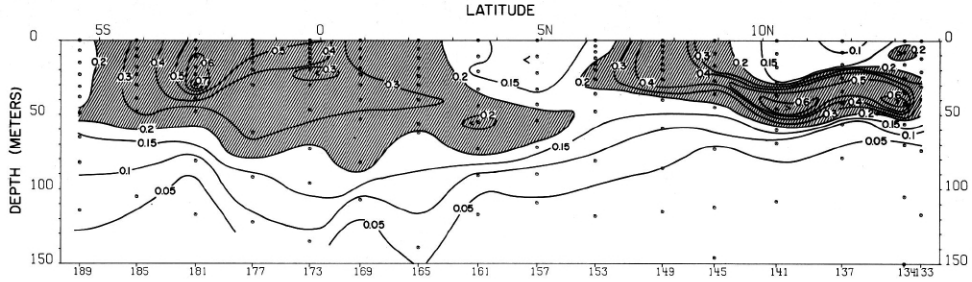


FIGURE 46-Ch-v4.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 92° W., September 15-22, 1967.

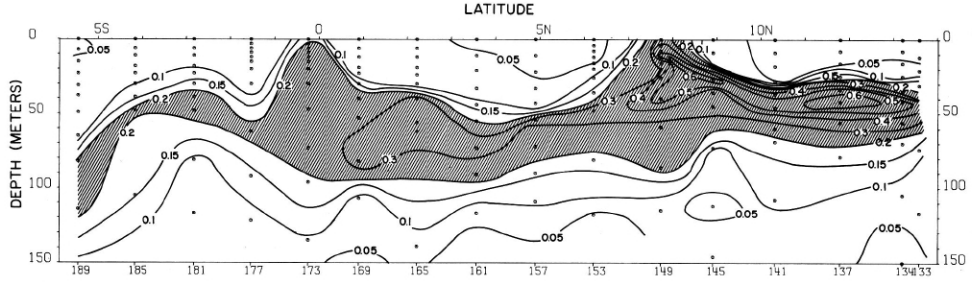


FIGURE 46-Ph-v4.—Vertical distribution of phaeophytin (mg./m.^{3}) along 92° W., September 15-22, 1967.

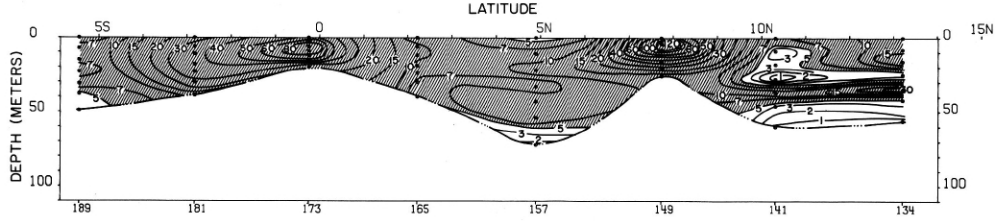
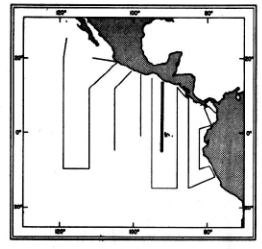


FIGURE 46-PP-v4.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 92° W., September 15-22, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



46-Ch-v4.

46-Ph-v4.

46-PP-v4.

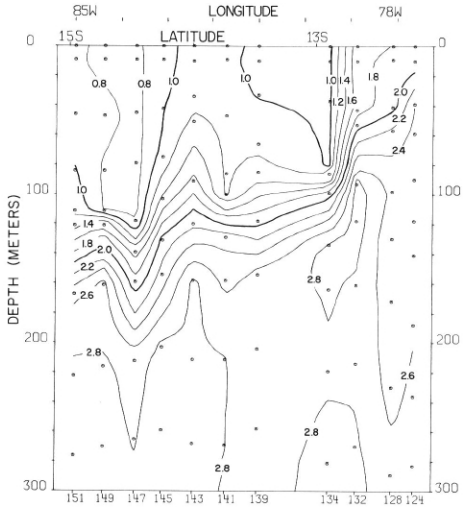


FIGURE 47-P-v7.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1967.

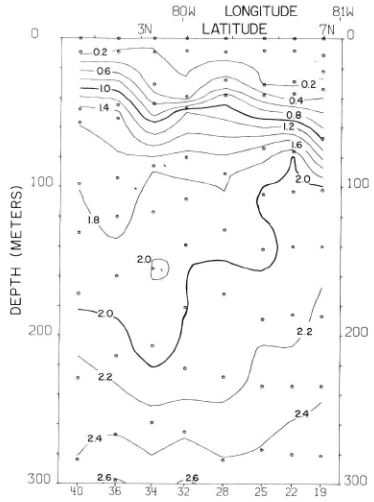


FIGURE 47-P-v2.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-4, 1967.

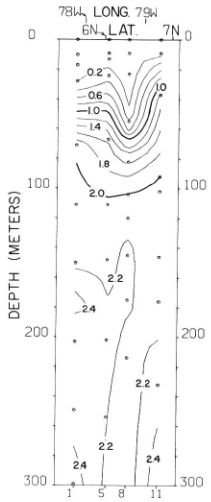


FIGURE 47-P-v1.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) across the northern portion of the Panama Bight from the coast of Colombia to Cabo Mala, Panama, August 1-2, 1967.

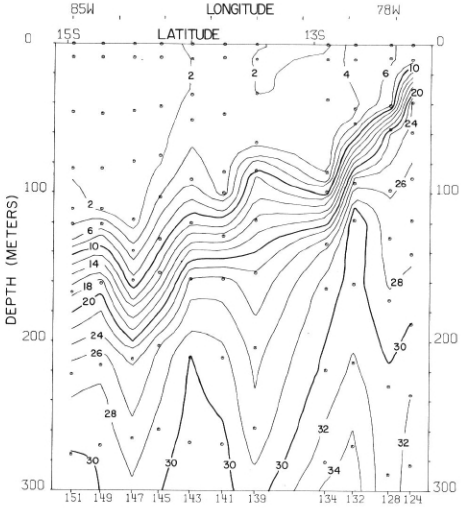


FIGURE 47-Si-v7.—Vertical distribution of silicate-silicon (μg.-at./l.) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1967.

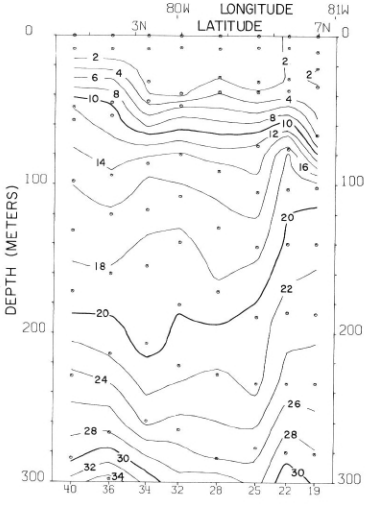


FIGURE 47-Si-v2.—Vertical distribution of silicate-silicon (μg.-at./l.) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-4, 1967.

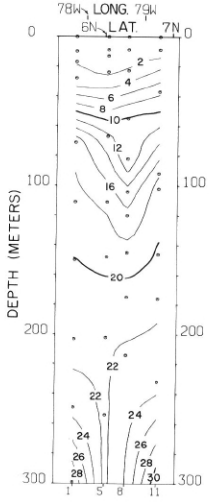
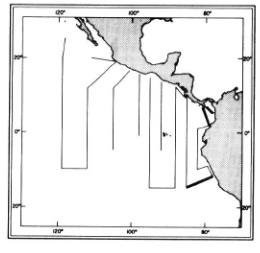


FIGURE 47-Si-v1.—Vertical distribution of silicate-silicon (μg.-at./l.) across the northern portion of the Panama Bight from the coast of Colombia to Cabo Mala, Panama, August 1-2, 1967.



47-P-v1.

47-Si-v1.

47-P-v2.

47-Si-v2.

47-P-v7.

47-Si-v7.

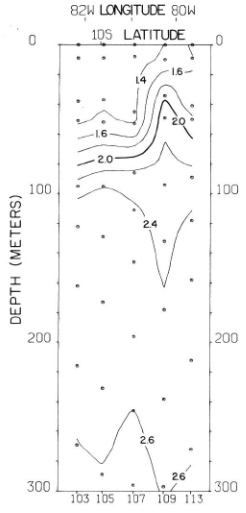


FIGURE 47-P-v5.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12, 1967.

