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SEAMAP 1983 - ICHTHYOPLANKTON

Larval Distribution and Abundance of Engraulidae,  
Carangidae, Clupeidae, Lutjanidae, Serranidae,  
Sciaenidae, Coryphaenidae, Istiophoridae, Xiphiidae,  
and Scombridae in the Gulf of Mexico

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U.S. DEPARTMENT OF COMMERCE  
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
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The second area-wide ichthyoplankton survey under the Southeast Area Monitoring and Assessment Program (SEAMAP) was conducted throughout 1983, except during January, February and August in U.S. waters of the Gulf of Mexico. The first survey was in 1982 (see "SEAMAP-Ichthyoplankton", NOAA Technical Memorandum NMFS-SEFC-144). Participating vessels were from the National Marine Fisheries Service, the States of Florida, Alabama, Mississippi, and Louisiana, University of Miami and Florida Institute of Oceanography (Fig. 1, Table 1). A 60 cm bongo net was sent to 200 m and towed to the surface (oblique tow) or it was sent to within 5 m of the bottom in depths less than 200 m; a 20 cm bongo net was used for oblique tows by the States of Alabama and Louisiana in shallow coastal waters; a 1/2 m ring net was used by the State of Louisiana for surface tows in shallow coastal waters; and a 1x2 m neuston net was towed at the surface for 10 minutes by most vessels in conjunction with the oblique 60 cm bongo net tow. The number of samples collected in 1983 is shown in Table 2 where the numbers can be compared to those samples collected in 1982. All neuston tow samples and one sample from each bongo tow collected in 1983 were sorted for fish larvae at the Polish Plankton Sorting and Identification Center in Szczecin, Poland. The other sample from each bongo tow will be deposited at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi for archiving. The sorted larvae were identified to lowest taxon possible, counted and measured under the supervision of Ejsymont. Then the ichthyoplankton samples were returned to the National Marine Fisheries Service's Southeast Fisheries Center laboratory in Miami. Here Richards, Potthoff and Kelley verified Polish identifications of scombrids. Kelley verified identifications of chaetodontids and pomacanthids. Potthoff and Richards verified gempylid identifications. A data base had been developed for the 1982 SEAMAP samples (NOAA Technical Memorandum NMFS-SEFC-144). The fish larvae

during the 1983 SEAMAP survey were added to that data base on the computer at the Southeast Fisheries Center, Miami, Florida. The larvae were transferred to the SEAMAP Ichthyoplankton Archiving Center (SAC), Florida Department of Natural Resources, Marine Resource Laboratory, 100 Eighth Avenue, S.E., St. Petersburg, FL 33701-5095, where they are archived by Gartner. Additionally, anguilliform larval identifications were updated by M.M. Leiby and post-metamorphic myctophids were updated by J.V. Gartner of SAC. Taxa of larval fishes are loaned to qualified researchers upon request. The identifications made by the Polish Plankton Sorting Center will be updated by these scientists who borrow individual larval fish groups.

In this paper, charts of selected fish taxa show distribution and abundance. For tows that had flow meters attached to the frame (20 and 60 cm bongo tows) the number of larvae under 10 square meters of sea surface was estimated and plotted. For 1x2 m neuston net tows, which did not have flow meters, the actual number of larvae was plotted. The center of the circle on the plots determines the position of capture, the diameter of the circle determines either the estimated number under 10 square meters of sea surface or the actual number of larvae caught. The radius in the circle determines the date: the full 360° circle represents one year, thus each clockwise degree approximately equals one day. The small crosses signify presence of larvae from tows where abundance estimates could not be made because of absence of flow meters (1/2 m ring net tows) or erroneous flow meter readings. The plots of families only include larvae that could not be identified to genus and species. For example, the taxon "Carangidae" contains larvae that could not be identified by the Polish Plankton Sorting Center to a lower taxon such as Caranx sp. or Caranx hippos. The same is true for the following families: Engraulidae, Sciaenidae, Clupeidae, Lutjanidae, Serranidae, Istiophoridae. The numbers of specimens caught in these families is great compared to the numbers identified to lower taxa (Table 3). However, the number of identifications to lower taxa was much greater in 1983 than in 1982.

In Table 3 the taxa and number of individuals caught during SEAMAP 1983 are listed phylogenetically. In Table 4 are listed the 20 most numerous taxa from SEAMAP 1982 and 1983, and their actual number captured. Twelve taxa from the 1982 list were present on the 1983 list, but ranked differently for each year.

The following ichthyoplankton data are available upon request:

1. List of SEAMAP 1983 participants, vessel, cruise, number of stations, SEAMAP sample numbers, gear and mesh size, cruise dates and affiliation (Table 1).
2. List of stations for participating vessels containing SEAMAP sample numbers, position, sampling date and time, gear, maximum sampling depth, volume of water filtered by net, and zooplankton displacement volumes for bongo net tows. Table 5 is an example of the printout.
3. List of all larval fish taxa caught during SEAMAP 1983 arranged alphabetically containing vessel, cruise, station, SEAMAP sample number, gear, mesh, capture position, date and time of capture, number captured, length measurement and computed number of larvae under 10 square meters of sea surface for bongo tows with flow meters. Table 6 is an example of the printout.
4. List of all plankton tows during SEAMAP 1983 arranged by cruise containing the following information for each tow: SEAMAP sample number, position, time and date of sampling, gear and mesh size, zooplankton displacement volume, maximum sampling depth, volume of water filtered by bongo net, standard haul factor of bongo tow, distance traveled by bongo net, ichthyoplankton taxa present in tow, their number and lengths and computed number of larvae under 10 square meters of sea surface for bongo tows with flow meters. Table 7 is an example of the printout.

5. Phylogenetically arranged list of taxa and their numbers captured during SEAMAP 1983 (Table 3).

Research on larvae caught during SEAMAP 82, 83 has started. The groups of fish larvae that are being worked on and the number of loan requests are shown in Table 8. Following is a list of manuscripts, reports and accepted publications that resulted from loaned SEAMAP 1982, 1983 material.

Fahay, M.P. MS. Relationships and systematics of Steindachneria based on its ontogeny. Workshop on Gadiform Systematics, Los Angeles County Museum, January 1986.

McGowan, M.F., and W.J. Richards. MS. Distribution and abundance of bluefin tuna (Thunnus thynnus) larvae in the Gulf of Mexico in 1982 and 1983 with estimates of the biomass and population size of the spawning stock for 1977, 1978, and 1981-83. International Commission for the Conservation of Atlantic Tunas.

Shaw, R.F., and D.L. Drullinger. 1985. Early life history of coastal pelagic finfish off Louisiana. Report to Louisiana Board of Regents.

Potthoff, T., S. Kelley and J.C. Javech. MS accepted. Cartilage and bone development in scombroid fishes. Fish. Bull., U.S.

The following are brief accounts for the 46 plots of 1983 abundance and distribution of larval fishes and brief comparisons with the 1982 plots (see SEAMAP 1982 - Ichthyoplankton, NOAA Tech. Mem. NMFS-SEFC-144).

Carangidae, Figures 3-5. Jack larvae were captured in the northern half of the Gulf of Mexico during all months sampled, but most of them occurred during May and June. The distribution of jack larvae captured in 1982 was similar to 1983.

Clupeidae, Figures 6-8. Herring larvae were mostly captured in the shallow water shelf areas from Texas to Florida. The largest concentrations were found in June along the west coast of Florida, although larvae were present during most months sampled. The occurrence and abundance of herring larvae in 1982 was similar to 1983.

Coryphaena sp., Figure 9. This taxon represents those small dolphin fish larvae less than 5.0 mm NL, which could not be identified to species. All were captured in May 1983, mostly over deep water in the central Gulf of Mexico. In 1982 the occurrence and abundance of dolphin fish larvae was similar, except in 1982 we reported neuston tow captures of Coryphaena sp. In 1983 all dolphin fish from neuston net tows were identified to species.

Coryphaena hippurus, Figures 10, 11. Few common dolphin larvae were captured in bongo tows and more were caught in neuston nets, indicating their predominant occurrence at the sea surface. The larvae are distributed in the northern Gulf of Mexico shelf waters and above all deep water where sampling took place in 1983. Most common dolphin larvae were captured in May and June, but a few captures were in September and October. In 1982 the abundance and distribution for common dolphin was similar for neuston tows, but more larvae were caught in 1982 in bongo net tows than in 1983.

Coryphaena equisetis, Figures 12, 13. Only a few pompano dolphin larvae were caught in 1983 in bongo and neuston net tows in the northern Gulf of Mexico, both over shallow shelf and deep oceanic waters. Almost all pompano dolphin larvae were caught in April, May and June. In 1982, pompano dolphin larvae were not captured in bongo nets. Their distribution from neuston tows was more oceanic in 1982 than in 1983.

Engraulidae, Figures 14-17. Anchovy larvae were the most abundant taxon captured in 1983. They were most widely and numerous distributed adjacent to and in shelf waters from Texas to Alabama both in neuston and bongo net tows. Fewer larvae were captured in Florida waters. Most captures of anchovies were in April, May and June with some captures in March, October, November and December. A similar distribution and abundance was reported for anchovy larvae in 1982.

Istiophoridae, Figures 18, 19. Sailfish and marlin larvae are difficult to separate in the larval stage. Most larvae captured are probably sailfish, judging from adult abundances. In 1983, sailfish larvae were distributed adjacent to northern shelf waters and in the oceanic realm of the Gulf of Mexico from both bongo and neuston net tows. All were captured in April, May and June, except a bongo tow capture in the Gulf Stream off Palm Beach, Florida in the middle of September. The distribution and abundance of sailfish in 1982 was similar to that of 1983.

Lutjanidae, Figures 20-22. Snapper larvae were distributed over shelf and adjacent waters along the coasts of the Gulf of Mexico from Texas to Florida during 1983. More captures of snapper larvae were done by bongo nets than by neuston nets. This may indicate that snapper larvae are distributed from the surface down to deeper water. Most captures were in June and October, but a few were in May, September and November. The distribution of snapper larvae in 1982 was similar in 1983, but more were caught in neuston tows in 1982 than in 1983.

Sciaenidae, Figures 23-25. During SEAMAP 1983 drum and croaker larvae were captured from both bongo and neuston net tows mostly in shelf waters from Texas to Florida, with a few oceanic occurrences. There was a greater number of occurrences of drum and croaker larvae from bongo net tows when

compared to neuston net tows, indicating a subsurface distribution. The larvae occurred during all months sampled. In 1982 the distribution and abundance of drum and croaker larvae was similar to 1983. In 1982, as in 1983, there was a greater occurrence of the larvae from bongo net tows than from neuston net tows.

Auxis sp., Figures 26, 27. Frigate and bullet mackerel larvae cannot be separated to species. They occurred frequently in both bongo and neuston net tows mostly in oceanic waters and in a few places over the shelf. Of all scombrids, the frigate and bullet mackerels were the most frequently captured in 1983 followed by Thunnus atlanticus (Figs. 34, 35). Bullet and frigate mackerel larvae were captured from April to November, but mostly during May and June. Their distribution and abundance in 1982 was very similar to that of 1983.

Euthynnus alletteratus, Figures 28, 29. Little tunny larvae were of low abundance in 1983, both in neuston and bongo net tows. Most were caught in shelf waters, but some were oceanic. The majority was captured in May and June, but one capture was in April and another in November. In 1982 many more little tunny were captured in bongo tows than in 1983. In 1982 there were more frequent captures of little tunny from neuston tows in 1982 than in 1983.

Katsuwonus pelamis, Figures 30, 31. Skipjack tuna larvae from both bongo and neuston net tows occurred predominantly in oceanic waters in the eastern Gulf of Mexico in 1983. A few occurrences were in the western Gulf. The larvae were captured during April, May, June and October. In contrast to 1983's low abundance and limited eastern distribution, skipjack tuna larvae were abundantly distributed over the entire oceanic northern half of the Gulf of Mexico in 1982.

Thunnus sp., Figures 32, 33. These small tuna larvae could not be identified to species and probably are mostly yellowfin tuna (T. albacares). Most captures of Thunnus sp. larvae in 1983 were in the eastern Gulf of Mexico, predominantly in oceanic waters. A few occurrences were in the western Gulf and a few were over the shelf. The distribution of Thunnus sp. in 1983 was similar to that of skipjack tuna, but for bongo net tows only. In neuston tows, only four Thunnus sp. larvae were captured at four stations in 1983. Thunnus sp. larvae were mostly captured in May and June. Three occurrences were in September and December. In 1982, Thunnus sp. larvae were distributed over the entire oceanic northern half of the Gulf of Mexico and in greater abundance than in 1983.

Thunnus atlanticus, Figures 34, 35. In 1983, blackfin tuna larvae from bongo and neuston net tows occurred predominantly in the oceanic waters of the eastern Gulf of Mexico, with a few occurrences in the western Gulf. Most captures were in May and June, a few were in April and December. In 1982 blackfin tuna larvae were distributed more or less evenly in oceanic waters across the entire northern half of the Gulf of Mexico.

Thunnus thynnus, Figures 36, 37. In 1983, bluefin tuna larvae were entirely absent in the northern half of the western Gulf of Mexico, but occurred in oceanic waters of the eastern Gulf of Mexico in moderate abundance during May only. Bluefin tuna larvae were much more widely distributed in 1982 than in 1983 and covered the oceanic waters of the northern half of the Gulf of Mexico.

Scomberomorus sp., Figures 38, 39. Three species of this mackerel genus are found in the Gulf of Mexico: S. maculatus, S. cavalla and S. regalis. At times, smaller mackerel larvae cannot be identified to species with certainty. These unidentified mackerel species occurred in 1983 over the

shelf of the northern Gulf of Mexico both from bongo and neuston net tows during May and June.

Scomberomorus maculatus, Figures 40, 41. In 1983, Spanish mackerel were caught by bongo and neuston net tows over shelf waters in the northern Gulf of Mexico from Alabama to Texas with one occurrence in Florida waters. All captures were from May and June. The distribution and abundance of Spanish mackerel larvae was very similar in 1982.

Scomberomorus cavalla, Figure 42. We can only report two occurrences of king mackerel larvae in May and June of 1983, one on the shelf, the other in oceanic waters. The king mackerel were caught in bongo net tows, none were present in neuston tows. In 1982, more king mackerel larvae were caught than in 1983, and in 1982 they only occurred in the northeast half of the Gulf both from bongo and neuston net tows.

Acanthocybium solanderi, Figure 43. Wahoo larvae were captured during May and June 1983 near the edge of the Florida shelf on three locations in the southwestern Gulf of Mexico. In 1982, wahoo larvae were caught on two locations in the vicinity of the 1983 capture sites.

Serranidae, Figures 44-46. Sea bass or grouper larvae were very abundant in 1983 over the entire sampling area of the northern half of the Gulf of Mexico, both from bongo and neuston net tows. The larvae were captured during all seasons, but most occurrences were in May and June. The 1982 abundances and distributions for sea bass larvae were similar to those in 1983.

Xiphias gladius, Figures 47, 48. In 1983, swordfish larvae occurred in low abundance in the oceanic waters of the central Gulf of Mexico during May only. Bongo nets caught swordfish only at one location, neuston nets caught them at five locations. This supports the concept that swordfish

larvae only occur at the surface of the ocean. In 1982, numerous swordfish larvae were captured in neuston tows over a wide oceanic area of the Gulf, but there were only four occurrences from bongo net tows.

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## List of Figures

- Figure 1. Station plots of SEAMAP 1983 participants in the Gulf of Mexico. 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. Enlarged area indicated by inset on Figure 3.
- Figure 5. Actual number of carangids caught by 1x2 m neuston net tows.
- Figure 6. Estimated number of clupeids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 7. Enlarged area indicated by inset on Figure 6.
- Figure 8. Actual number of clupeids caught by 1x2 m neuston net tows.
- Figure 9. Estimated number of Coryphaena sp. under 10 square meters of sea surface from bongo and ring net tows.
- Figure 10. Estimated number of Coryphaena hippurus under 10 square meters of sea surface from bongo and ring net tows.
- Figure 11. Actual number of Coryphaena hippurus caught by 1x2 m neuston net tows.
- Figure 12. Estimated number of Coryphaena equisetis under 10 square meters of sea surface from bongo and ring net tows.
- Figure 13. Actual number of Coryphaena equisetis caught by 1x2 m neuston net tows.
- Figure 14. Estimated number of engraulids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 15. Enlarged area indicated by inset on Figure 14.

- Figure 16. Actual number of engraulids caught by 1x2 m neuston net tows.
- Figure 17. Enlarged area indicated by inset on Figure 16.
- Figure 18. Estimated number of istiophorids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 19. Actual number of istiophorids caught by 1x2 m neuston net tows.
- Figure 20. Estimated number of lutjanids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 21. Enlarged area indicated by inset on Figure 20.
- Figure 22. Actual number of lutjanids caught by 1x2 m neuston net tows.
- Figure 23. Estimated number of sciaenids under 10 square meters of sea surface from bongo and ring net tows.
- Figure 24. Enlarged area indicated by inset on Figure 23.
- Figure 25. Actual number of sciaenids caught by 1x2 m neuston net tows.
- Figure 26. Estimated number of Auxis sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 27. Actual number of Auxis sp. (Scombridae) caught by 1x2 m neuston net tows.
- Figure 28. Estimated number of Euthynnus alletteratus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.
- Figure 29. Actual number of Euthynnus alletteratus (Scombridae) caught by 1x2 m neuston net tows.
- Figure 30. Estimated number of Katsuwonus pelamis (Scombridae) under 10 square meters of sea surface from Bongo and ring net tows.
- Figure 31. Actual number of Katsuwonus pelamis (Scombridae) caught by 1x2 m neuston net tows.
- Figure 32. Estimated number of Thunnus sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 33. Actual number of Thunnus sp. (Scombridae) caught by 1x2 m neuston net tows.

Figure 34. Estimated number of Thunnus atlanticus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 35. Actual number of Thunnus atlanticus (Scombridae) caught by 1x2 m neuston net tows.

Figure 36. Estimated number of Thunnus thynnus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 37. Actual number of Thunnus thynnus (Scombridae) caught by 1x2 m neuston net tows.

Figure 38. Estimated number of Scomberomorus sp. (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 39. Actual number of Scomberomorus sp. (Scombridae) caught by 1x2 m neuston net tows.

Figure 40. Estimated number of Scomberomorus maculatus (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 41. Actual number of Scomberomorus maculatus (Scombridae) caught by 1x2 m neuston net tows.

Figure 42. Estimated number of Scomberomorus cavalla (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 43. Estimated number of Acanthocybium solanderi (Scombridae) under 10 square meters of sea surface from bongo and ring net tows.

Figure 44. Estimated number of serranids under 10 square meters of sea surface from bongo and ring net tows.

Figure 45. Enlarged area indicated by inset on Figure 44.

Figure 46. Actual number of serranids caught by 1x2 m neuston net tows.

Figure 47. Estimated number of Xiphias gladius under 10 square meters of sea surface from bongo and ring net tows.

Figure 48. Actual number of Xiphias gladius caught by 1x2 m neuston net tows.

Table 1. SEAMAP 1983 Participants

| Vessel                   | Cruise Number | Station Numbers | Seamap Numbers         | Gear                       | Mesh, mm      | Dates, 1983   | Affiliation   |
|--------------------------|---------------|-----------------|------------------------|----------------------------|---------------|---------------|---|
| Oregon-II                | 134           | 39065-39198     | 1139-1471              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 4/22 - 5/23   | National Marine Fisheries Service, NOAA             |
| Alabama-23               | 135           | 7 Stations      | 1472-1485              | 20cm Bongo                 | .333          | 6/9 - 6/30    | Alabama Dept. of Conservation and Natural Resources |
| Hernan Cortez            | 01            | 8301-8316       | 1486-1533              | 60cm Bongo<br>1x2m Neuston | .333<br>1.000 | 6/26 - 6/29   | Florida Dept. of Natural Resources                  |
| Hernan Cortez            | 02            | 8317-8335       | 1534-1590              | 60cm Bongo<br>1x2m Neuston | .333<br>1.000 | 7/12 - 7/19   | Florida Dept. of Natural Resources                  |
| Delaware-II <sup>1</sup> | 37            | 333-620         | 1591-1638              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 5/29 - 6/20   | National Marine Fisheries Service, NC               |
| Tommy Munro              | 135           | B178 - A7       | 1639-1673              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 6/7 - 6/14    | Gulf Coast Research Laboratory, Mississippi         |
| Calanus <sup>1</sup>     | 12            | 10 Stations     | 1675-1684              | 1x2m Neuston               | .947          | 9/14 - 9/18   | University of Miami                                 |
| Suncoaster               | 01            | B183- B172      | 1685-1701              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 6/28 - 7/18   | Florida Institute of Oceanography                   |
| Small Boat               | 02            | 04023-06001     | 1703-1735              | ½m Ring                    | .333          | 6/13 - 6/16   | Louisiana Dept. of Wildlife and Fisheries           |
| Small Boat               | 03            | 07005-06001     | 1736-1765              | ½m Ring                    | .333          | 6/21 - 6/23   | Louisiana Dept. of Wildlife and Fisheries           |
| Small Boat               | 04            | 03101-03103     | 1766-1771              | 20cm Bongo                 | .333          | 7/5           | Louisiana Dept. of Wildlife and Fisheries           |
| Oregon-II                | 140           | 40163-40195     | 1772-1841              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 12/7 - 12/21  | National Marine Fisheries Service, NOAA             |
| Small Boat               | 05            | 01001-07005     | 1842-1883              | 20cm Bongo                 | .333          | 10/17 - 11/17 | Louisiana Dept. of Wildlife and Fisheries           |
| Tommy Munro              | RD83          | 1-3             | 1884-1889              | 60cm Bongo                 | .333          | 10/18 - 10/19 | Gulf Coast Research Laboratory, Mississippi         |
| Oregon-II                | 135           | 39199-39443     | 1890-2033              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 6/01 - 7/13   | National Marine Fisheries Service, NOAA             |
| Oregon-II                | 133           | 38604-38617     | 2133-2162<br>3339-3351 | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 3/13 - 3/15   | National Marine Fisheries Service, NOAA             |
| Oregon-II                | 138           | 39580-39859     | 3352-3454              | 60cm Bongo<br>1x2m Neuston | .333<br>.947  | 10/12 - 10/31 | National Marine Fisheries Service, NOAA             |

<sup>1</sup>Surveyed: not a SEAMAP cruise, but SEAMAP numbers were assigned to the samples.

Table 2. Number of samples taken during SEAMAP 1982 and 1983.

|                                      | 1982             |                               | 1983             |                               |
|--------------------------------------|------------------|-------------------------------|------------------|-------------------------------|
|                                      | Number processed | Number missing or destroyed** | Number processed | Number missing or destroyed** |
| 1x2 m neuston tow samples (sorted)   | 270              | 25                            | 292              | 29                            |
| 60 cm bongo tow samples (sorted)     | 527*             | 13                            | 366              | 64                            |
| 60 cm bongo tow samples (not sorted) | 261              | --                            | 302              | --                            |
| 1/2 m ring net samples (sorted)      | 43               | 0                             | 63               | 0                             |
| 20 cm bongo tow samples (sorted)     | 0                | 0                             | 3                | 0                             |
| 20 cm bongo tow samples (not sorted) | 0                | 0                             | 3                | 0                             |
| Total                                | <u>1,101</u>     | <u>38</u>                     | <u>1,029</u>     | <u>93</u>                     |
| Grand Total                          | 1,139            |                               | 1,122            |                               |

\*Only one sample per bongo tow was received from Mexico.

\*\*These samples were not received in Miami and therefore not shipped to Poland, or they were broken during shipment from ship to Miami or Miami to Poland.

