

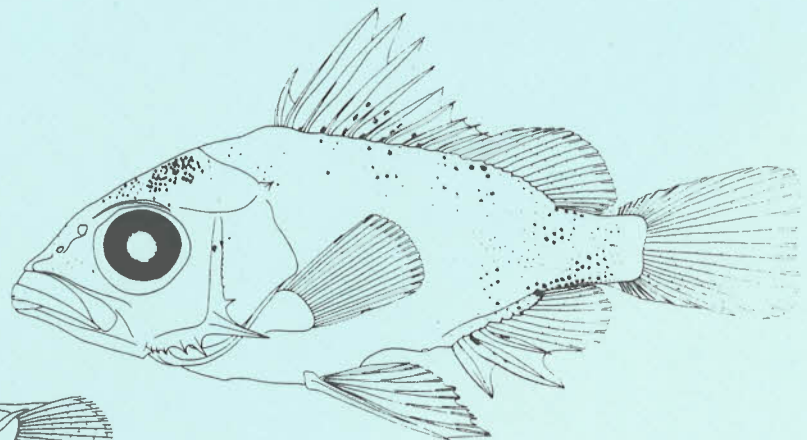
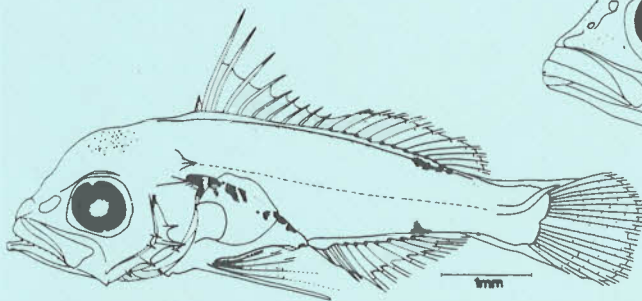


# NOAA Technical Memorandum NMFS-SEFC-245

## SEAMAP 1986 - ICHTHYOPLANKTON Larval Distribution and Abundance of Engraulididae, Carangidae, Clupeidae, Gobiidae, Lutjanidae, Serranidae, Coryphaenidae, Istiophoridae, and Scombridae in the Gulf of Mexico

S. Kelley<sup>1</sup>, J.V. Gartner Jr.<sup>2</sup>, W.J. Richards<sup>1</sup>, and  
L. Ejsymont<sup>3</sup>

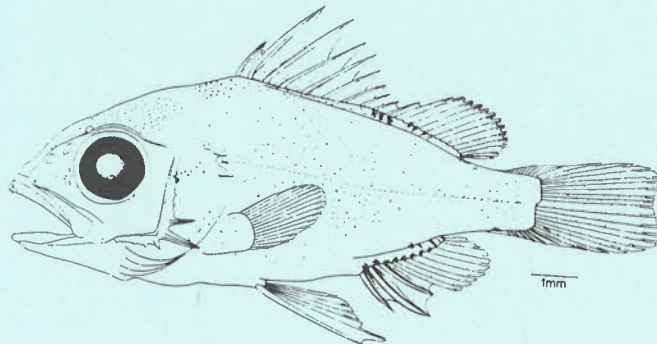
January 1990



<sup>1</sup>U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southeast Fisheries Center  
75 Virginia Beach Drive  
Miami, FL 33149

<sup>3</sup>Sea Fisheries Institute  
Plankton Sorting and Identification Center  
ul. Kazimierza Krolewicza 4 - Pawilon E  
F1-550 Szczecin, Poland

<sup>2</sup>SEAMAP Ichthyoplankton Archiving Center  
Florida Department of Natural Resources  
100 Eighth Avenue, S.E.  
St. Petersburg, FL 33701-5095



# NOAA Technical Memorandum

## NMFS-SEFC-245

SEAMAP 1986 - ICHTHYOPLANKTON

Larval Distribution and Abundance of Engraulididae,  
Carangidae, Clupeidae, Gobiidae, Lutjanidae,  
Serranidae, Coryphaenidae, Istiophoridae, and  
Scombridae in the Gulf of Mexico

by

Sharon Kelley, J.V. Gartner Jr., William J. Richards,  
and Leonard Ejsymont

---

U. S. DEPARTMENT OF COMMERCE  
Robert A. Mosbacher, Secretary

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
John A. Knauss, Administrator

NATIONAL MARINE FISHERIES SERVICE  
William W. Fox, Jr., Assistant Administrator for Fisheries

---

January 1990

---

Technical Memorandums are used for documentation and timely communication of preliminary results, interim reports, or special-purpose information, and have not received complete formal review, editorial control, or detailed editing.

NOTICE

---

The National Marine Fisheries Service (NMFS) does not approve, recommend or endorse any proprietary product or material mentioned in this publication. No reference shall be made to NMFS, or to this publication furnished by NMFS, in any advertising or sales promotion which would indicate or imply that NMFS approves, recommends, or endorses any proprietary product or proprietary material mentioned herein or which has its purpose any intent to cause directly or indirectly the advertised product to be used or purchase because of NMFS publication.

---

This report should be cited as follows:

Kelley, S., et al. 1990.

SEAMAP 1986 - ICHTHYOPLANKTON  
Larval Distribution and Abundance of Engraulididae,  
Carangidae, Clupeidae, Gobiidae, Lutjanidae,  
Serranidae, Coryphaenidae, Istiophoridae, and  
Scombridae in the Gulf of Mexico  
NMFS-SEFC-245, 45p.

Copies may be obtained by writing:

Sharon Kelley  
National Marine Fisheries Service  
Southeast Fisheries Center  
75 Virginia Beach Drive  
Miami, FL 33149

or  
National Technical  
Information Service  
5258 Port Royal Road  
Springfield, VA 22161

The Southeast Area Monitoring and Assessment Program (SEAMAP) has conducted ichthyoplankton surveys in U.S. waters of the Gulf of Mexico since 1982, to determine the distribution and abundance of pelagic eggs, larvae and juveniles of fishes for the purpose of management for protection and conservation of critical fishery habitats. This reports on the results of the 1986 survey. The National Marine Fisheries Service (NMFS) and participating components from Alabama Marine Resources (AMR); Florida Department of Natural Resources (FDNR); Louisiana Department of Wildlife and Fisheries (LDWF); Mississippi Gulf Coast Research Lab (GCRL) conducted sampling throughout 1986 except the months of January, February, March and August. A total of 19 cruises were done using seven vessels. Seventeen of the 19 cruises employed oblique tows using a 60 cm bongo with 333 m mesh nets, which were sent to 200 meters or within 5 meters of the bottom and towed to the surface. One cruise by LDWF used a 20 cm bongo with 333 m mesh, for oblique tows in shallow coastal waters. In addition to the bongos, fourteen of the 19 cruises used a 1 x 2 meter neuston net which was towed at the surface for ten minutes. One two station cruise by AMR employed only a neuston net.

Three of the cruises were conducted in May targeting the pelagic stock of bluefin tuna larvae and eggs. A total of 267 samples were obtained, sampling off shore waters from the Florida Keys westward to 94 degrees West longitude. The assessment of the larval bluefin tuna stock was published by M. F. McGowan and W.

J. Richards in the University of Miami's Rosenstiel School of Marine and Atmospheric Science Technical report # 88-003. This information was used to formulate bluefin tuna stock size indices by ICCAT.

There were four cruises done in June and five in September (Table 1). A total of 1601 samples were collected in 1986, right bongos were sent to the Polish Plankton Sorting and Identification Center in Szczecin, Poland for sorting of eggs and fish larvae. The sorted larvae were counted, measured and identified to the lowest taxon possible, under the supervision of L. Ejsymont. The ichthyoplankton samples were then sent to the SEAMAP Ichthyoplankton Archiving Center (SAC), at FDNR, 100 Eighth Avenue, S.E. St.Petersburg, FL. 33701-5095 for archiving and computer entry under the supervision of J.V. Gartner Jr.. Taxa of larval fish are loaned to qualified researchers upon request with corrections of identifications after analysis being used to update the data base. Current loan request to SAC for 1986 caught larvae are shown in Table 2. The station data and FDNR sample data, were added to the Southeast Fisheries Center, Miami, Florida 6800 data base, established in 1982 (NOAA Technical Memorandum NMFS-SEFC-144).

The charts (figure 1-24) in this paper show distributions and abundances of selected fish taxa. The number of larvae under 10 square meters of sea surface was estimated and plotted for

tows which had flow meters attached to the frames. The neuston samples for 1986 were not sorted and therefore are not available (they will be sorted in 1990 and reported in a future report). The center of the circle on the plots determines the position of capture, the diameter of the circle defines the estimated number of larvae under ten square meters of sea surface. The radius of each circle ascertains the date: the full 360 circle represents one year, thus each clockwise degree is approximately one day. The crosses depict where larvae were caught but where estimates could not be made, due to the lack of a flow meter or erroneous flow counts by malfunctioning meters. These plots are summaries of the entire year and can be modified by location, date and/or cruise. The taxa plotted only include larvae identified to that family, genus or species. For example "Carangidae" contains only larvae identified to the familial level and not to a lower taxon of genus and species. The numbers of specimens identified to family level is considerable compared to the numbers of the larvae identified to lower taxa (Table 3).

In Table 3 the taxa and number of individuals collected during SEAMAP 1986 are arranged phylogenetically. Table 4 list the 20 most abundant taxa recorded from the SEAMAP 1986 collections and are arranged in decreasing order of abundance. There are four ichthyoplankton reports available on the NMFS Seattle 7800 data base, all are public under (SE10MBIO).

1.) SEAMAP/REPORT/ONE/WFL: gives a list by year of SEAMAP participants. It is organized by vessel; cruise; stations; SEAMAP

sample number; gear; cruise date range and affiliation (Table 1).

2.) SEAMAP/REPORT/TWO/WFL: gives a listing of stations for participating vessels; by vessel; cruise and contains the station number; SEAMAP sample number; position; date; time; gear; depth; volume of water filtered and displacement volume (Table 5).

3.) SEAMAP/REPORT/THREE/WFL: gives a listing by station, vessel, cruise of alphabetically arranged fish taxa caught, and contains SEAMAP sample number; position; date; time; gear; mesh; displacement volume; depth; volume of water filtered; standard haul factor; distance net traveled in meters; number of larvae captured; length range in mm and computed number of larvae under 10 square meters of sea surface, for bongo tows with flow meters. This report can be selected for the whole year; month or a range in SEAMAP sample numbers (Table 6).

4.) SEAMAP/REPORT/FOUR/WFL: give a alphabetical listing by taxon and contains vessel; cruise; station; gear; mesh; position; date; time; number of larvae; lengths and number of larvae under 10 meters square of sea surface. This report can be selected for one taxon or the whole year (Table 7).

## List of Figures

- Figure 1. Station plots of SEAMAP 1986 participants in the Gulf of Mexico and the Atlantic Ocean along the Florida eastern coast. Cruises are identified by different symbols used for the station plots.
- Figure 2. Enlarged area indicated by inset on Figure 1.
- Figure 3. Estimated number of carangids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 4. Estimated number of clupeids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 5. Estimated number of Coryphaena sp. under 10 square meters of sea surface from bongo and ring net tows.
- Figure 6. Estimated number of Coryphaena hippurus under 10 square meters of sea surface from bongo and ring net tows.
- Figure 7. Estimated number of engraulids under 10 square meters of sea surface from bongo and ring net tows, for the dates of January 1, 1986 through June 31, 1986.



- Figure 8. Estimated number of engraulids under 10 square meters of sea surface from bongo and ring net tows, for the dates of July 1, 1986 through December 31, 1986.
- Figure 9. Estimated number of gobiids under 10 square meters of sea surface from bongo and ring net tows, for the dates of January 1, 1986 through June 31, 1986.
- Figure 10. Estimated number of gobiids under 10 square meters of sea surface from bongo and ring net tows, for the dates of July 1, 1986 through December 31, 1986.
- Figure 11. Estimated number of Istiophorus platypterus under 10 square meters of sea surface from bongo and ring net tows.
- Figure 12. Estimated number of lutjanids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 13. Estimated number of sciaenids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 14. Enlarged area indicated by inset on Figure 13.
- Figure 15. Estimated number of Auxis sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

- Figure 16. Estimated number of Euthynnus alletteratus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 17. Estimated number of Katsuwonus pelamis (Scombridae) under 10 square meters of sea surface from Bongo and ring net tows.
- Figure 18. Estimated number of Thunnus sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 19. Estimated number of Thunnus atlanticus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 20. Estimated number of Thunnus thynnus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 21. Estimated number of Scomberomorus sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 22. Estimated number of Scomberomorus cavalla  
(Scombridae) under 10 square meters of sea surface  
from bongo and ring net tows.

Figure 23. Estimated number of Scomberomorus maculatus  
(Scombridae) under 10 square meters of sea surface  
from bongo and ring net tows.

Figure 24. Estimated number of serranids under 10 square meters  
of sea surface from bongo and ring net tows.

TABLE 1

## SEANAP 1986 PARTICIPANT SUMMARY TABLE

VESSEL	CRUISE	STATIONS	SAMPLES	GEAR	DATES	AFFILIATION
OREGON-II	159	43948-44090	5008-5214	BONGO NEUSTN	860423-860522	NMFS
ALABAMA #23	861	8177- 8177	5215-5217	NEUSTN	860611-860611	AL. MAR. RES.
LOUISIANA35	16	D105- D100	5254-5301	BONGO	860505-860508	LOWF
LOUISIANA25	17	1001- 7005	5302-5343	BONGO	860611-860619	LOWF
LOUISIANA35	18	D112- M123	5344-5391	BONGO	860611-860619	LOWF
OREGON-II	160	44094-44265	5392-5520	NEUSTN BONGO	860611-860706	NMFS
CORAL SEA	8601	01- 11	5521-5537	BONGO NEUSTN	860504-860506	DNR
TOMMY MUNRO	861	1-17514	5538-5583	NEUSTN BONGO	860521-860530	GCRL
H.CORTEZ-II	8602	12- 40	5584-5670	BONGO NEUSTN	860904-860913	FLA.DNR
OREGON-II	161	44328-44420	5671-5946	NEUSTN BONGO	860904-860921	NMFS
CHAPMAN	14	1- 65	5947-6141	BONGO NEUSTN	860913-860922	NMFS
TOMMY MUNRO	863	1- 19	6142-6168	NEUSTN BONGO	860909-860911	GCRL
OREGON-II	163	44556-44860	6169-6360	BONGO NEUSTN	861024-861123	NMFS
TOMMY MUNRO	862	A001- 8183	6361-6378	NEUSTN BONGO	860611-860612	GCRL
ALABAMA #23	961	MR33- MR14	6379-6402	BONGO NEUSTN	860919-860923	AL. MAR. RES.
H.CORTEZ-II	8604	41- 68	6403-6486	NEUSTN BONGO	861115-861121	FLA.DNR
LOUISIANA35	19	D132- D126	6487-6563	BONGO NEUSTN	861027-861030	LOWF
LOUISIANA25	20	03047-07001	6564-6593	BONGO	861105-861106	LOWF
LOUISIANA35	21	D141- D139	6594-6646	BONGO NEUSTN	861201-861204	LOWF

Table 2. List of loan requests to the SEAMAP Ichthyoplankton Archiving Center for 1986 material, excluding data requests.

<u>Requestor</u>	<u>Priority</u>	<u>Shipped</u>	<u>Taxa</u>	<u>No.Lots</u>	<u>Status</u>
Gartner/Conley	1	Yes	Myctophidae	661	Out
Leiby	2	Yes	Ophichthidae	243	Returned
Richards	2	Yes	Scombridae	341	Returned
Shaw	2	Yes	Clupeidae, Carangidae	283 446	Out Out
Shultz	2	Yes	Sciaenidae	473	Out

Table 3 . Ichthyoplankton taxa, number of lots and total number of individuals collected during SEAMAP 1986, arranged phylogenetically.