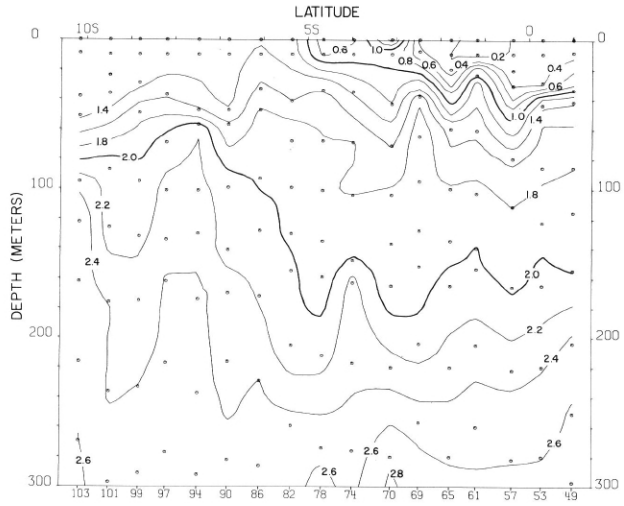


FIGURE 47-P-v4.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 82° W., August 6-12, 1967.

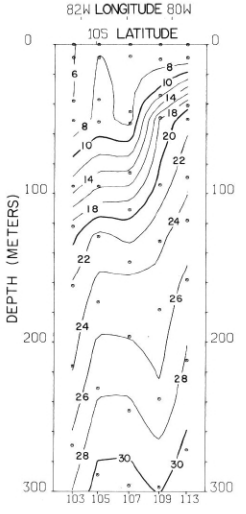


FIGURE 47-Si-v5.—Vertical distribution of silicate-silicon (μg.-at./l.) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12, 1967.

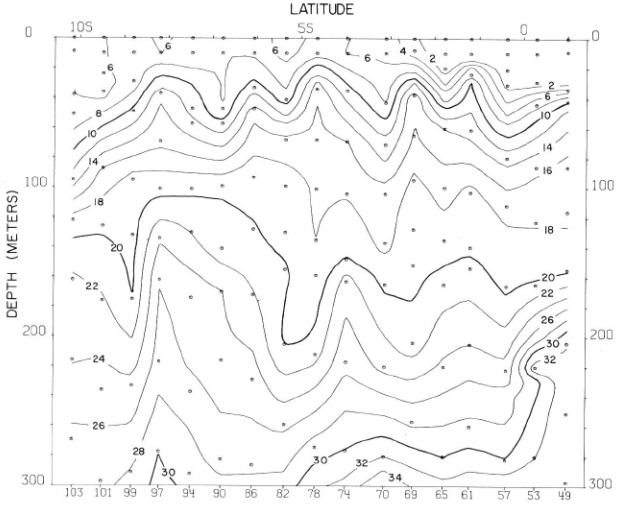
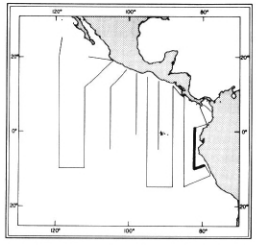


FIGURE 47-Si-v4.—Vertical distribution of silicate-silicon (μg.-at./l.) along 82° W., August 6-12, 1967.



47-P-v4.

47-Si-v4.

47-P-v5.

47-Si-v5.

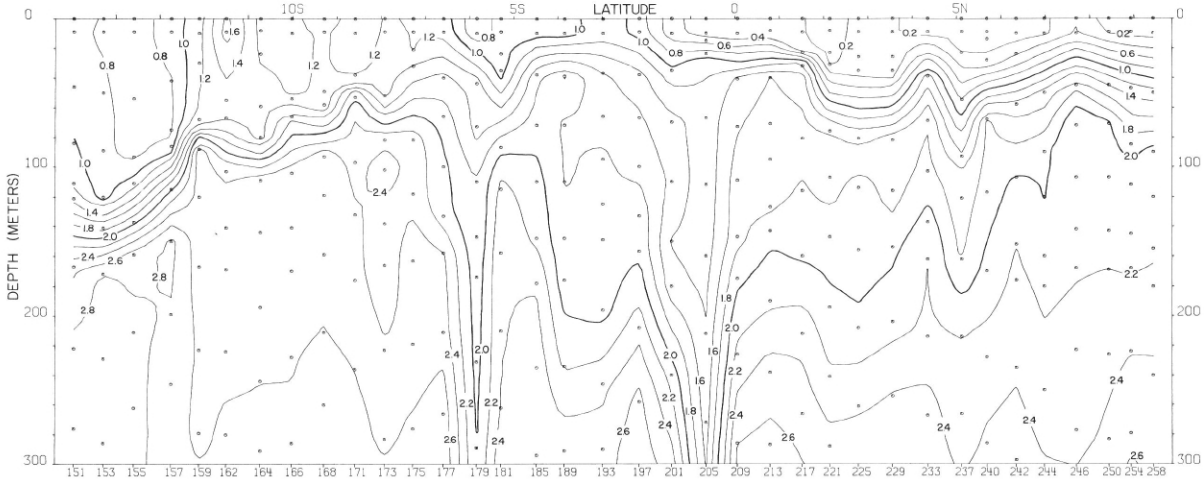


FIGURE 47-P-v8.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 85° W., August 19-28, 1967.

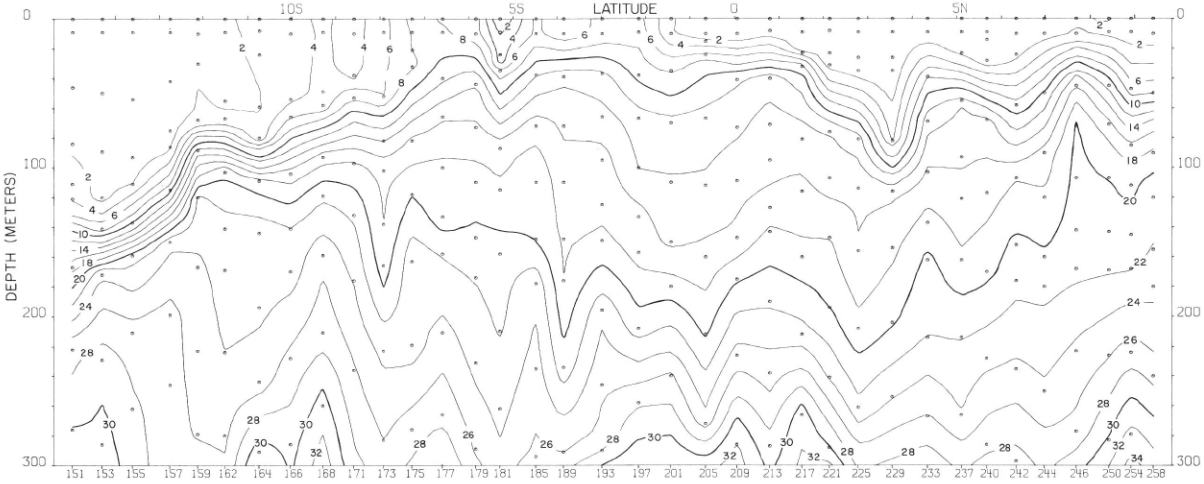
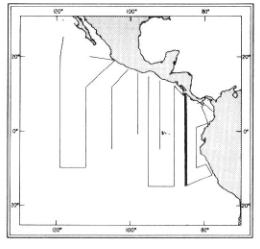


FIGURE 47-Si-v8.—Vertical distribution of silicate-silicon (μg.-at./l.) along 85° W., August 19-28, 1967.



47-P-v8.

47-Si-v8.