Table 3. Ichthyoplankton taxa, number of lots, and total number of individuals for SEAMAP 1983, arranged phylogenetically.

| TAXA                          | LOTS | TOTAL |
|-------------------------------|------|-------|
| CLUPEIFORMES                  | 23   | 8256  |
| CLUPEIDAE                     | 142  | 7044  |
| <u>Brevoortia</u> sp.         | 2    | 80    |
| <u>Etrumeus</u> sp.           | 6    | 225   |
| <u>Etrumeus teres</u>         | 10   | 1157  |
| <u>Harengula jaguana</u>      | 4    | 49    |
| <u>Jenkinsia lamprotaenia</u> | 2    | 3     |
| <u>Opisthonema oglinum</u>    | 2    | 2     |
| <u>Sardinella</u> sp.         | 1    | 10    |
| ENGRAULIDIDAE                 | 166  | 11904 |
| <u>Anchoa</u> sp.             | 7    | 279   |
| <u>Anchoa hepsetus</u>        | 24   | 537   |
| <u>Anchoa mitchilli</u>       | 14   | 426   |
| <u>Engraulis eurystole</u>    | 35   | 322   |
| ELOPIFORMES                   |      |       |
| ELOPIDAE                      |      |       |
| <u>Elops saurus</u>           | 2    | 2     |
| MEGALOPIDAE                   |      |       |
| <u>Megalops atlanticus</u>    | 1    | 3     |
| ANGUILLIFORMES                | 53   | 208   |
| ANGUILLIDAE                   |      |       |
| <u>Anquilla rostrata</u>      | 1    | 1     |
| MORINGUIDAE                   | 7    | 15    |
| NEMICHTHYIDAE                 | 1    | 1     |
| MURAENIDAE                    | 18   | 25    |
| MURAENIDAE                    |      |       |
| <u>Gymnothorax</u> sp.        | 1    | 1     |
| <u>Anarchias yoshiae</u>      | 1    | 1     |
| SYNAPHOBRANCHIDAE             | 1    | 1     |
| CONGRIDAE                     | 87   | 258   |
| <u>Ariosoma balearicum</u>    | 1    | 2     |
| MURAENESOCIDAE                | 5    | 5     |
| NETTASTOMATIDAE               | 30   | 73    |
| OPHICHTHIDAE                  | 83   | 271   |
| <u>Ophichthus</u> sp.         | 18   | 23    |
| <u>Ophichthus puncticeps</u>  | 1    | 1     |
| <u>Myrophis punctatus</u>     | 18   | 45    |
| <u>Pseudomyrophis</u> sp.     | 1    | 3     |
| SALMONIFORMES                 |      |       |
| ARGENTINIDAE                  | 21   | 33    |
| <u>Microstoma</u> sp.         | 3    | 3     |
| <u>Microstoma microstoma</u>  | 2    | 2     |
| BATHYLAGIDAE                  | 22   | 32    |
| <u>Bathylagus</u> sp.         | 14   | 21    |

Table 3 - Continued

| TAXA                                  | LOTS | TOTAL |
|---------------------------------------|------|-------|
| GONOSTOMATIDAE                        | 104  | 476   |
| <u>Cyclothone</u> sp.                 | 163  | 564   |
| <u>Gonostoma</u> sp.                  | 10   | 15    |
| <u>Gonostoma atlanticum</u>           | 5    | 5     |
| <u>Gonostoma elongatum</u>            | 3    | 3     |
| <u>Vinciguerrria</u> sp.              | 53   | 116   |
| <u>Vinciguerrria attenuata</u>        | 53   | 133   |
| <u>Vinciguerrria nimbaria</u>         | 81   | 179   |
| <u>Vinciguerrria poweriae</u>         | 41   | 95    |
| <u>Diplophos taenia</u>               | 2    | 2     |
| <u>Margrethia obtusirostre</u>        | 1    | 1     |
| <u>Pollichthys mauli</u>              | 23   | 49    |
| <u>Bonapartia</u> sp.                 | 1    | 1     |
| <u>Bonapartia pedalotia</u>           | 2    | 2     |
| <u>Valenciennellus</u> sp.            | 1    | 3     |
| <u>Valenciennellus tripunctulatus</u> | 13   | 27    |
| <u>Maurolicus muelleri</u>            | 98   | 1192  |
| STERNOPTYCHIDAE                       | 16   | 33    |
| <u>Argyropelecus</u> sp.              | 5    | 7     |
| <u>Argyropelecus hemigymnus</u>       | 1    | 1     |
| <u>Argyropelecus aculeatus</u>        | 1    | 1     |
| <u>Sternoptyx</u> sp.                 | 47   | 104   |
| CHAULIODONTIDAE                       | 11   | 18    |
| <u>Chauliodus</u> sp.                 | 29   | 41    |
| <u>Chauliodus sloani</u>              | 1    | 1     |
| STOMIIDAE                             | 5    | 7     |
| <u>Stomias</u> sp.                    | 17   | 19    |
| ASTRONESTHIDAE                        | 2    | 3     |
| <u>Astronesthes</u> sp.               | 1    | 1     |
| MELANOSTOMIIDAE                       | 26   | 41    |
| <u>Eustomias</u> sp.                  | 2    | 2     |
| <u>Bathophilus</u> sp.                | 1    | 1     |
| IDIACANTHIDAE                         | 2    | 2     |
| MYCTOPHIFORMES                        |      |       |
| SYNODONTIDAE                          | 111  | 1398  |
| <u>Synodus</u> sp.                    | 1    | 1     |
| <u>Synodus foetens</u>                | 71   | 741   |
| <u>Trachinocephalus myops</u>         | 4    | 7     |
| CHLOROPHTHALMIDAE                     | 10   | 25    |
| SCOPELOSAURIDAE                       | 3    | 6     |
| MYCTOPHIDAE                           | 195  | 2360  |
| <u>Myctophum</u> sp.                  | 155  | 1238  |
| <u>Myctophum nitidulum</u>            | 11   | 156   |
| <u>Myctophum affine</u>               | 37   | 1124  |
| <u>Myctophum asperum</u>              | 2    | 4     |
| <u>Myctophum obtusirostre</u>         | 1    | 1     |
| <u>Hygophum</u> sp.                   | 138  | 1159  |
| <u>Hygophum reinhardtii</u>           | 9    | 19    |

Table 3 - Continued

| TAXA                                 | LOTS | TOTAL |
|--------------------------------------|------|-------|
| <u>Hygophum benoiti</u>              | 1    | 2     |
| <u>Hygophum macrochir</u>            | 3    | 3     |
| <u>Hygophum hygomii</u>              | 1    | 71    |
| <u>Notolychnus</u> sp.               | 1    | 2     |
| <u>Notolychnus valdiviae</u>         | 72   | 180   |
| <u>Centrobranchus nigroocellatus</u> | 51   | 174   |
| <u>Diaphus</u> sp.                   | 183  | 2485  |
| <u>Diaphus dumerilii</u>             | 6    | 7     |
| <u>Diaphus mollis</u>                | 2    | 2     |
| <u>Diaphus splendidus</u>            | 1    | 2     |
| <u>Ceratoscopelus</u> sp.            | 77   | 241   |
| <u>Benthoosema</u> sp.               | 98   | 302   |
| <u>Benthoosema suborbitale</u>       | 5    | 12    |
| <u>Diogenichthys</u> sp.             | 10   | 16    |
| <u>Diogenichthys atlanticus</u>      | 71   | 163   |
| <u>Gonichthys</u> sp.                | 2    | 2     |
| <u>Gonichthys cocco</u>              | 28   | 67    |
| <u>Lobianchia</u> sp.                | 1    | 1     |
| <u>Bolinichthys photothorax</u>      | 1    | 1     |
| <u>Taaningichthys</u> sp.            | 1    | 1     |
| <u>Lampanyctus</u> sp.               | 106  | 315   |
| <u>Lampanyctus alatus</u>            | 2    | 3     |
| <u>Lepidophanes</u> sp.              | 3    | 3     |
| <u>Lepidophanes guentheri</u>        | 2    | 2     |
| <u>Notoscopelus</u> sp.              | 12   | 26    |
| <u>Notoscopelus resplendens</u>      | 6    | 7     |
| PARALEPIDIDAE                        | 99   | 283   |
| <u>Paralepis</u> sp.                 | 2    | 2     |
| <u>Paralepis atlantica</u>           | 2    | 2     |
| <u>Lestidium</u> sp.                 | 2    | 6     |
| <u>Lestidium atlanticum</u>          | 42   | 85    |
| <u>Stemonosudis intermedia</u>       | 1    | 1     |
| <u>Sudis</u> sp.                     | 14   | 19    |
| <u>Sudis atrox</u>                   | 1    | 1     |
| <u>Lestidiops</u> sp.                | 4    | 14    |
| OMOSUDIDAE                           | 2    | 2     |
| ALEPISAUROIDAE                       |      |       |
| <u>Alepisaurus</u> sp.               | 1    | 1     |
| EVERMANNELLIDAE                      | 11   | 17    |
| <u>Evermannella</u> sp.              | 2    | 2     |
| SCOPELARCHIDAE                       | 39   | 68    |
| <u>Scopelarchus</u> sp.              | 2    | 2     |
| MORIDAE                              | 11   | 13    |
| GADIFORMES                           |      |       |
| BREGMACEROTIDAE                      | 7    | 152   |
| <u>Bregmaceros</u> sp.               | 231  | 4764  |
| <u>Bregmaceros atlanticus</u>        | 1    | 1     |

Table 3 - Continued

| TAXA                              | LOTS | TOTAL |
|-----------------------------------|------|-------|
| GADIDAE                           | 9    | 16    |
| <u>Urophycis</u> sp.              | 22   | 83    |
| MERLUCCIIDAE                      |      |       |
| <u>Merluccius</u> sp.             | 4    | 11    |
| MACROURIDAE                       | 27   | 39    |
| OPHIDIIDAE                        | 146  | 2034  |
| CARAPIDAE                         | 23   | 33    |
| LOPHIIFORMES                      | 15   | 27    |
| CERATIOIDEI                       | 64   | 119   |
| ANTENNARIIDAE                     | 19   | 28    |
| <u>Histrio histrio</u>            | 1    | 1     |
| CAULOPHRYNIDAE                    | 5    | 12    |
| HIMANTOLOPHIDAE                   |      |       |
| <u>Himantolophus</u> sp.          | 1    | 1     |
| ATHERINIFORMES                    |      |       |
| EXOCOETIDAE                       | 198  | 884   |
| <u>Hemirhamphus</u> sp.           | 3    | 7     |
| <u>Exocoetus</u> sp.              | 9    | 18    |
| <u>Cypselurus</u> sp.             | 17   | 27    |
| <u>Hirundichthys</u> sp.          | 5    | 9     |
| <u>Cheilopogon</u> sp.            | 4    | 9     |
| <u>Cheilopogon heturus</u>        | 1    | 1     |
| <u>Paraexocoetus brachypterus</u> | 3    | 7     |
| <u>Oxyporhamphus micropterus</u>  | 1    | 3     |
| BELONIDAE                         | 3    | 4     |
| SCOMBERESOCIDAE                   |      |       |
| <u>Scomberesox saurus</u>         | 2    | 2     |
| ATHERINIDAE                       | 39   | 590   |
| LAMPRIDIFORMES                    |      |       |
| TRACHIPTERIDAE                    | 6    | 6     |
| <u>Trachipterus</u> sp.           | 1    | 1     |
| BERYCIFORMES                      |      |       |
| MELAMPHAEIDAE                     | 41   | 67    |
| HOLOCENTRIDAE                     | 31   | 126   |
| ZEIFORMES                         |      |       |
| CAPROIDAE                         | 4    | 9     |
| SYNGNATHIFORMES                   |      |       |
| MACRORHAMPHOSIDAE                 | 1    | 1     |
| <u>Macrorhamphosus scolopax</u>   | 3    | 8     |
| SYNGNATHIDAE                      | 29   | 46    |
| <u>Syngnathus</u> sp.             | 4    | 9     |
| <u>Hippocampus</u> sp.            | 1    | 1     |
| <u>Hippocampus erectus</u>        | 7    | 11    |
| SCORPAENIFORMES                   |      |       |
| SCORPAENIDAE                      | 96   | 338   |
| <u>Scorpaena</u> sp.              | 3    | 3     |
| <u>Pontinus</u> sp.               | 1    | 1     |
| TRIGLIDAE                         | 54   | 208   |
| <u>Prionotus</u> sp.              | 62   | 197   |

Table 3 - Continued

| TAXA                            | LOTS | TOTAL |
|---------------------------------|------|-------|
| DACTYLOPTERIFORMES              |      |       |
| DACTYLOPTERIDAE                 |      |       |
| <u>Dactylopterus volitans</u>   | 1    | 5     |
| PERCIFORMES                     | 3    | 3     |
| SERRANIDAE                      | 203  | 1421  |
| <u>Diplectrum</u> sp.           | 5    | 58    |
| <u>Serranus</u> sp.             | 11   | 22    |
| <u>Serraniculus</u> sp.         | 1    | 1     |
| <u>Anthias</u> sp.              | 23   | 130   |
| <u>Centropristis</u> sp.        | 12   | 35    |
| <u>Epinephelus</u> sp.          | 4    | 5     |
| <u>Hemanthias</u> sp.           | 2    | 2     |
| <u>Hemanthias vivanus</u>       | 26   | 62    |
| <u>Hemanthias aureorubens</u>   | 1    | 1     |
| <u>Liopropoma</u> sp.           | 2    | 3     |
| <u>Mycteroperca</u> sp.         | 4    | 6     |
| <u>Plectranthias</u> sp.        | 2    | 3     |
| GRAMMISTIDAE                    | 14   | 17    |
| <u>Rypticus</u> sp.             | 1    | 1     |
| PRIACANTHIDAE                   | 26   | 72    |
| <u>Pristigenys alta</u>         | 1    | 1     |
| APOGONIDAE                      | 13   | 22    |
| <u>Apogon</u> sp.               | 29   | 50    |
| <u>Howella</u> sp.              | 38   | 55    |
| BRANCHIOSTEGIDAE                | 14   | 23    |
| MALACANTHIDAE                   |      |       |
| <u>Malacanthus plumieri</u>     | 1    | 1     |
| POMATOMIDAE                     |      |       |
| <u>Pomatomus saltatrix</u>      | 6    | 8     |
| CARANGIDAE                      | 222  | 3026  |
| <u>Decapterus</u> sp.           | 21   | 117   |
| <u>Decapterus punctatus</u>     | 15   | 32    |
| <u>Caranx</u> sp.               | 67   | 303   |
| <u>Caranx bartholomaei</u>      | 2    | 3     |
| <u>Caranx hippos</u>            | 3    | 5     |
| <u>Caranx latus</u>             | 1    | 1     |
| <u>Oligoplites saurus</u>       | 2    | 4     |
| <u>Seriola</u> sp.              | 24   | 42    |
| <u>Trachinotus</u> sp.          | 7    | 9     |
| <u>Trachinotus carolinus</u>    | 2    | 3     |
| <u>Trachinotus goodei</u>       | 3    | 3     |
| <u>Chloroscombrus chrysurus</u> | 8    | 31    |
| <u>Selene vomer</u>             | 5    | 6     |
| <u>Elagatis bipinnulatus</u>    | 3    | 4     |
| <u>Naucrates ductor</u>         | 3    | 4     |

Table 3 - Continued

| TAXA                               | LOTS | TOTAL |
|------------------------------------|------|-------|
| CORYPHAENIDAE                      | 2    | 2     |
| <u>Coryphaena</u> sp.              | 24   | 33    |
| <u>Coryphaena hippurus</u>         | 34   | 57    |
| <u>Coryphaena equiselis</u>        | 12   | 16    |
| PERCIFORMES                        |      |       |
| BRAMIDAE                           | 14   | 18    |
| LUTJANIDAE                         | 59   | 237   |
| <u>Rhomboplites aureorubens</u>    | 1    | 1     |
| LOBOTIDAE                          | 1    | 1     |
| SPARIDAE                           | 65   | 267   |
| <u>Archosargus probatocephalus</u> | 1    | 4     |
| <u>Lagodon rhomboides</u>          | 1    | 2     |
| SCIAENIDAE                         | 113  | 2970  |
| <u>Cynoscion nebulosus</u>         | 1    | 2     |
| MULLIDAE                           | 80   | 1005  |
| KYPHOSIDAE                         | 1    | 1     |
| EPHIPPIDAE                         | 6    | 9     |
| CHAETODONTIDAE                     | 6    | 6     |
| POMACANTHIDAE                      | 2    | 3     |
| <u>Holacanthus tricolor</u>        | 1    | 1     |
| POMACENTRIDAE                      | 7    | 7     |
| <u>Microspathodon chrysurus</u>    | 3    | 5     |
| MUGILIDAE                          | 11   | 26    |
| <u>Mugil</u> sp.                   | 34   | 881   |
| <u>Mugil curema</u>                | 2    | 3     |
| <u>Mugil cephalus</u>              | 21   | 1361  |
| SPHYRAENIDAE                       | 15   | 22    |
| <u>Sphyraena</u> sp.               | 29   | 46    |
| LABRIDAE                           | 139  | 546   |
| SCARIDAE                           | 81   | 221   |
| OPISTHOGNATHIDAE                   | 3    | 3     |
| CHIASMODONTIDAE                    | 4    | 4     |
| URANOSCOPIDAE                      | 3    | 3     |
| CLINIDAE                           | 1    | 3     |
| BLENNIIDAE                         | 78   | 562   |
| GOBIIDAE                           | 274  | 5354  |
| MICRODESMIDAE                      | 1    | 1     |
| ACANTHURIDAE                       | 13   | 20    |
| GEMPYLIDAE                         | 9    | 10    |
| <u>Diplospinus multistriatus</u>   | 70   | 107   |
| <u>Gempylus serpens</u>            | 18   | 26    |
| <u>Nesiarchus nasutus</u>          | 14   | 19    |
| TRICHIURIDAE                       | 3    | 6     |
| <u>Benthodesmus</u> sp.            | 2    | 2     |
| <u>Trichiurus lepturus</u>         | 17   | 66    |

Table 3 - Continued

| TAXA                              | LOTS | TOTAL |
|-----------------------------------|------|-------|
| SCOMBRIDAE                        | 13   | 89    |
| <u>Katsuwonus pelamis</u>         | 38   | 65    |
| <u>Thunnus</u> sp.                | 20   | 30    |
| <u>Thunnus thynnus</u>            | 38   | 197   |
| <u>Thunnus atlanticus</u>         | 56   | 181   |
| <u>Auxis</u> sp.                  | 55   | 170   |
| <u>Euthynnus alletteratus</u>     | 23   | 45    |
| <u>Scomberomorus</u> sp.          | 7    | 25    |
| <u>Scomberomorus maculatus</u>    | 27   | 181   |
| <u>Scomberomorus cavalla</u>      | 2    | 5     |
| <u>Scomberomorus regalis</u>      | 1    | 1     |
| <u>Acanthocybium solanderi</u>    | 3    | 4     |
| <u>Scomber japonicus</u>          | 1    | 4     |
| SCOMBROLABRACIDAE                 |      |       |
| <u>Scombrolabrax heterolepsis</u> | 8    | 11    |
| XIPHIIDAE                         |      |       |
| <u>Xiphias gladius</u>            | 7    | 13    |
| ISTIOPHORIDAE                     | 15   | 27    |
| <u>Istiophorus platypterus</u>    | 1    | 2     |
| CENTROLOPHIDAE                    | 1    | 4     |
| <u>Schedophilus</u> sp.           | 2    | 4     |
| NOMEIDAE                          |      |       |
| <u>Nomeus gronovii</u>            | 8    | 13    |
| <u>Cubiceps</u> sp.               | 8    | 15    |
| <u>Psenes</u> sp.                 | 23   | 44    |
| ARIOMMIDAE                        |      |       |
| <u>Arionna</u> sp.                | 2    | 12    |
| TETRAGONURIDAE                    | 1    | 1     |
| STROMATEIDAE                      | 244  | 1532  |
| <u>Peprilus</u> sp.               | 8    | 12    |
| <u>Peprilus paru</u>              | 2    | 16    |
| <u>Peprilus triacanthus</u>       | 1    | 2     |
| GOBIESOCIFORMES                   |      |       |
| CALLIONYMIDAE                     | 78   | 221   |
| PLEURONECTIFORMES                 |      |       |
| BOTHIDAE                          | 111  | 1112  |
| <u>Citharichthys</u> sp.          | 84   | 981   |
| <u>Syacium</u> sp.                | 99   | 966   |
| <u>Syacium papillosum</u>         | 30   | 216   |
| <u>Bothus</u> sp.                 | 191  | 670   |
| <u>Bothus ocellatus</u>           | 1    | 2     |
| <u>Monolene sessilicauda</u>      | 1    | 1     |
| <u>Etropus</u> sp.                | 3    | 3     |
| <u>Etropus microstomus</u>        | 7    | 28    |
| <u>Cyclopsetta</u> sp.            | 13   | 42    |
| <u>Cyclopsetta fimbriata</u>      | 3    | 4     |
| PLEURONECTIDAE                    | 2    | 5     |
| SOLEIDAE                          | 13   | 22    |

Table 3 - Continued

| TAXA                          | LOTS | TOTAL |
|-------------------------------|------|-------|
| CYNOGLOSSIDAE                 | 4    | 9     |
| <u>Symphurus</u> sp.          | 96   | 1030  |
| <u>Symphurus plagiusa</u>     | 45   | 161   |
| TETRAODONTIFORMES             |      |       |
| BALISTIDAE                    | 37   | 121   |
| <u>Stephanolepis</u> sp.      | 2    | 2     |
| <u>Stephanolepis hispidus</u> | 42   | 220   |
| <u>Stephanolepis setifer</u>  | 2    | 5     |
| <u>Monacanthus ciliatus</u>   | 28   | 150   |
| <u>Aluterus</u> sp.           | 3    | 3     |
| <u>Aluterus schoepfi</u>      | 2    | 6     |
| <u>Aluterus heudelotii</u>    | 2    | 3     |
| <u>Aluterus monoceros</u>     | 1    | 1     |
| <u>Balistes</u> sp.           | 7    | 7     |
| <u>Balistes capriscus</u>     | 1    | 2     |
| TETRAODONTIDAE                | 56   | 138   |
| <u>Sphoeroides</u> sp.        | 59   | 428   |
| <u>Sphoeroides maculatus</u>  | 11   | 38    |
| DIODONTIDAE                   | 5    | 6     |
| <u>Chilomycterus schoepfi</u> | 1    | 1     |
| MOLIDAE                       |      |       |
| <u>Mola mola</u>              | 1    | 1     |

Table 4. Twenty most numerous taxa captured during SEAMAP 1982 and 1983, arranged in descending order.

| 1982                           |      |        | 1983                       |      |        |
|--------------------------------|------|--------|----------------------------|------|--------|
| TAXA                           | LOTS | NUMBER | TAXA                       | LOTS | NUMBER |
| Clupeidae                      | 236  | 42,485 | Engraulidae                | 166  | 11,904 |
| Myctophidae                    | 341  | 12,712 | Clupeiformes               | 23   | 8,256  |
| Engraulidae                    | 154  | 8,678  | Clupeidae                  | 142  | 7,044  |
| Gobiidae                       | 298  | 7,187  | Gobiidae                   | 274  | 5,354  |
| Carangidae                     | 283  | 6,756  | <u>Bregmaceros</u> sp.     | 231  | 4,764  |
| Gonostomatidae                 | 263  | 5,726  | Carangidae                 | 222  | 3,026  |
| Bothidae                       | 297  | 5,406  | Sciaenidae                 | 113  | 2,970  |
| Clupeiformes                   | 26   | 3,746  | <u>Diaphus</u> sp.         | 183  | 2,485  |
| Bregmacerotidae                | 230  | 3,429  | Myctophidae                | 195  | 2,360  |
| <u>Chloroscombrus</u>          |      |        |                            |      |        |
| <u>chrysurus</u>               | 14   | 2,865  | Ophidiidae                 | 146  | 2,034  |
| Synodontidae                   | 164  | 2,507  | Stromateidae               | 244  | 1,532  |
| Sciaenidae                     | 116  | 2,417  | Serranidae                 | 203  | 1,421  |
| Serranidae                     | 256  | 2,228  | Synodontidae               | 111  | 1,398  |
| <u>Symphurus plagiusa</u>      | 203  | 1,662  | <u>Mugil cephalus</u>      | 21   | 1,361  |
| Stromateidae                   | 299  | 1,614  | <u>Myctophum</u> sp.       | 155  | 1,238  |
| Tetraodontidae                 | 144  | 1,418  | <u>Maurolicus muelleri</u> | 98   | 1,192  |
| Exocoetidae                    | 222  | 1,201  | <u>Hygophum</u> sp.        | 138  | 1,159  |
| <u>Caranx</u> sp.              | 90   | 1,045  | <u>Etrumeus teres</u>      | 10   | 1,157  |
| <u>Anchoviella perfasciata</u> | 3    | 976    | <u>Myctophum affine</u>    | 37   | 1,124  |
| Ophidiidae                     | 110  | 680    | Bothidae                   | 111  | 1,112  |

TABLE 5. Example of data printout for "List of stations for participating vessels" SEAMAP 1983.

| OREGON-II |                      | Cruise           |                  | 134               |                   | NMFS      |          |               |                      |                             |   |
|-----------|----------------------|------------------|------------------|-------------------|-------------------|-----------|----------|---------------|----------------------|-----------------------------|---|
| Station   | Seamap Sample Number | Latitude Degrees | Latitude Minutes | Longitude Degrees | Longitude Minutes | Date 1983 | Time GMT | Gear          | Maximum Tow Depth, m | Cubic Meters Water Filtered | Wet Zooplankton Displacement Volume, ml |
| 39065     | 1139-1141            | 29               | 00.00N           | 088               | 00.00W            | 4/22      | 1041     | Bongo Neuston | 199                  | 488                         | 65*                                     |
| 39066     | 1142-1144            | 28               | 30.20N           | 088               | 00.10W            | 4/22      | 1527     | Bongo Neuston | 201                  | 383                         | 25                                      |
| 39067     | 1145-1147            | 28               | 30.00N           | 087               | 30.00W            | 4/22      | 2106     | Bongo Neuston | 200                  | 296                         | 20                                      |
| 39068     | 1148-1150            | 28               | 59.90N           | 087               | 29.50W            | 4/23      | 0040     | Bongo Neuston | 202                  | 407                         | 40                                      |
| 39069     | 1151-1153            | 29               | 00.00N           | 087               | 00.00W            | 4/23      | 0359     | Bongo Neuston | 195                  | 379                         | 40                                      |
| 39070     | 1154-1156            | 28               | 30.00N           | 086               | 59.60W            | 4/23      | 0815     | Bongo Neuston | 200                  | 482                         | -                                       |
| 39071     | 1157-1159            | 28               | 00.40N           | 087               | 00.00W            | 4/23      | 1912     | Bongo Neuston | 202                  | 377                         | 25                                      |

\*No information is available where dashes occur.