TAXON	LOTS	TOTAL
CLUPEIFORMES	42	2810
CLUPEIDAE	39	1224
<u>Brevoortia guenterii</u>	4	30
<u>Brevoortia patronus</u>	1	1
<u>Brevoortia sp.</u>	52	902
<u>Etrumeus teres</u>	5	76
<u>Harengula jaguana</u>	30	157
<u>Opisthonema oglinum</u>	92	1660
<u>Sardinella aurita</u>	60	2805
ENGRAULIDIDAE	229	10115
<u>Anchoa hepsetus</u>	2	7
<u>Anchoa mitchilli</u>	1	10
<u>Anchoa sp.</u>	70	777
<u>Engraulis eurystole</u>	7	62
ELOPIFORMES		
ELOPIDAE	13	34
ANGUILLIFORMES	86	583
MORINGUIDAE	20	57
<u>Neoconger sp.</u>	1	1
MURAENIDAE	18	21
DYSOMMIDAE	1	1
CONGRIDAE	93	242
NETTASTOMATIDAE	32	60
OPHICHTHIDAE	101	357
<u>Aplatophis chauliodus</u>	6	29
<u>Callechelys guineensis</u>	1	1
<u>Callechelys muraena</u>	1	1
<u>Myrichthys sp.</u>	1	1
<u>Myrophis punctatus</u>	39	141
<u>Ophichthus gomesi</u>	33	62
<u>Ophichthus melanoporus</u>	1	1
<u>Ophichthus rex</u>	17	26
<u>Ophichthus sp.</u>	1	2
<u>Phaenomonas longissimus</u>	10	15
<u>Pseudomyrophis fugesae</u>	26	52
<u>Pseudomyrophis sp.</u>	6	8
SALMONIFORMES		
ARGENTINIDAE	11	12
BATHYLAGIDAE	8	12
<u>Bathylagus sp.</u>	16	22
GONOSTOMATIDAE	109	624
<u>Bonapartia pedalotia</u>	1	1
<u>Cyclothone sp.</u>	111	407
<u>Diplophos taenia</u>	1	1
<u>Gonostoma elongatum</u>	2	3
<u>Gonostoma sp.</u>	14	20

Table 3 - Continued

TAXON	LOTS	TOTAL
<u>Margrethia obtusirostre</u>	1	1
<u>Maurolicus muelleri</u>	69	537
<u>Pollichthys maui</u>	8	10
<u>Vinciguerrria attenuata</u>	39	68
<u>Vinciguerrria nimbaria</u>	48	95
<u>Vinciguerrria poweriae</u>	8	17
<u>Vinciguerrria sp.</u>	9	13
STERNOPTYCHIDAE	27	66
<u>Argyropelecus sp.</u>	1	1
<u>Sternoptyx sp.</u>	10	14
CHAULIODONTIDAE	18	28
<u>Chauliodus sloani</u>	1	1
<u>Chauliodus sp.</u>	1	1
MELANOSTOMIIDAE	10	13
IDIACANTHIDAE	1	1
<u>Idiacanthus fasciola</u>	1	1
GIGANTURIDAE	1	1
MYCTOPHIFORMES	1	2
SYNODONTIDAE	224	1686
CHLOROPHTHALMIDAE		
<u>Chlorophthalmus sp.</u>	6	6
SCOPELOSAURIDAE	4	4
MYCTOPHIDAE	186	2840
<u>Benthoosema sp.</u>	56	237
<u>Centrobranchus nigroocellatus</u>	11	12
<u>Ceratoscopelus maderensis</u>	14	30
<u>Ceratoscopelus sp.</u>	18	32
<u>Diaphus sp.</u>	77	1155
<u>Diogenichthys atlanticus</u>	44	104
<u>Diogenichthys sp.</u>	1	2
<u>Gonichthys cocco</u>	16	20
<u>Hygophum reinhardtii</u>	2	4
<u>Hygophum sp.</u>	55	533
<u>Lampadena sp.</u>	6	8
<u>Lampanyctus alatus</u>	1	1
<u>Lampanyctus sp.</u>	43	109
<u>Lobianchia sp.</u>	3	3
<u>Myctophum asperum</u>	1	1
<u>Myctophum nitidulum</u>	1	2
<u>Myctophum sp.</u>	60	545
<u>Notolychnus valdiviae</u>	62	212
<u>Notoscopelus resplendens</u>	4	5
PARALEPIDIDAE	112	336
<u>Sudis sp.</u>	5	7
EVERMANNELLIDAE	3	4
SCOPELARCHIDAE	20	28

Table 3 - Continued

TAXON	LOTS	TOTAL
GADIFORMES	1	1
MORIDAE	1	1
BREGMACEROTIDAE		
<u>Bregmaceros</u> sp.	276	5746
GADIDAE	2	3
<u>Urophycis chuss</u>	1	1
<u>Urophycis regius</u>	1	1
<u>Urophycis</u> sp.	8	15
MACROURIDAE	7	10
OPHIDIIDAE	235	1865
CARAPIDAE	3	3
<u>Carapus</u> sp.	30	61
LOPHIIFORMES	1	1
CERATIOIDEI	84	163
LOPHIIDAE		
<u>Lophius americanus</u>	2	2
ATHERINIFORMES		
EXOCOETIDAE	34	43
ATHERINIDAE	10	25
<u>Membras martinica</u>	1	4
LAMPRIDIFORMES		
TRACHIPTERIDAE	2	2
BERYCIFORMES		
MELAMPHAIDAE	30	40
HOLOCENTRIDAE	2	2
<u>Holocentrus</u> sp.	8	11
SYNGNATHIFORMES		
SYNGNATHIDAE		
<u>Hippocampus erectus</u>	1	1
<u>Hippocampus</u> sp.	2	2
<u>Syngnathus</u> sp.	29	33
SCORPAENIFORMES	24	47
SCORPAENIDAE	127	517
TRIGLIDAE	1	1
<u>Prionotus</u> sp.	135	444
CYCLOPTERIDAE	3	5
PERCIFORMES	27	46
SERRANIDAE	155	665
<u>Anthias nicholsi</u>	6	23
<u>Anthias</u> sp.	13	26
<u>Centropristis striata</u>	2	7
<u>Centropristis</u> sp.	5	8
<u>Diplectrum</u> sp.	93	409
<u>Epinephelus</u> sp.	1	10
<u>Hemanthias aureorubens</u>	2	3
<u>Hemanthias leptus</u>	3	5
<u>Hemanthias vivanus</u>	7	36
<u>Hemanthias</u> sp.	15	36



Table 3 - Continued

TAXON	LOTS	TOTAL
GERREIDAE	40	194
HAEMULIDAE	2	2
SPARIDAE	52	296
<u>Lagodon rhomboides</u>	8	18
SCIAENIDAE	96	1395
<u>Bairdiella chryoura</u>	8	35
<u>Bairdiella</u> sp.	1	3
<u>Cynoscion arenarius</u>	80	767
<u>Cynoscion nebulosus</u>	10	13
<u>Cynoscion nothus</u>	30	94
<u>Cynoscion regalis</u>	1	1
<u>Cynoscion</u> sp.	14	82
<u>Larimus fasciatus</u>	21	38
<u>Leiostomus xanthurus</u>	50	555
<u>Menticirrhus</u> sp.	29	94
<u>Micropogonias undulatus</u>	99	2622
<u>Sciaenops ocellatus</u>	24	120
<u>Stellifer lanceolatus</u>	10	60
MULLIDAE	14	25
KYPHOSIDAE	1	1
EPHIPPIDAE	9	41
POMACANTHIDAE	1	1
POMACENTRIDAE	22	50
MUGILIDAE		
<u>Mugil curema</u>	1	1
<u>Mugil</u> sp.	33	156
SPHYRAENIDAE		
<u>Sphyraena</u> sp.	56	126
LABRIDAE	128	956
SCARIDAE	69	264
URANOSCOPIDAE	7	8
BLENNIIDAE	39	127
<u>Hypleurochilus geminatus</u>	11	24
<u>Hypsoblennius hentzi</u>	38	70
GOBLIDAE	379	13207
MICRODESMIDAE	60	270
ACANTHURIDAE	3	3
<u>Acanthurus</u> sp.	15	17
GEMPYLIDAE	5	5
<u>Diplospinus multistriatus</u>	22	35
<u>Gempylus serpens</u>	12	15
<u>Necepinnula orientalis</u>	1	1
<u>Necepinnula</u> sp.	1	2
<u>Nesiarchus nasutus</u>	8	13
TRICHIURIDAE	2	2
<u>Lepidopus caudatus</u>	3	4
<u>Trichiurus lepturus</u>	65	188

Table 3 - continued

TAXON	LOTS	TOTAL
SCOMBRIDAE	38	118
<u>Acanthocybium solanderi</u>	2	2
<u>Auxis</u> sp.	61	160
<u>Euthynnus alletteratus</u>	83	224
<u>Katsuwonus pelamis</u>	15	37
<u>Scomberomorus cavalla</u>	30	83
<u>Scomberomorus maculatus</u>	35	68
<u>Thunnus albacares</u>	2	2
<u>Thunnus atlanticus</u>	36	90
<u>Thunnus thynnus</u>	12	24
<u>Thunnus</u> sp.	25	74
SCOMBROLABRACIDAE		
<u>Scombrolabrax heterolepis</u>	1	1
ISTIOPHORIDAE		
<u>Istiophorus platypterus</u>	6	7
NOMEIDAE		
<u>Cubiceps</u> sp.	56	130
<u>Psenes</u> sp.	19	39
TETRAGONURIDAE	3	4
STROMATEIDAE	4	10
<u>Peprilus burti</u>	63	179
<u>Peprilus paru</u>	32	111
<u>Peprilus triacanthus</u>	1	2
<u>Peprilus</u> sp.	28	63
GOBIESOCIFORMES		
GOBIESOCIDAE	1	1
CALLIONYMIDAE	7	10
<u>Callionymus</u> sp.	95	961
PLEURONECTIFORMES	7	30
BOTHIDAE	165	1339
<u>Bothus</u> sp.	166	1057
<u>Citharichthys cornutus</u>	11	39
<u>Citharichthys gymnorhinus</u>	19	55
<u>Citharichthys spilopterus</u>	60	141
<u>Citharichthys</u> sp.	57	126
<u>Cyclopsetta</u> sp.	25	41
<u>Etropus crossotus</u>	146	1492
<u>Etropus</u> sp.	6	112
<u>Syacium</u> sp.	214	2846
<u>Trichopsetta ventralis</u>	1	1
PLEURONECTIDAE	1	1
SOLEIDAE	18	29
CYNOGLOSSIDAE		
<u>Symphurus plagusia</u>	3	11
<u>Symphurus</u> sp.	257	4591

Table 3 - Continued

TAXON	LOTS	TOTAL
<u>Holanthias martinicensis</u>	1	1
<u>Hypoplectrus</u> sp.	1	1
<u>Liopropoma</u> sp.	2	2
<u>Serraniculus pumilio</u>	38	233
<u>Serranus</u> sp.	10	13
GRAMMISTIDAE	12	13
<u>Pseudogramma gregoryi</u>	1	1
<u>Pseudogramma</u> sp.	3	3
<u>Rypticus</u> sp.	8	9
PRIACANTHIDAE	25	43
APOGONIDAE	9	10
<u>Apogon</u> sp.	66	213
<u>Howella</u> sp.	31	43
ACROPOMATIDAE	7	9
BRANCHIOSTEGIDAE		
<u>Caulolatilus</u> sp.	1	1
MALACANTHIDAE	4	11
POMATOMIDAE	1	1
<u>Pomatomus saltatrix</u>	16	41
RACHYCENTRIDAE	2	3
ECHENEIDIDAE	1	1
CARANGIDAE	82	500
<u>Caranx crysos</u>	25	59
<u>Caranx hippos</u>	1	1
<u>Caranx</u> sp.	25	50
<u>Chloroscombrus chrysurus</u>	160	6021
<u>Decapterus punctatus</u>	92	1273
<u>Decapterus</u> sp.	1	2
<u>Elagatis bipinnulatus</u>	1	22
<u>Oligoplites saurus</u>	7	18
<u>Selar crumenophthalmus</u>	22	42
<u>Selene setapinnis</u>	1	1
<u>Selene vomer</u>	20	48
<u>Selene</u> sp.	1	1
<u>Seriola zonata</u>	1	1
<u>Seriola</u> sp.	4	8
<u>Trachurus lathami</u>	3	3
CORYPHAENIDAE	1	1
<u>Coryphaena hippurus</u>	7	7
<u>Coryphaena</u> sp.	6	8
BRAMIDAE	8	8
LUTJANIDAE	108	637
<u>Lutjanus campechanus</u>	17	22
<u>Lutjanus griseus</u>	2	18
<u>Pristipomoides aquilonaris</u>	22	33
<u>Rhomboplites aurorubens</u>	30	96

Table 3 - Continued

TAXON	LOTS	TOTAL
TETRAODONTIFORMES		
BALISTIDAE	78	218
<u>Stephanolepis</u> sp.	1	1
TETRAODONTIDAE	4	5
<u>Sphoeroides maculatus</u>	1	1
<u>Sphoeroides</u> sp.	99	249
DIODONTIDAE	3	4

Table 4. Twenty most abundant taxa recorded from SEAMAP 1986 collections, arranged by decreasing number of individuals captured.

<u>TAXON</u>	<u>NO. LOTS</u>	<u>NO. SPECIMENS</u>
Gobiidae	379	13,207
Engraulididae	229	10,115
<u>Chloroscombrus chrysurus</u>	160	6,021
<u>Bregmaceros</u> sp.	276	5,746
<u>Symphurus</u> sp.	257	4,591
<u>Syacium</u> sp.	214	2,846
Myctophidae	186	2,840
Clupeiformes	42	2,810
<u>Sardinella aurita</u>	60	2,805
<u>Micropogonias undulatus</u>	99	2,622
Ophidiidae	235	1,865
Synodontidae	224	1,686
<u>Opisthonema oglinum</u>	92	1,660
<u>Etropus crossotus</u>	146	1,492
Bothidae	165	1,399
Sciaenidae	96	1,395
<u>Decapterus punctatus</u>	92	1,273
Clupeidae	39	1,224
<u>Diaphus</u> sp.	77	1,155
<u>Bothus</u> sp.	166	1,057

TABLE 5

## SEAMAP 1986 LIST OF STATIONS FOR PARTICIPATING VESSELS

-----									
OREGON-II CRUISE 159 NMFS									
-----									
STATION	SAMPLES	LATITUDE	LONGITUDE	DATE	TIME	GEAR	DEPTH	VWF	DISP VOL
-----									
43948	5008-5010	2900.00N	08759.90W	860423	0425	BONGO NEUSTN	201 1	325 0	??? ???
43950	5011-5013	2800.00N	08800.00W	860423	1314	BONGO NEUSTN	200 1	303 0	
43952	5014-5016	0900.40N	02800.20W	860423	2056	BONGO NEUSTN	216 1	331 0	
43954	5017-5019	2800.00N	09000.00W	860424	0402	BONGO NEUSTN	217 1	304 0	
43956	5020-5022	2800.00N	09100.00W	860424	1118	BONGO NEUSTN	145 1	254 0	
43958	5023-5025	2800.10N	09200.00W	860424	1911	BONGO NEUSTN	111 1	184 0	
43960	5026-5028	2800.00N	09300.00W	860425	0316	BONGO NEUSTN	100 1	162 0	
43962	5029-5031	2700.00N	09400.00W	860425	1427	BONGO NEUSTN	200 1	303 0	
43964	5032-5034	2600.20N	09400.00W	860425	2347	BONGO NEUSTN	216 1	328 0	
43966	5035-5037	2600.00N	09300.00W	860426	0835	BONGO NEUSTN	216 1	330 0	
43968	5038-5040	2700.00N	09300.00W	860426	1634	BONGO NEUSTN	200 1	289 0	
43970	5041-5043	2700.00N	09200.00W	860427	0820	BONGO NEUSTN	200 1	311 0	
43972	5044-5046	2600.00N	09200.00W	860427	1016	BONGO NEUSTN	200 1	317 0	
43974	5047-5049	2600.00N	09100.00W	860427	1754	BONGO NEUSTN	200 1	298 0	
43976	5050-5052	2700.00N	09100.00W	860428	0217	BONGO NEUSTN	200 1	330 0	
43978	5053-5055	2700.20N	09000.00W	860428	0949	BONGO NEUSTN	200 1	323 0	
43980	5056-5058	2600.00N	09000.00W	860428	1752	BONGO NEUSTN	162 1	321 0	

**TABLE 6 SEAMAP 1986 TAXON BY STATION, CRUISE**

STATION												
-----												
43948	OREGON-II		CRUISE	159	NMFS							
-----												
SAMPLE	LATITUDE	LONGITUDE	DATE	TIME	GEAR	MESH	DTSP.	VOL.	DEPTH	VMF	SHF	DIST.
-----												
5008	2900.00N	08759.90W	86 423	0421	BONGO	.333			201	325	0.62	1111
-----												
FAMILY	GENUS	SPECIES	NUMBER		LENGTH		NO. UNDER 10MS0		ALIQUT			
-----												
	BENTHOSEMA	SP.	1		3.7-	3.70			6			
	MYCTOPHUM	SP.	2		2.9-	14.00			12			
	CYCLOTHOME	SP.	2		3.5-	7.00			12			
	STERNOPTYX	SP.	1		6.0-	6.00			6			
	BREGMACEROS	SP.	2		3.2-	23.50			12			
	NOTOSCOPELUS	RESPLENDENS	2		18.8-	20.50			12			
	GONOSTOMATIDAE		3		5.0-	5.50			18			
	VINCIGUERRIA	NIMBARIA	1		8.6-	8.60			6			
	BOTHUS	SP.	1		7.0-	7.00			6			
	NOTOLYCHNUS	VALDIVIAE	2		6.5-	19.00			12			
	OIOGENICHTHYS	ATLANTICUS	1		4.0-	4.00			6			
	VINCIGUERRIA	ATTENUATA	1		15.0-	15.00			6			
	CONGRIDAE		1		64.0-	64.00			6			
	PARALEPIDIDAE		1		5.0-	5.00			6			
	MAURDLICUS	MUELLERI	1		6.0-	6.00			6			
	DIAPNUS	SP.	2		3.8-	8.10			12			
	HYGOPHUM	SP.	20		3.0-	7.50			173			
	DIPLOSPINUS	MULTISTRIATUS	1		3.0-	3.00			6			
	MYCTOPHIDAE		42		2.0-	5.00			260			
-----												
TOTAL LARVAE COUNT FOR SAMPLE			95									

**TABLE 7 SEAMAP 1986 ALPHABETICAL LISTING BY TAXON**

**STATION**

43968 OREGON-II CRUISE 159 NMFS

SAMPLE LATITUDE LONGITUDE DATE TIME GEAR MESH DISP. VOL. DEPTH VNF SHF DIST.  
 -----  
 5008 2900.00N 08759.90W 86 423 0421 BONGO .333 201 325 0.62 1111

FAMILY	GENUS	SPECIES	NUMBER	LENGTH	NO. UNDER 10MSQ	ALIQUNT
	BENTHOSEMA	SP.	1	3.7- 3.70		6
	MYCTOPHUM	SP.	2	2.9- 14.80		12
	CYCLOTHONE	SP.	2	3.5- 7.80		12
	STERNOPTYX	SP.	1	6.0- 6.00		6
	BREGMACERDS	SP.	2	3.2- 23.50		12
	MOTOSCOPELUS	RESPLENDENS	2	18.8- 20.50		12
	GONOSTOMATIDAE		3	5.0- 5.50		18
	VINCIGUERRIA	NIMBARIA	1	8.6- 8.60		6
	ROTHUS	SP.	1	7.0- 7.00		6
	NOTOLYCHNUS	VALDIVIAE	2	6.5- 19.80		12
	DIOGENICHTHYS	ATLANTICUS	1	4.0- 4.00		6
	VINCIGUERRIA	ATTENUATA	1	15.0- 15.00		6
	CONGRIDAE		1	64.0- 64.00		6
	PARALEPIDIDAE		1	5.0- 5.00		6
	MAUROLICUS	MUELLERT	1	6.0- 6.00		6
	DIAPHUS	SP.	2	3.8- 8.10		12
	MYGOPHUM	SP.	20	3.0- 7.50		173
	DIPLOSPINUS	MULTISTRIATUS	1	3.0- 3.00		6
	MYCTOPHIDAE		42	2.0- 5.00		260