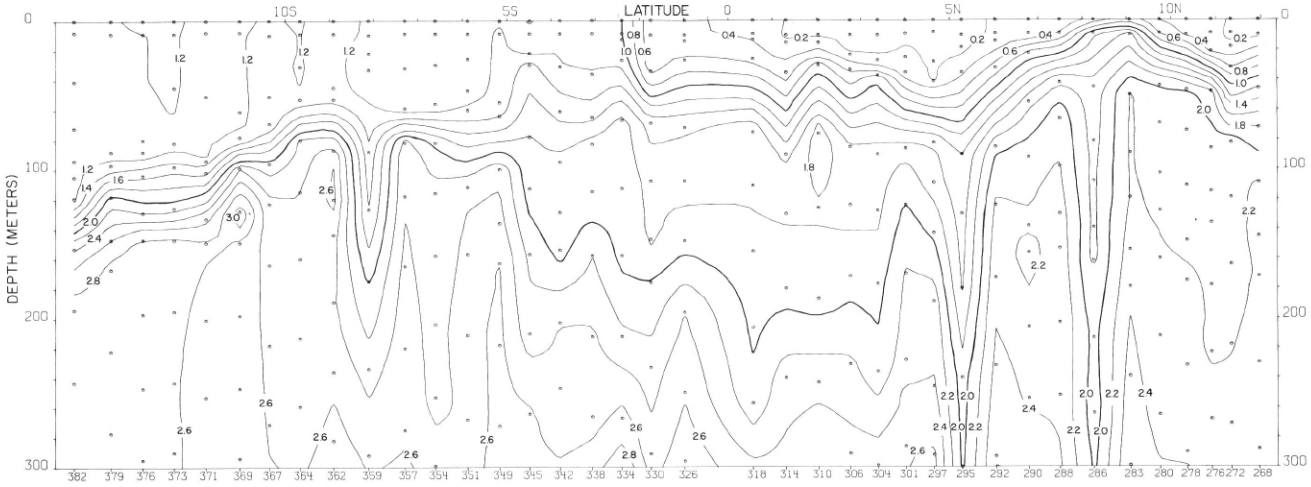


FIGURE 47-P-v10.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 88° W., August 31-September 10, 1967.

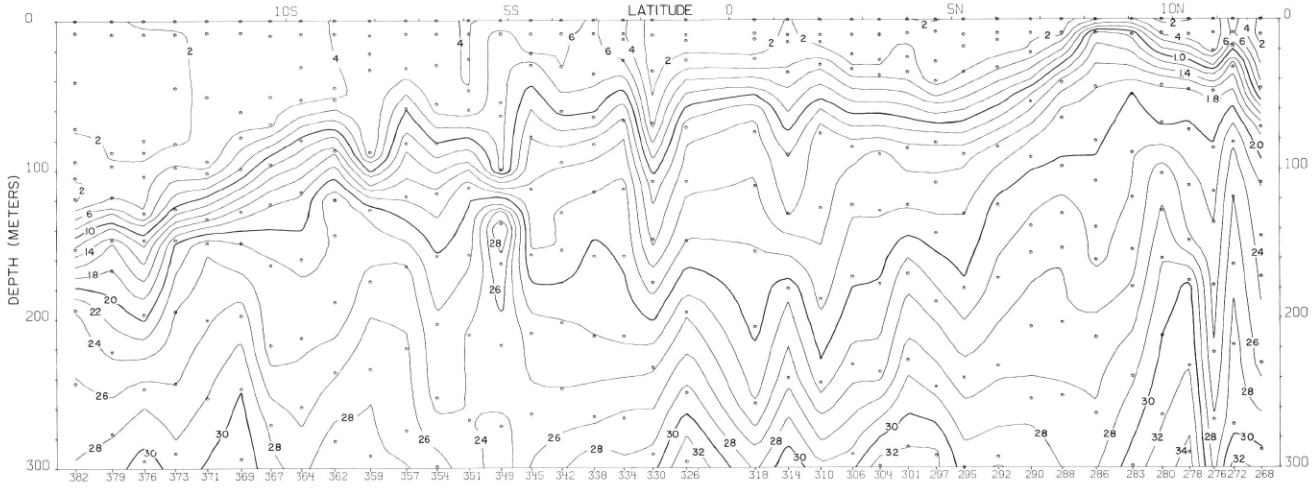
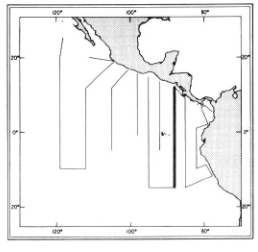


FIGURE 47-Si-v10.—Vertical distribution of silicate-silicon (μg.-at./l.) along 88° W., August 31-September 10, 1967.



47-P-v10.

47-Si-v10.

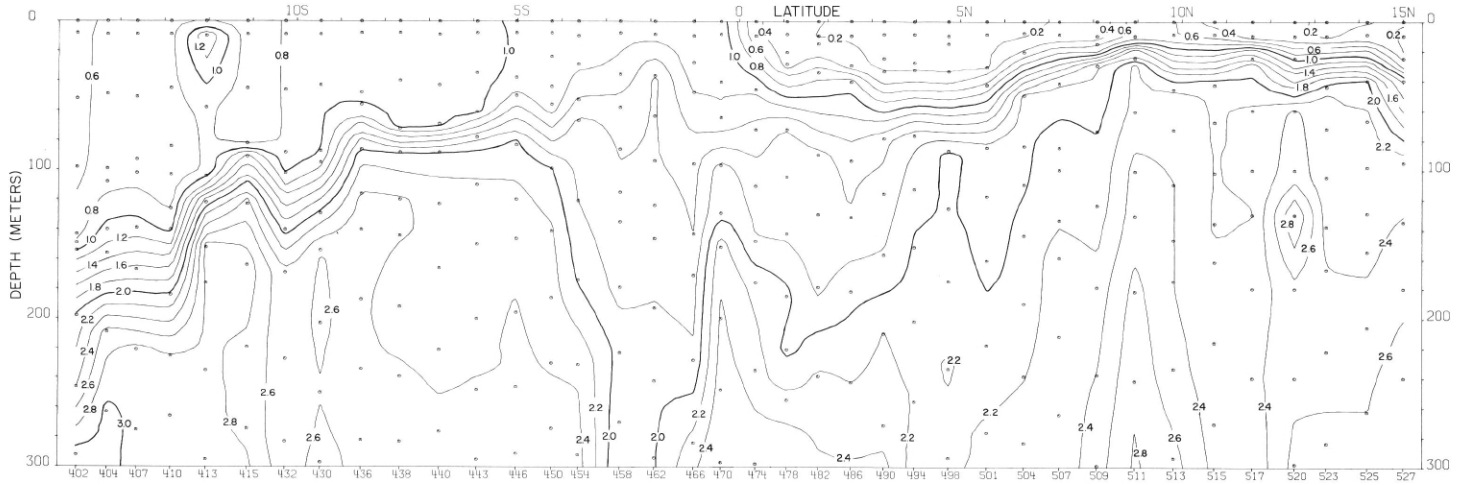


FIGURE 47-P-v12.—Vertical distribution of phosphate-phosphorus (μg.-at./l.) along 95° W., September 12-23, 1967.

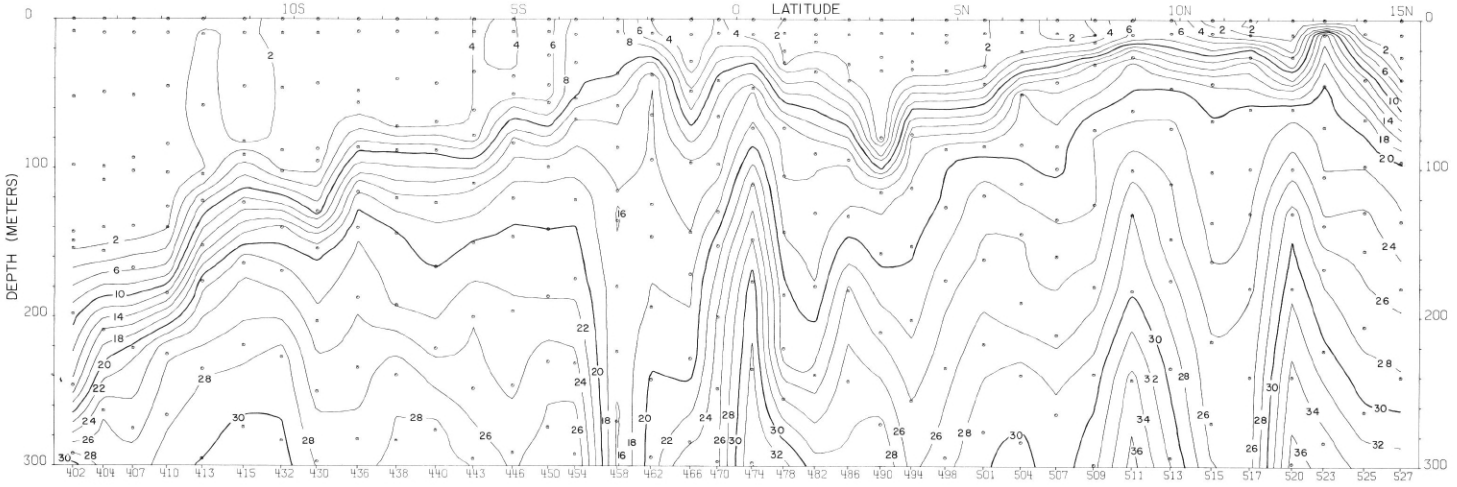
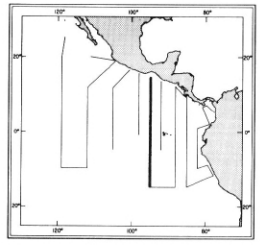


FIGURE 47-Si-v12.—Vertical distribution of silicate-silicon (μg.-at./l.) along 95° W., September 12-23, 1967.