TABLE 6. Example of data printout for "List of larval fish taxa caught during SEAMAP 1983".

BAIHYLAGUS SP.

| Vessel           | Cruise Station | Sample | Gear        | Mesh,<br>mm | Latitude,<br>North | Longitude,<br>West | Date<br>1983 | Time<br>GMT | Number<br>Larvae | Lengths, mm SL | Number<br>Under<br>10MSQ |
|------------------|----------------|--------|-------------|-------------|--------------------|--------------------|--------------|-------------|------------------|----------------|--------------------------|
| Oregon-II        | 134            | 39065  | Bongo       | .333        | 29 00.00           | 088 00.00          | 4/22         | 1030        | 1                | 9.8            | 4                        |
| Oregon-II        | 134            | 39066  | Bongo       | .333        | 28 30.20           | 088 00.10          | 4/22         | 1518        | 1                | 13.0           | 5                        |
| Oregon-II        | 134            | 39068  | Bongo       | .333        | 28 59.90           | 087 29.50          | 4/23         | 0030        | 2                | 7.5 4.5        | 9                        |
| Oregon-II        | 134            | 39073  | Bongo       | .333        | 28 00.00           | 089 00.00          | 4/25         | 0545        | 2                | 6.0 10.0       | 13                       |
| Oregon-II        | 134            | 39113  | Bongo       | .333        | 27 00.00           | 091 00.00          | 5/01         | 2311        | 1                | 10.0           | 6                        |
| Oregon-II        | 134            | 39127  | Bongo       | .333        | 28 30.00           | 088 30.00          | 5/07         | 0804        | 2                | 8.6 7.0        | 11                       |
| Oregon-II        | 134            | 39130  | Bongo       | .333        | 28 00.00           | 086 30.00          | 5/08         | 0408        | 1                | 5.8            | 6                        |
| Oregon-II        | 134            | 39144  | Bongo       | .333        | 28 00.00           | 086 00.00          | 5/10         | 1038        | 1                | 18.0           | 7                        |
| Oregon-II        | 134            | 39153  | Bongo       | .333        | 27 30.00           | 088 00.00          | 5/11         | 2233        | 2                | 6.0 11.0       | 12                       |
| Oregon-II        | 134            | 39174  | Bongo       | .333        | 26 30.00           | 085 30.00          | 5/19         | 2003        | 2                | 6.0 11.0       | 10                       |
| Herman<br>Cortez | 02             | 8324   | Bongo       | .333        | 25 30.00           | 084 30.00          | 7/14         |             | 2                | 7.2 7.0        | 8                        |
| Oregon-II        | 140            | 40173  | Bongo       | .333        | 28 00.00           | 086 00.00          | 12/10        | 2155        | 1                | 10.5           | 7                        |
| Oregon-II        | 135            | 39340  | Bongo       | .333        | 28 00.20           | 092 30.10          | 6/24         | 1255        | 1                | 7.2            | 4                        |
| Oregon-II        | 130            | 38275  | Neuston.946 |             | 28 00 00           | 090 00.40          | 11/23        | 0555        | 3                | 17.0 13.0 7.5  | 0                        |
| Oregon-II        | 133            | 38607  | Bongo       | .333        | 28 30.30           | 088 00.30          | 3/13         | 1644        | 1                | 4.6            | 2                        |



Table 8. List of loan requests to the "SEAMAP" Ichthyoplankton Archiving Center (SAC) for 1982 and 1983 material as of December 1985

| <u>Requestor</u>                       | <u>Priority</u> | <u>Shipped</u> | <u>Families</u>  | <u>No. Lots</u> | <u>Status</u>  |
|--|-----------------|----------------|--|-----------------|--|
| Sharon Kelly                           | 2               | Yes            | '82, '83<br>Chaetodontidae,<br>Pomacanthidae   | 13              | Out  |
| Ken Lindeman<br>(via Bill<br>Richards) | 1               | Yes            | '82, '83 Lutjanidae,<br>'82 Atherinidae,<br>Ephippidae, Gadidae,<br>Haemulidae, Perciformes,<br>Pomacentridae, Pomatomidae,<br>Scorpaeniformes, Scaridae,<br>Sparidae  | 293             | Out  |
| Thomas Potthoff                        | 2               | Yes            | '83 <u>Scomberomorus</u> spp.  | 35              | Return<br>Pending  |
| Bill Richards                          | 1               | Yes            | '82 selected <u>Thunnus</u><br><u>thynnus</u> , Labridae,<br>Nomeidae*, Serranidae,<br>Stromateidae*, Trachipteridae*, others<br>Triglidae, Uncatalogued*  | 703             | Asterisked<br>material<br>returned;<br>out.                  |
| Rick Shaw                              | 2               | No             | '83 Carangidae,<br>Clupeidae,<br>Scombridae  | 259             | Clupeids<br>shipped,<br>Carangids to<br>be shipped<br>12/85. |
| Mark Leiby                             | 2               | Yes            | Anguilliformes   |                 |  |
| Jim Ditty                              | 2               | Yes            | Bothidae   | 69              | Returned   |
| Jim Cowan                              | 2               | Yes            | Sciaenidae   | 14              | Returned   |
| Mike Fahay                             | 4               | Yes<br>Yes     | Macrouridae, Moridae,<br>Fish eggs   | 30              | Out  |
| Bruce Thompson                         | 4               | Yes            | Polynemidae  | 4               | Out  |
| Eugene Nakamura                        | 4               | No             | '82 and '83<br>Scomberomorus spp.  | ---             | Pending  |
| Bill Richards                          | 1               | No             | '83 Scombridae,<br>Istiophoridae, Xiphiidae,<br>Gempylidae, Trichiuridae,<br>Labridae, Scaridae, Serranidae,<br>Nomeidae, Ariommidae,<br>Centrolophidae, Stromateidae,<br>Triglidae, Agonidae, Unidentified. | ---             | Pending  |

□ ALABAMA  
 + CALANUS  
 ↑ DELAWARE 'II  
 Y HERNAN CORTEZ 1  
 X HERNAN CORTEZ 2  
 - LOUISIANA 2

○ LOUISIANA 3  
 X LOUISIANA 4  
 X LOUISIANA 5  
 X OREGON II 134  
 | OREGON II 135  
 < OREGON-II 138

△ OREGON II 140  
 ◇ OREGON II 138  
 Z SUNCOASTER  
 \* TOMMY MMRO 135  
 ☆ TOMMY MMRO RD83

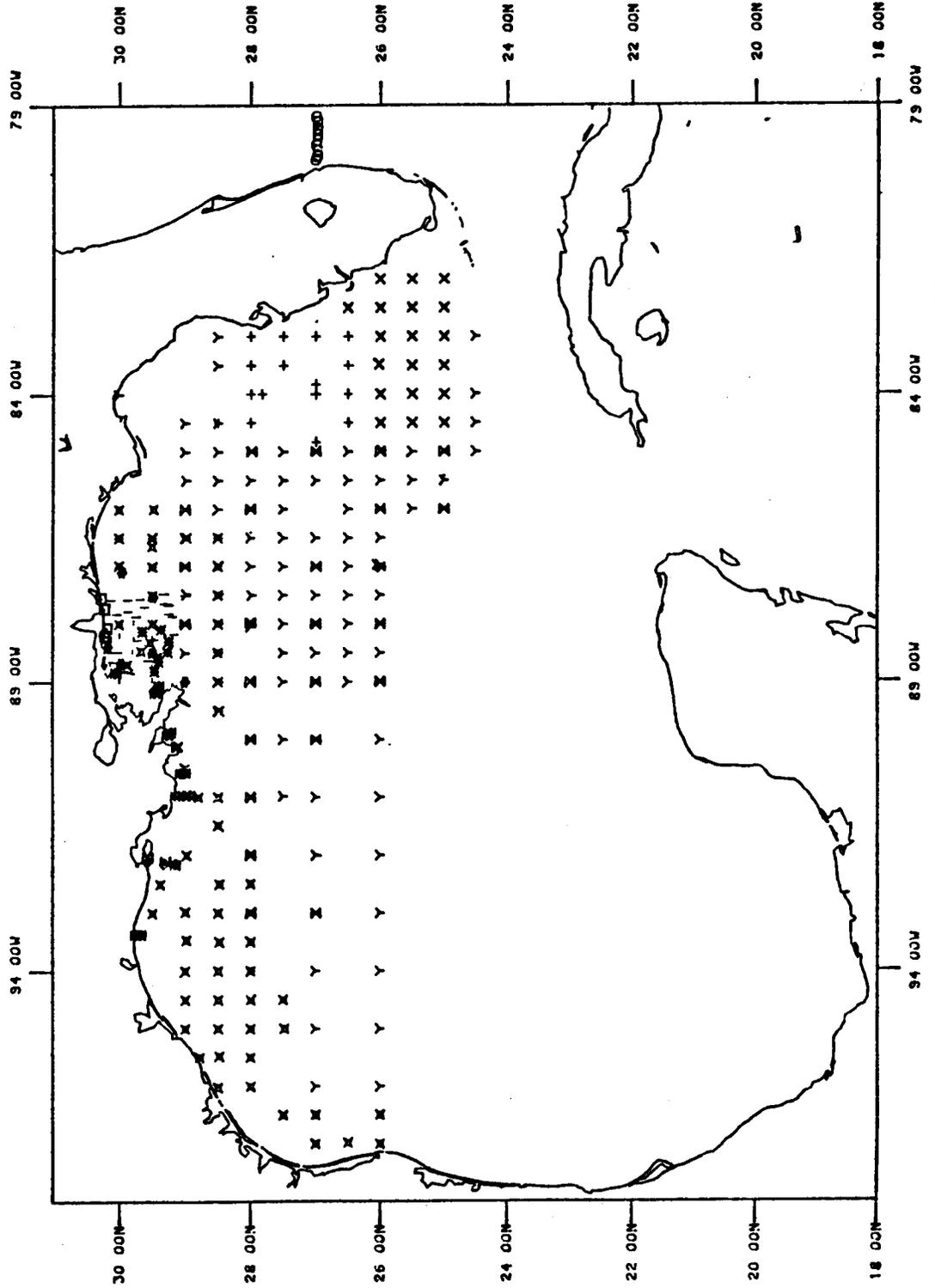


FIGURE 1

- ALABAMA
- + CALANUS
- ⚡ DELAWARE II
- Y HERNAN CORTEZ 1
- ⊗ HERNAN CORTEZ 2
- LOUISIANA 2
  
- LOUISIANA 3
- X LOUISIANA 4
- X LOUISIANA 5
- X OREGON II 134
- | OREGON II 135
- < OREGON-II 138
  
- △ OREGON II 140
- ◇ OREGON II 138
- Z SUNCOASTER
- \* TOMMY MMRO 135
- ☆ TOMMY MMRO RD83

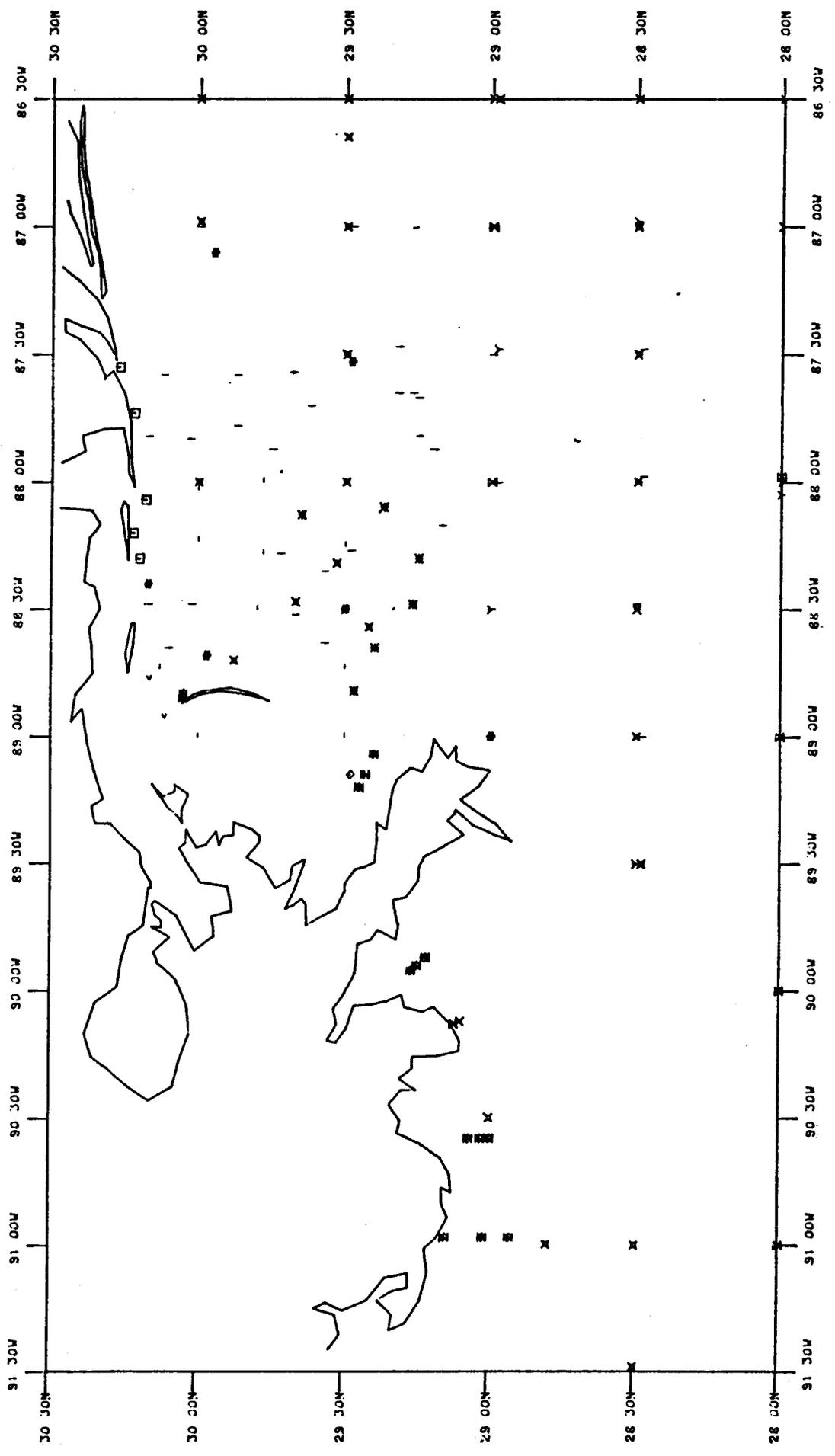
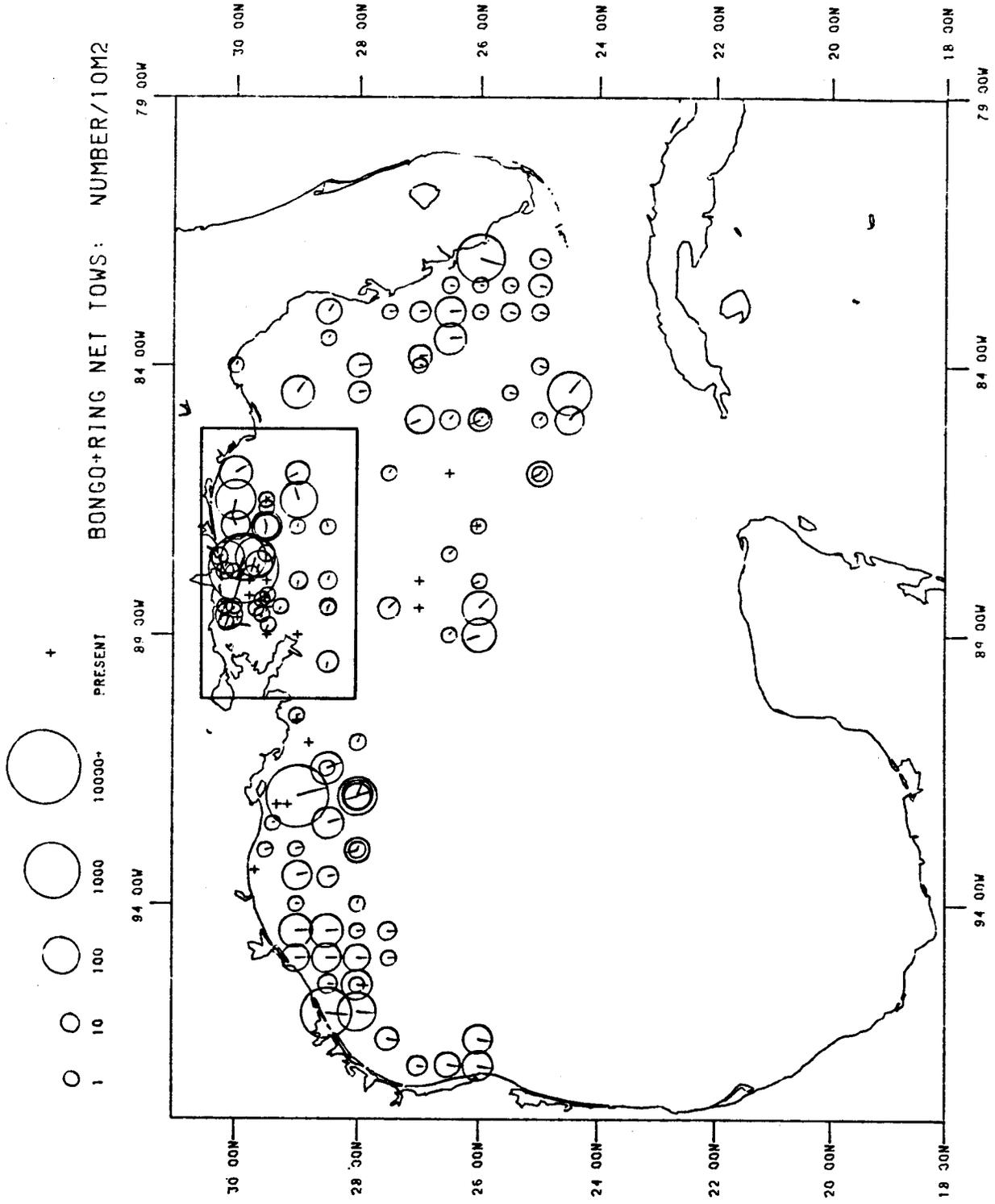