TOTAL LARVAE COUNT FOR SAMPLE

-----  
 95



□ ALABAMA #23	861	⊙ ALABAMA #23	961	△ CHAPMAN	14
+ CORAL SEA	8601	⊗ H. CORTEZ-11	86-02	◇ H. CORTEZ-11	86-04
⊕ LOUISIANA25	17	⊗ LOUISIANA25	20	∇ LOUISIANA35	16
∇ LOUISIANA35	18	⊗ LOUISIANA35	19	* LOUISIANA35	21
⊗ OREGON-11	159	OREGON-11	160	☆ OREGON-11	161
# OREGON-11	163	\$ TOMMY MUNRO	863	% TOMMY MUNRO	86-1
& TOMMY MUNRO	86-2				

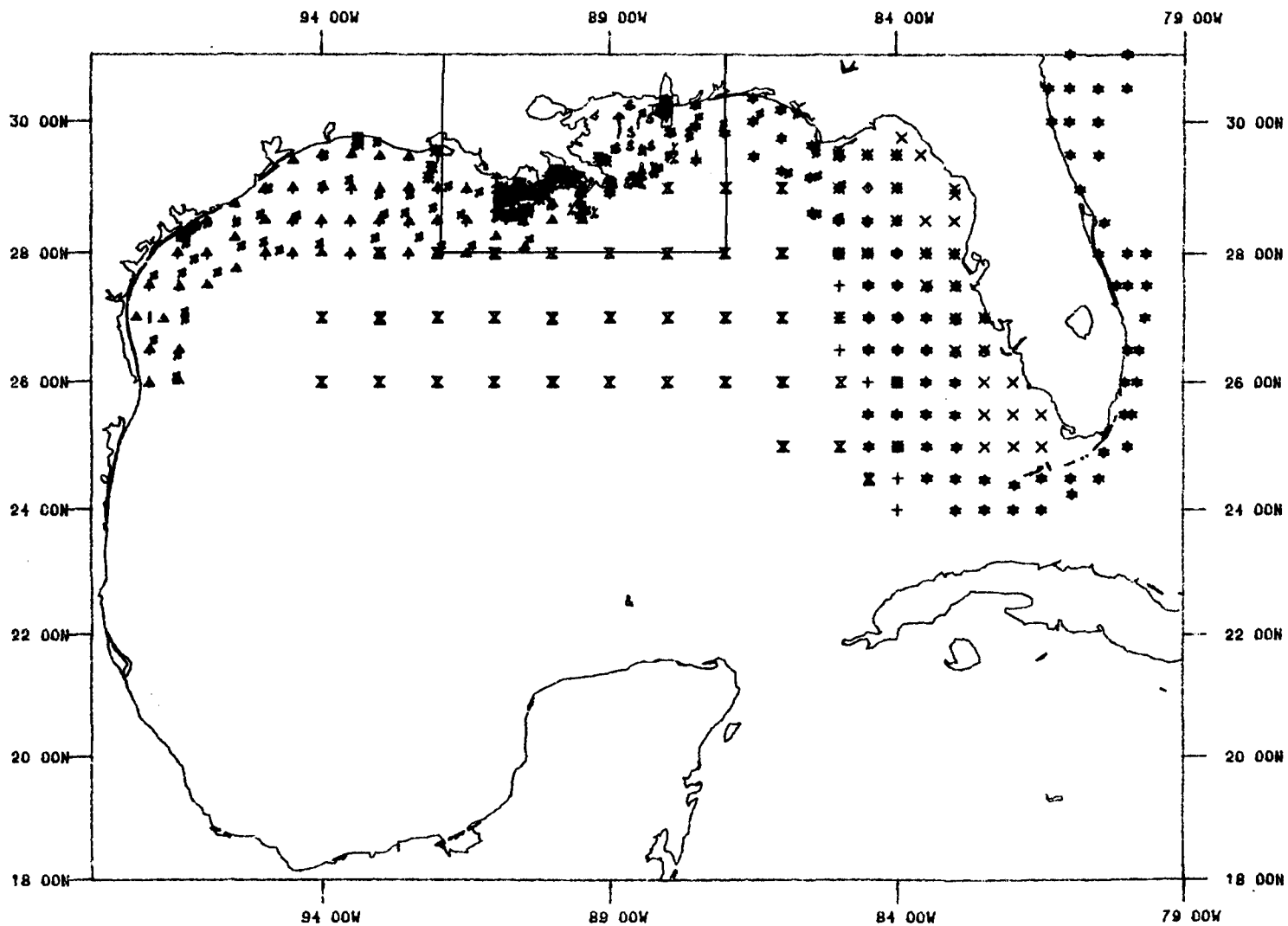


FIGURE 1 SEAMAP 1986 ICTHYOPLANKTON STATIONS

□ ALABAMA #23	861	⊙ ALABAMA #23	961	△ CHAPMAN	14
+ CORAL SEA	8601	× H. CORTEZ-11	86-02	◇ H. CORTEZ-11	86-04
⊕ LOUISIANA25	17	⊗ LOUISIANA25	20	∇ LOUISIANA35	16
∩ LOUISIANA35	18	⊘ LOUISIANA35	19	* LOUISIANA35	21
⊞ OREGON-11	159	OREGON-11	160	☆ OREGON-11	161
# OREGON-11	163	\$ TOMMY MUNRO	863	% TOMMY MUNRO	86-1
& TOMMY MUNRO	86-2				

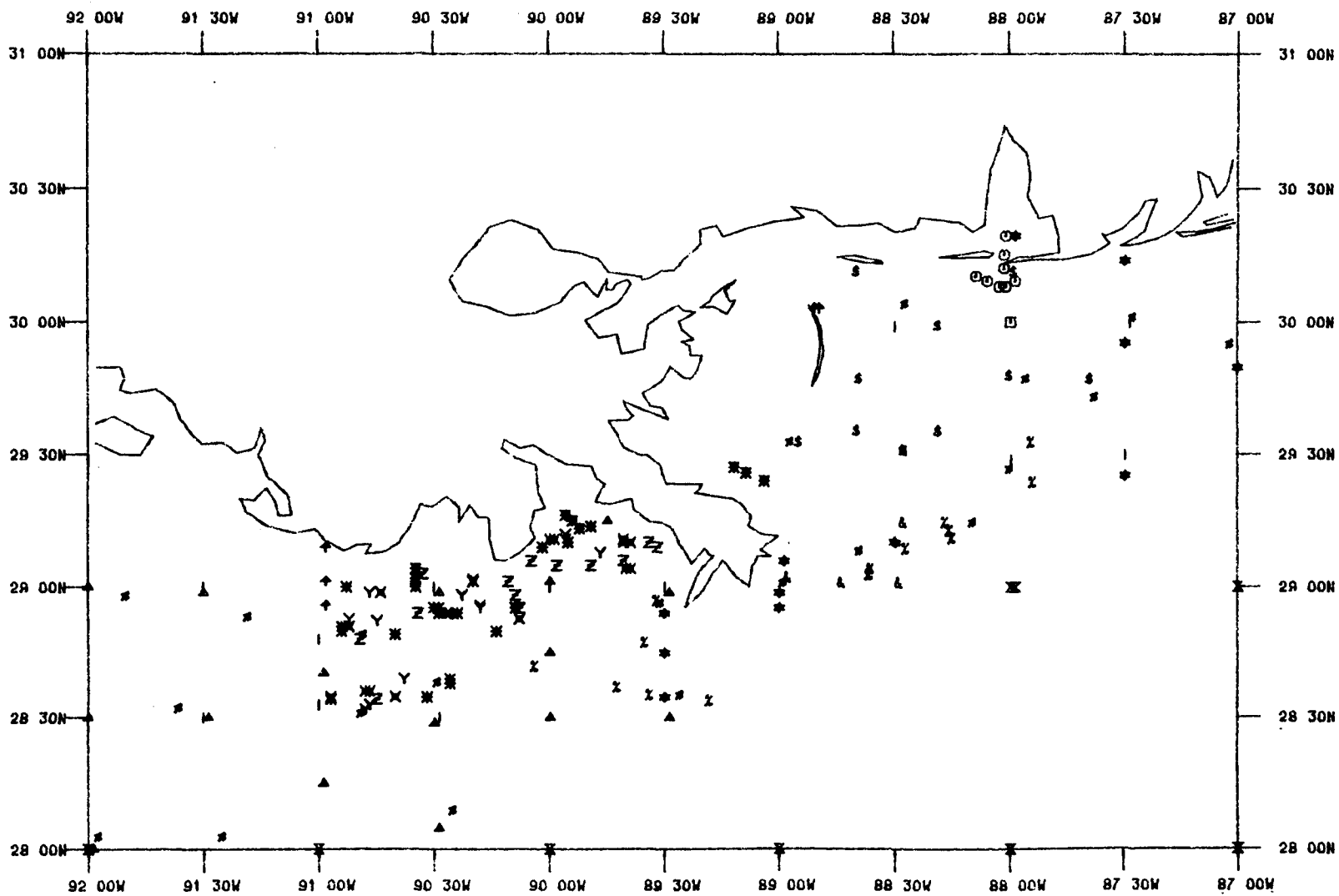
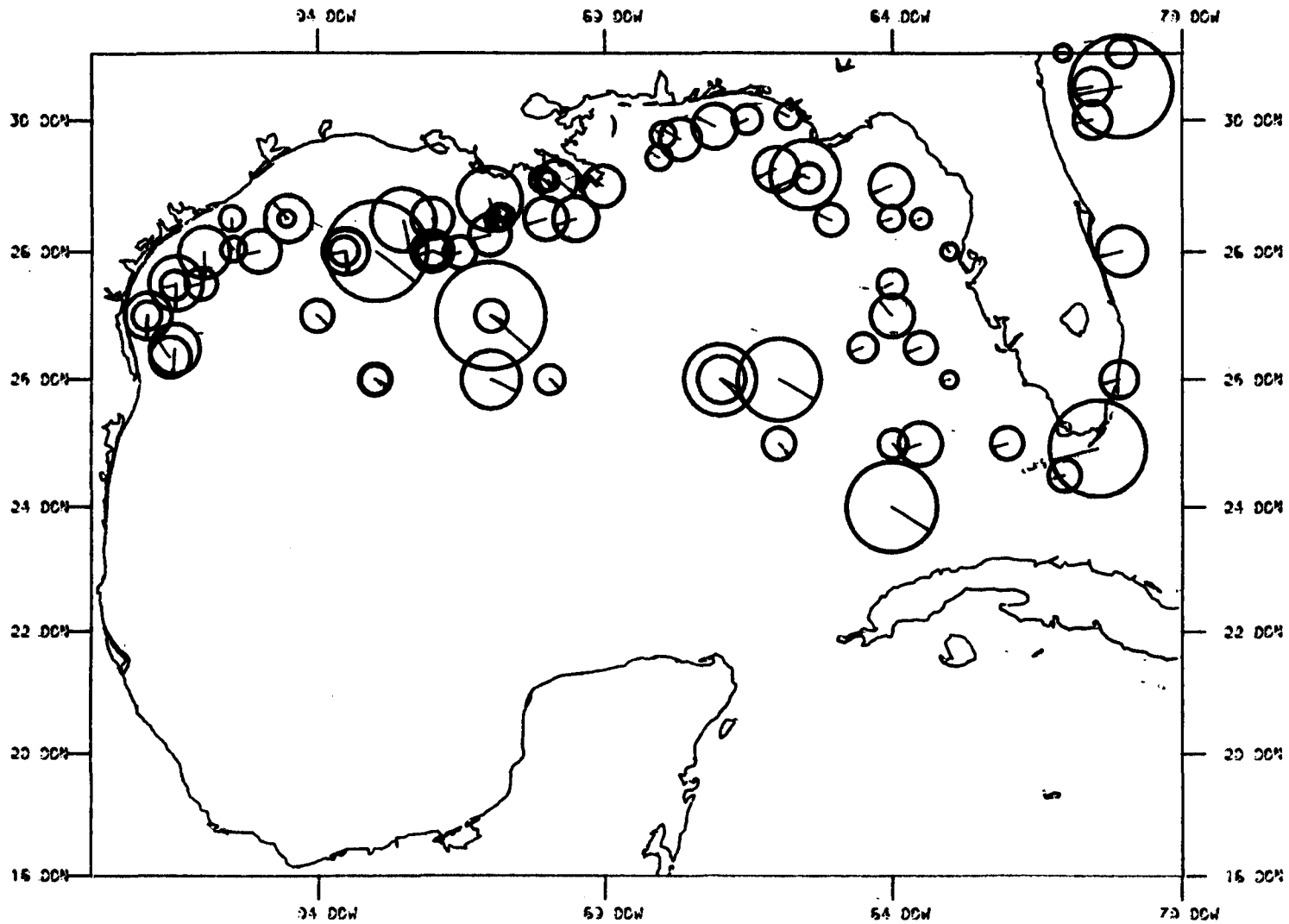
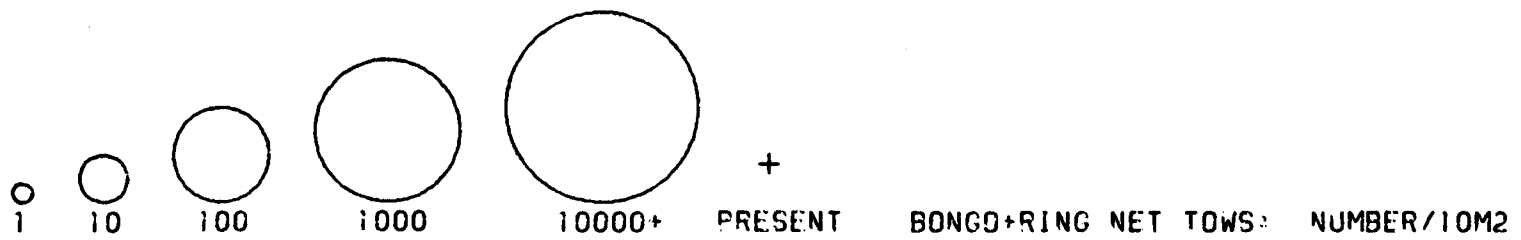
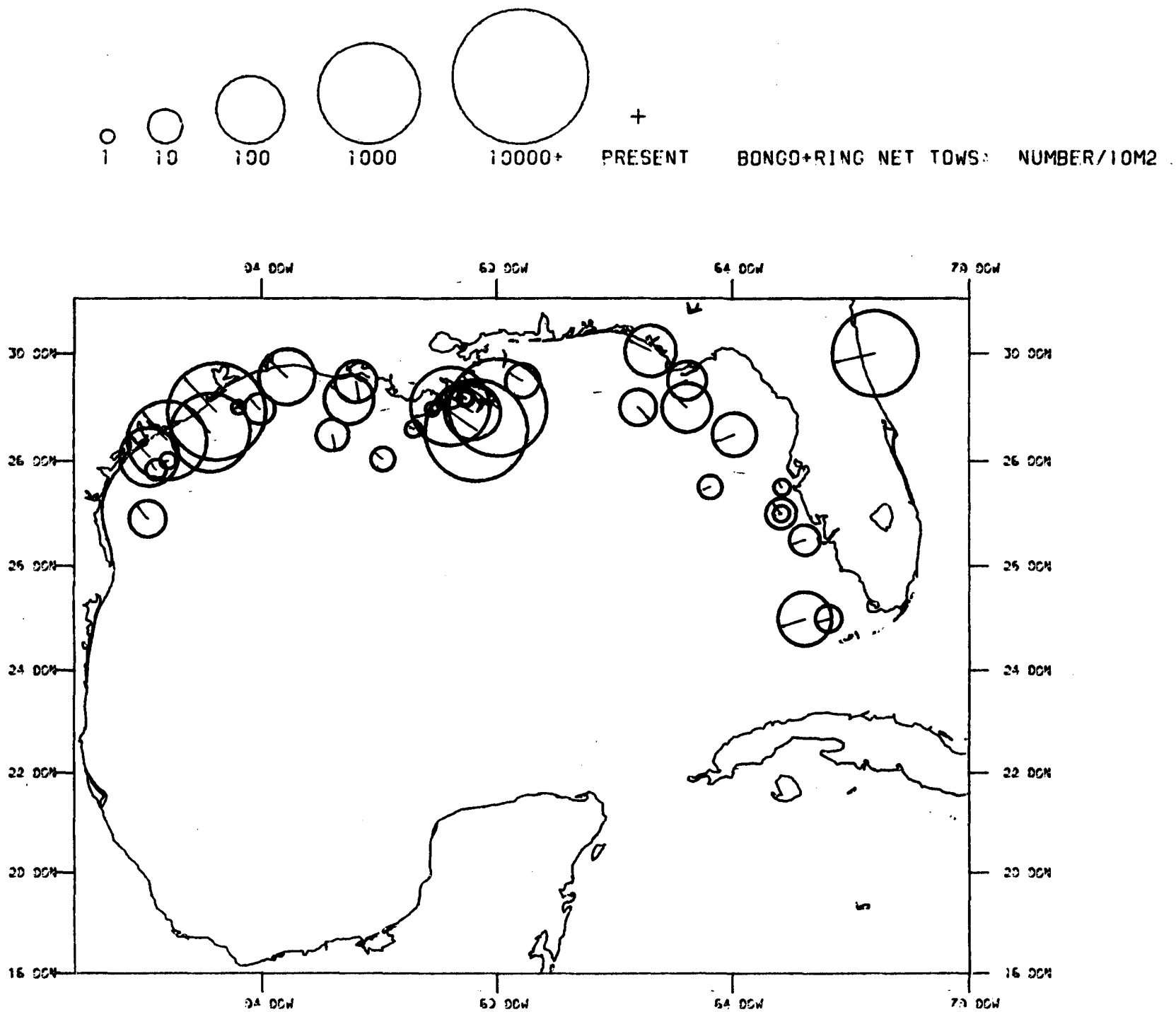