47-P-v12.

47-Si-v12.

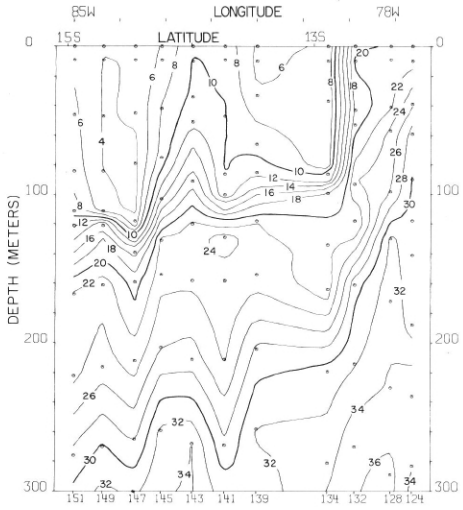


FIGURE 47-NO_3-v7.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1972.

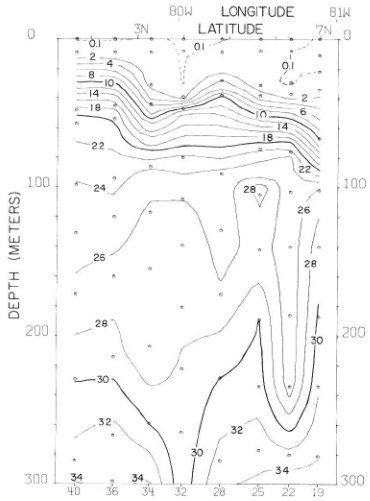


FIGURE 47-NO_3-v2.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-4, 1967.

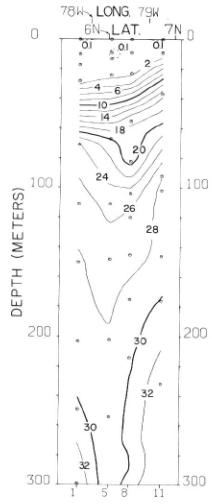


FIGURE 47-NO_3-v1. — Vertical distribution of nitrate-nitrogen (μg.-at./l.) across the northern portion of the Panama Bight from the coast of Colombia to Cabo Mala, Panama, August 1-2, 1967.

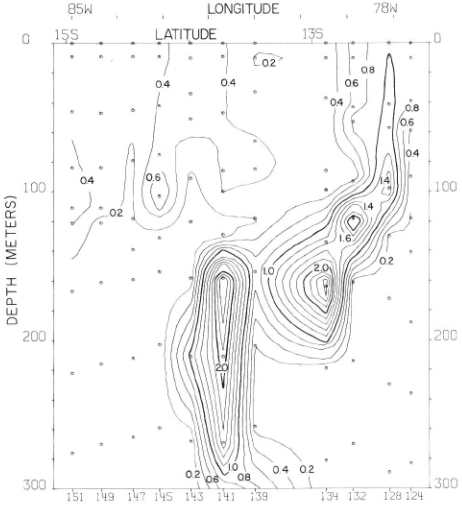


FIGURE 47-NO_2-v7.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1972.

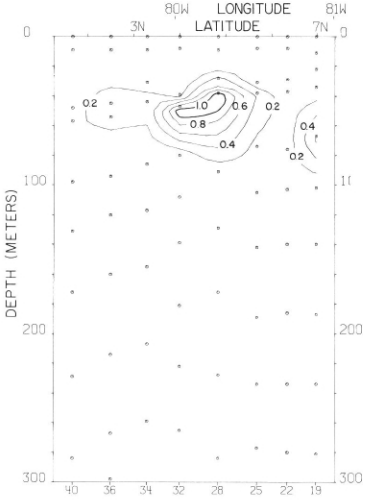


FIGURE 47-NO_2-v2.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-4, 1967.

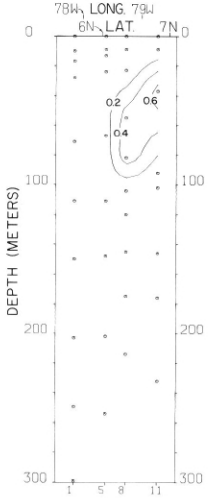
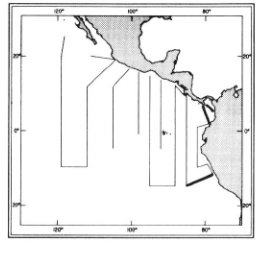


FIGURE 47-NO_2-v1. — Vertical distribution of nitrite-nitrogen (μg.-at./l.) across the northern portion of the Panama Bight from the coast of Colombia to Cabo Mala, Panama, August 1-2, 1967.



47-NO_3-v1.

47-NO_2-v1.

47-NO_3-v2.

47-NO_2-v2.

47-NO_3-v7.

47-NO_2-v7.

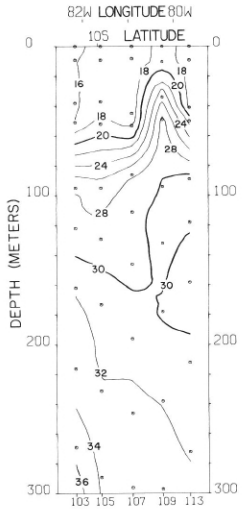


FIGURE 47-NO_3-v5. — Vertical distribution of nitrate-nitrogen (μg.-at./l.) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12, 1967.

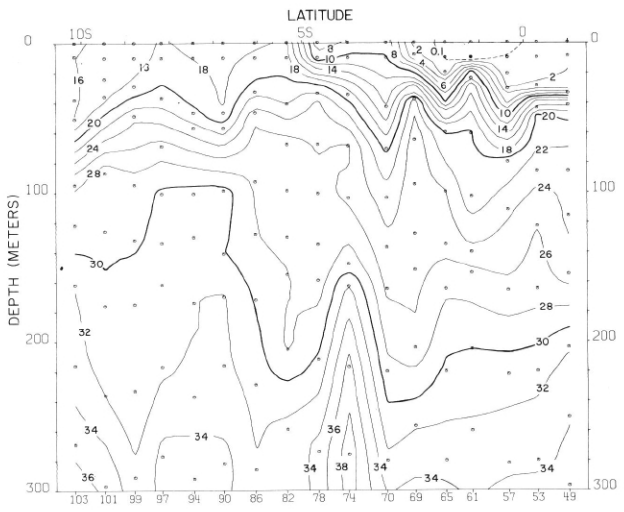


FIGURE 47-NO_3-v4.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 82° W., August 6-12, 1967.

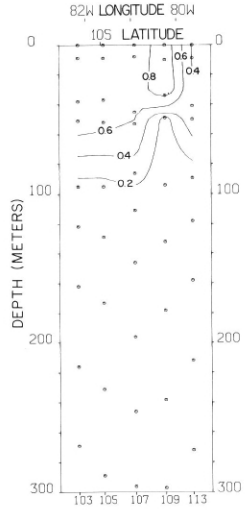


FIGURE 47-NO_2-v5. — Vertical distribution of nitrite-nitrogen (μg.-at./l.) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12, 1967.

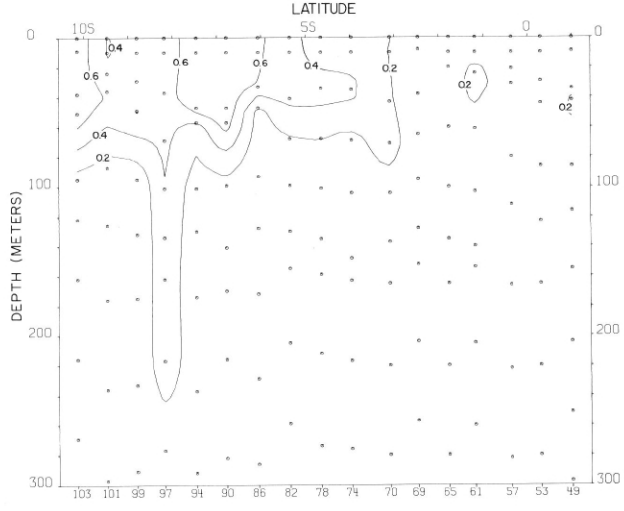
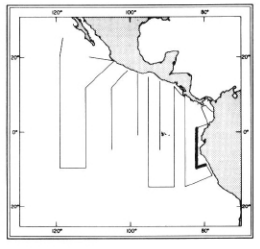


FIGURE 47-NO_2-v4.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 82° W., August 6-12, 1967.