FIGURE 2



SEAMAP 1983

CARANGIDAE

FIGURE 3

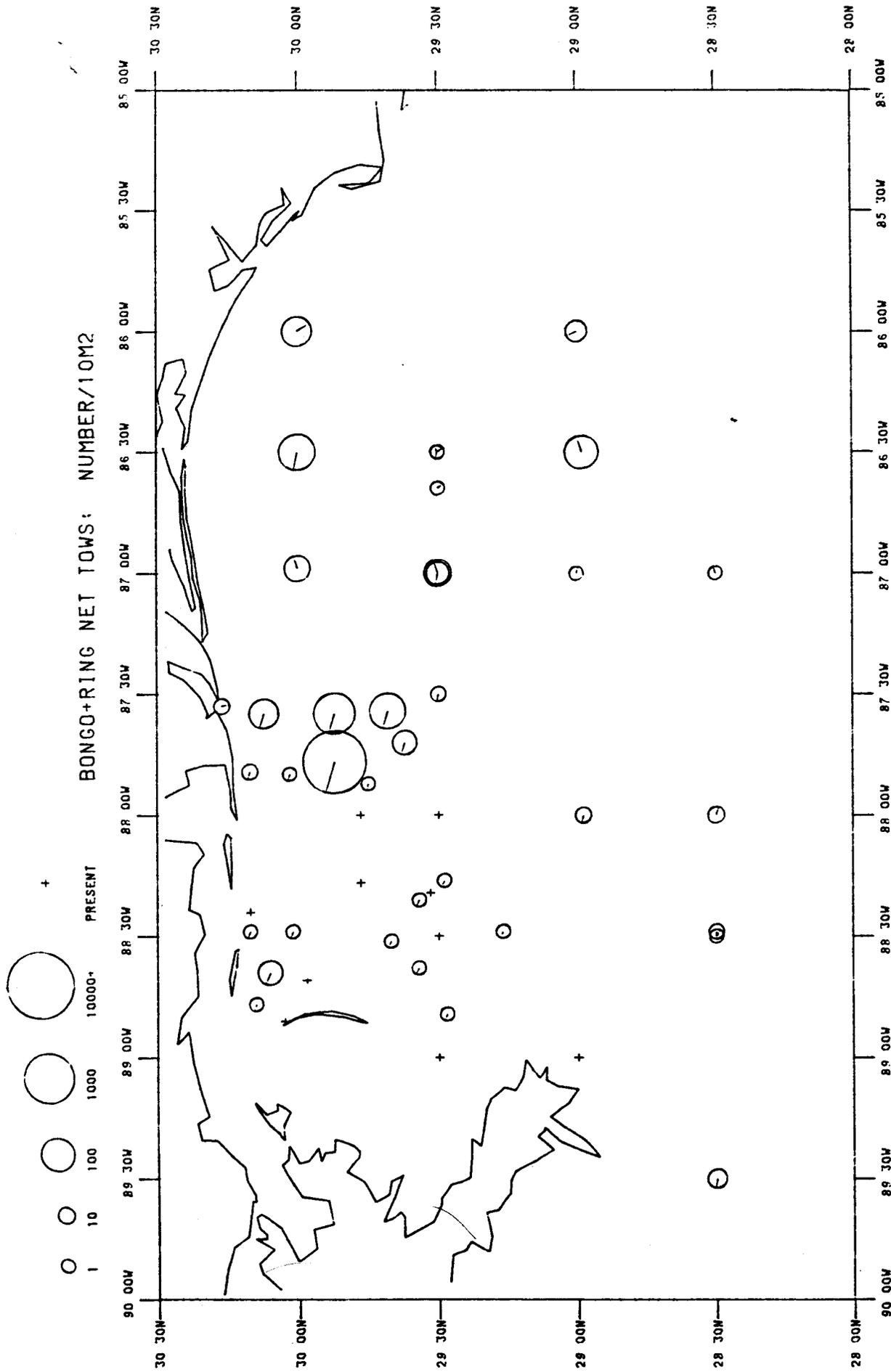
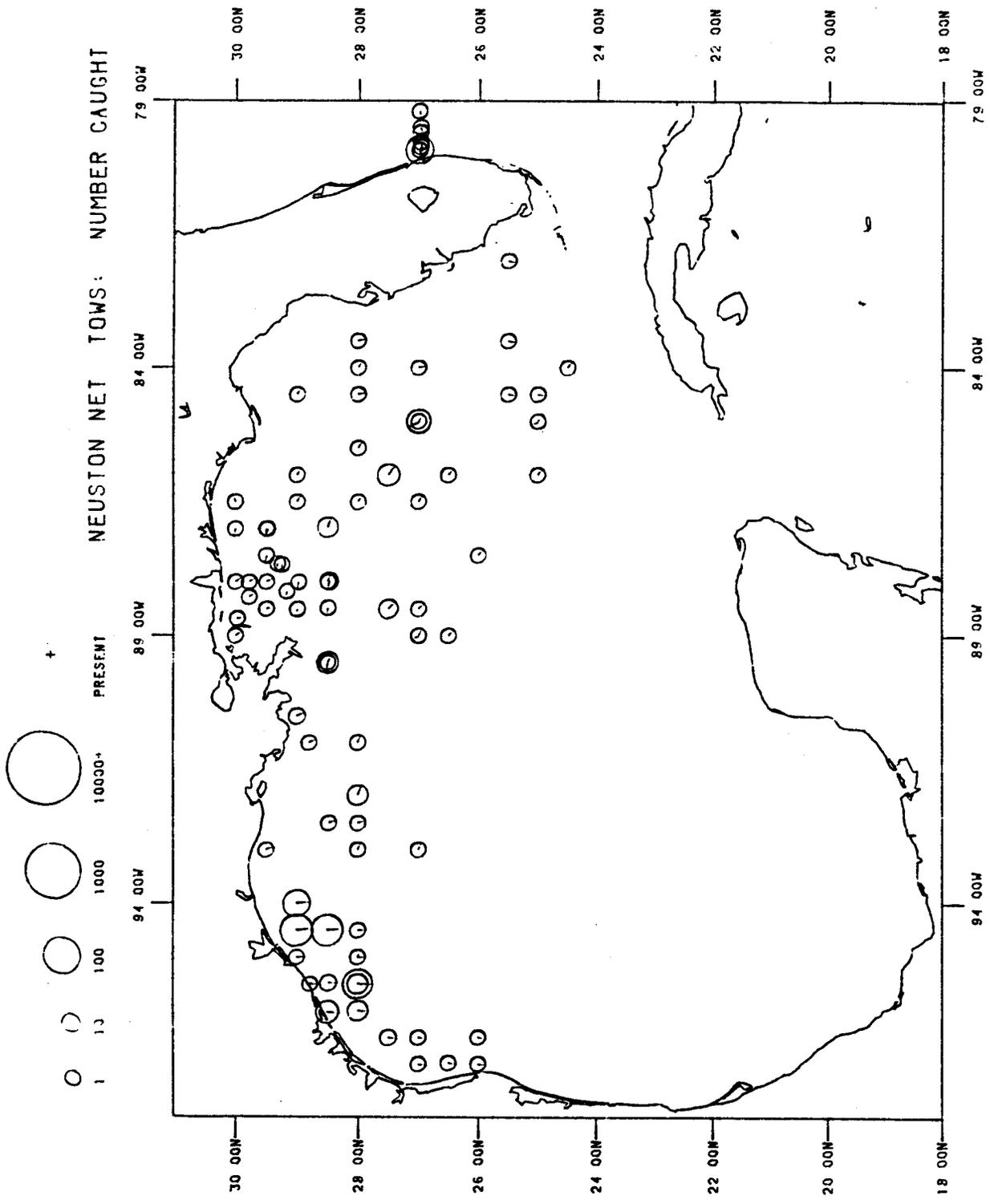


FIGURE 4

CARANGIDAE

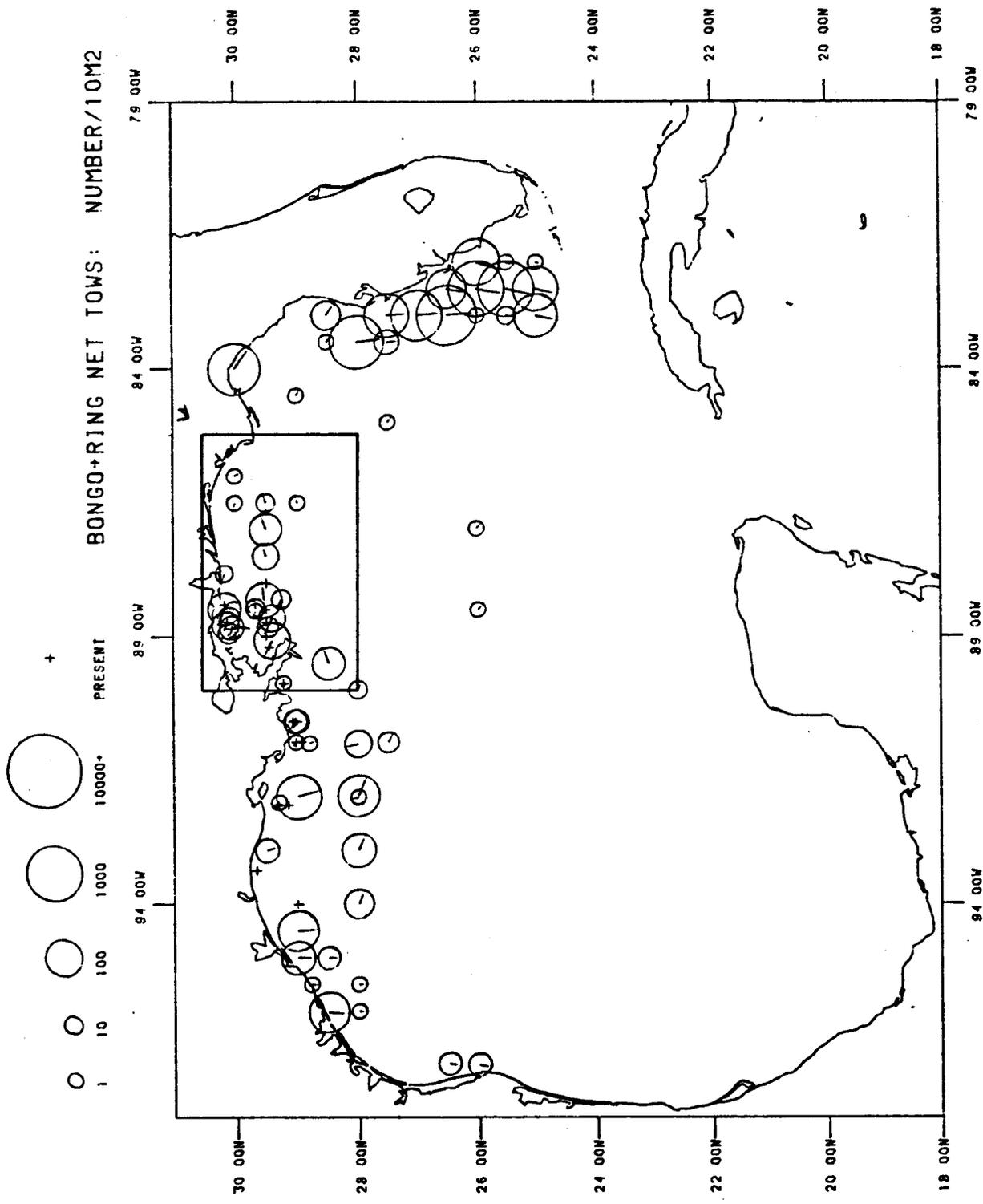
SEAMAP 1983



SEAMAP 1983

CARANGIDAE

FIGURE 5



SEAMAP 1983

CLUPEIDAE

FIGURE 6

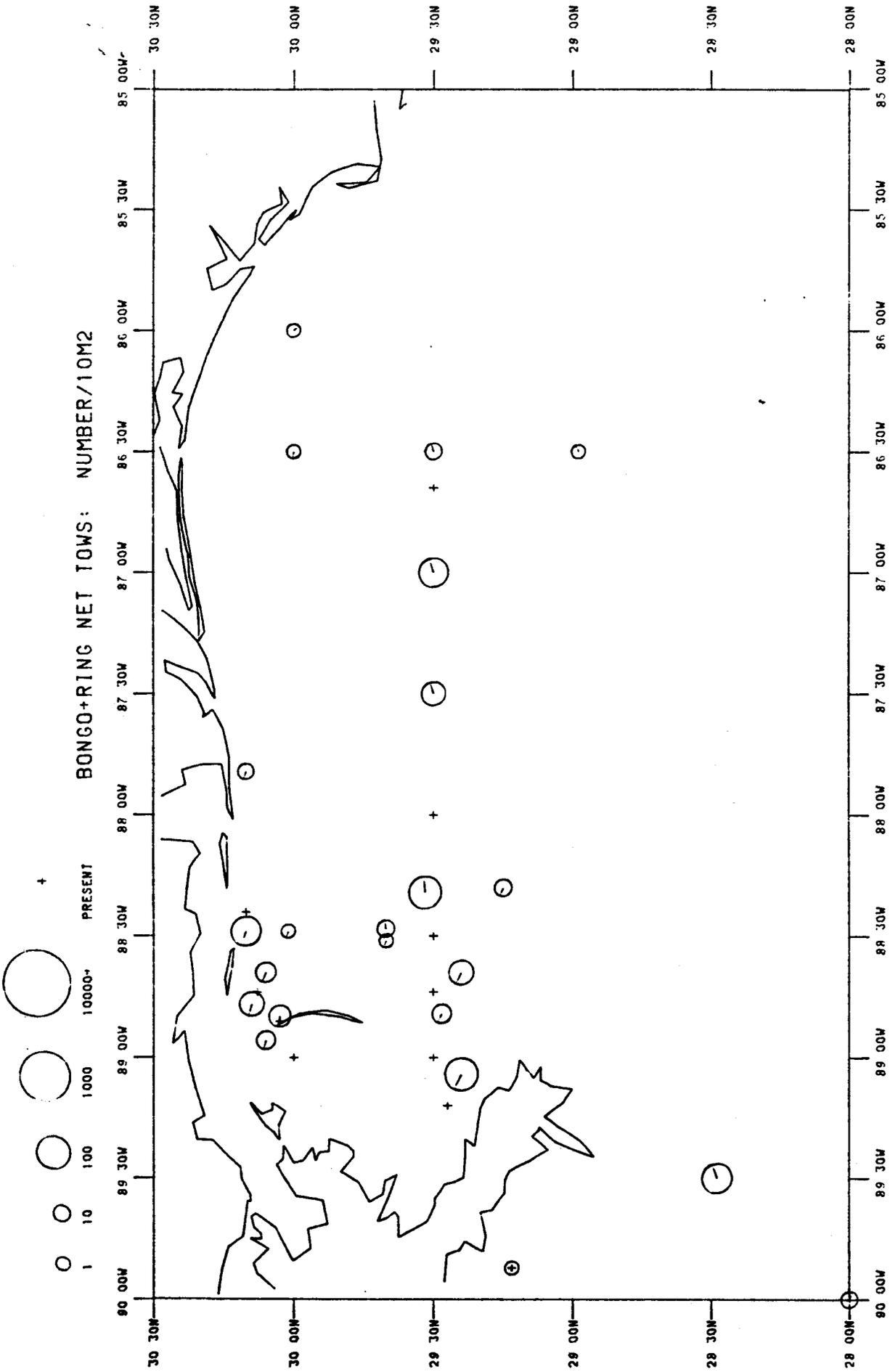
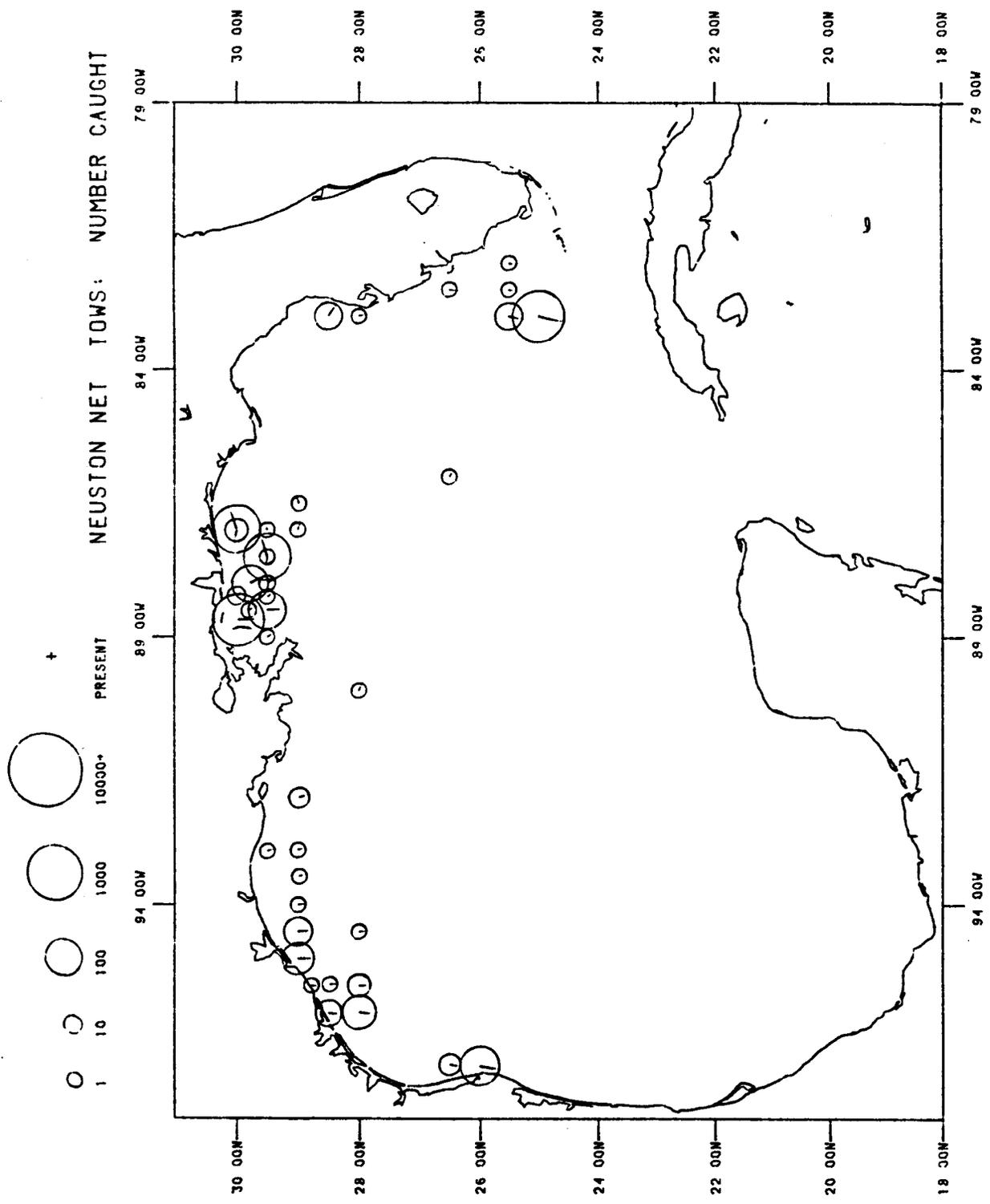