FIGURE 2 SEAMAP 1986 ICTHYOPLANKTON STATIONS



**FIGURE 3** SEAMAP 1986 ICHTHYOPLANKTON: CARANGIDAE



**FIGURE 4** SEAMAP 1966 ICHTHYOPLANKTON: CLUPEIDAE

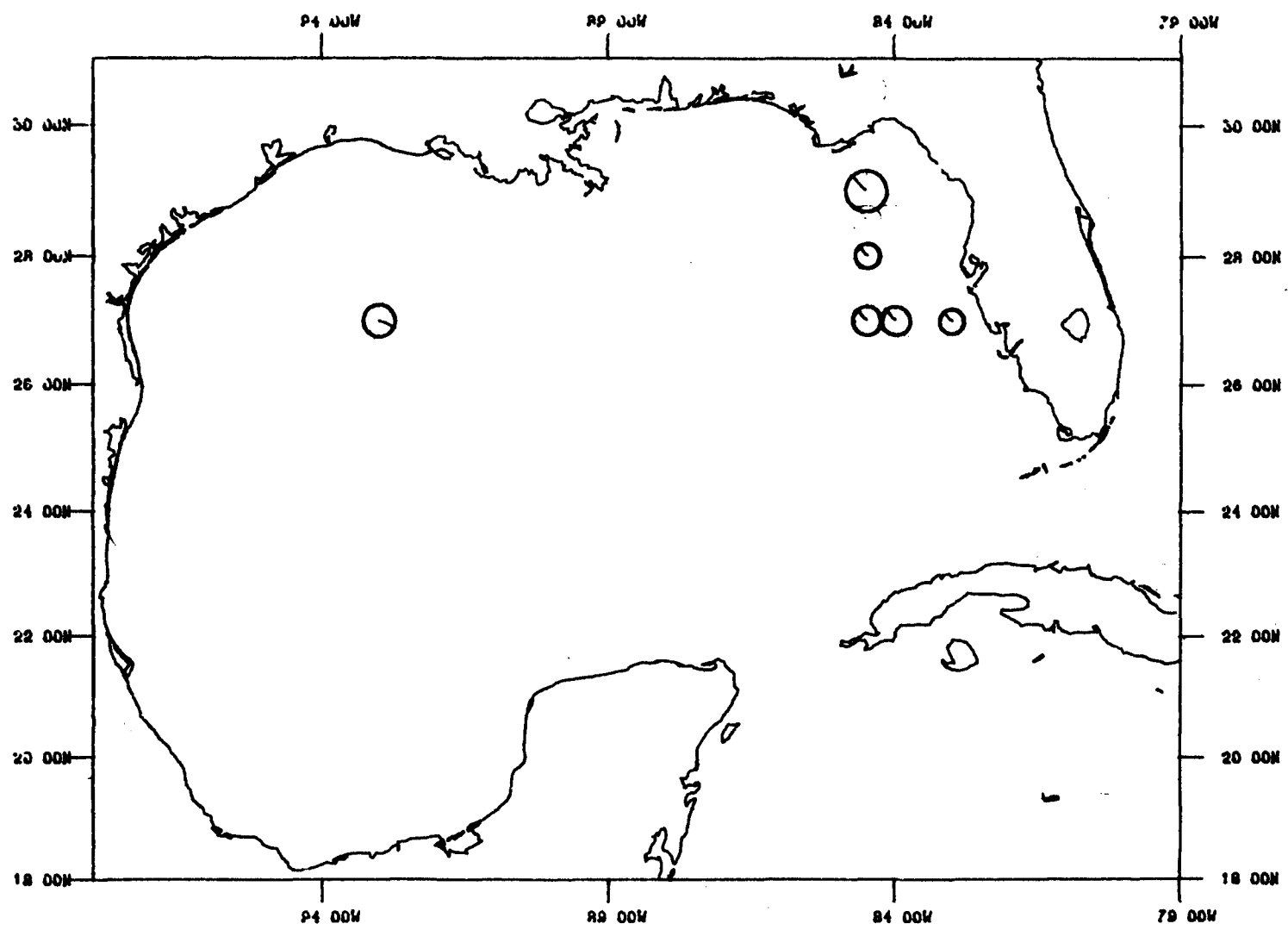
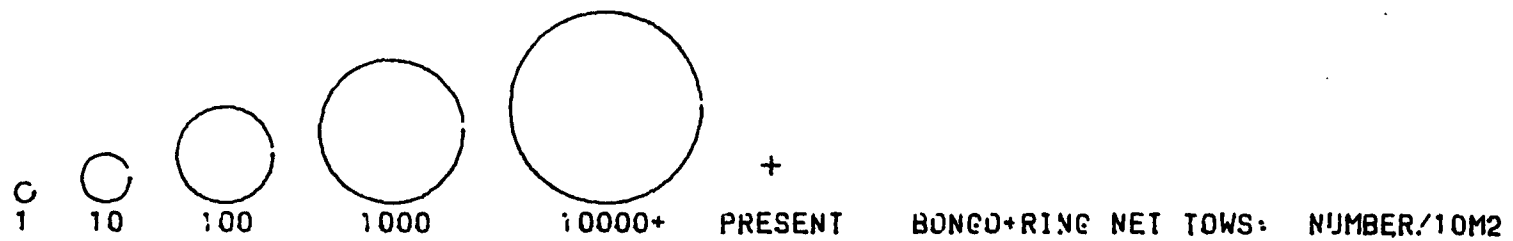


FIGURE 5 SEAMAP 1986 ICHTHYOPLANKTON: CORYPHAENA SP.

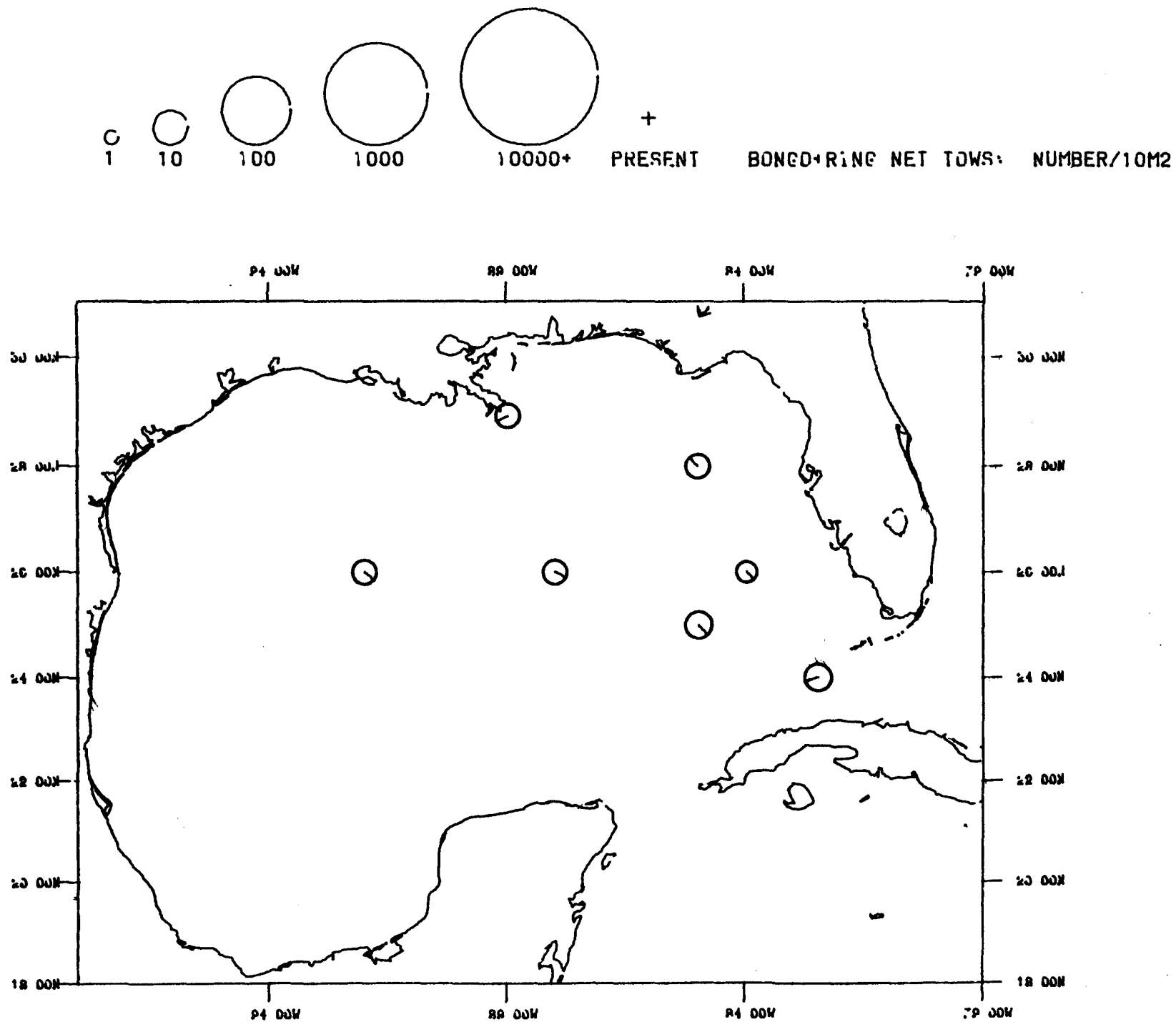
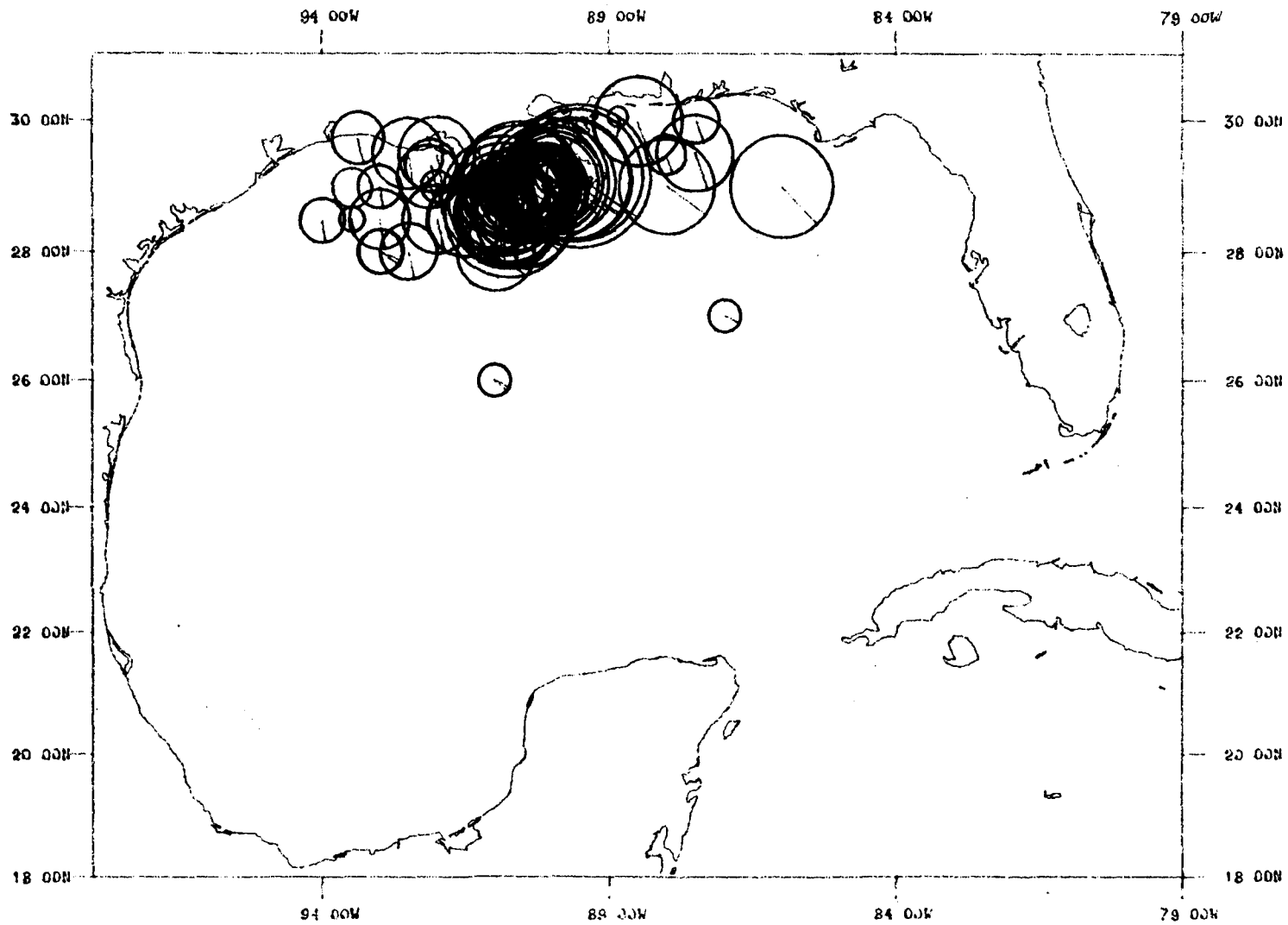
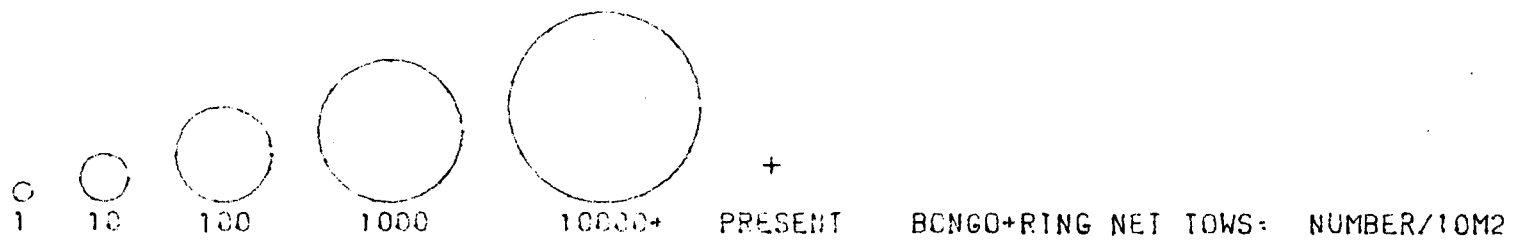
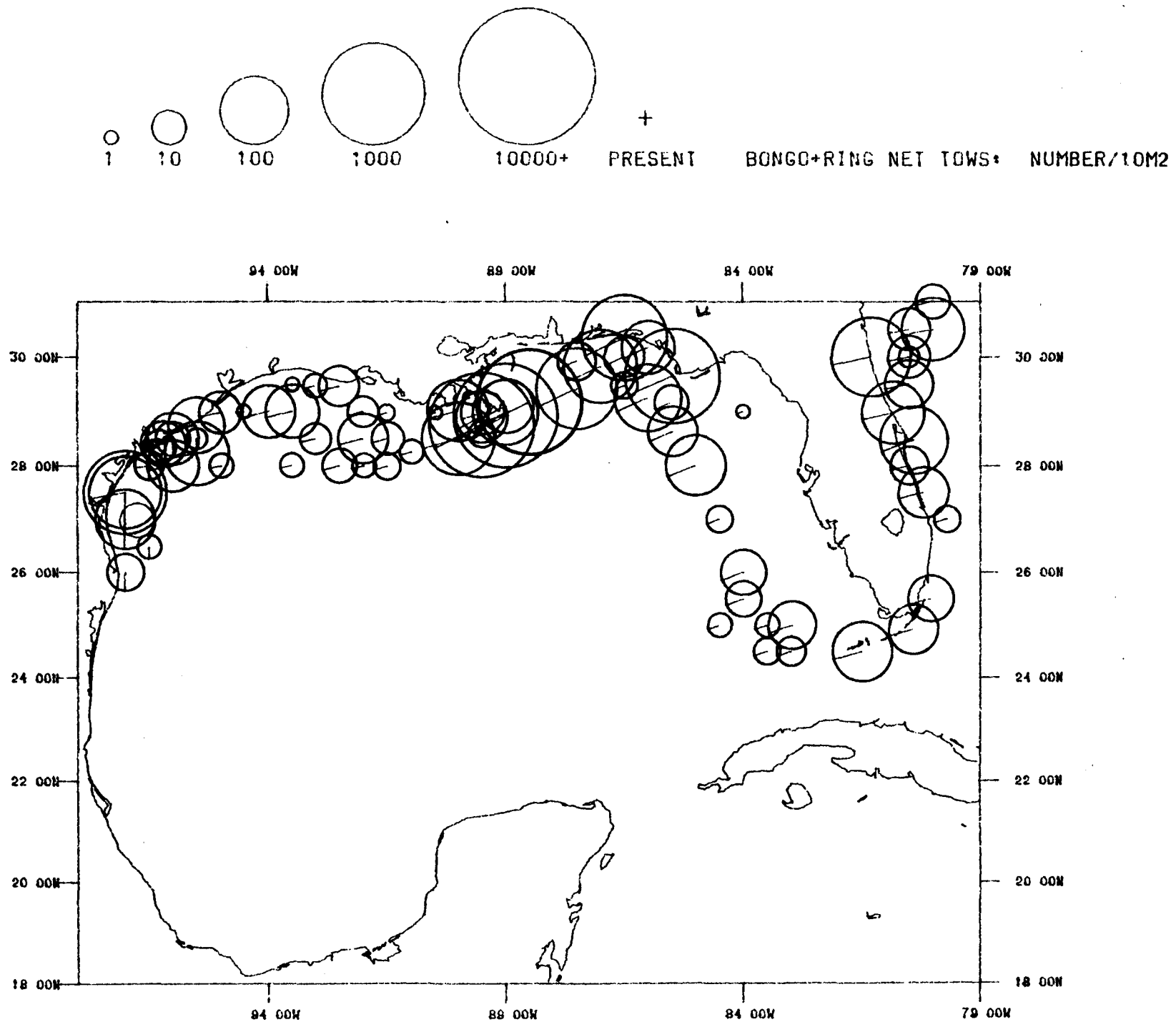