47-NO_3-v4.

47-NO_2-v4.

47-NO_3-v5.

47-NO_2-v5.

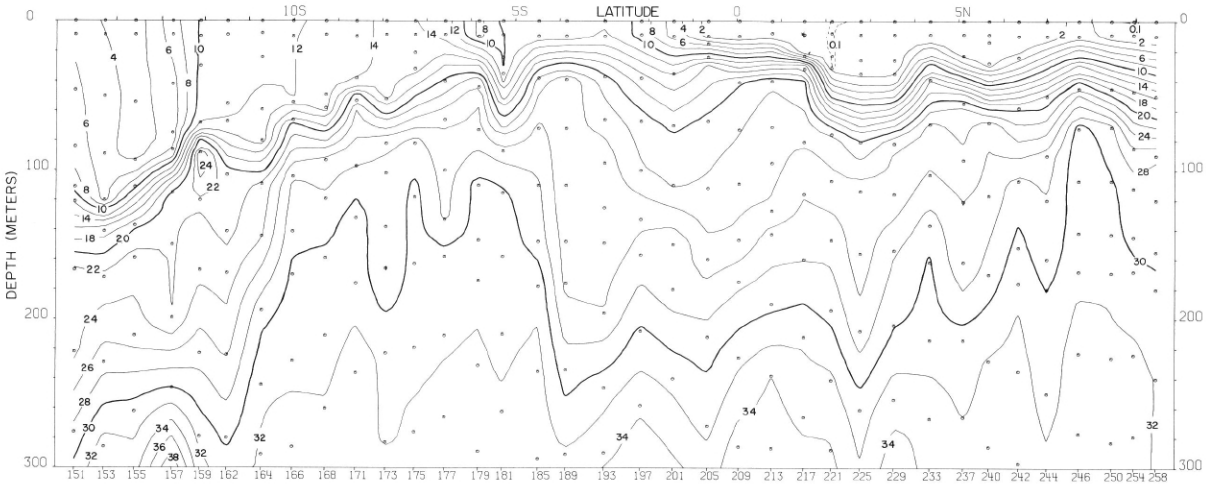


FIGURE 47-NO_3-v8.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 85° W., August 19-28, 1967.

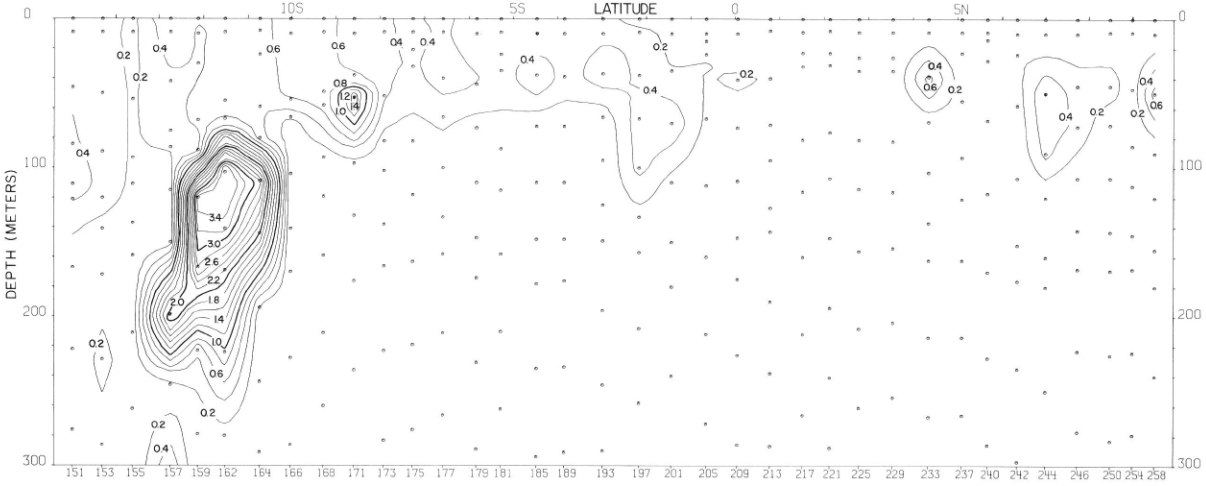
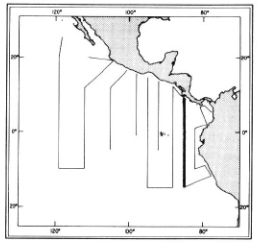


FIGURE 47-NO_2-v8.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 85° W., August 19-28, 1967.



47-NO_3-v8.

47-NO_2-v8.

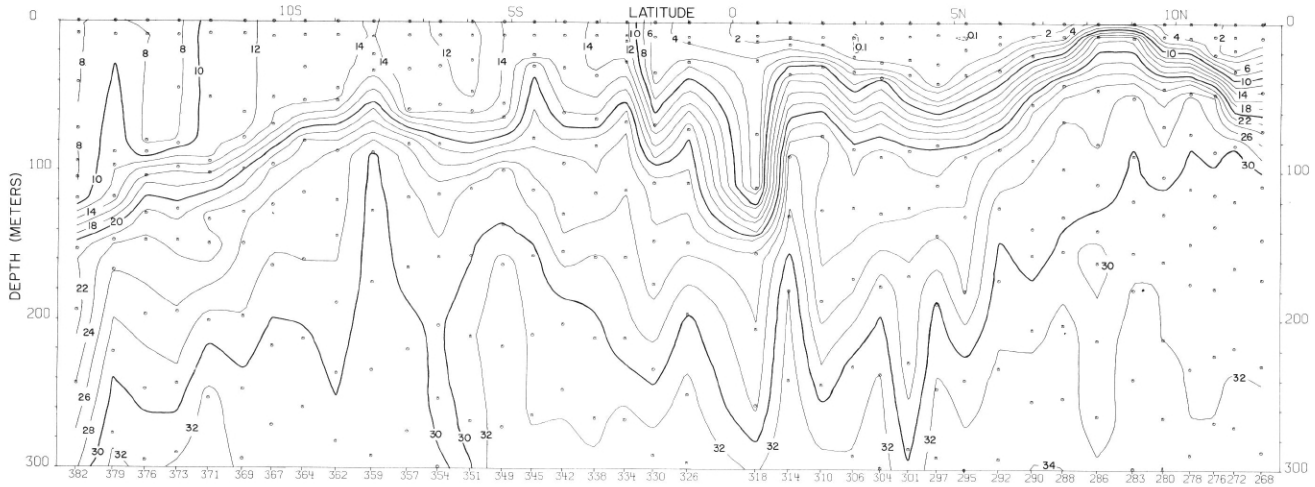


FIGURE 47-NO_3-v10.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 88° W., August 31-September 10, 1967.

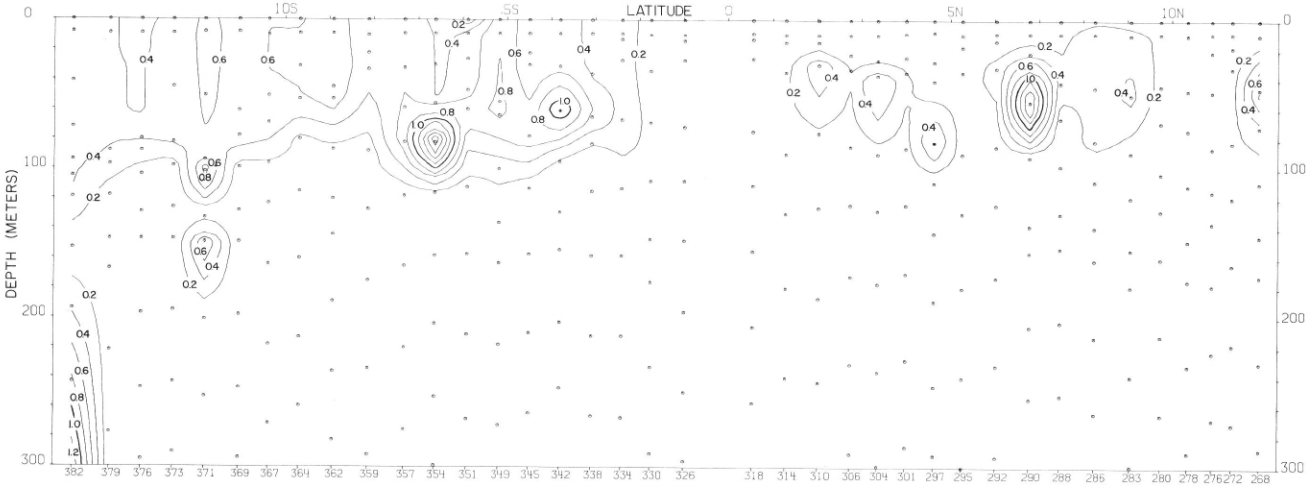
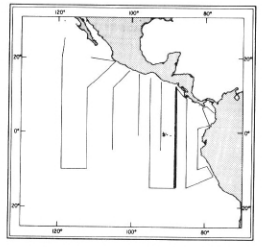


FIGURE 47-NO_2-v10.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 88° W., August 31-September 10, 1967.