FIGURE 7

CLUPEIDAE

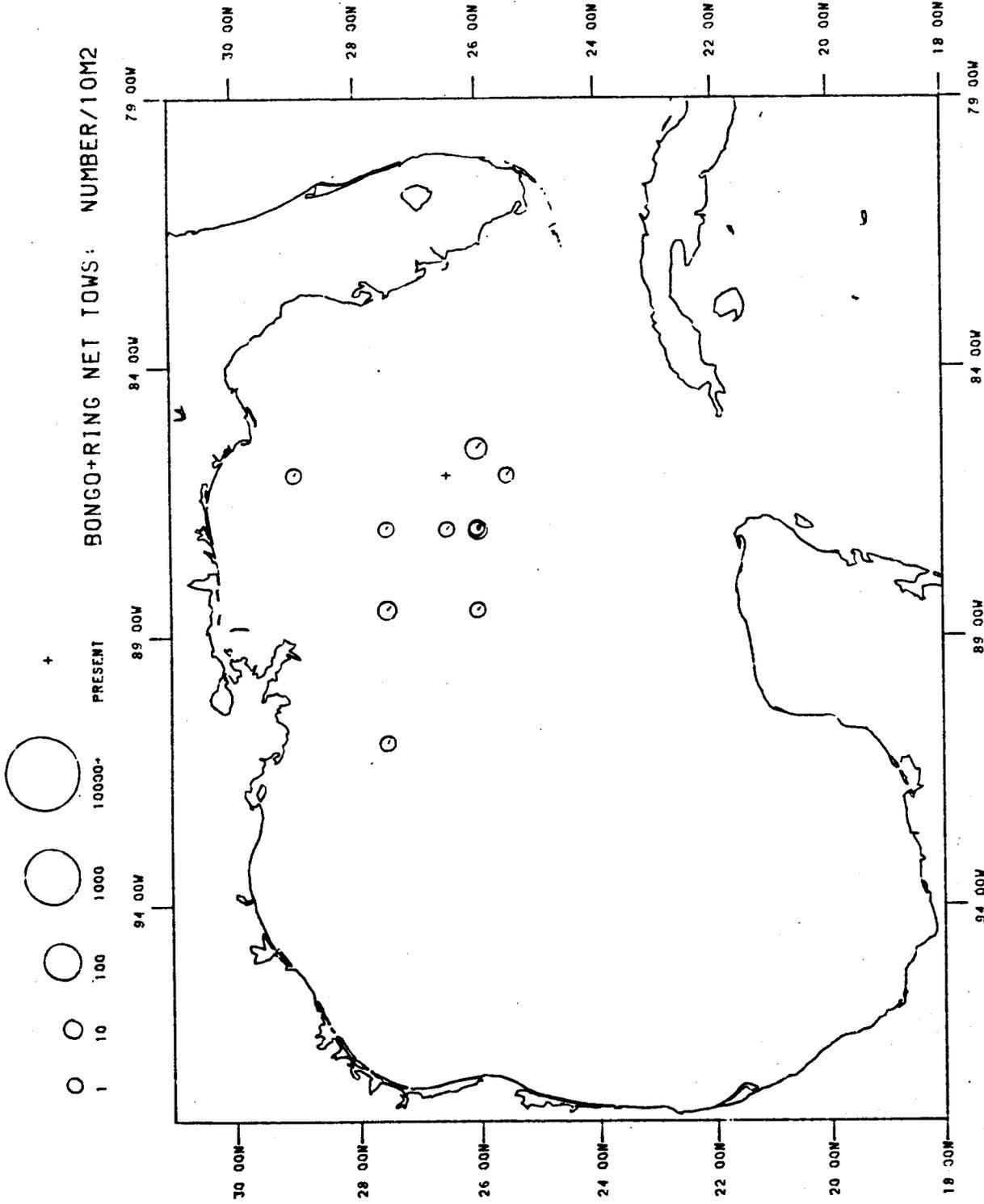
SEAMAP 1983

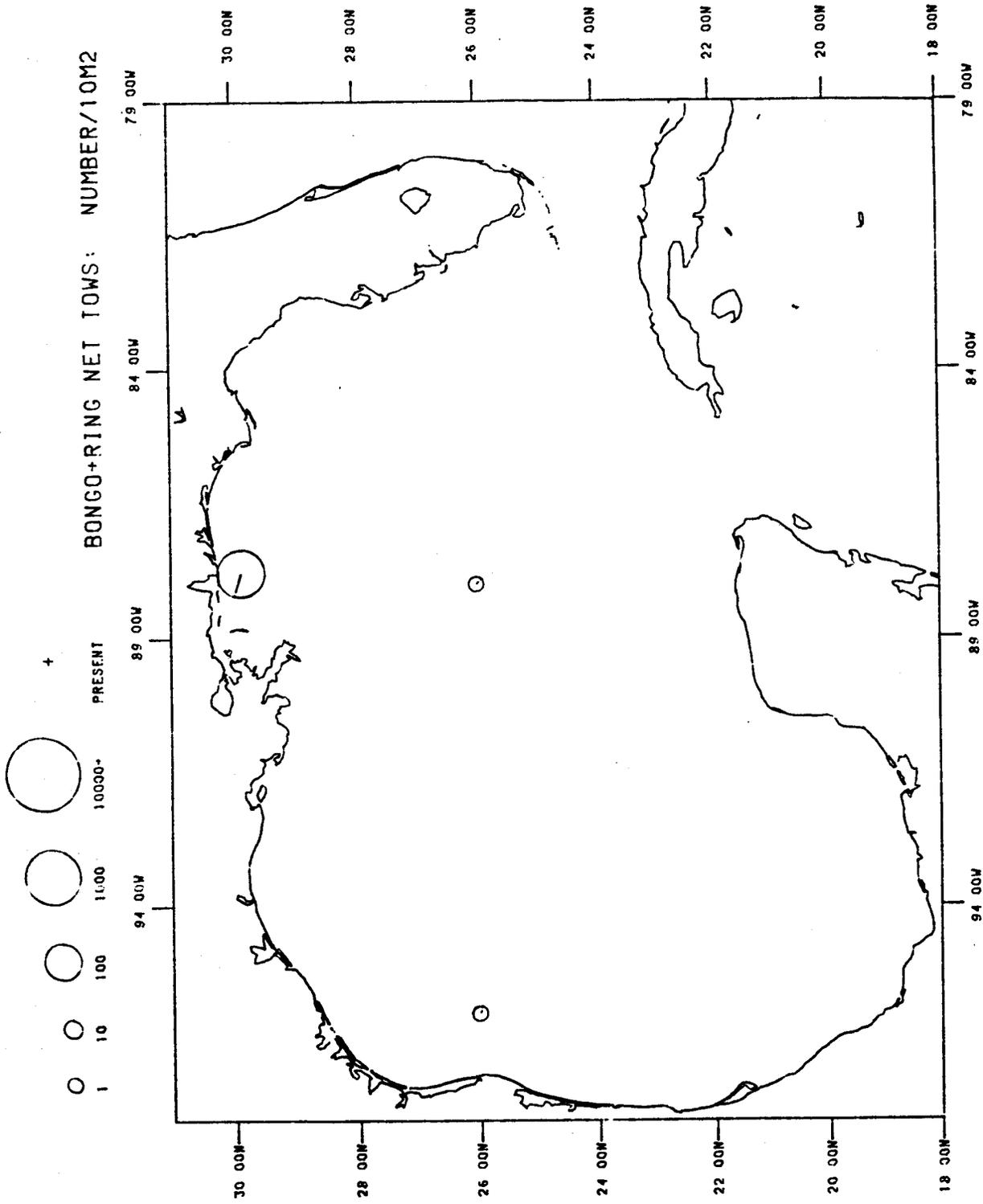


SEAMAP 1983

CLUPEIDAE

FIGURE 8

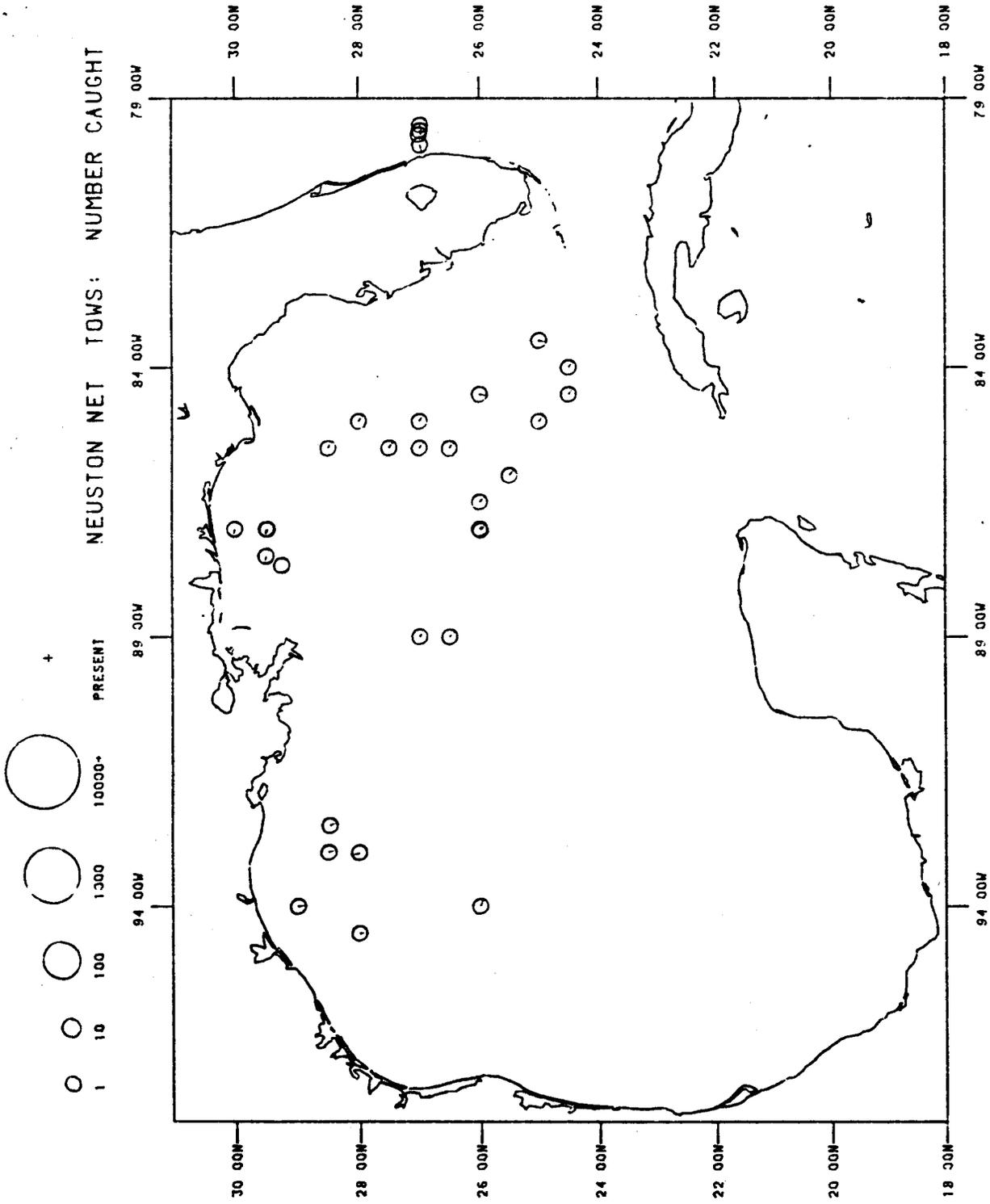




SEAMAP 1983

CORYPHAENA HIPPARUS

FIGURE 10



SEAMAP 1983 CORYPHAENA HIPPURUS FIGURE 11

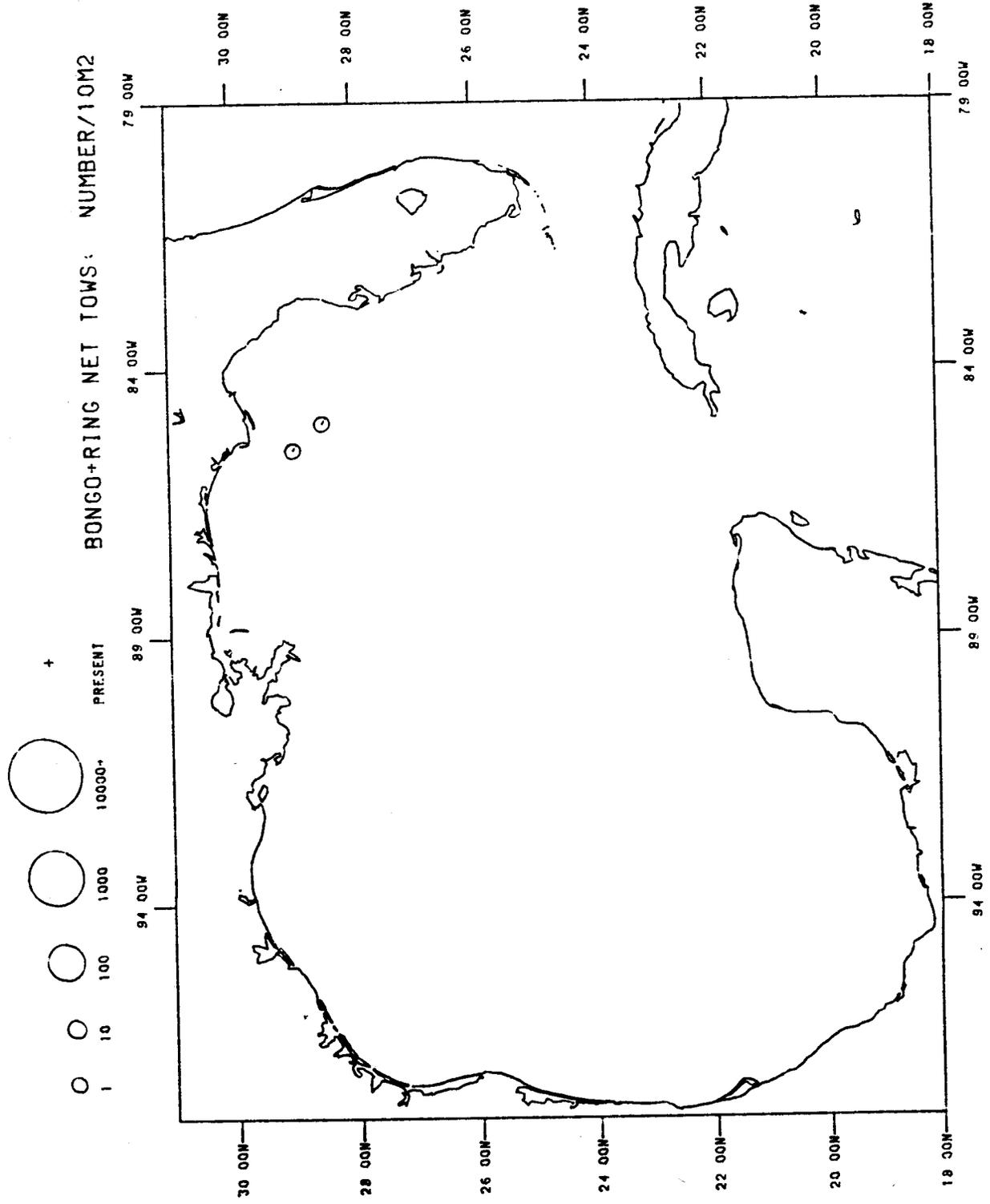
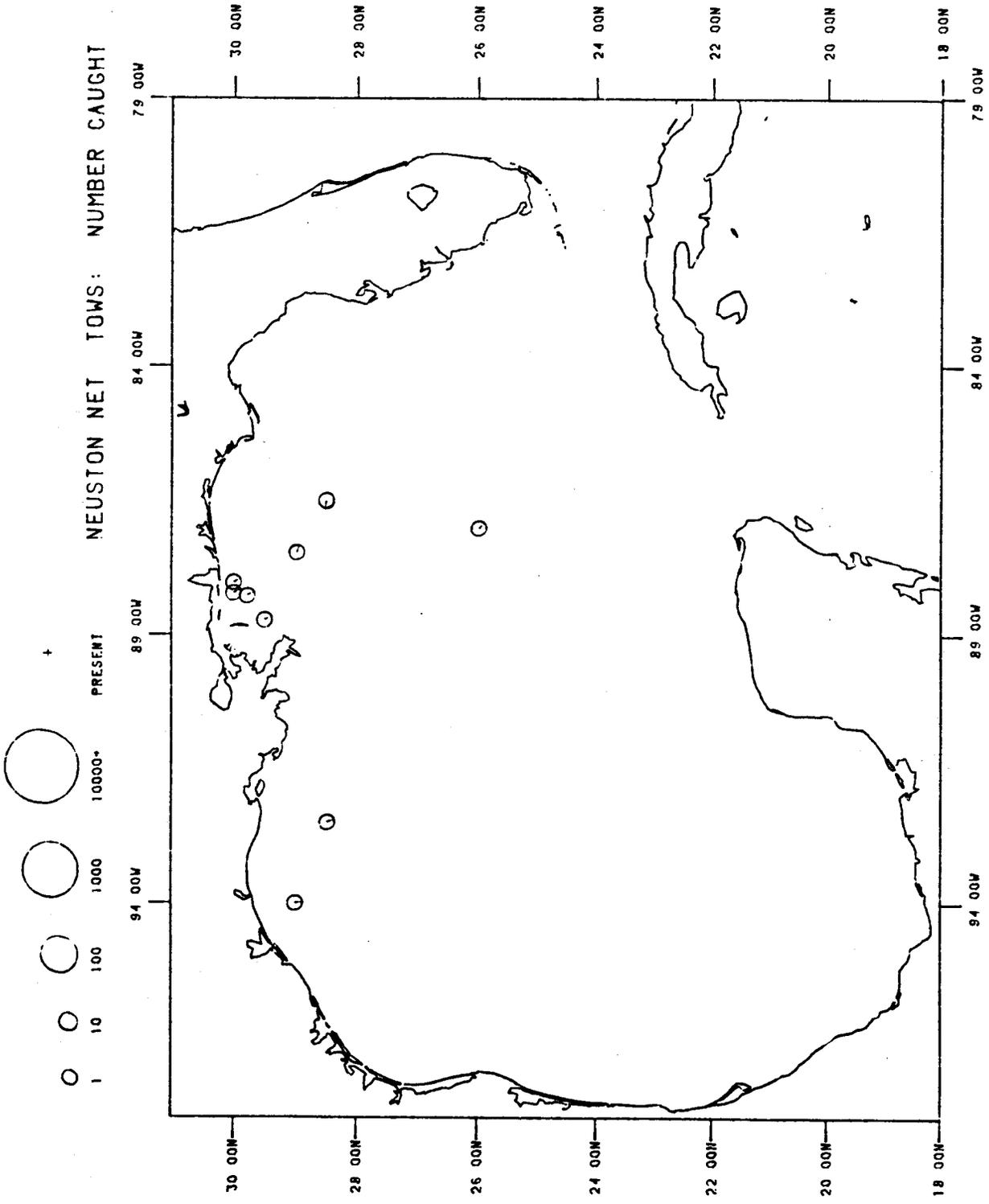


FIGURE 12

CORYPHAENA EQUISETIS

SEAMAP 1983



SEAMAP 1983 CORYPHAENA EQUISETIS FIGURE 13

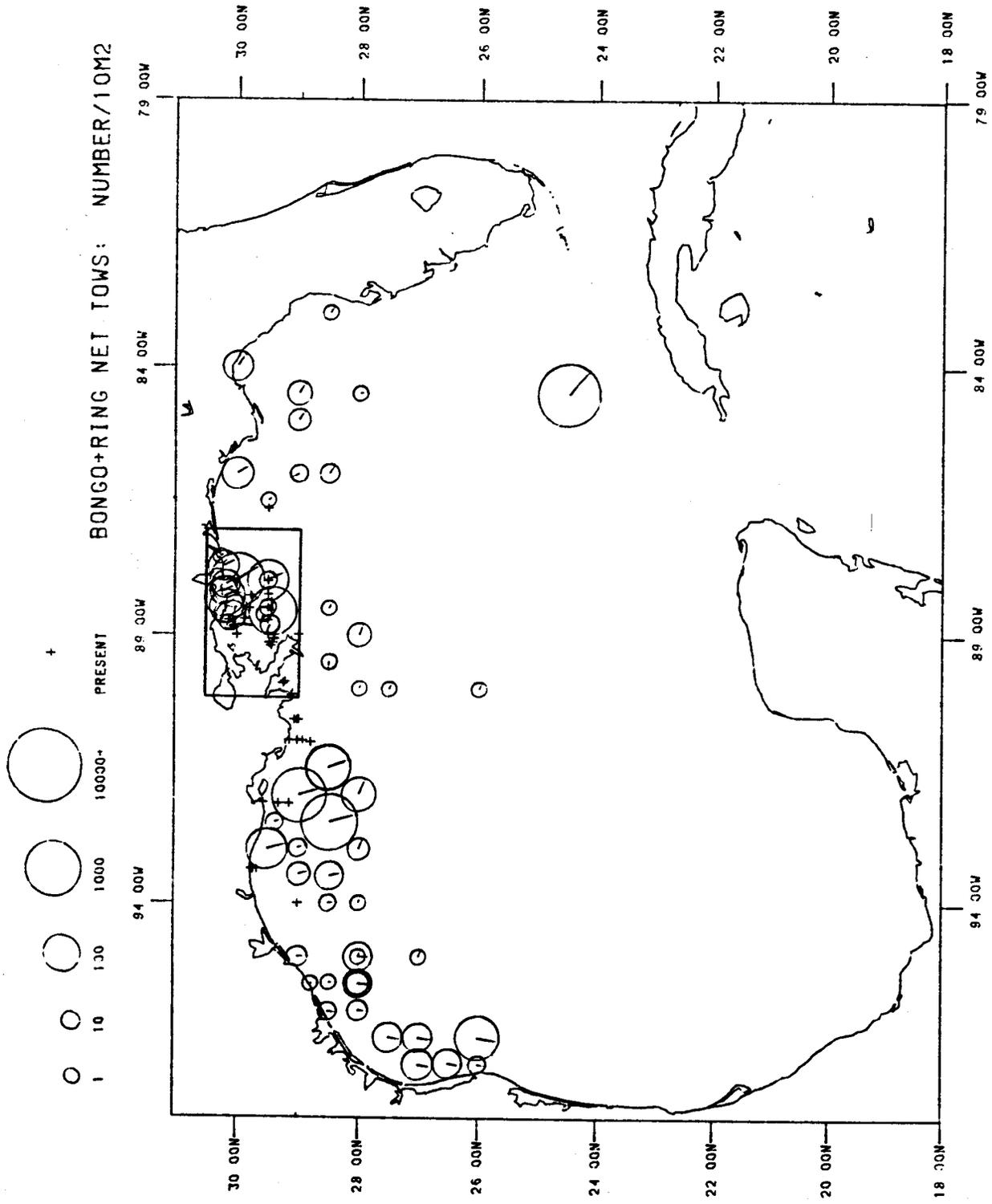
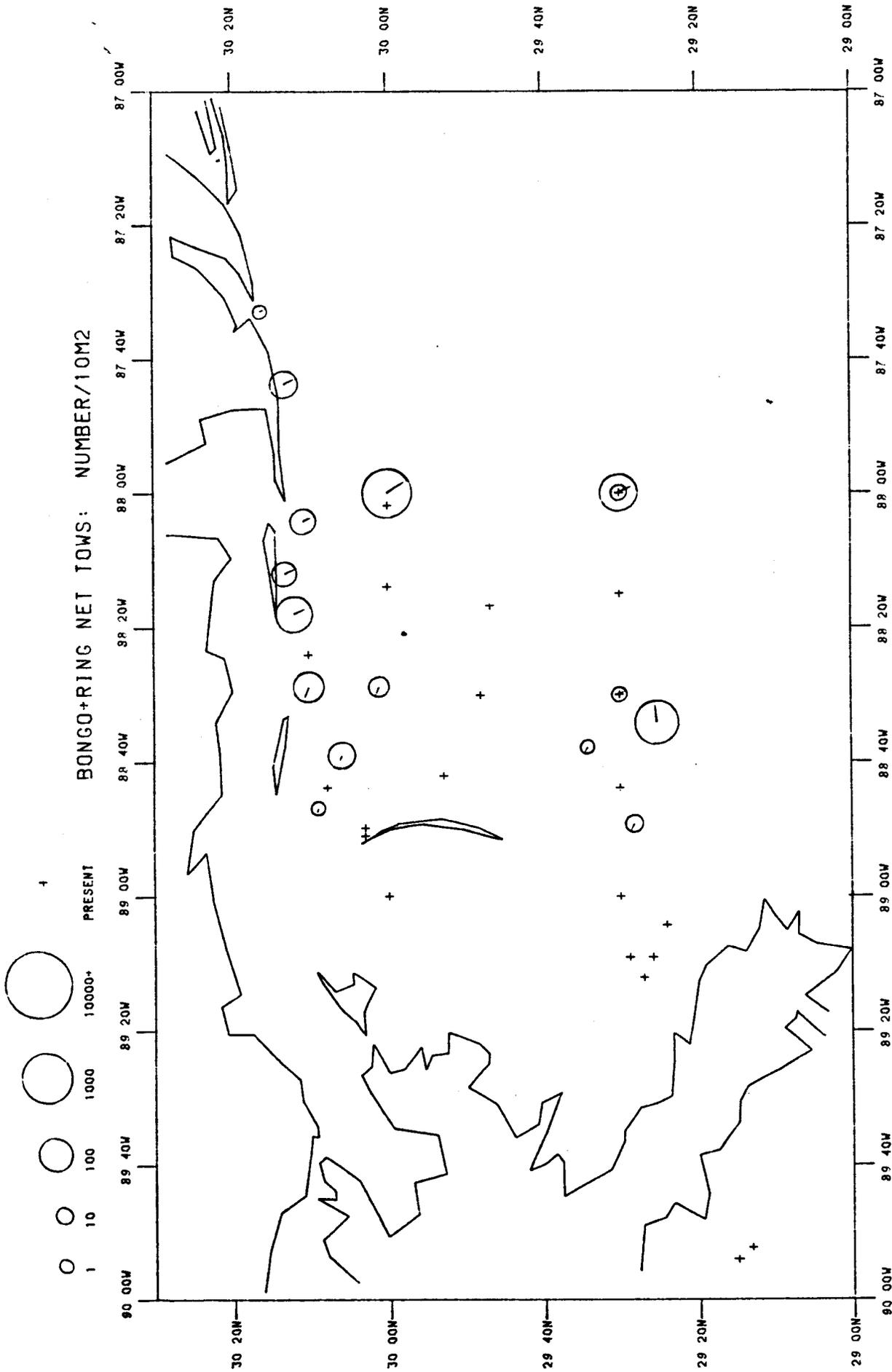