FIGURE 6 SEAMAP 1986 ICHTHYOPLANKTON: CORYPHAENA HIPPURUS

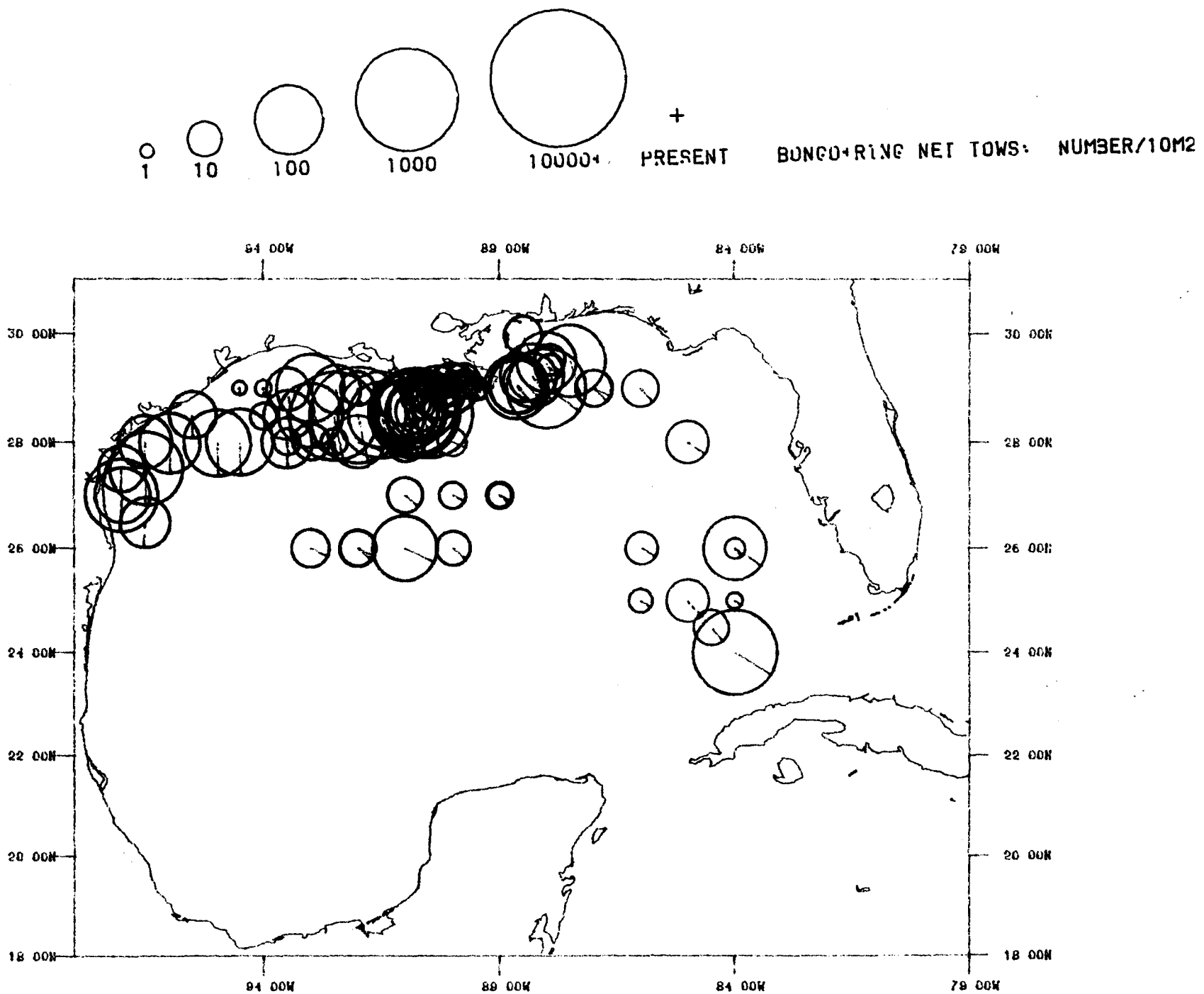


**FIGURE 7 SEAMAP 1986 ICHTHYOPLANKTON: ENGRAULIDIDAE 01/01/86-06/31/86**



**FIGURE 8** SEAMAP 1986 ICHTHYOPLANKTON: ENGRAULIDIDAE 07/01/86-12/31/86





**FIGURE 9** SEAMAP 1986 ICHTHYOPLANKTON: GOBIIIDAE 01/01/86-06/31/86

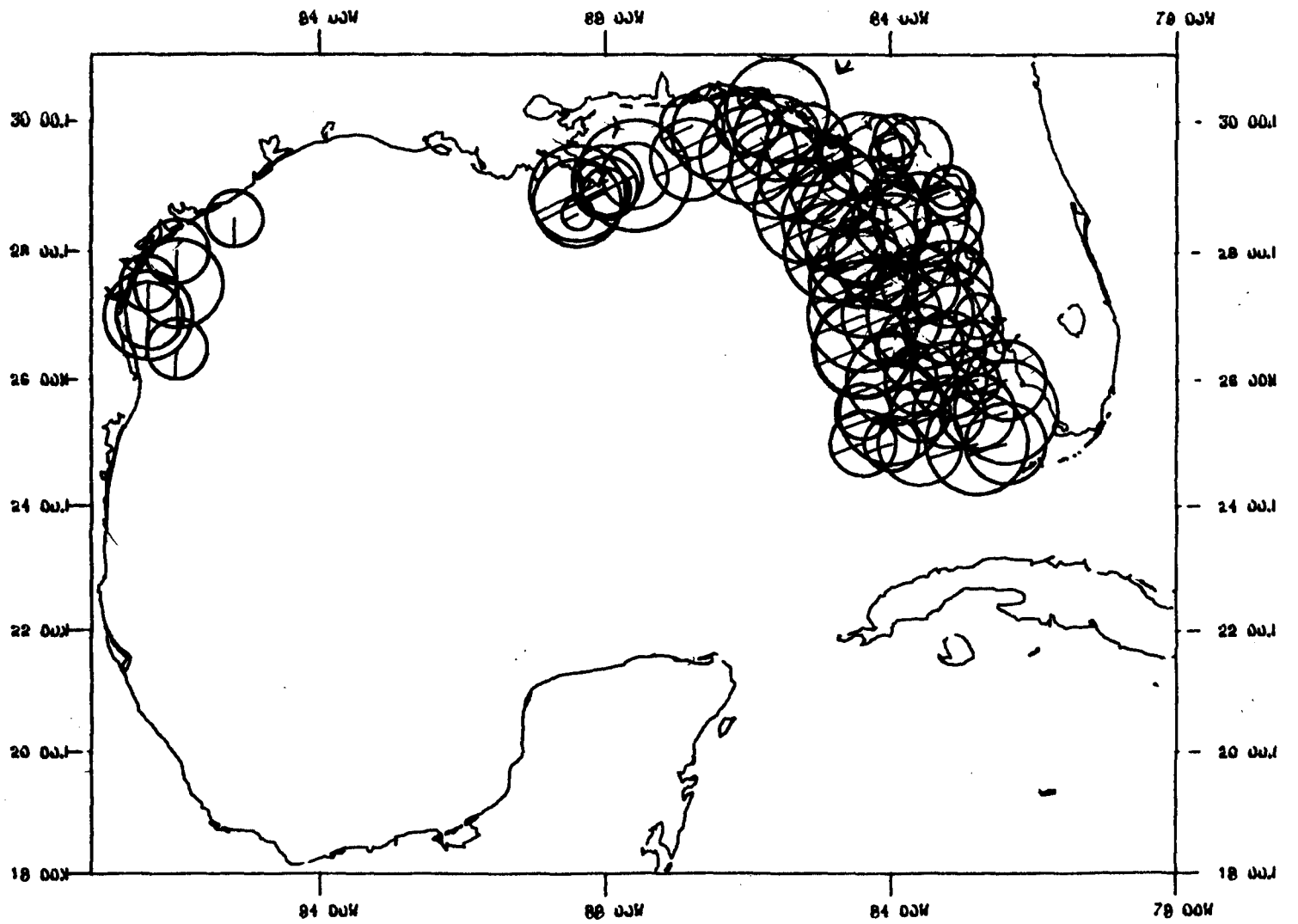
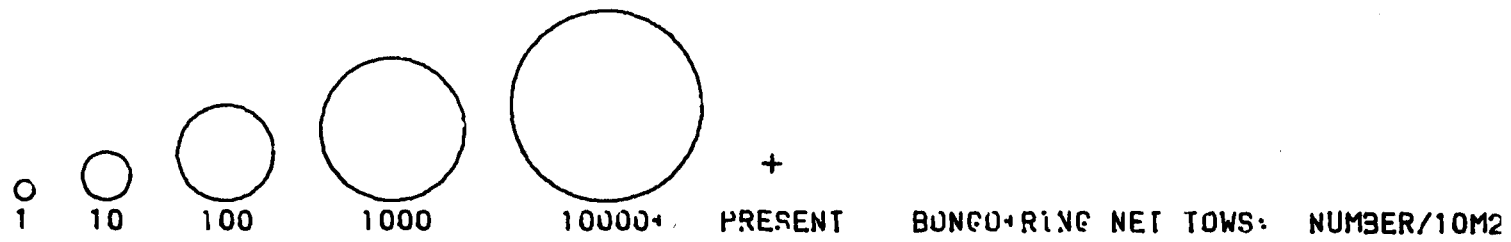


FIGURE 10 SEAMAP 1986 ICHTHYOPLANKTON: GOBIIDAE 07/01/86-12/31/86

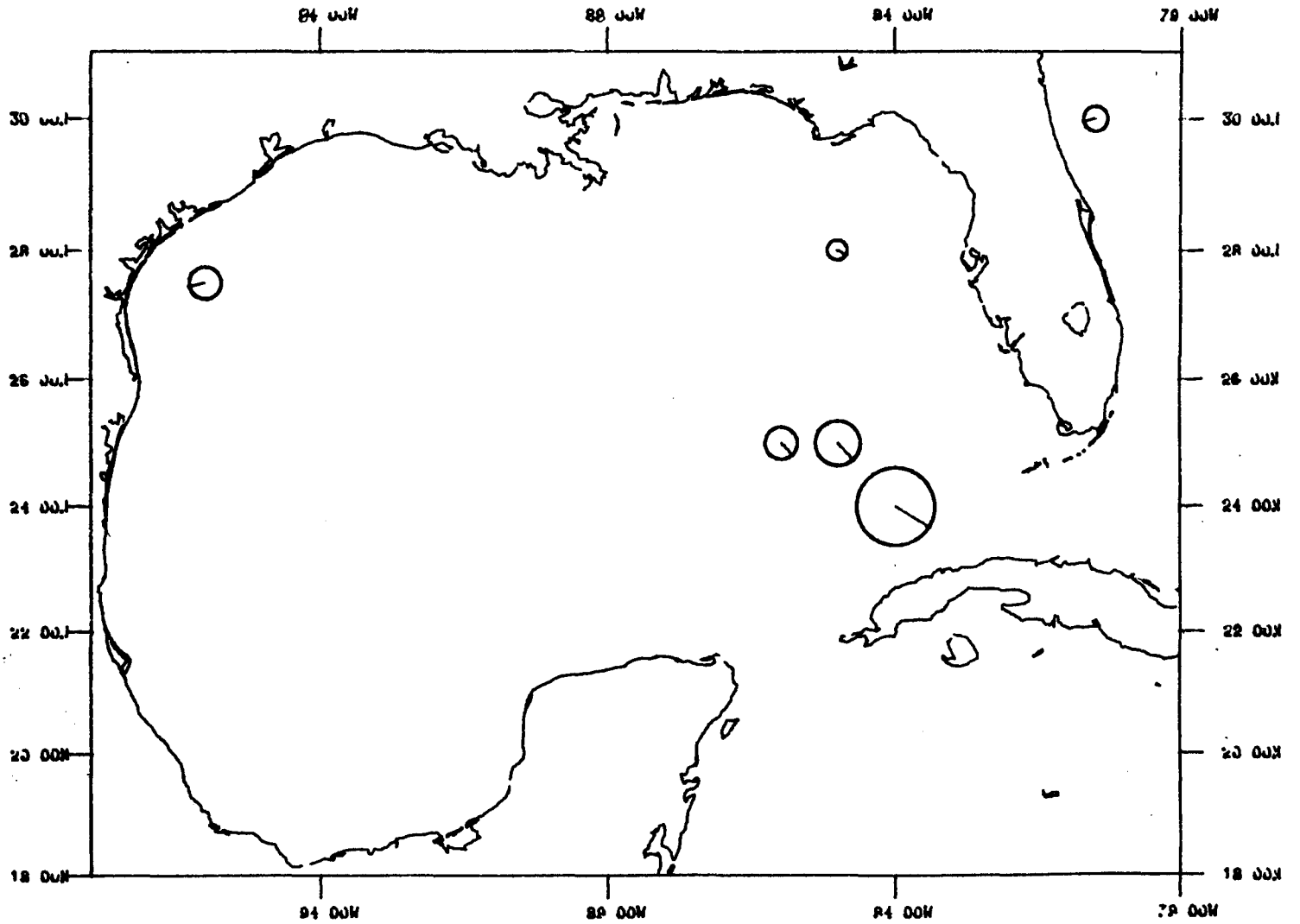
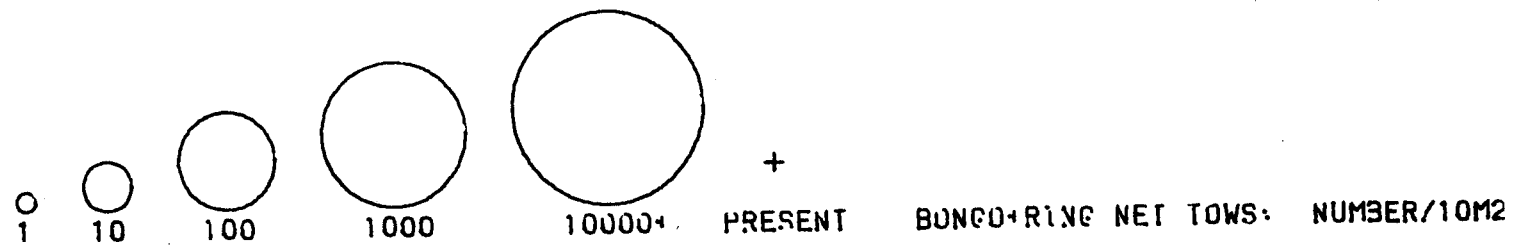
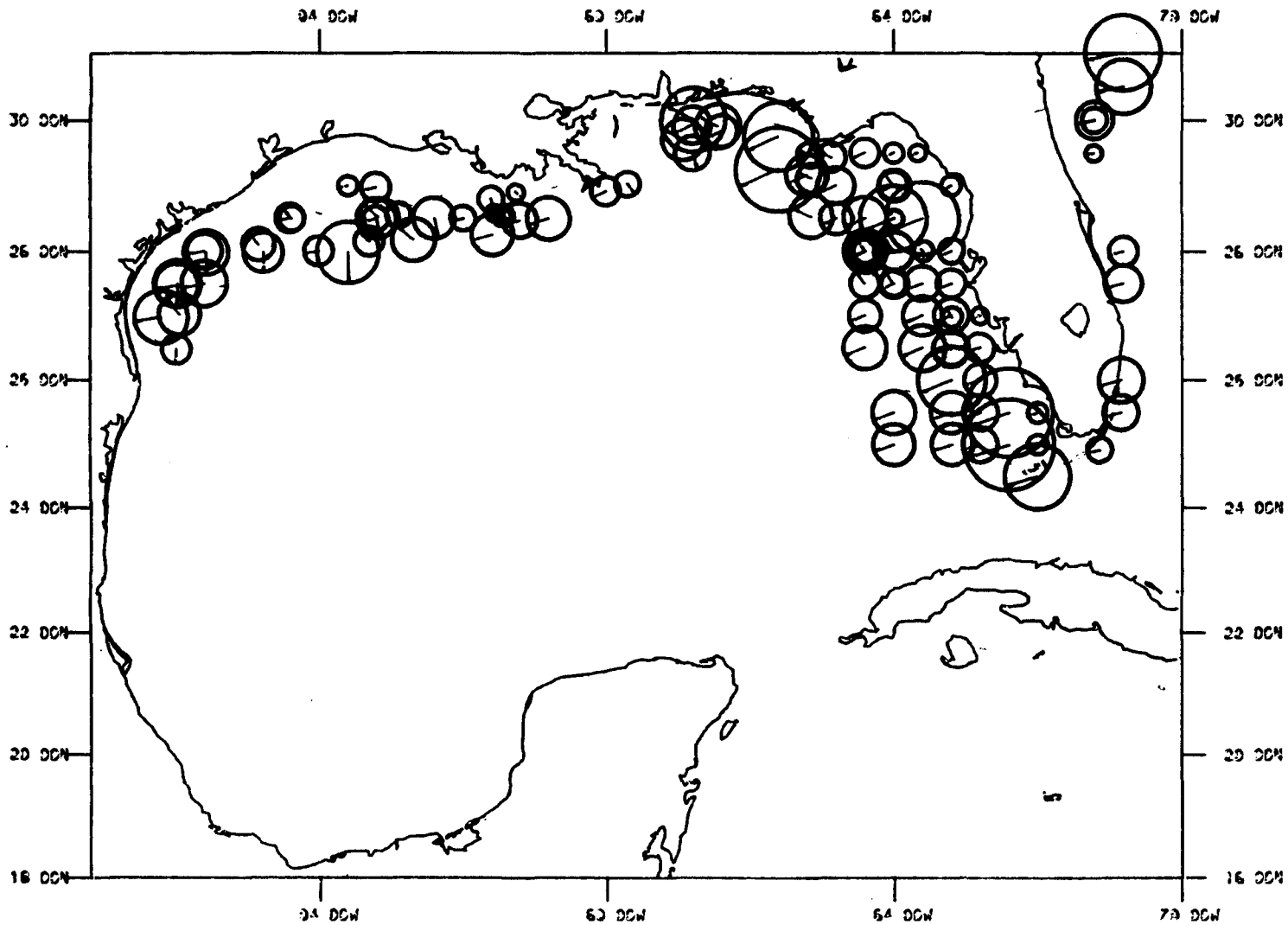
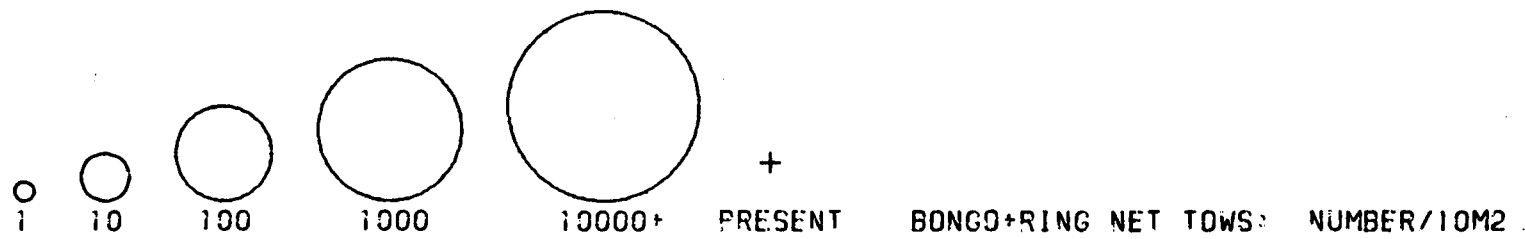