47-NO_3-v10.

47-NO_2-v10.

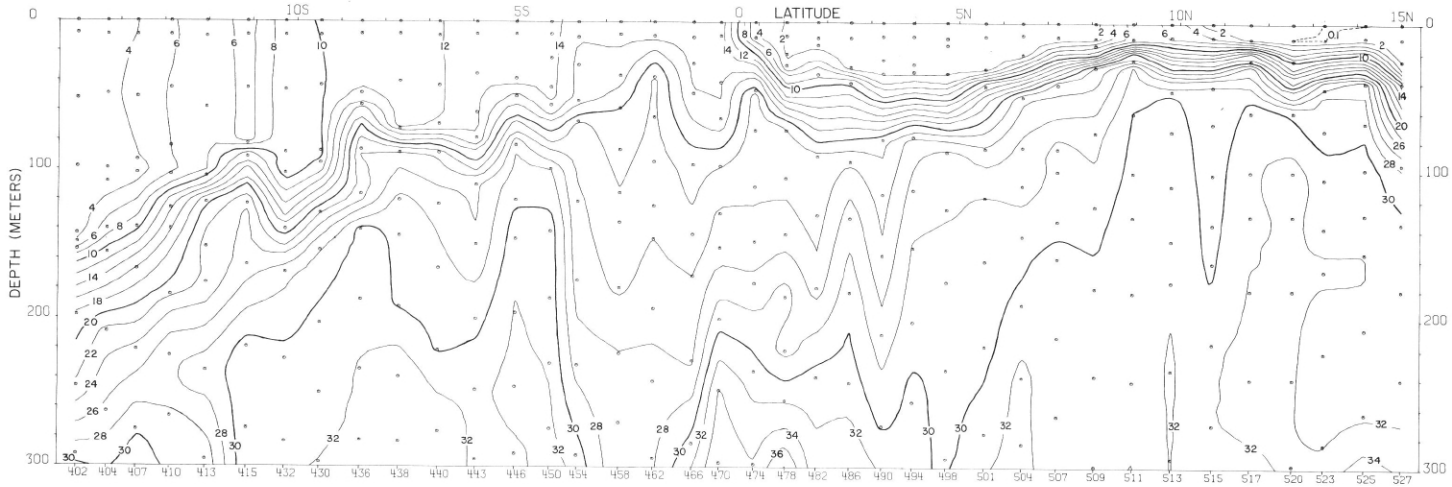


FIGURE 47-NO_3-v12.—Vertical distribution of nitrate-nitrogen (μg.-at./l.) along 95° W., September 12-23, 1967.

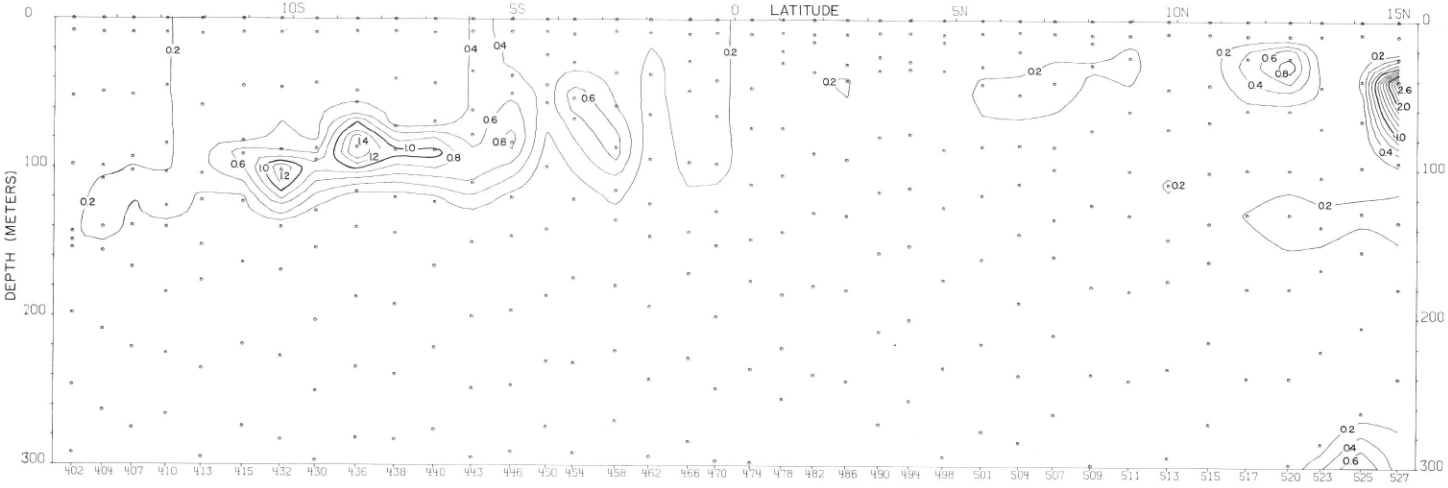
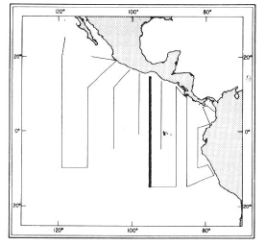


FIGURE 47-NO_2-v12.—Vertical distribution of nitrite-nitrogen (μg.-at./l.) along 95° W., September 12-23, 1967.



47-NO_3-v12.

47-NO_2-v12.

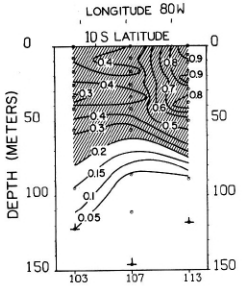


FIGURE 47-Ch-v5.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12-13, 1967.

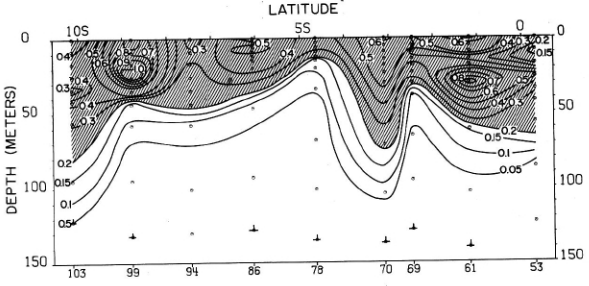


FIGURE 47-Ch-v4.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 82° W., August 6-12, 1967.

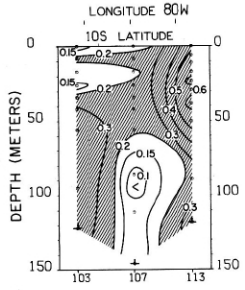


FIGURE 47-Ph-v5.—Vertical distribution of phaeophytin (mg./m.^{3}) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12-13, 1967.

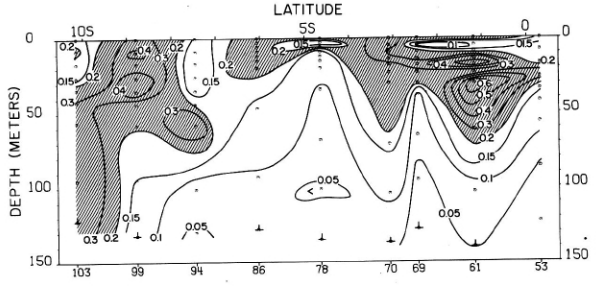


FIGURE 47-Ph-v4.—Vertical distribution of phaeophytin (mg./m.^{3}) along 82° W., August 6-12, 1967.