FIGURE 14

ENGRAULIDAE

SEAMAP 1983



**FIGURE 15**

**ENGRAULIDAE**

**SEAMAP 1983**

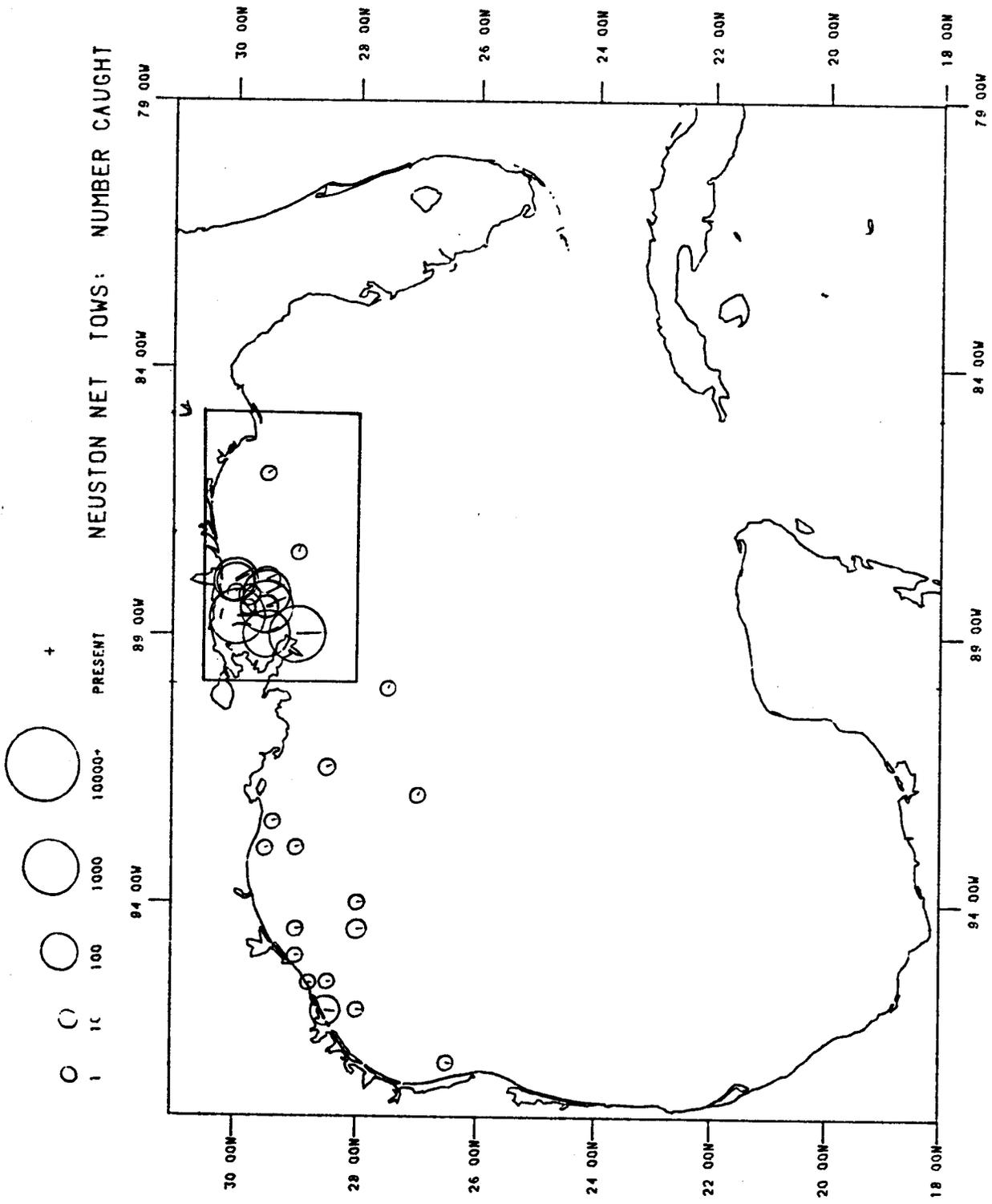


FIGURE 16

ENGRAULIDAE

SEAMAP 1983

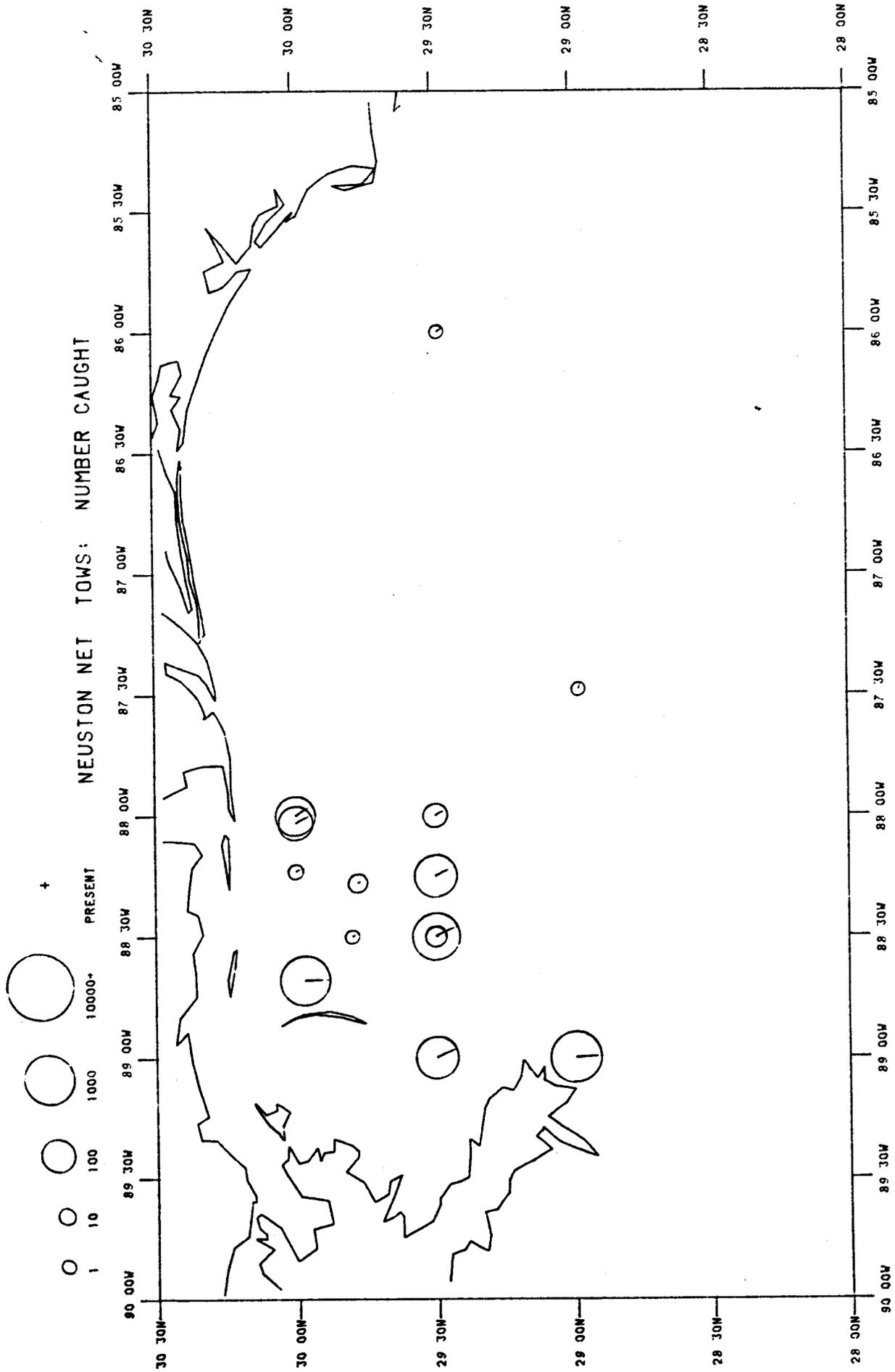
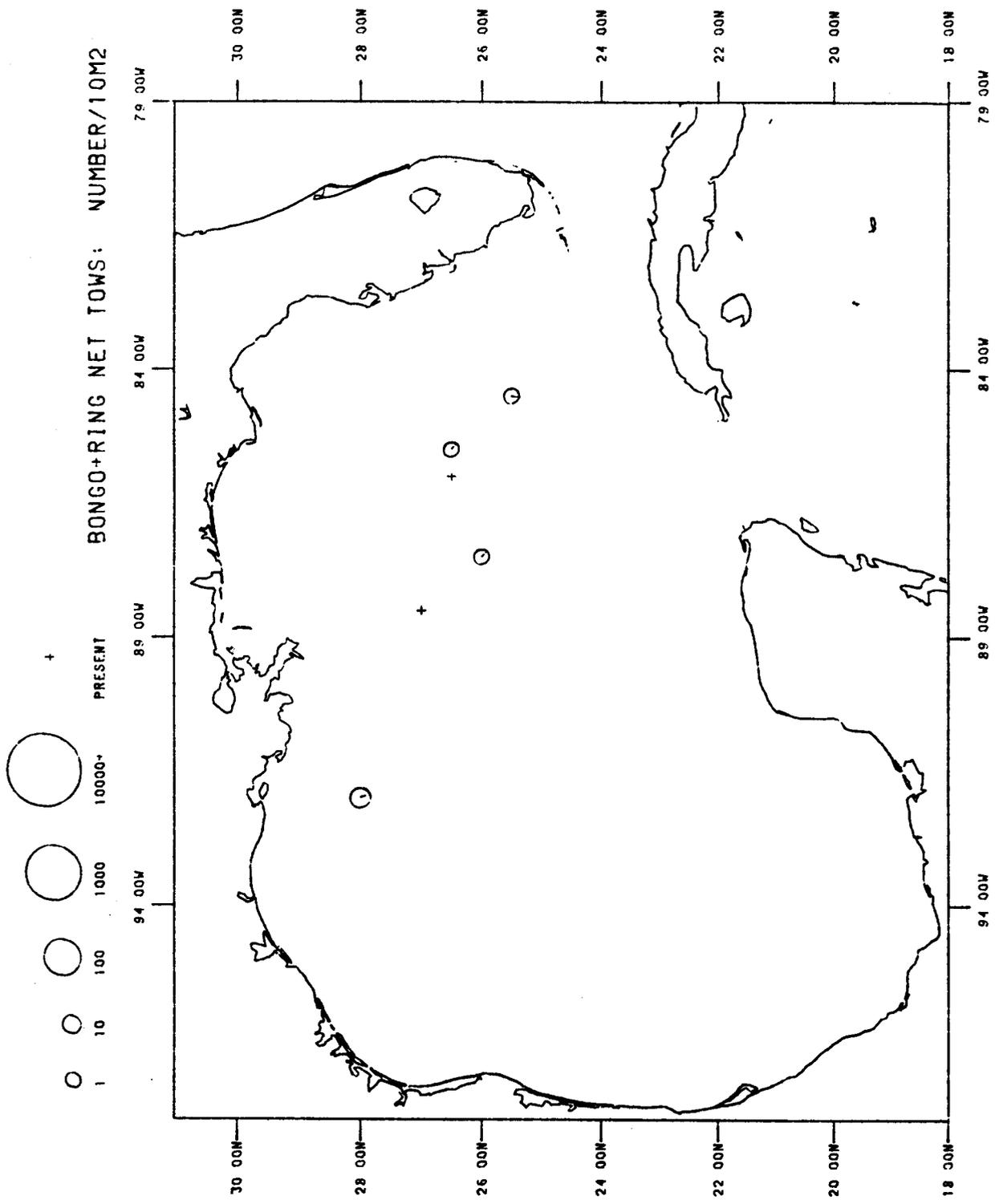


FIGURE 17

ENGRAULIDAE

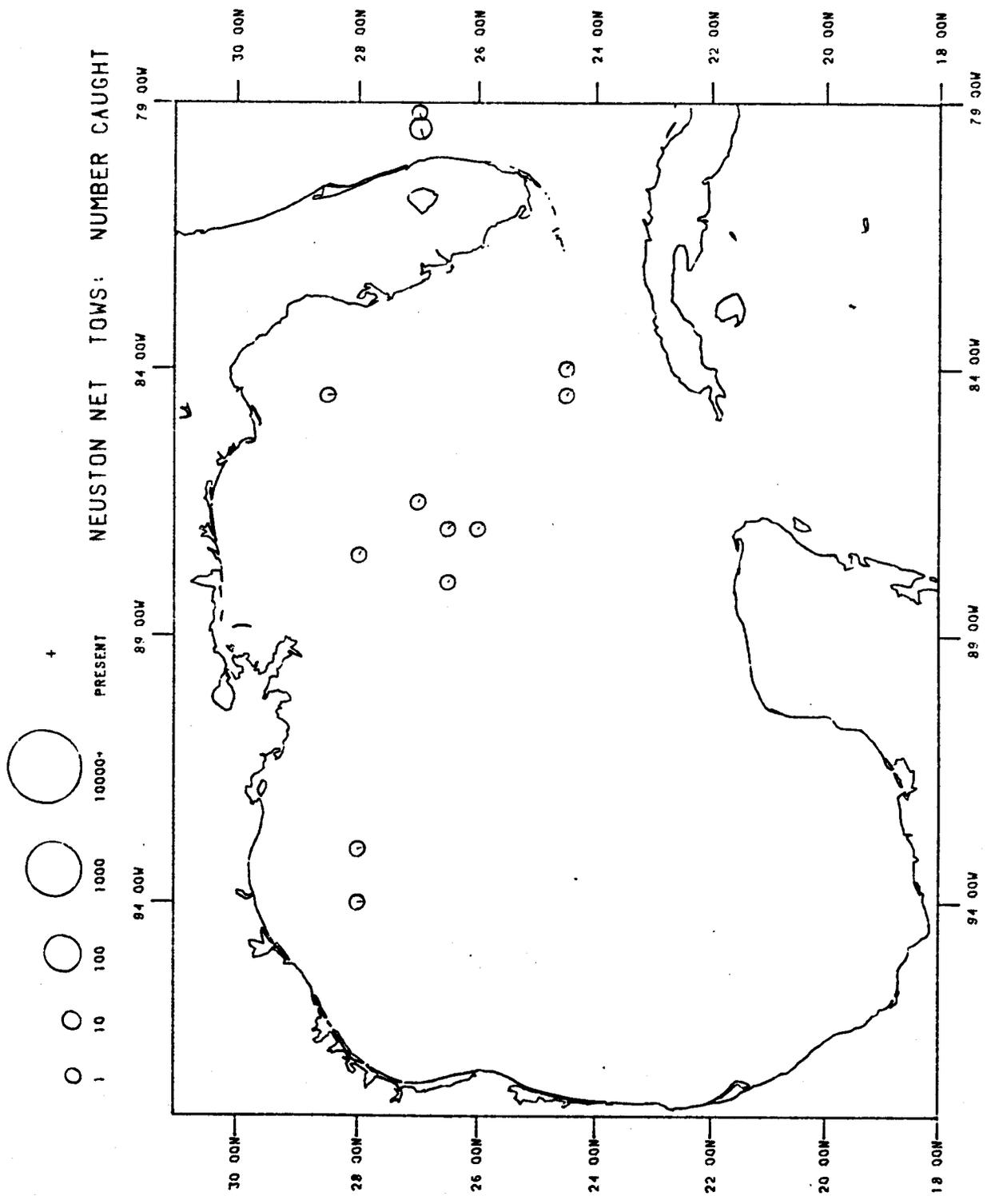
SEAMAP 1983



SEAMAP 1983

ISTIOPHORIDAE

FIGURE 18



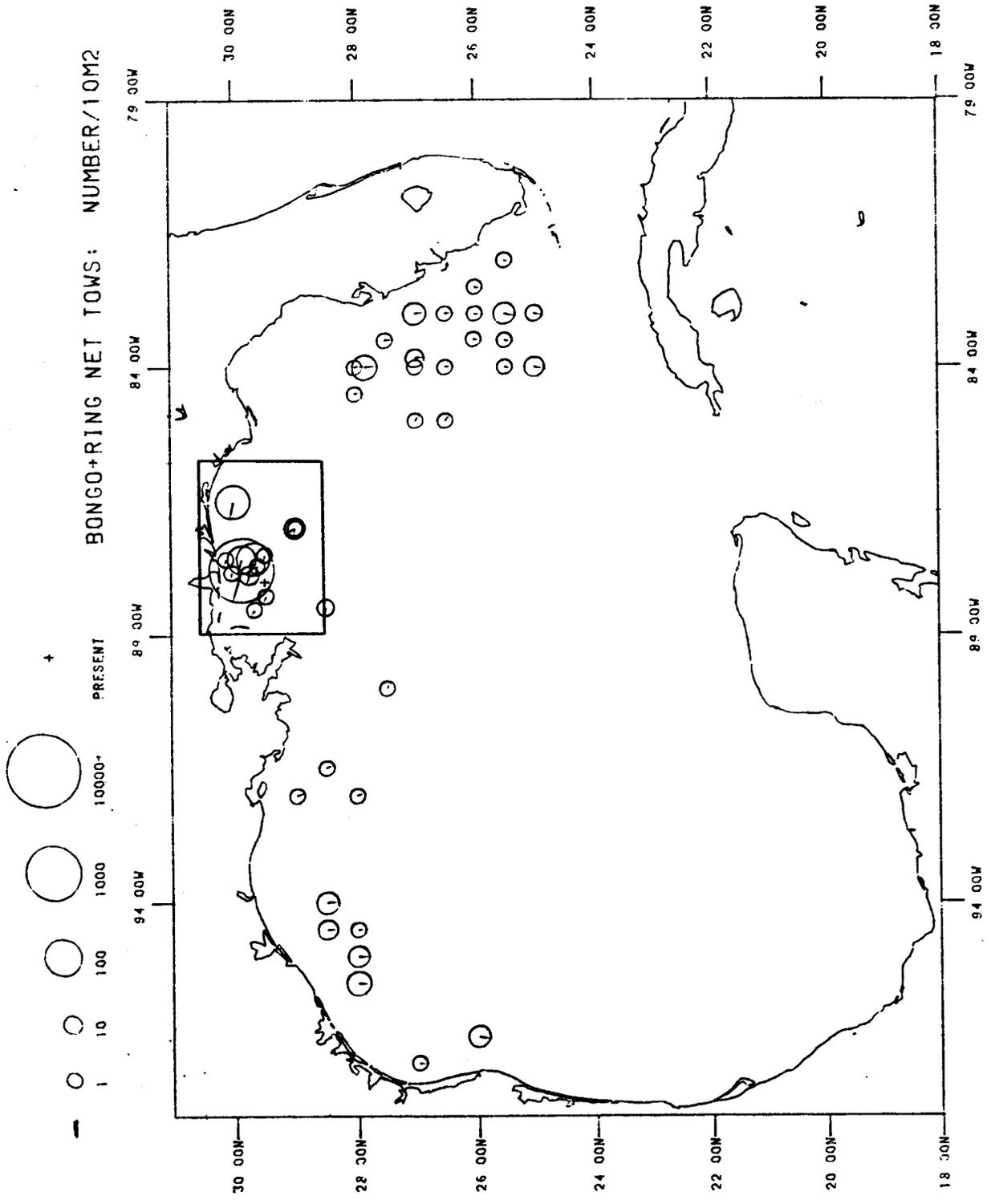
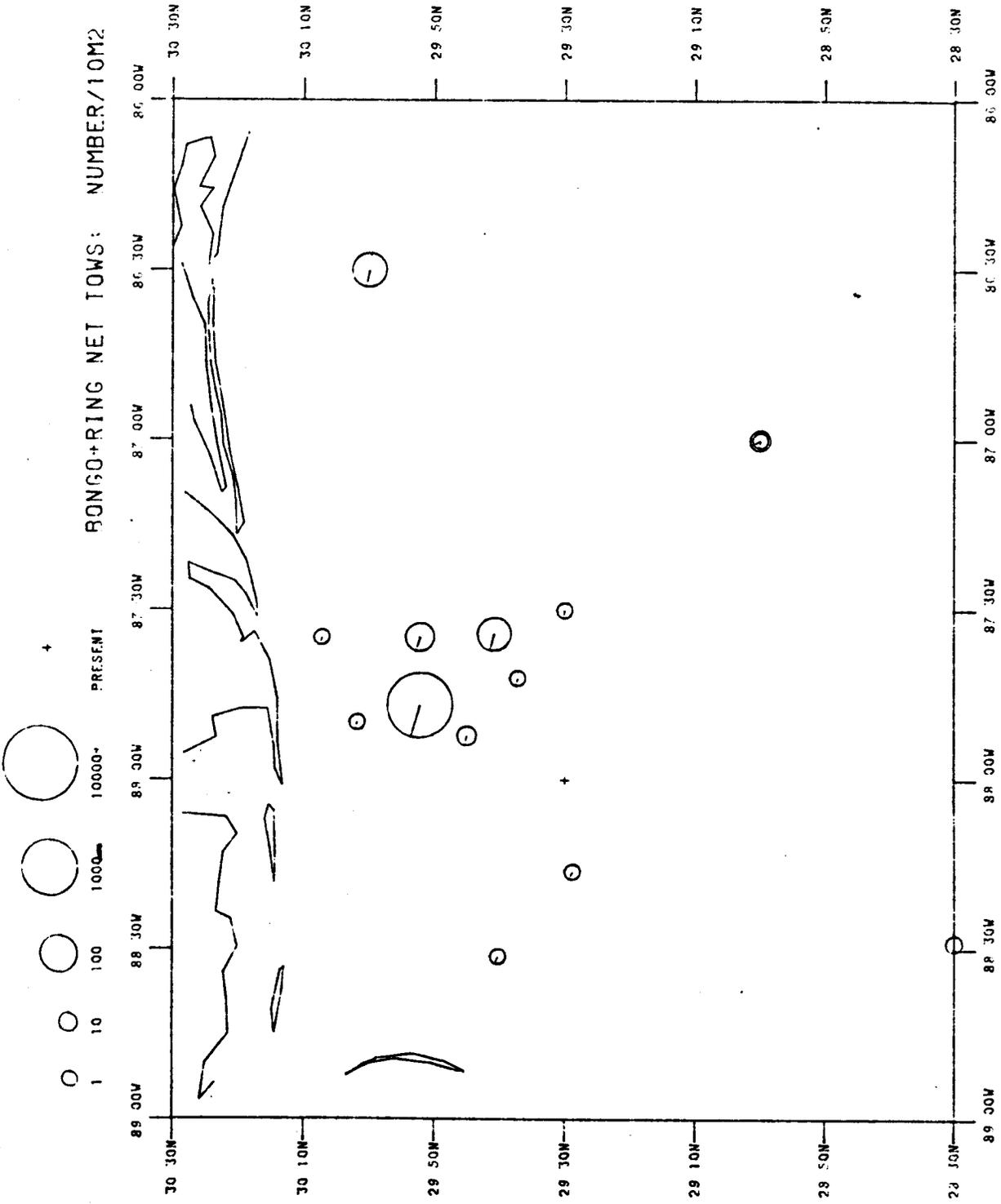