FIGURE 11 SEAMAP 1986 ICHTHYOPLANKTON: ISTIOPHORUS PLATYPTERUS



**FIGURE 12** SEAMAP 1986 ICHTHYOPLANKTON: LUTJANIDAE

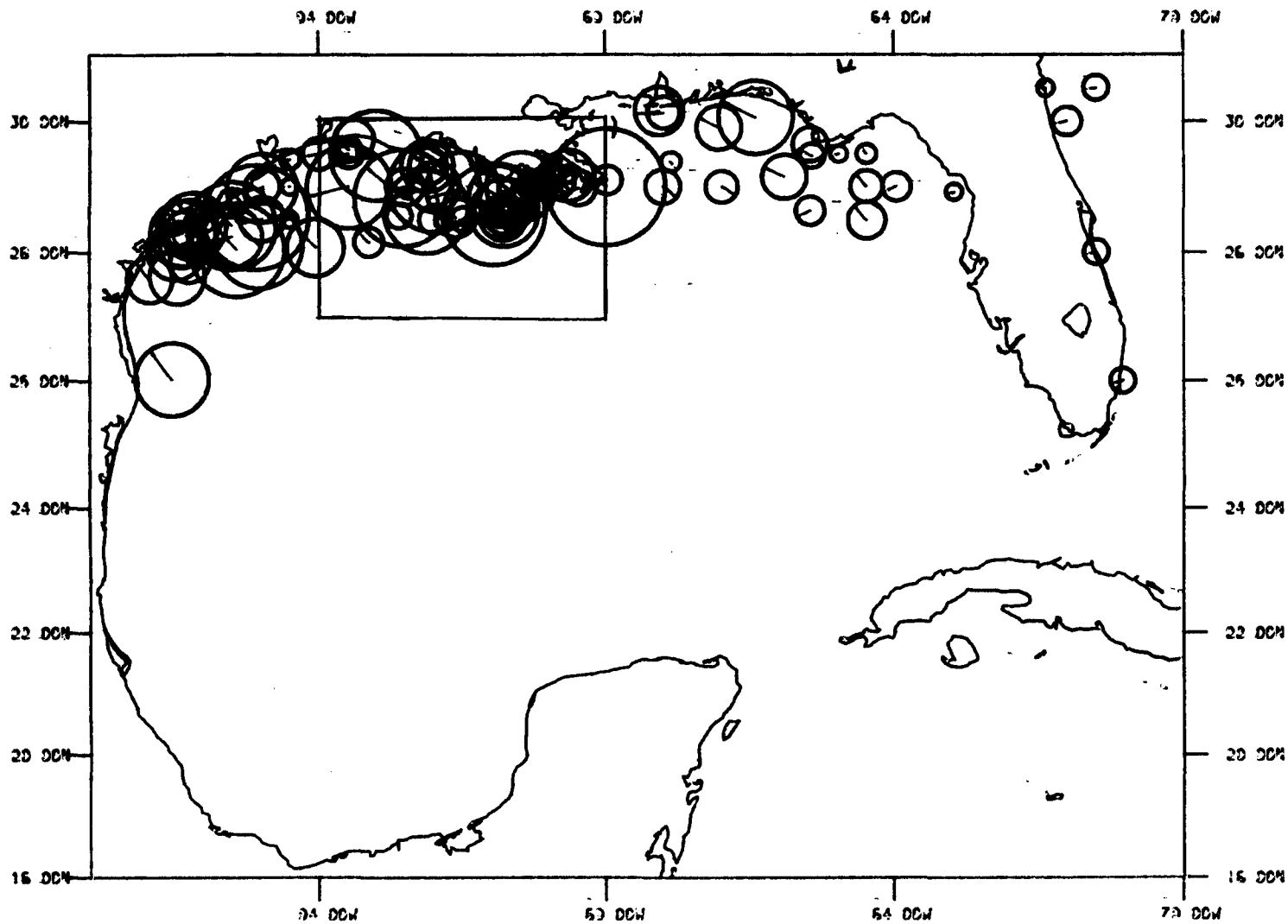
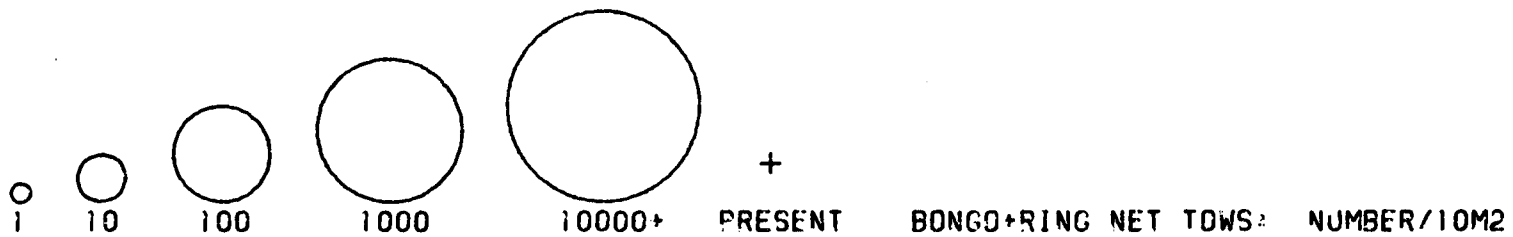


FIGURE 13 SEAMAP 1966 ICHTHYOPLANKTON: SCIAENIDAE

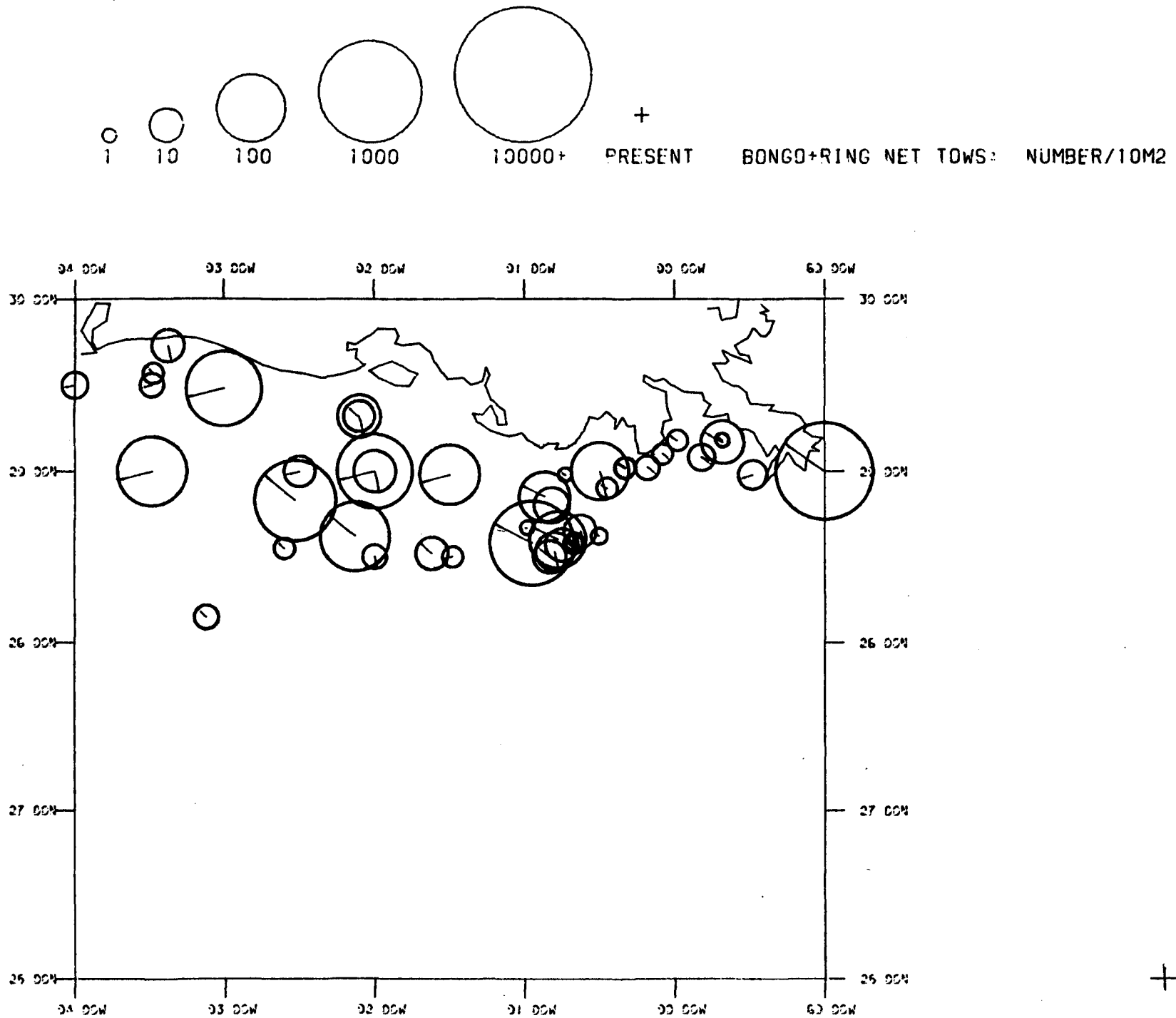
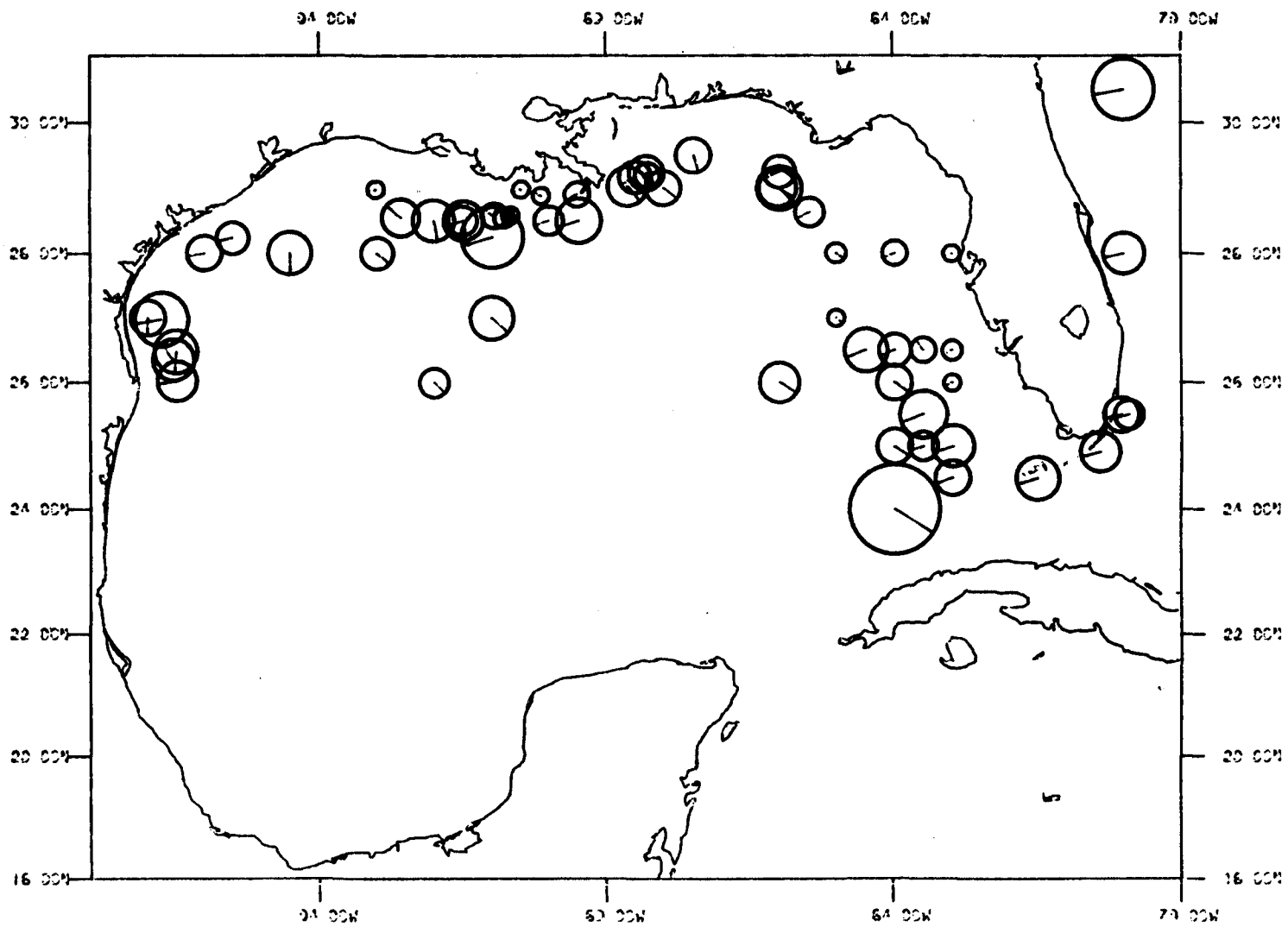
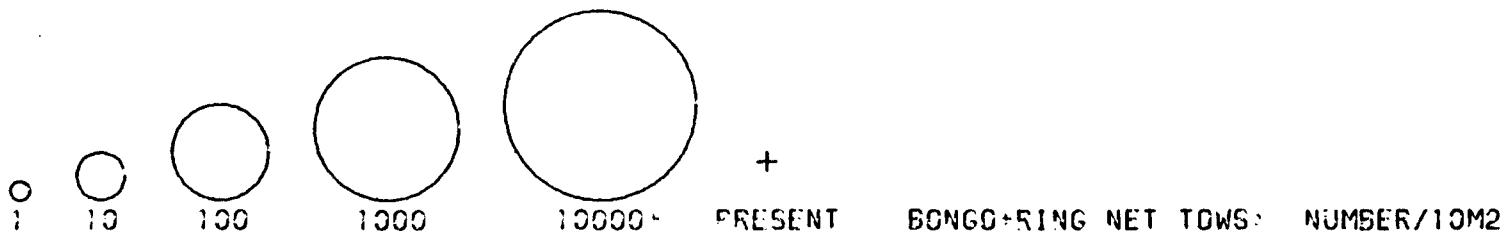
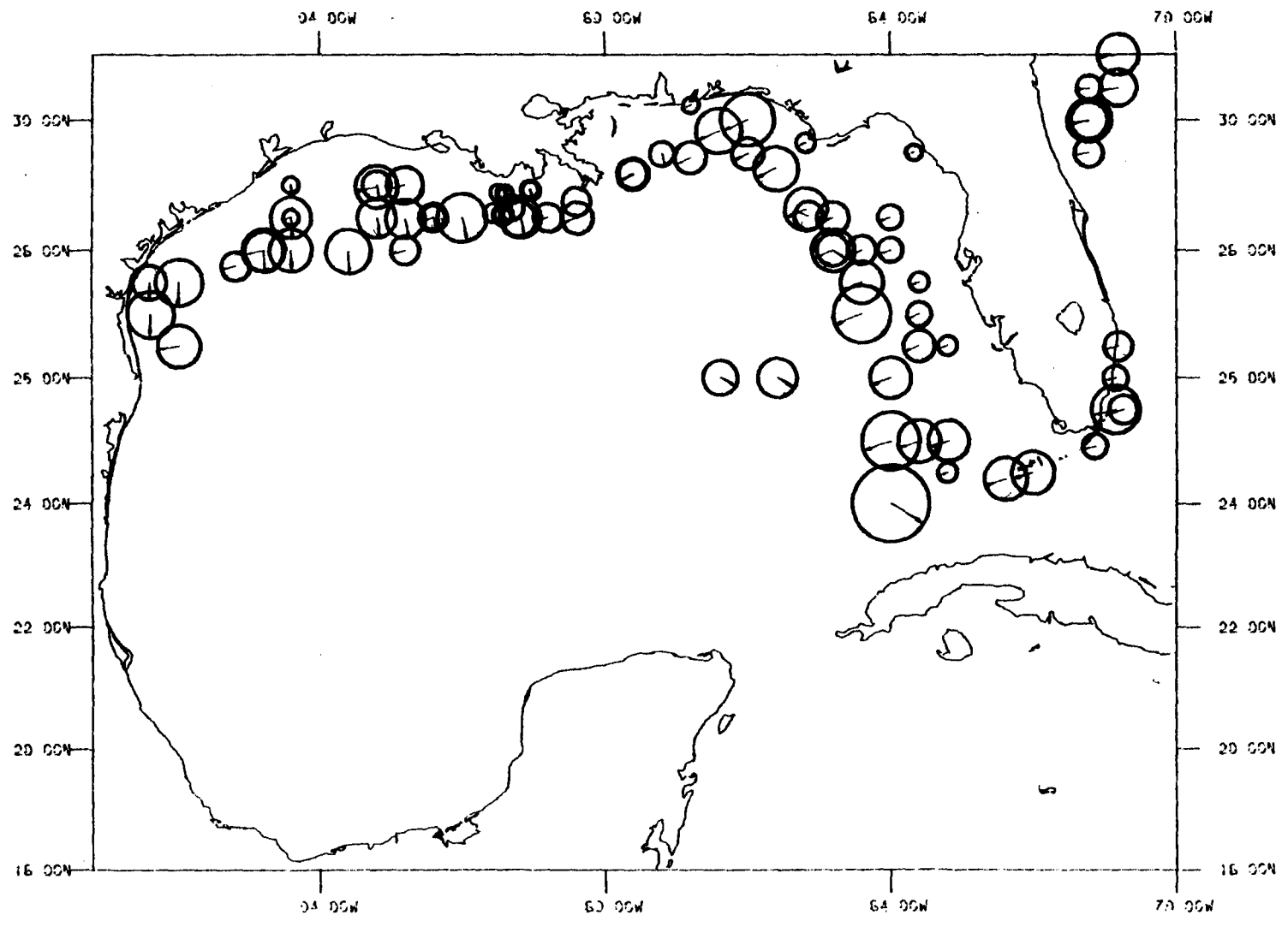
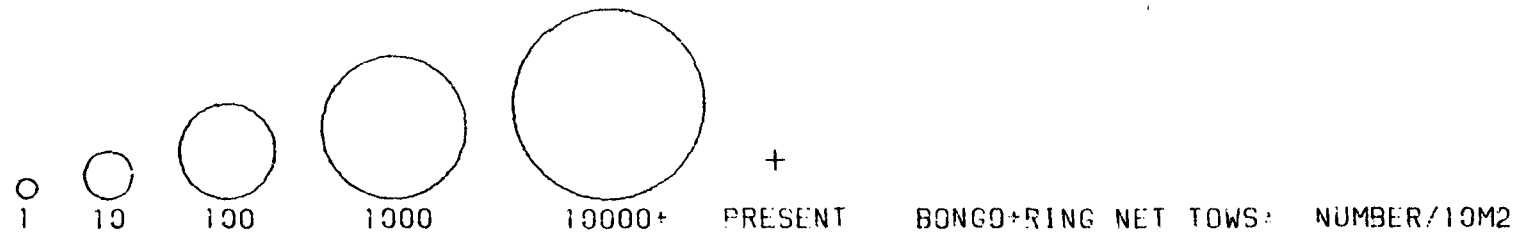