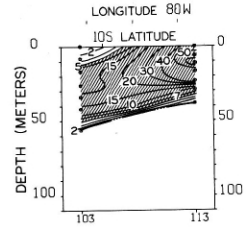


FIGURE 47-PP-v5.—Vertical distribution of primary production (mg. C/m.^{3}/day) along a southwest-northeast section from 10°09′ S., 82°09′ W. to the coast of Peru, August 12-13, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.

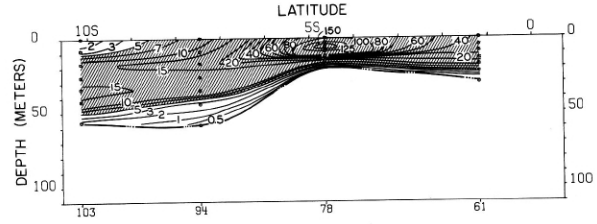
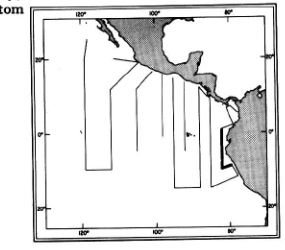


FIGURE 47-PP-v4.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 82° W., August 6-12, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



47-Ch-v4.

47-Ph-v4.

47-PP-v4.

47-Ch-v5.

47-Ph-v5.

47-PP-v5.

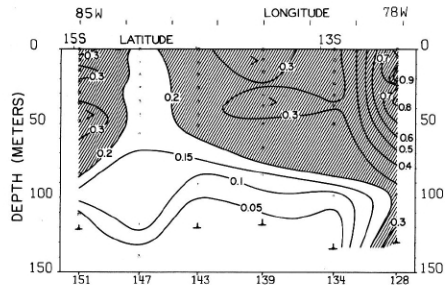


FIGURE 47-Ch-v7.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1967.

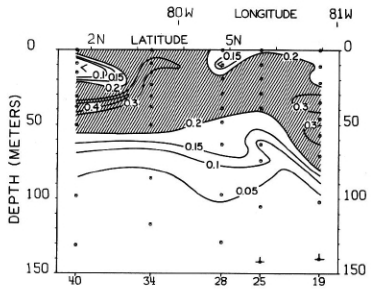


FIGURE 47-Ch-v2.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-5, 1967.

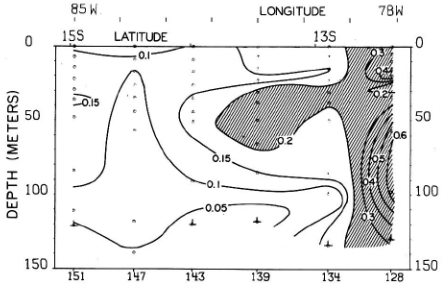


FIGURE 47-Ph-v7.—Vertical distribution of phaeophytin (mg./m.^{3}) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-19, 1967.

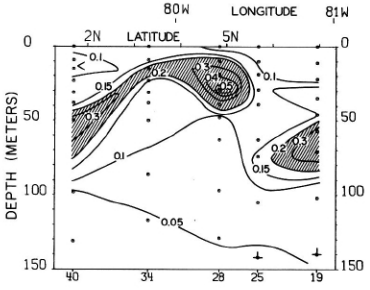


FIGURE 47-Ph-v2.—Vertical distribution of phaeophytin (mg./m.^{3}) along a northwest-southeast section in the central portion of the Panama Bight from Peninsula de Azuero, Panama, to the coast of Colombia, August 3-5, 1967.

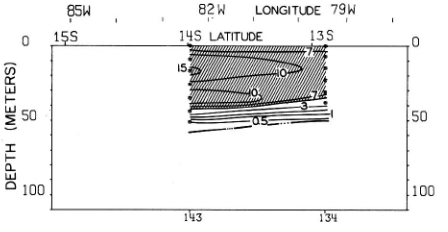
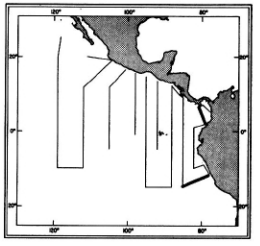


FIGURE 47-PP-v7.—Vertical distribution of primary production (mg. C/m.^{3}/day) along a northeast-southwest section from the coast of Peru to 15° S., 85° W., August 17-18, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



47-Ch-v2.

47-Ph-v2.

47-Ch-v7.

47-Ph-v7.

47-PP-v7.

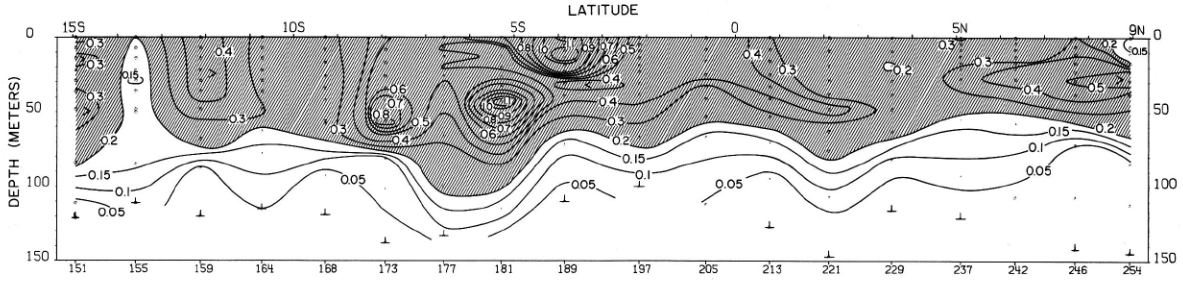


FIGURE 47-Ch-v8.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 85° W., August 19-28, 1967.

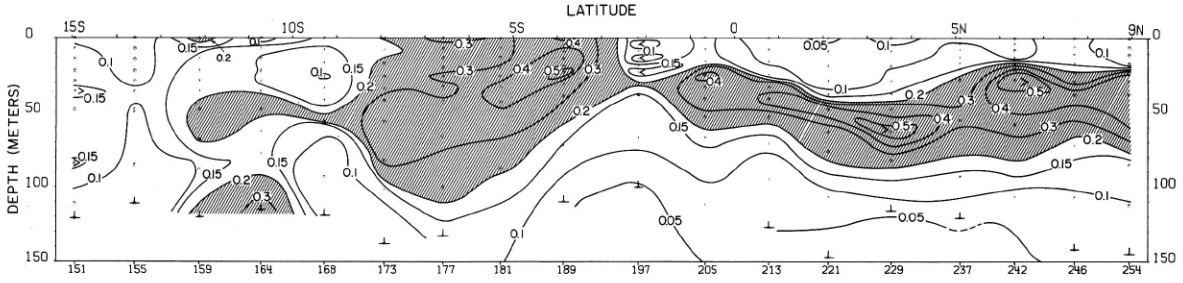


FIGURE 47-Ph-v8.—Vertical distribution of phaeophytin (mg./m.^{3}) along 85° W., August 19-28, 1967.

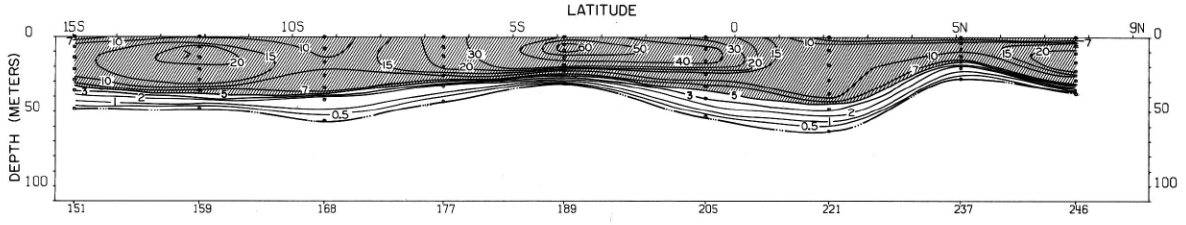
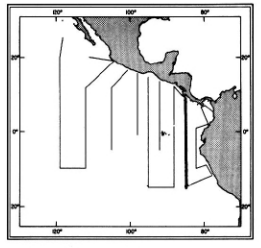


FIGURE 47-PP-v8.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 85° W., August 19-27, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



47-Ch-v8.

47-Ph-v8.

47-PP-v8.