FIGURE 20

LUTJANIDAE

SEAMAP 1983



SEAMAP 1983 LUTJANIDAE **FIGURE 21**

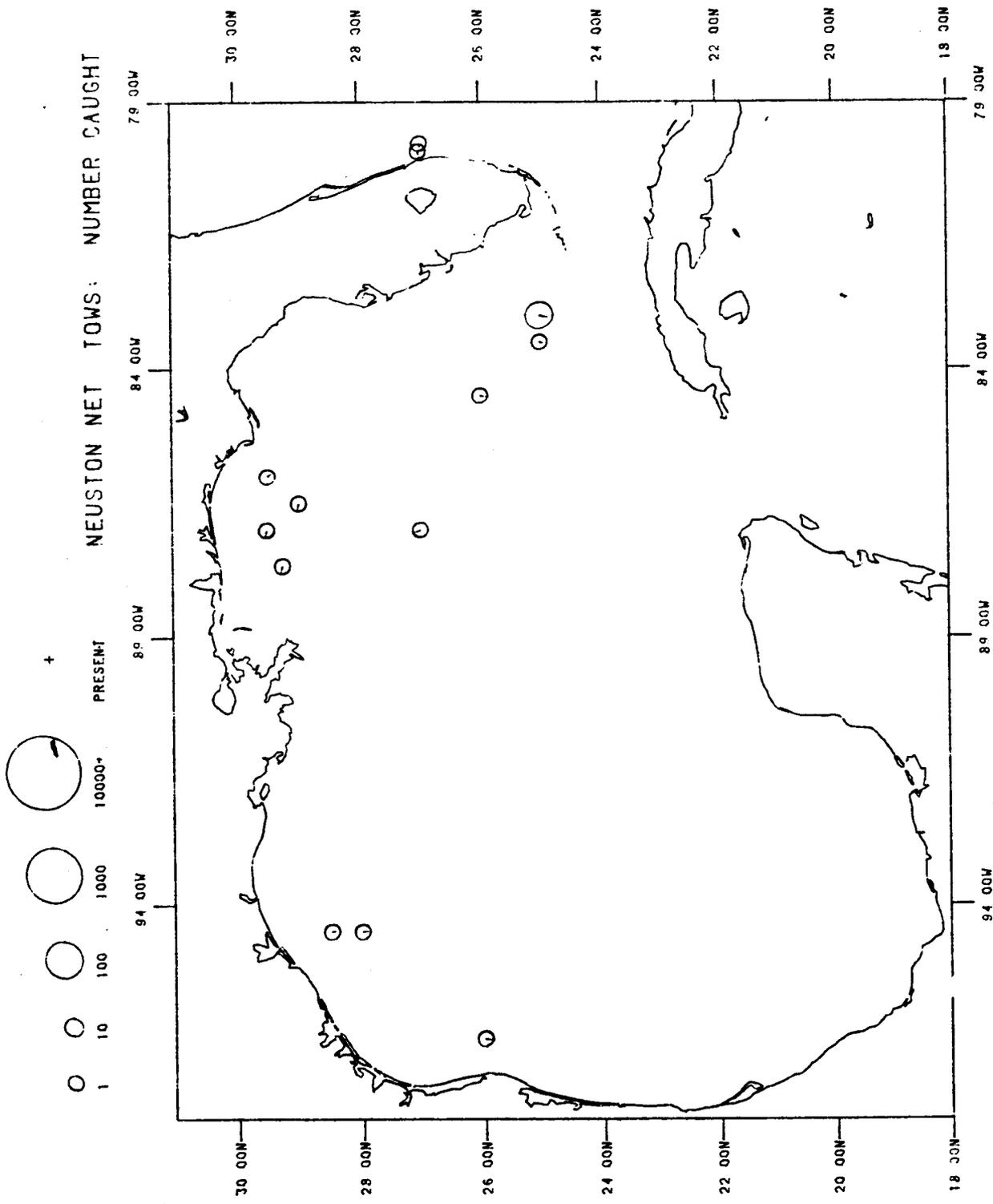


FIGURE 22

LUTJANIDAE

SEAMAP 1983

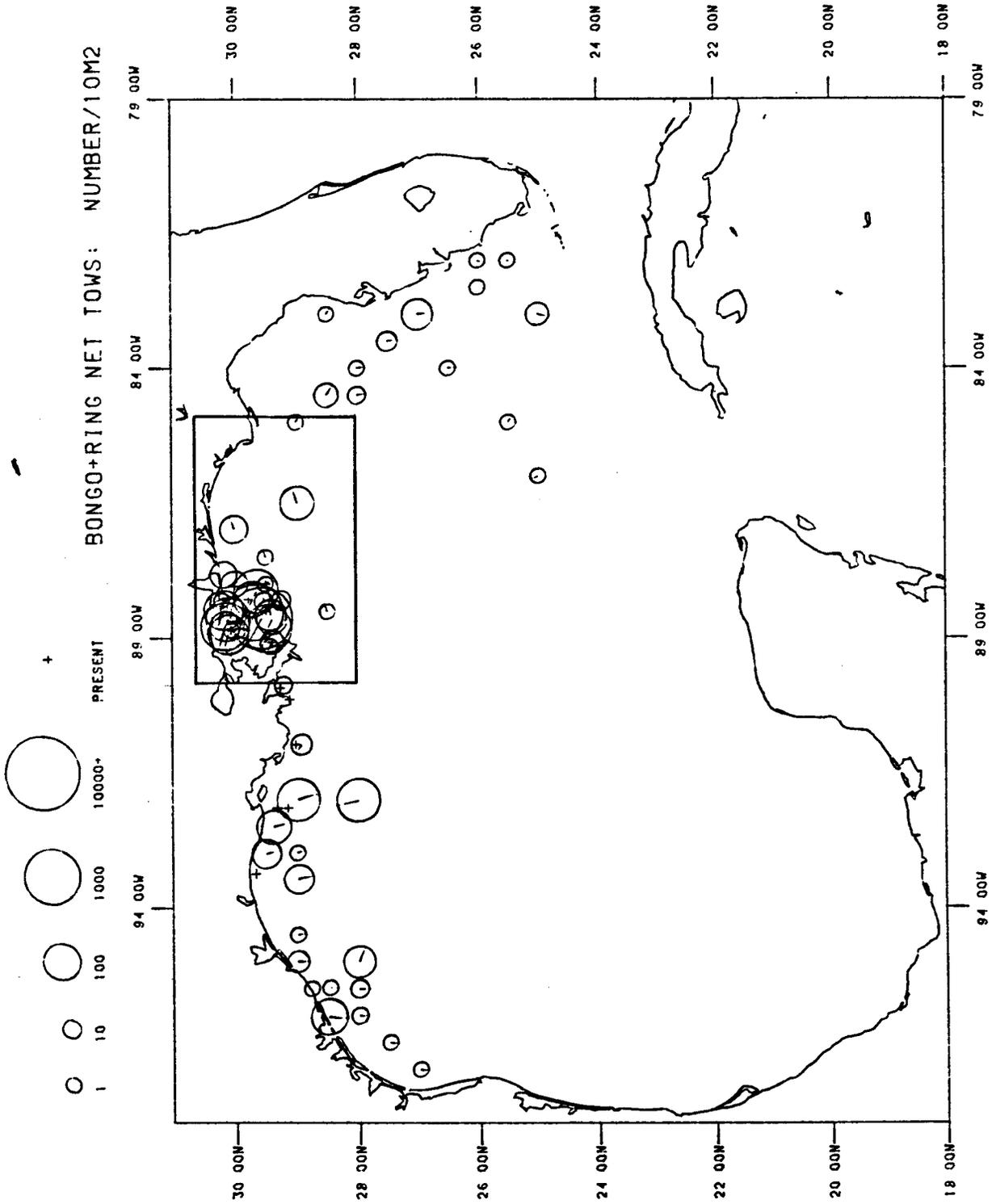


FIGURE 23

SCIAENIDAE

SEAMAP 1983

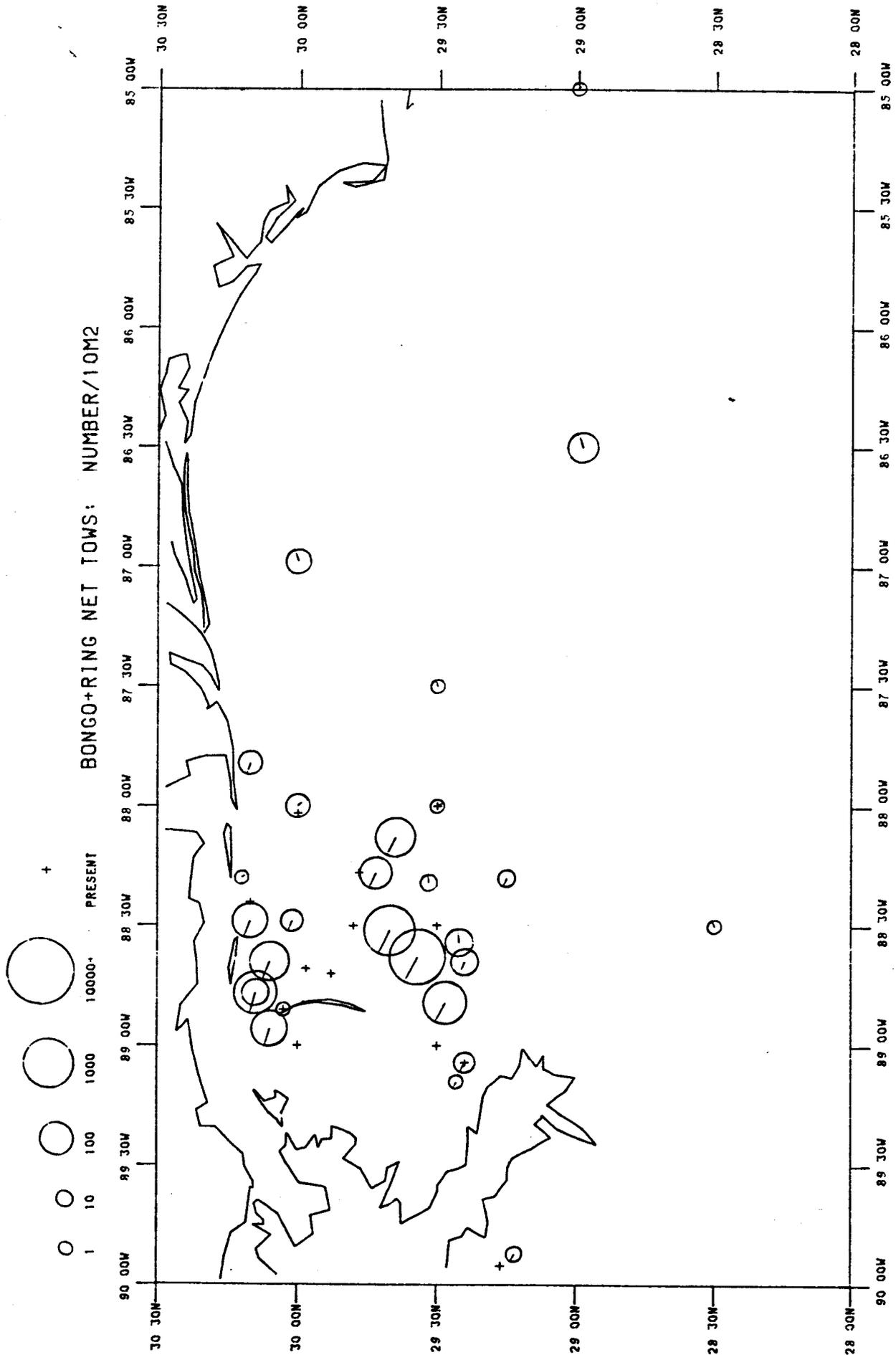


FIGURE 24

SCIAENIDAE

SEAMAP 1983

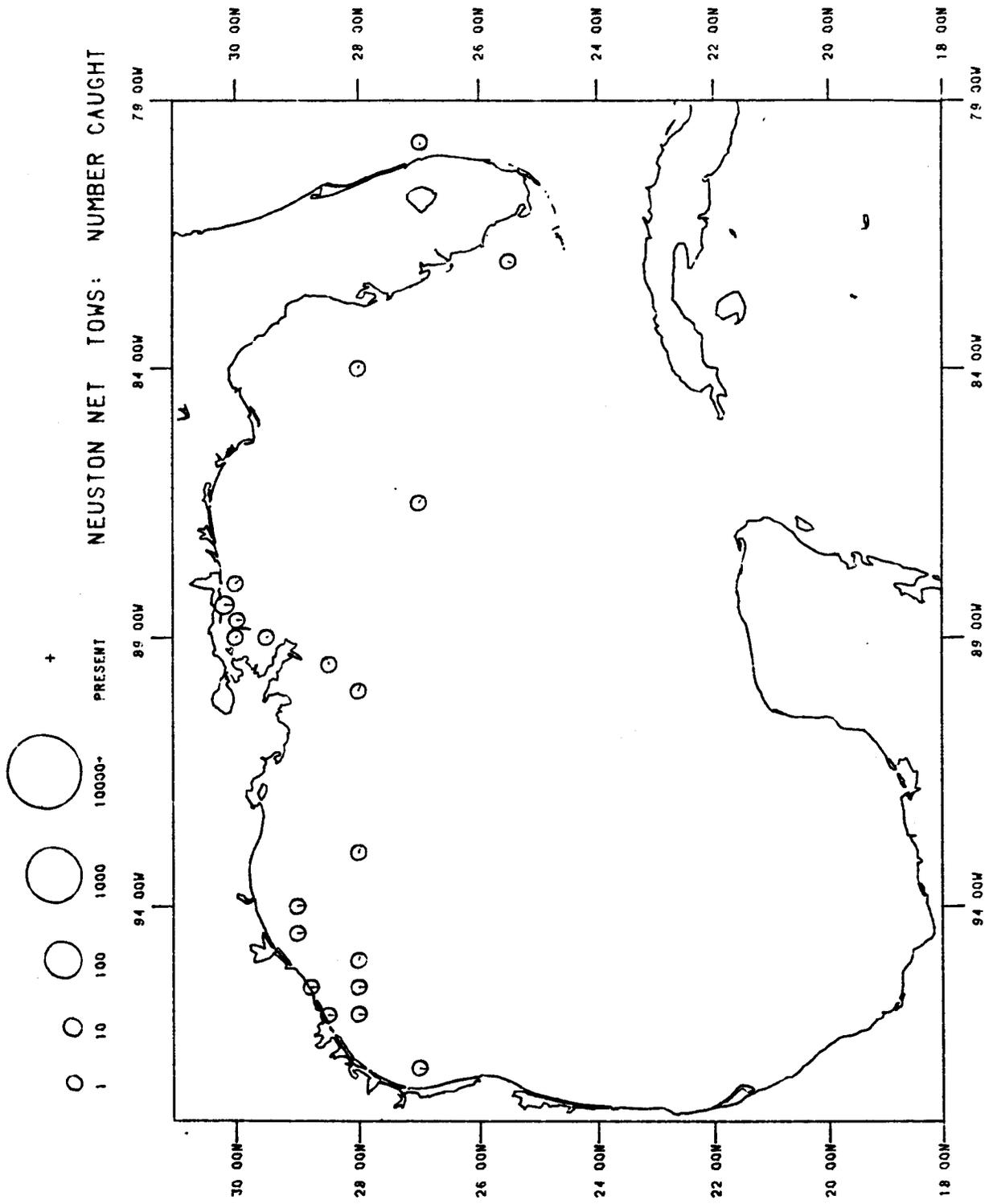


FIGURE 25

SCIAENIDAE

SEAMAP 1983

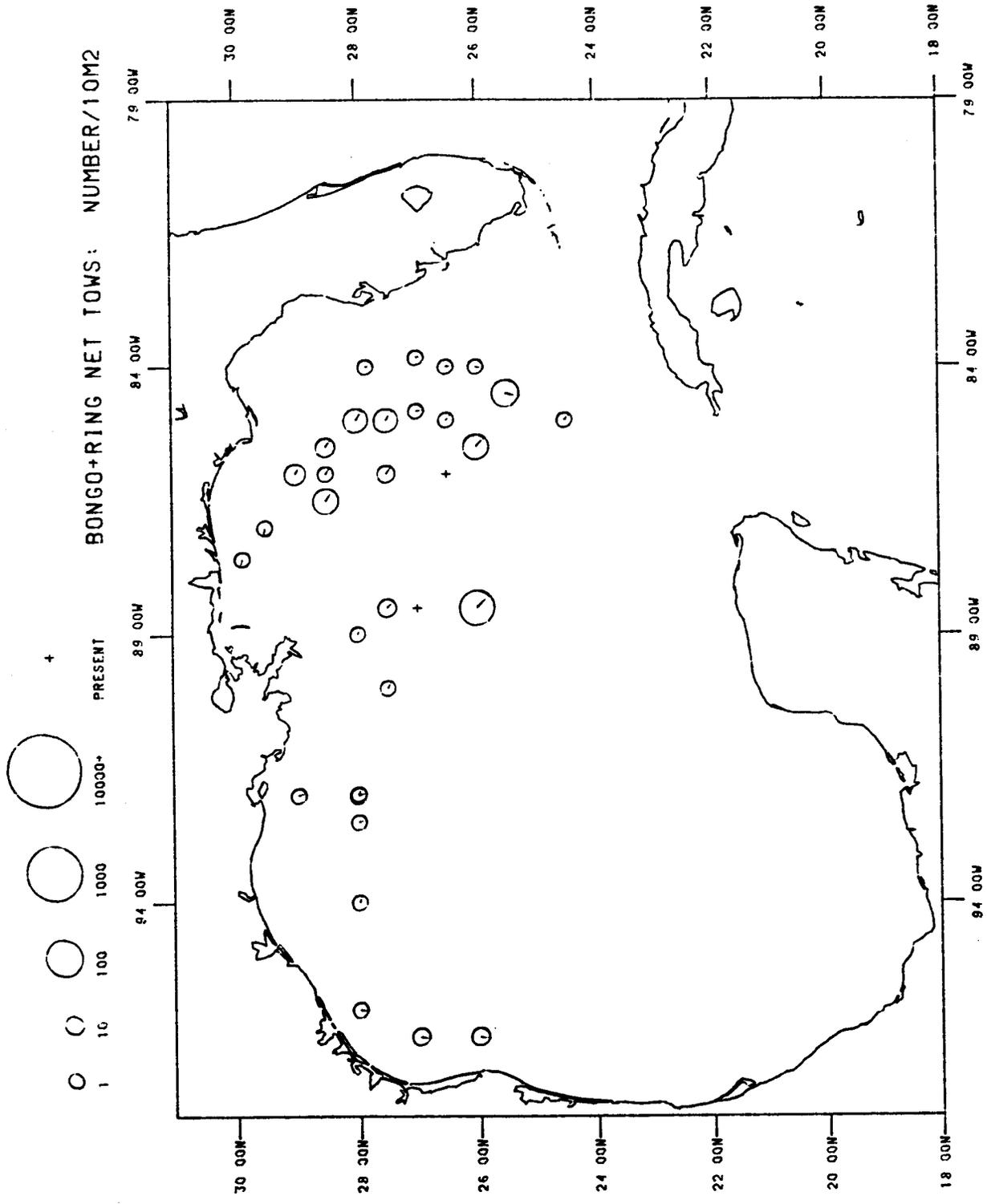
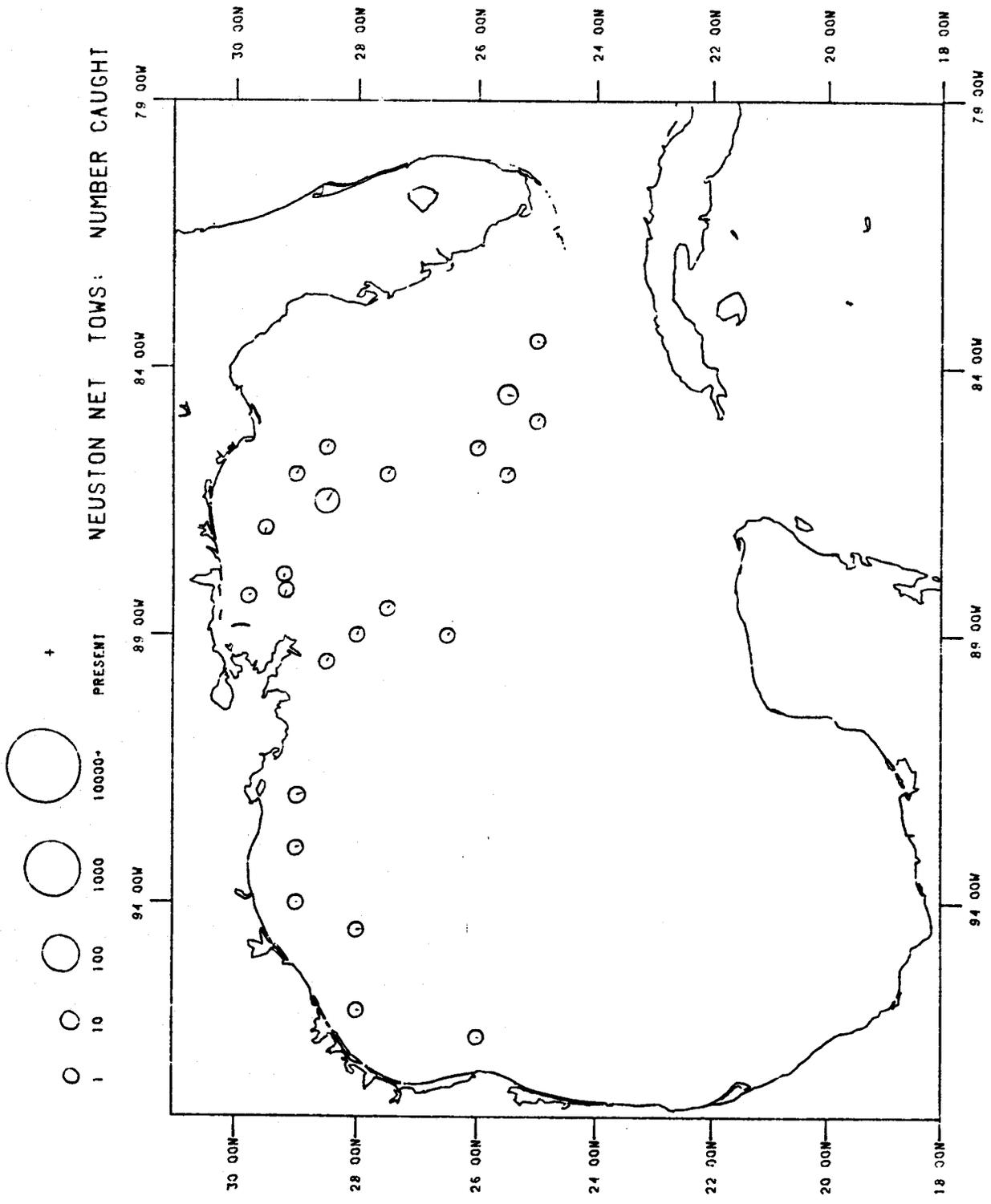