FIGURE 14 SEAMAP 1966 ICHTHYOPLANKTON: SCIAENIDAE

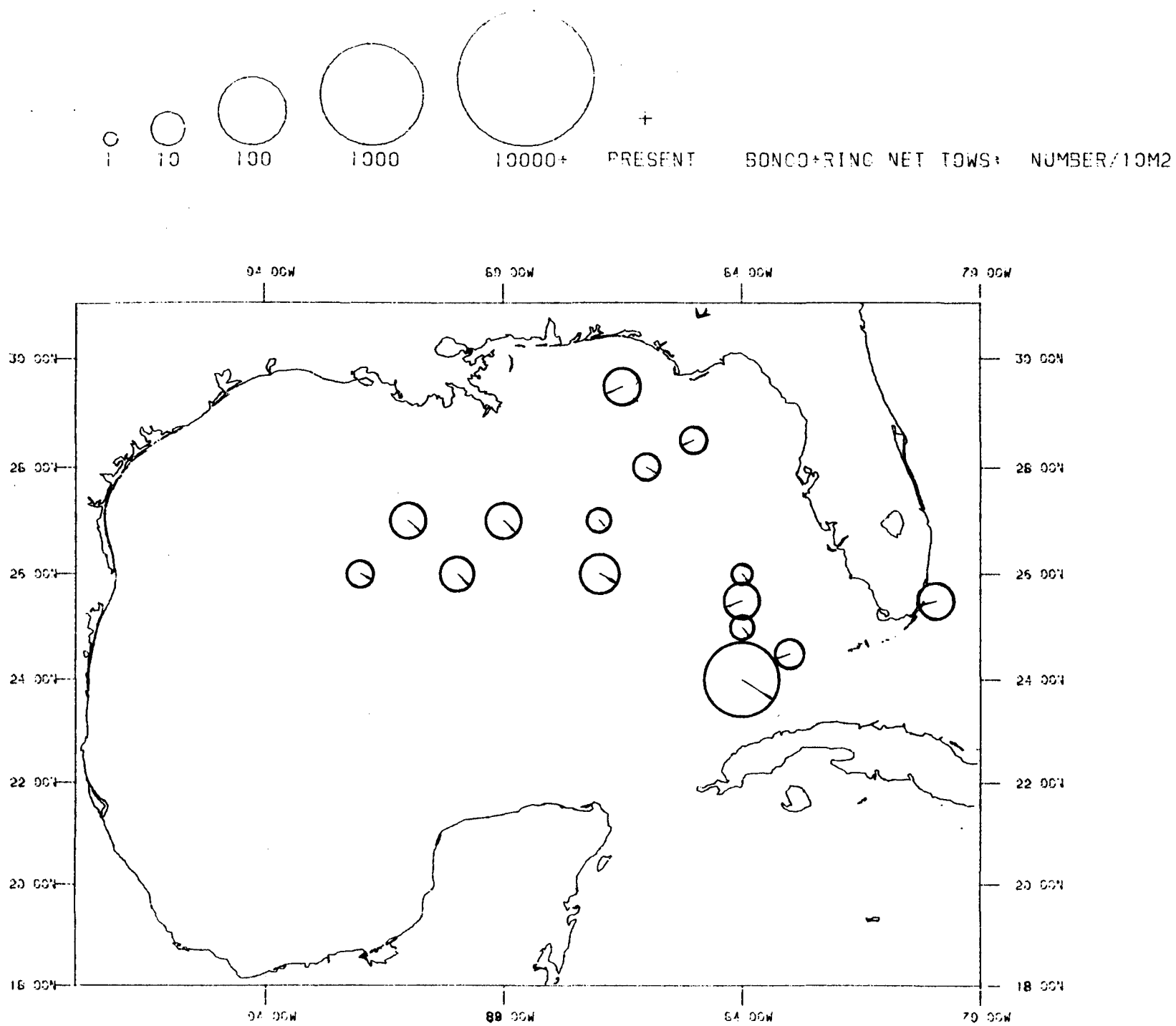


**FIGURE 15** SEAMAP 1966 ICHTHYOPLANKTON: AUXIS SP.

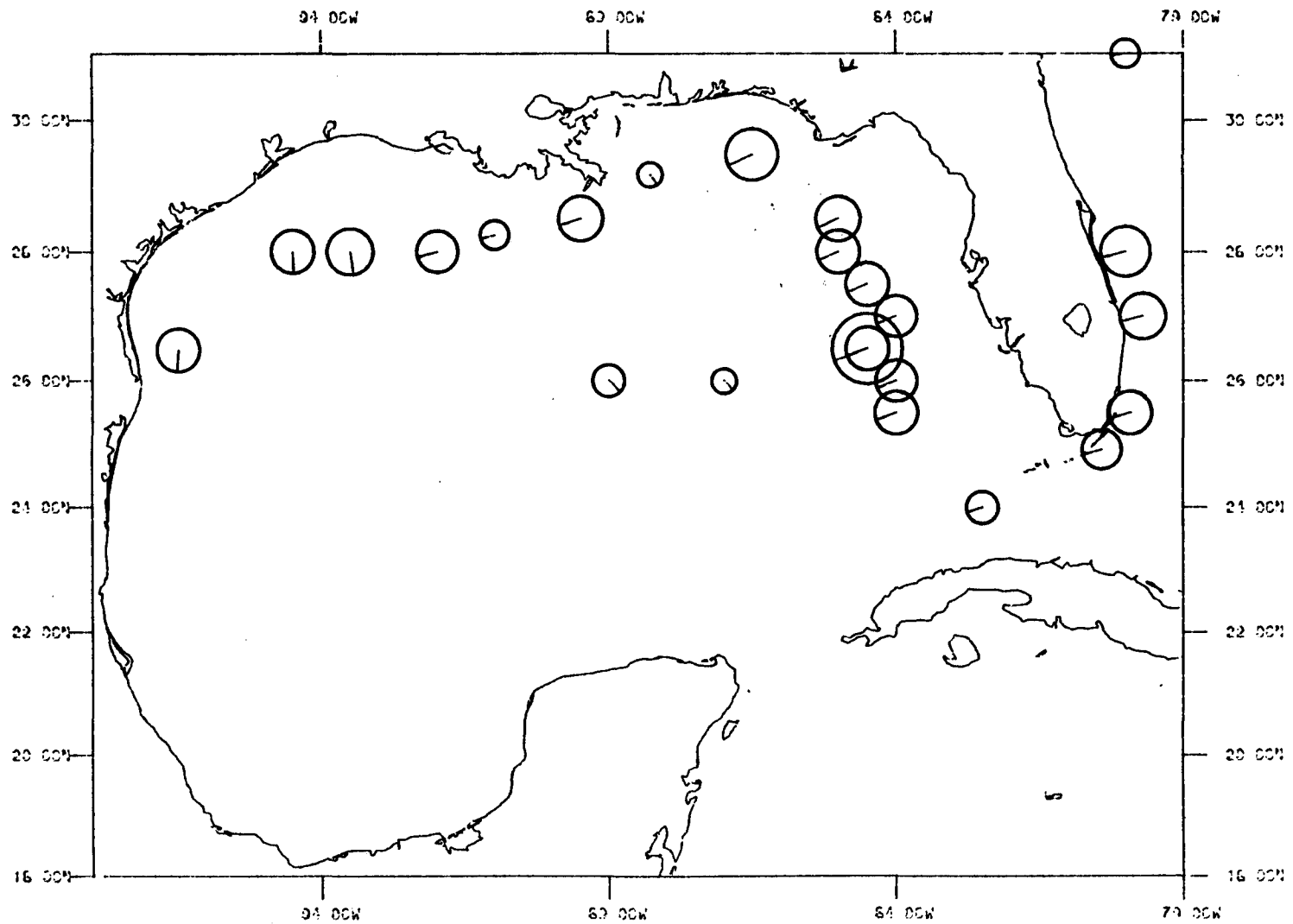
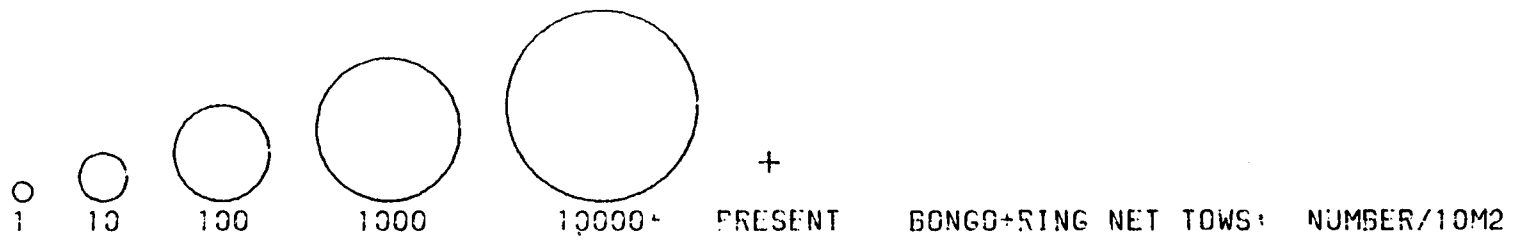