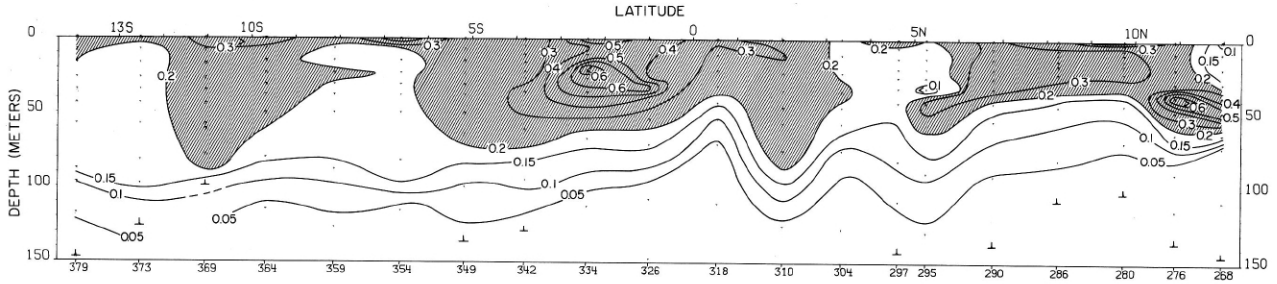


FIGURE 47-Ch-v10.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 88° W., August 31-September 10, 1967.

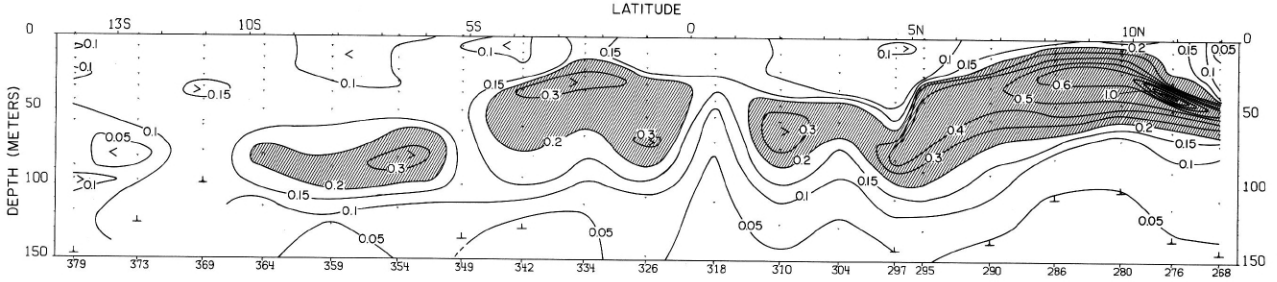


FIGURE 47-Ph-v10.—Vertical distribution of phaeophytin (mg./m.^{3}) along 88° W., August 31-September 10, 1967.

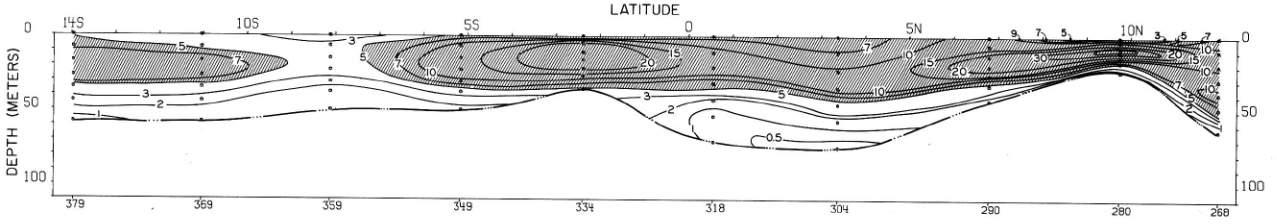
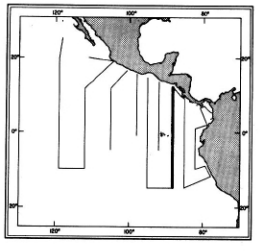


FIGURE 47-PP-v10.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 88° W., August 31-September 10, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



47-Ch-v10.

47-Ph-v10.

47-PP-v10.

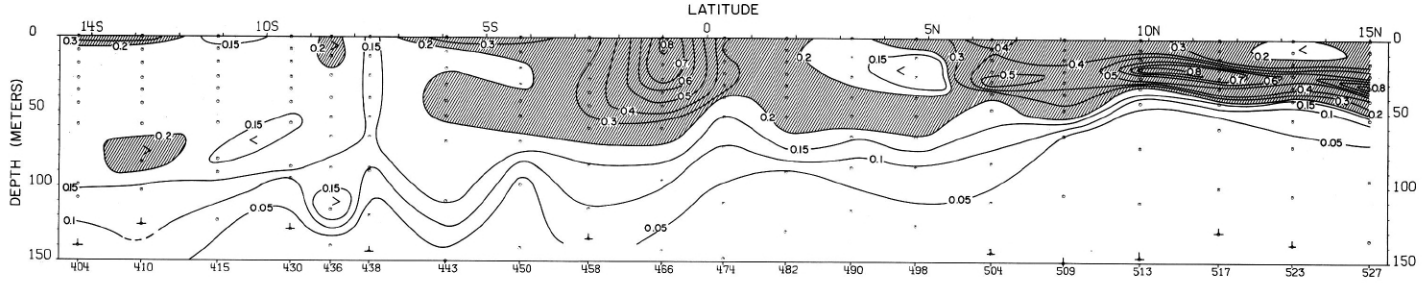


FIGURE 47-Ch-v12.—Vertical distribution of chlorophyll-a (mg./m.^{3}) along 95° W., September 12-23, 1967.

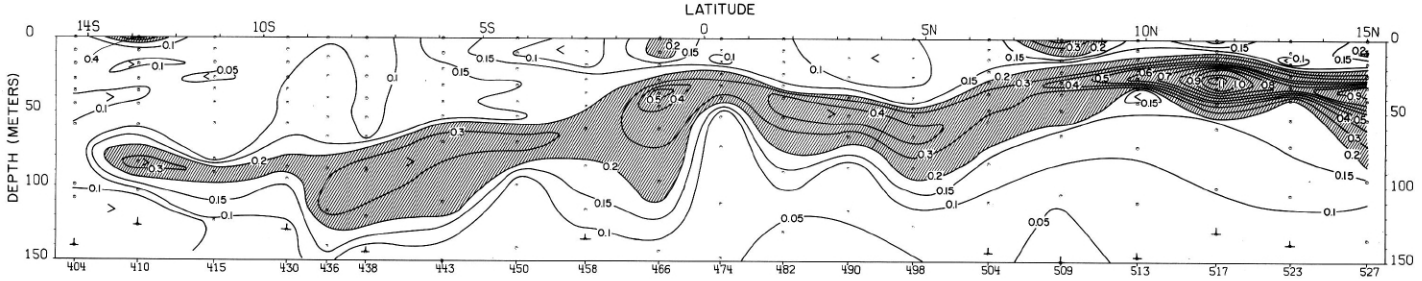


FIGURE 47-Ph-v12.—Vertical distribution of phaeophytin (mg./m.^{3}) along 95° W., September 12-23, 1967.

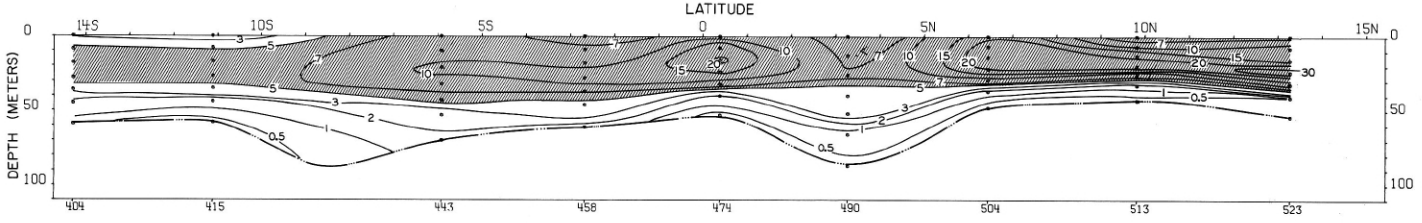
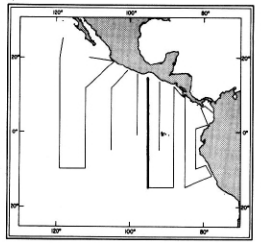


FIGURE 47-PP-v12.—Vertical distribution of primary production (mg. C/m.^{3}/day) along 95° W., September 12-22, 1967. The heavy dash-dot line indicates the bottom of the euphotic layer.



47-Ch-v12.

47-Ph-v12.

47-PP-v12.