**FIGURE 16** SEAMAP 1986 ICHTHYOPLANKTON: *EUTHYNNUS ALLETTERATUS*





**FIGURE 17** SEAMAP 1986 ICHTHYOPLANKTON: KATSUWONUS PELAMIS



**FIGURE 18** SE AMAD 1966 ICHTHYOPLANKTON: THUNNUS SP.

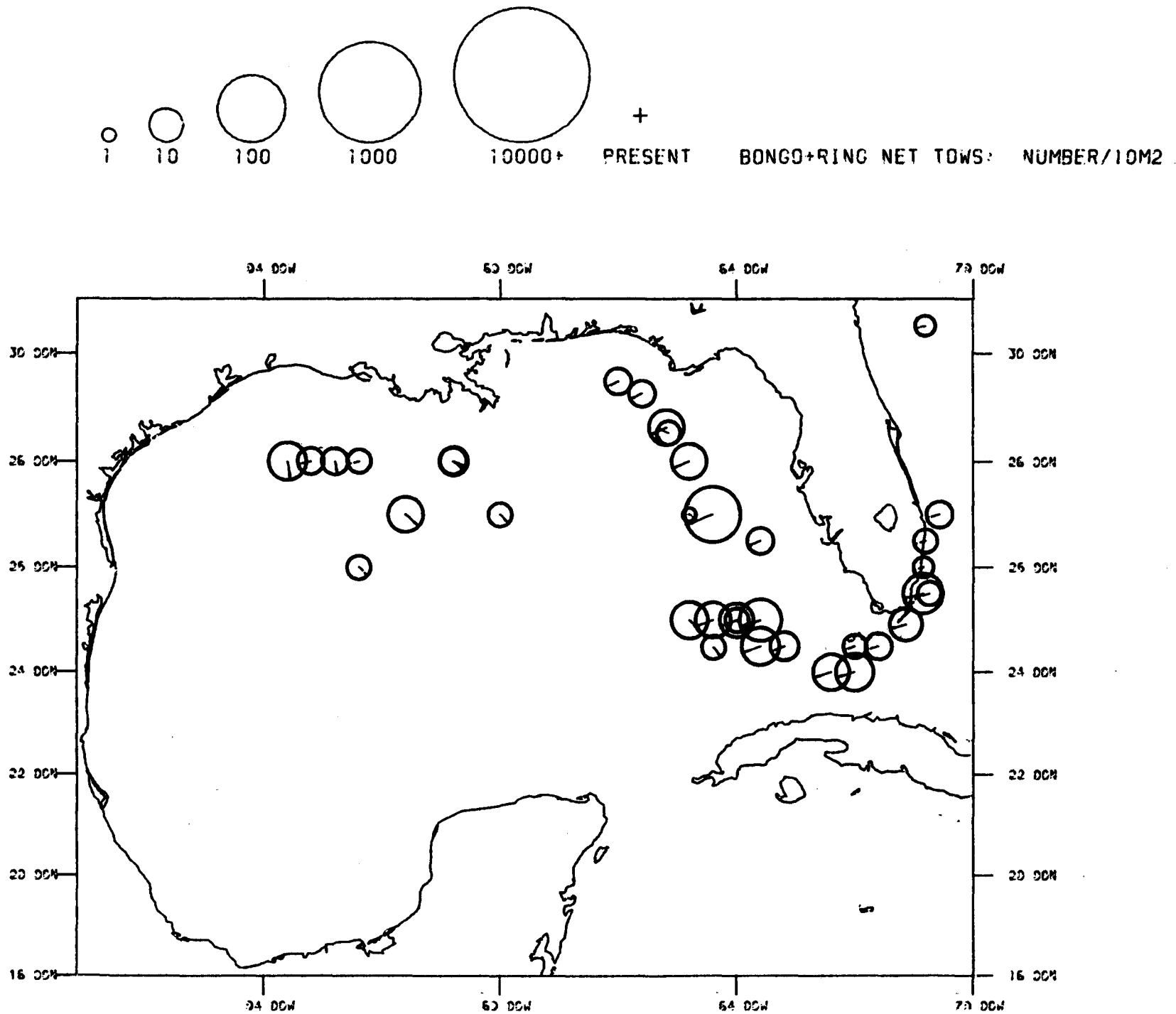


FIGURE 19 SEAMAP 1986 ICHTHYOPLANKTON: THUNNUS ATLANTICUS

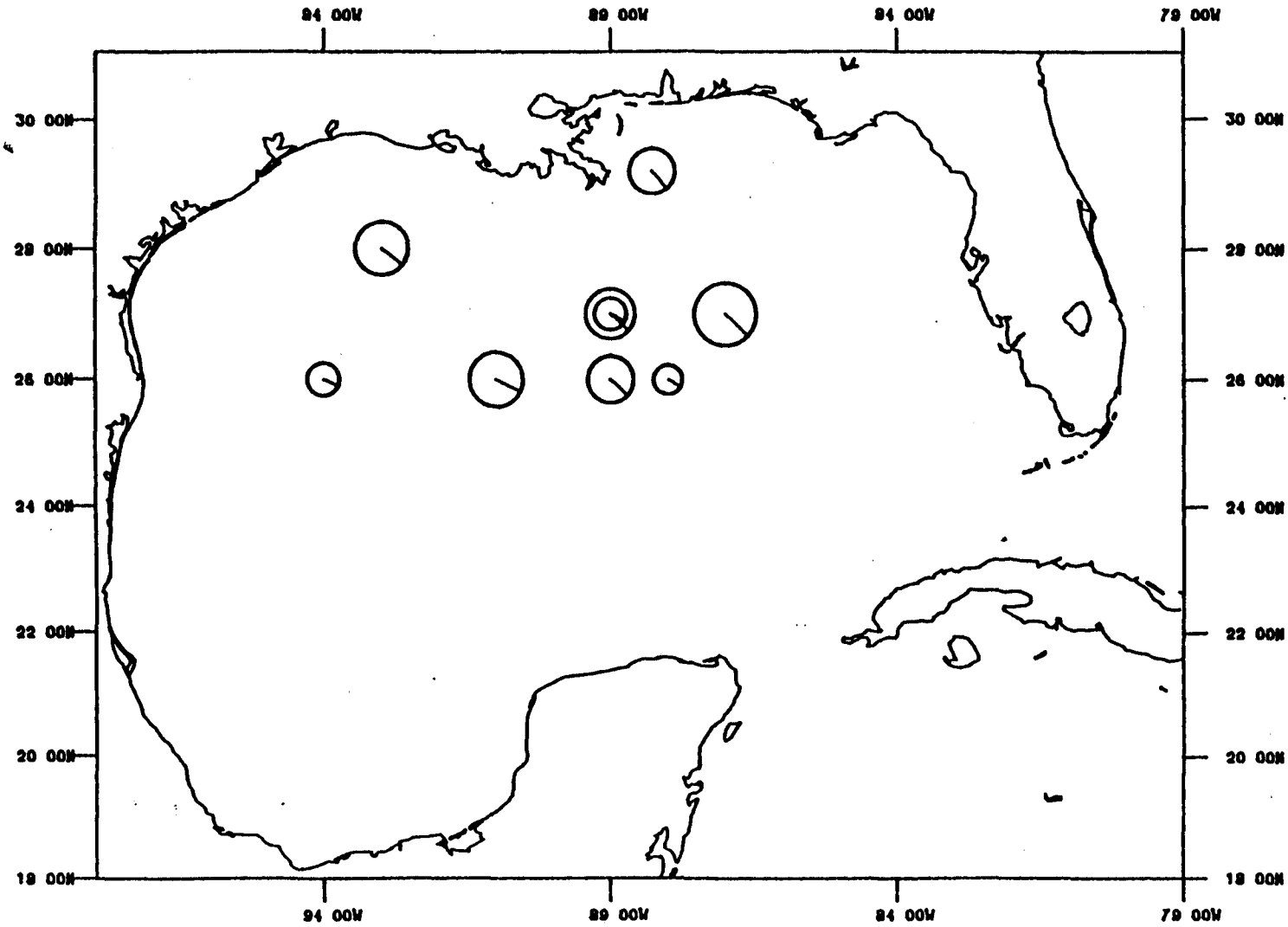
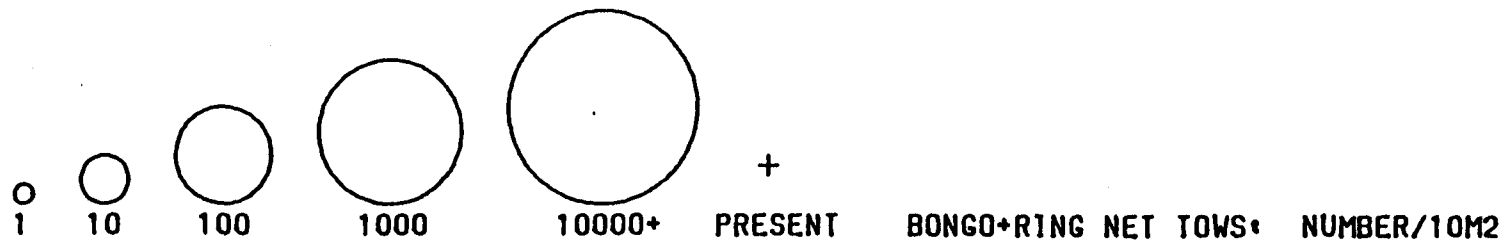
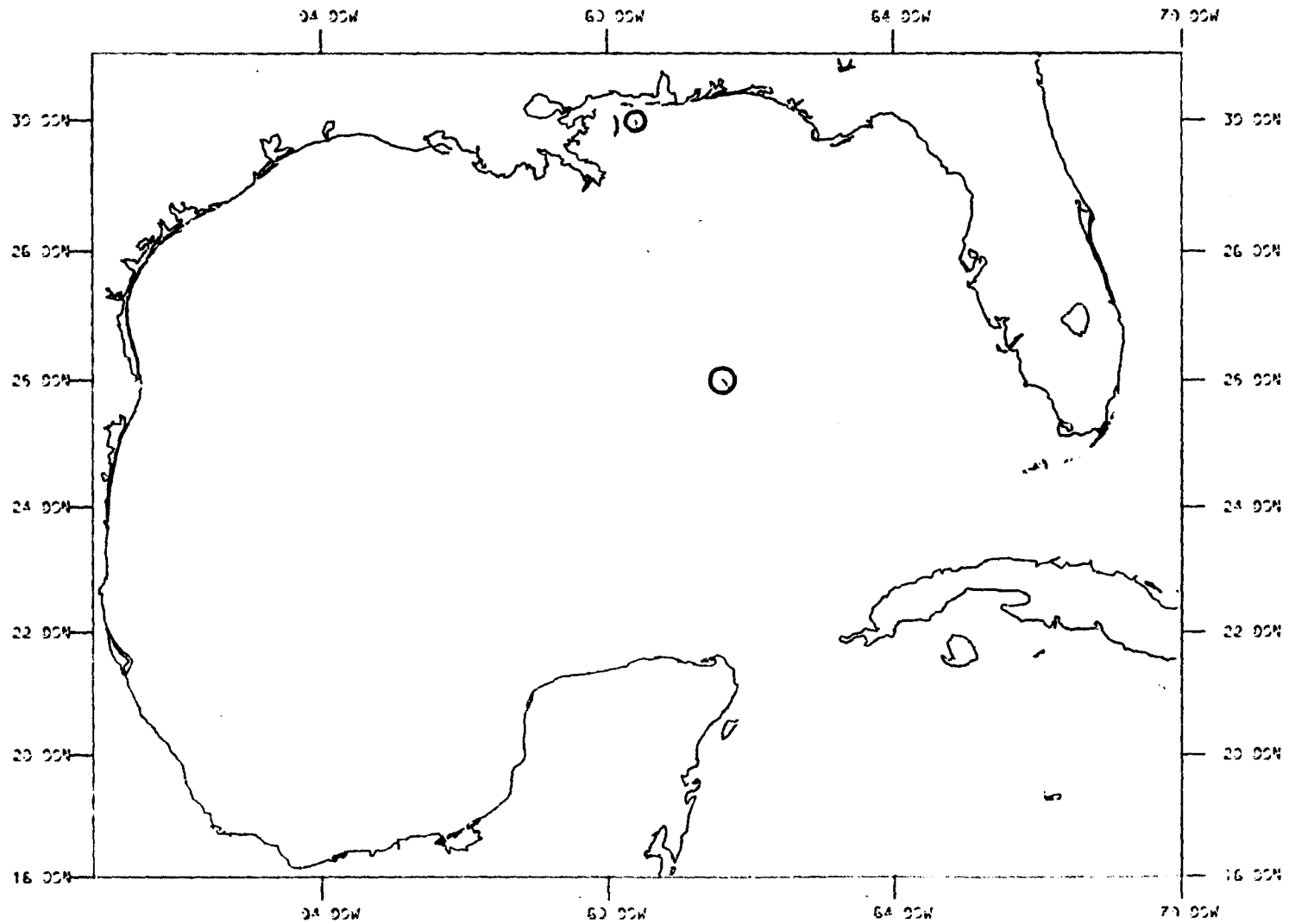
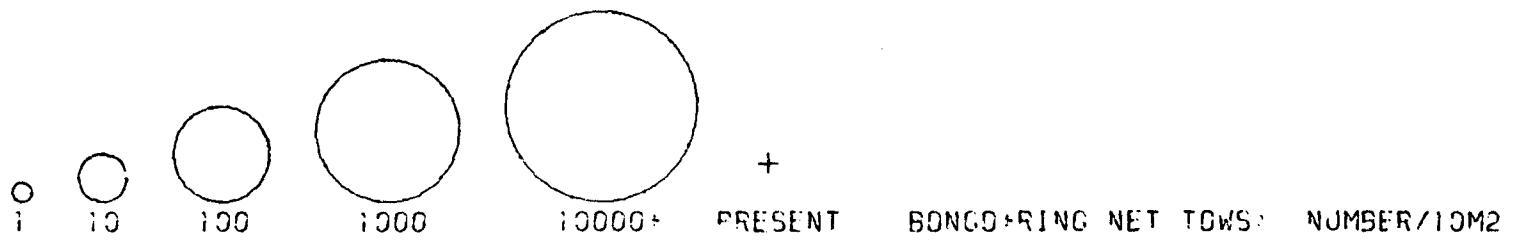


FIGURE 20 SEAMAP 1986 ICTHYOPLANKTON: THUNNUS THYNNUS



**FIGURE 21** SEAMAP 1966 ICHTHYOPLANKTON: SCOMBEROMORUS SP.

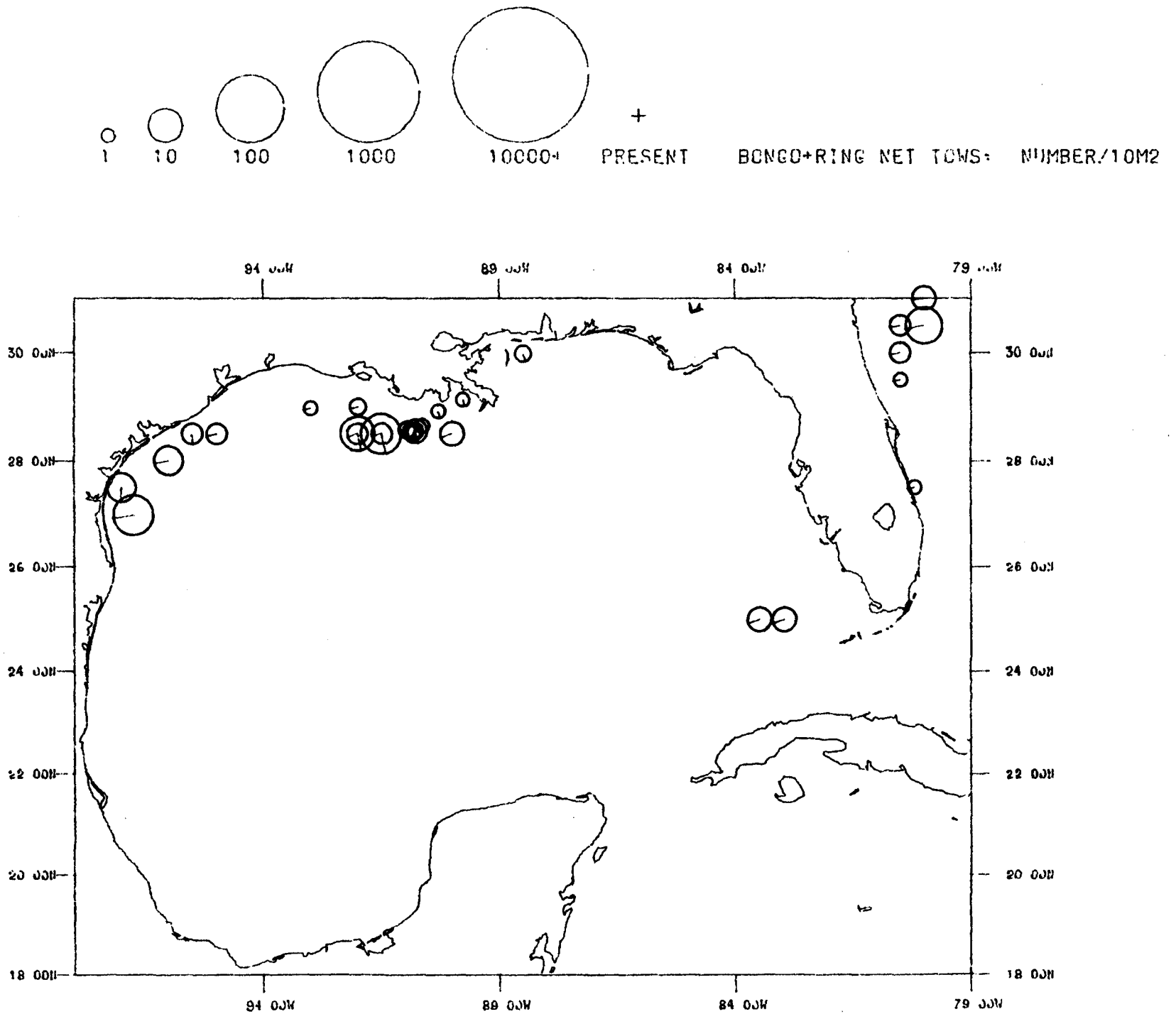


FIGURE 22 SEAMAP 1986 ICHTHYOPLANKTON: SCORPAENOPSIS DIABOLUS

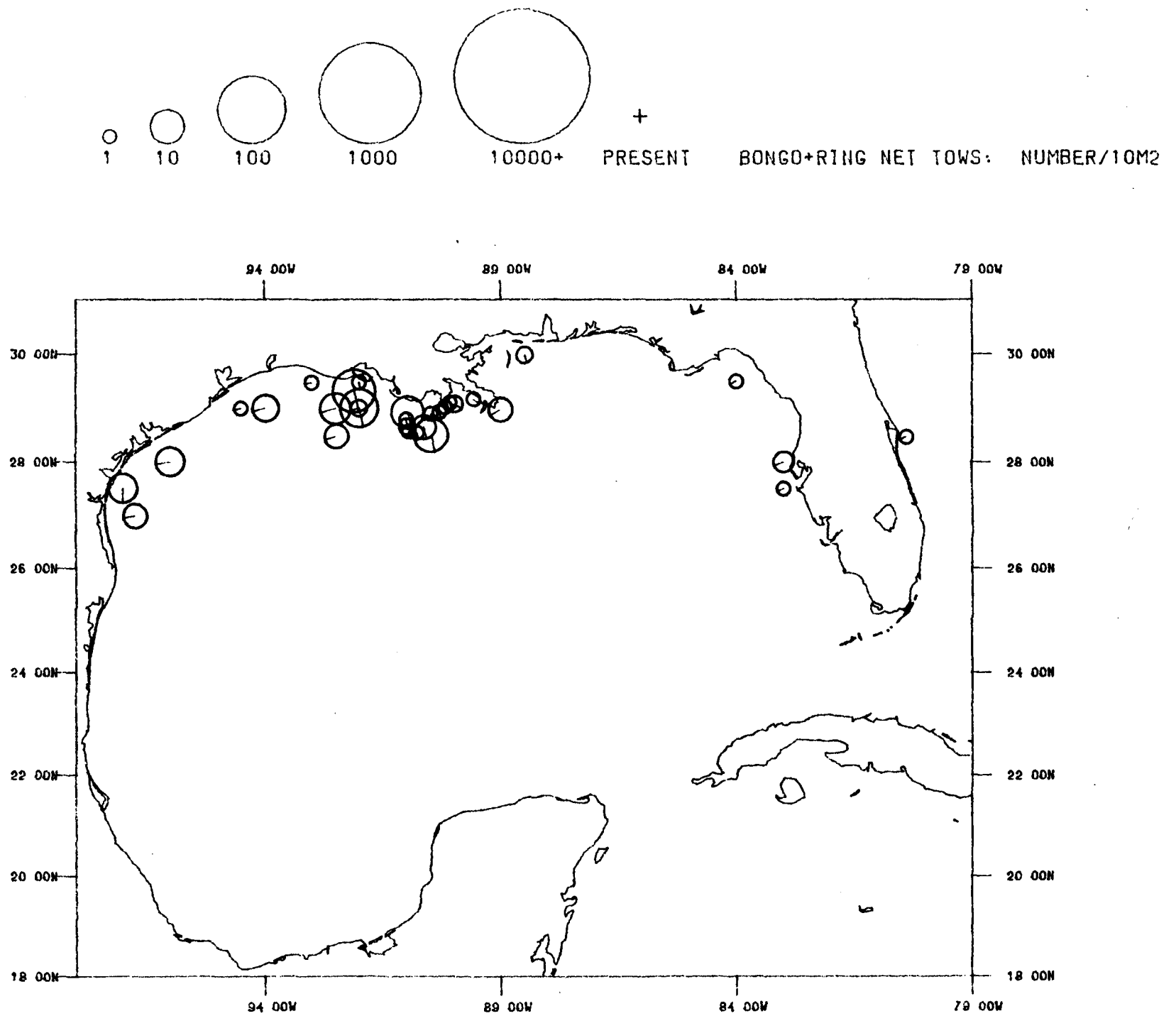
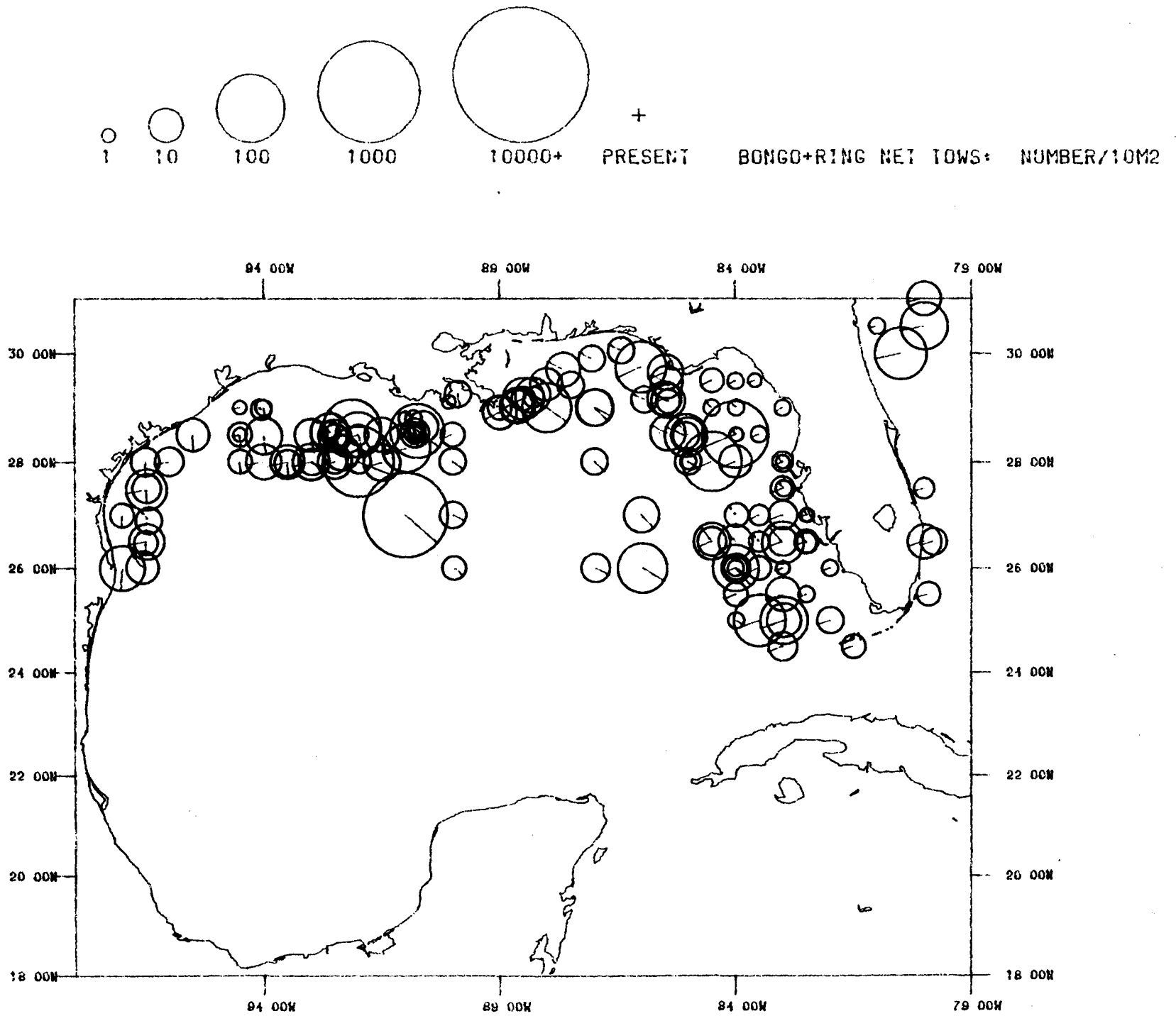


FIGURE 23 SEAMAP 1986 ICHTHYOPLANKTON: SCOMBEROMORUS MACULATUS



**FIGURE 24** SEAMAP 1986 ICHTHYOPLANKTON: SERRANIDAE