FIGURE 26

AUXIS SP

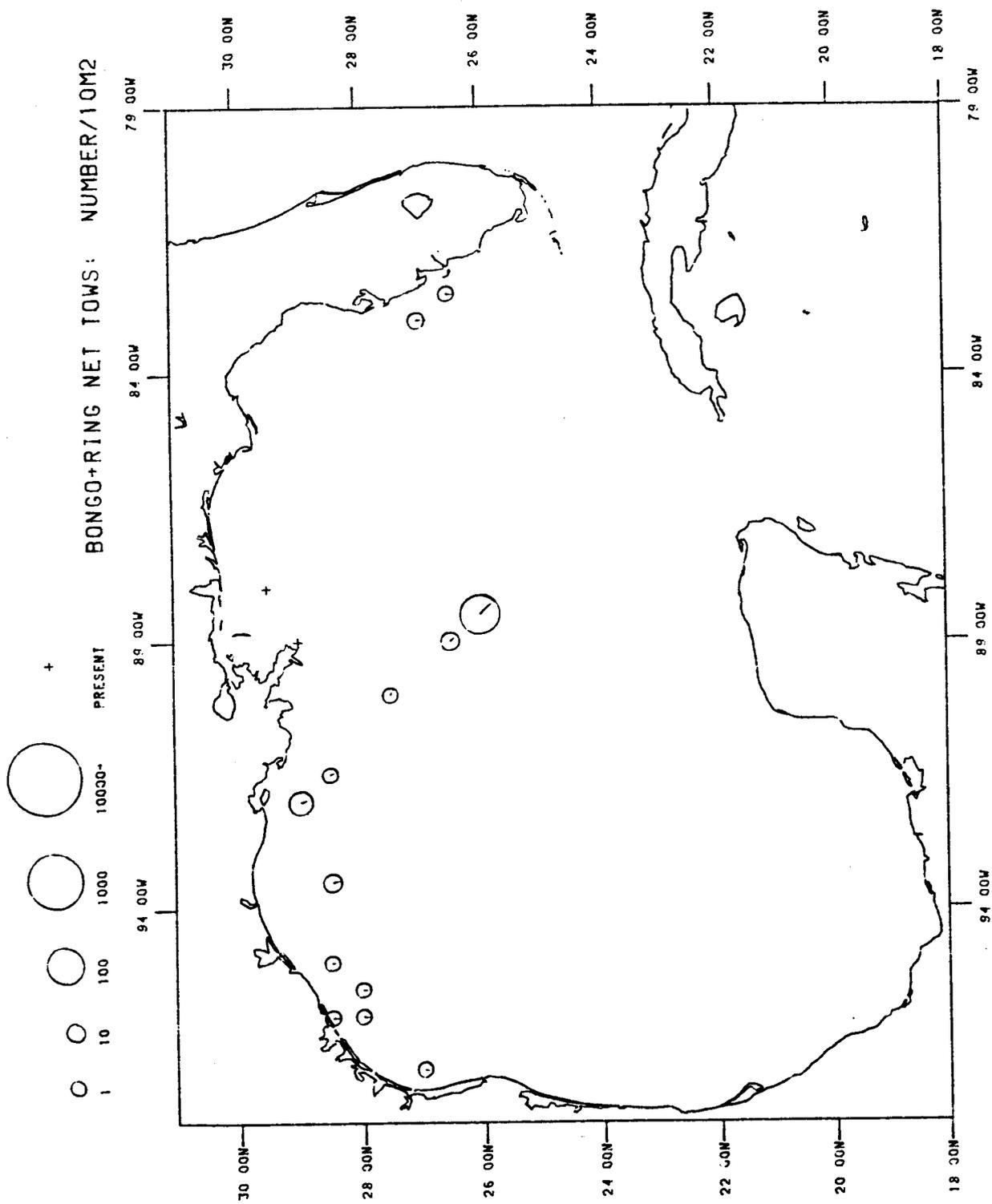
SEAMAP 1983



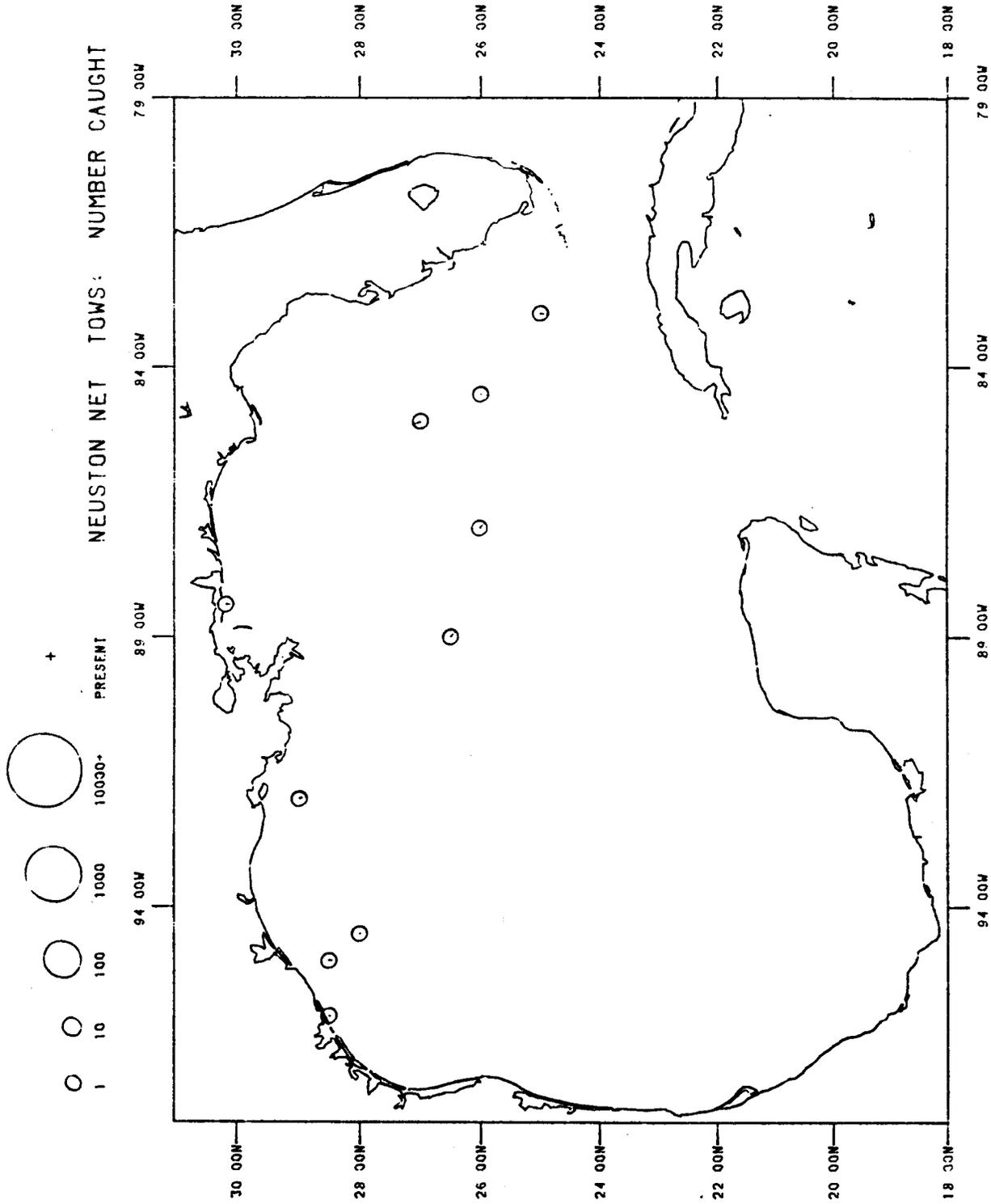
SEAMAP 1983

AUXIS SP

FIGURE 27



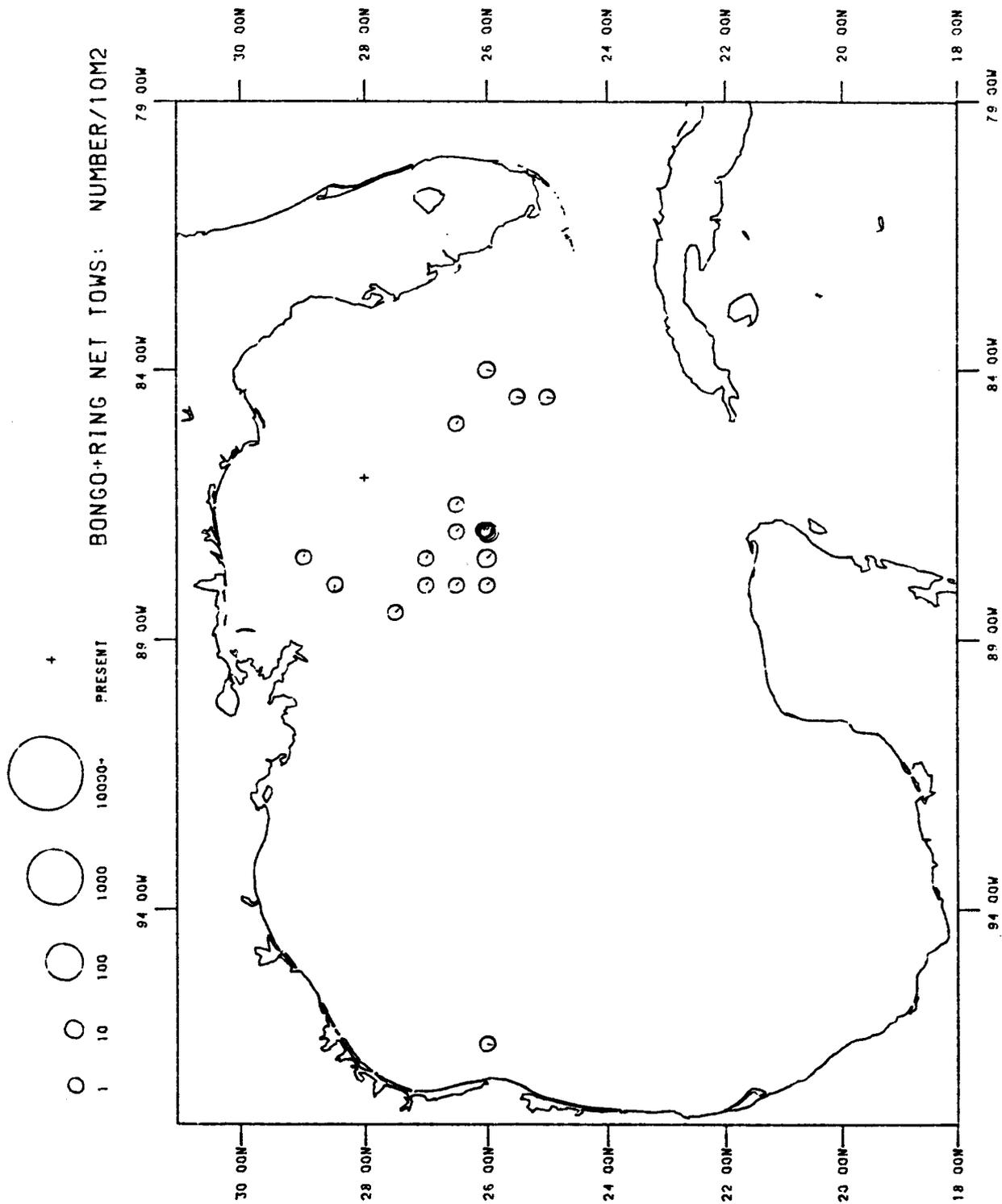
SEAMAP 1983 EUTHYNNUS ALLETTERATUS **FIGURE 28**



SEAMAP 1983

EUTHYNNUS ALLETTERATUS

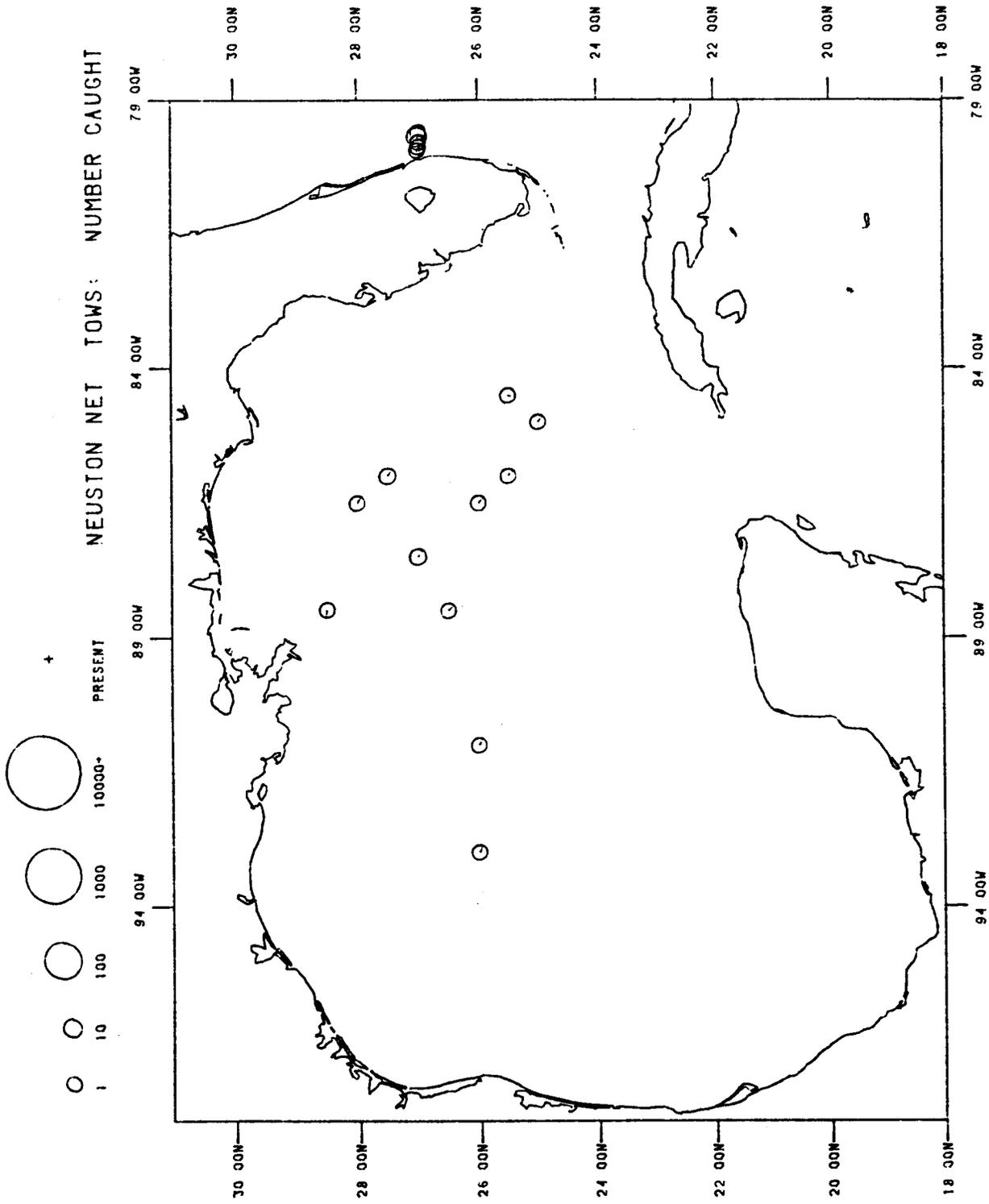
FIGURE 29

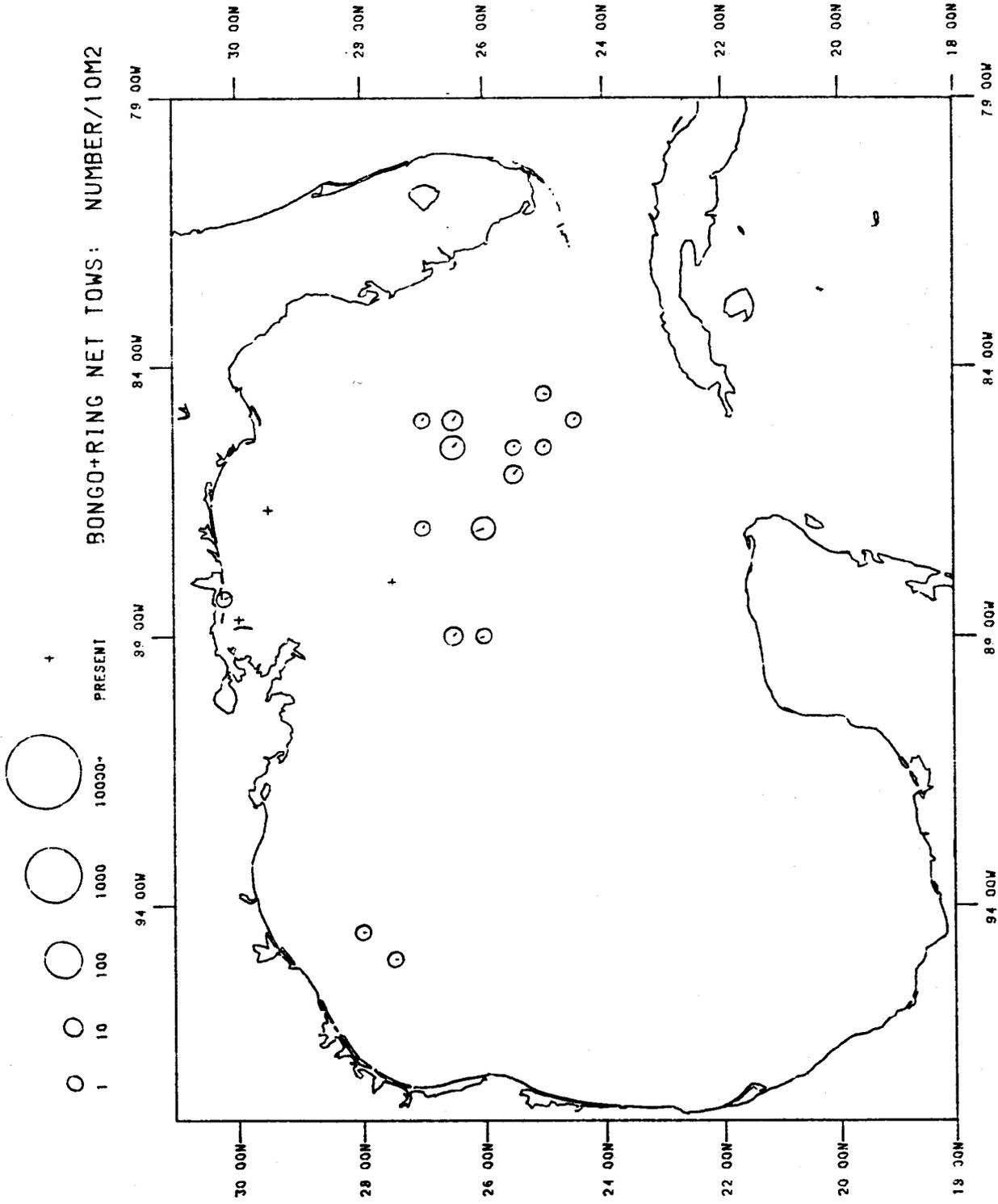


SEAMAP 1983

KATSUWONUS PELAMIS

FIGURE 30





SEAMAP 1983

THUNNUS SP

FIGURE 32

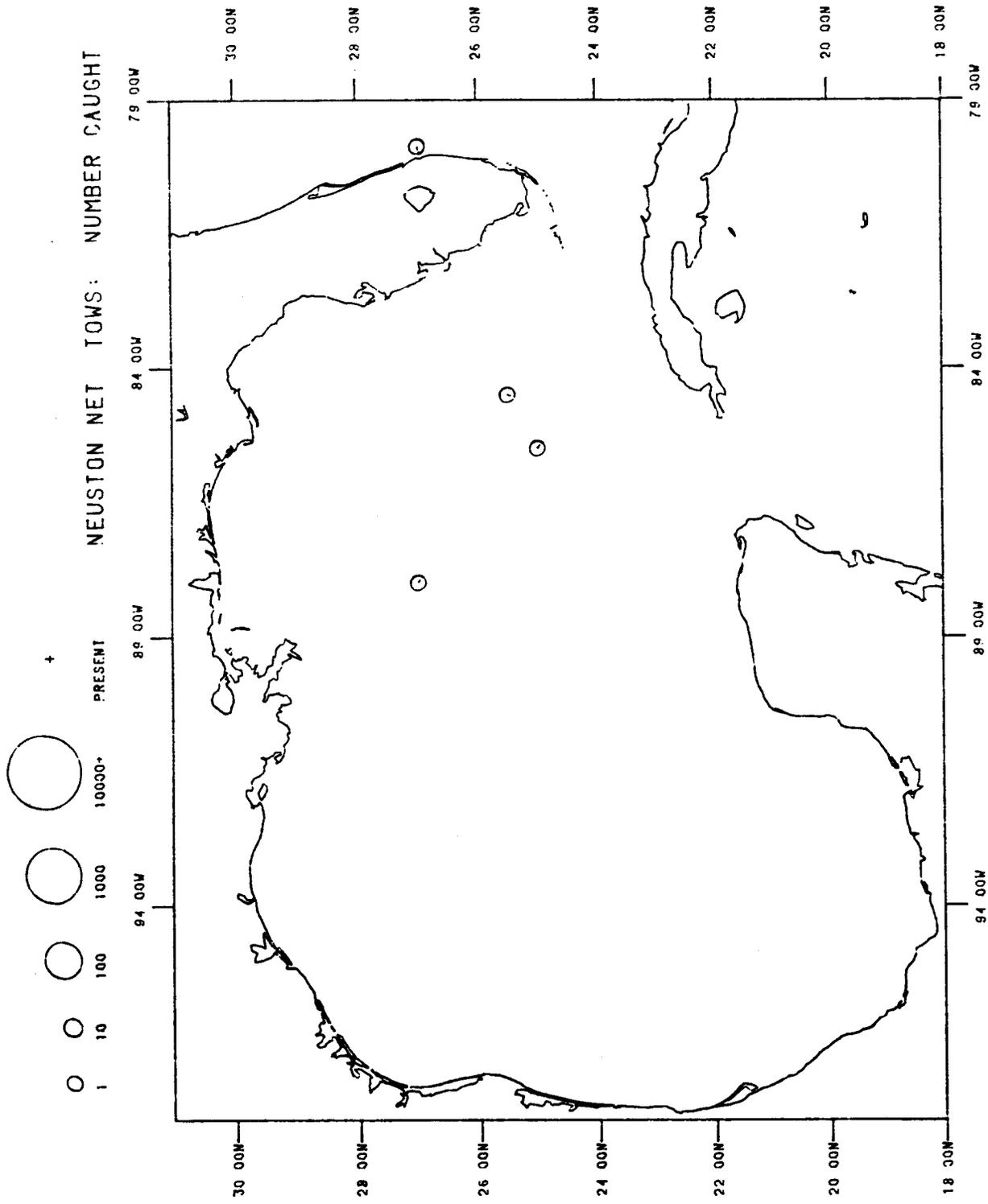
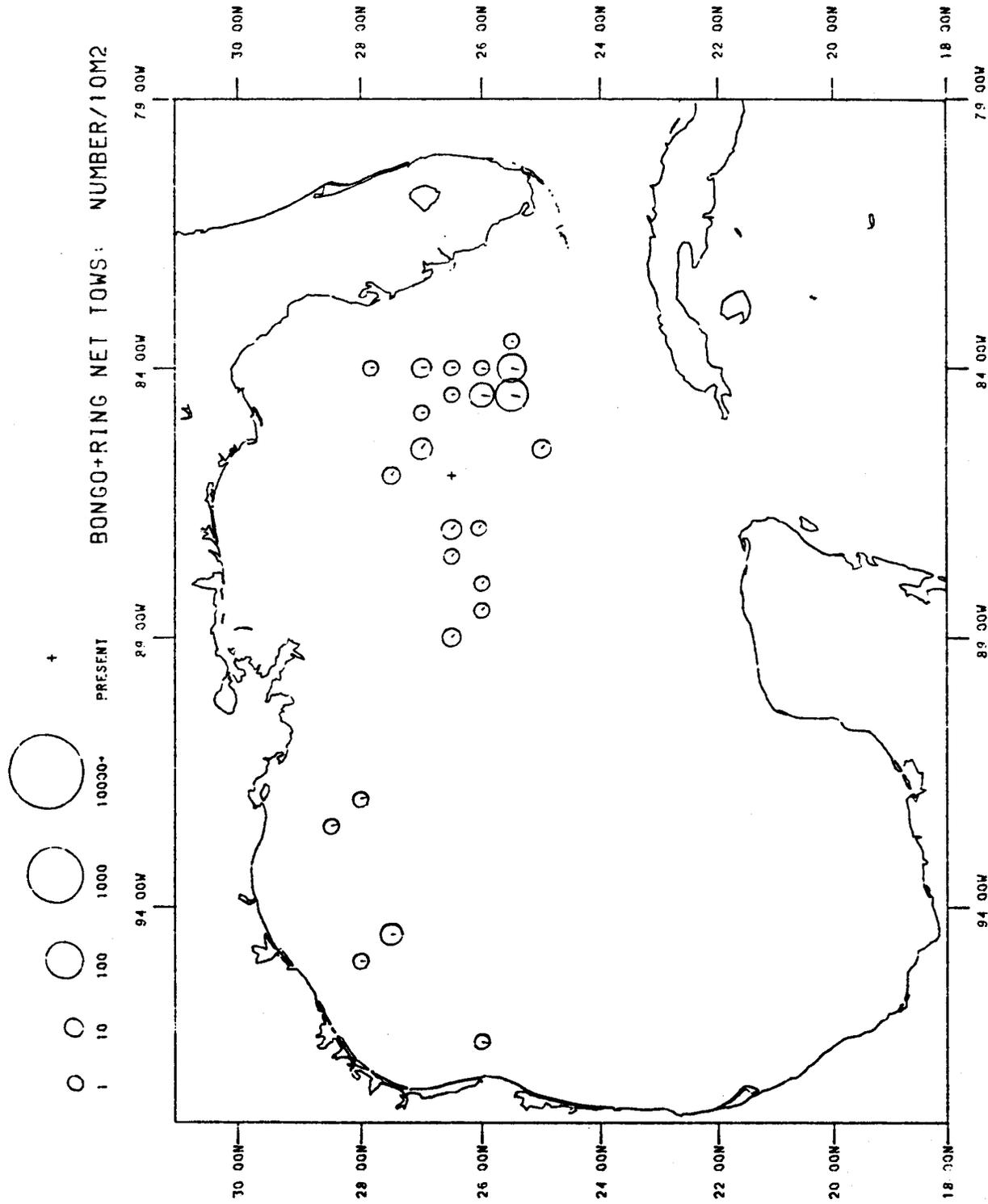


FIGURE 33

THUNNUS SP

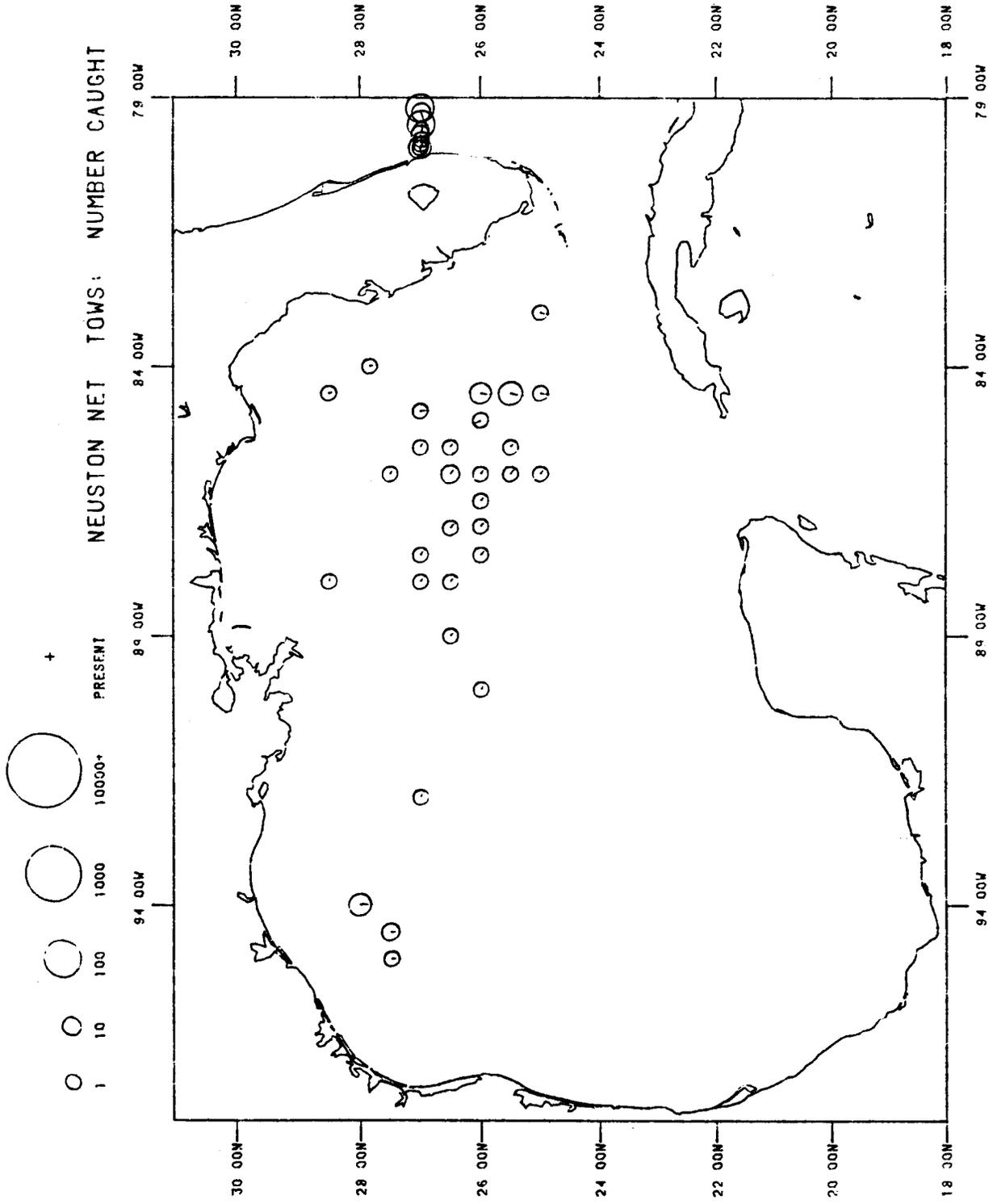
SEAMAP 1983



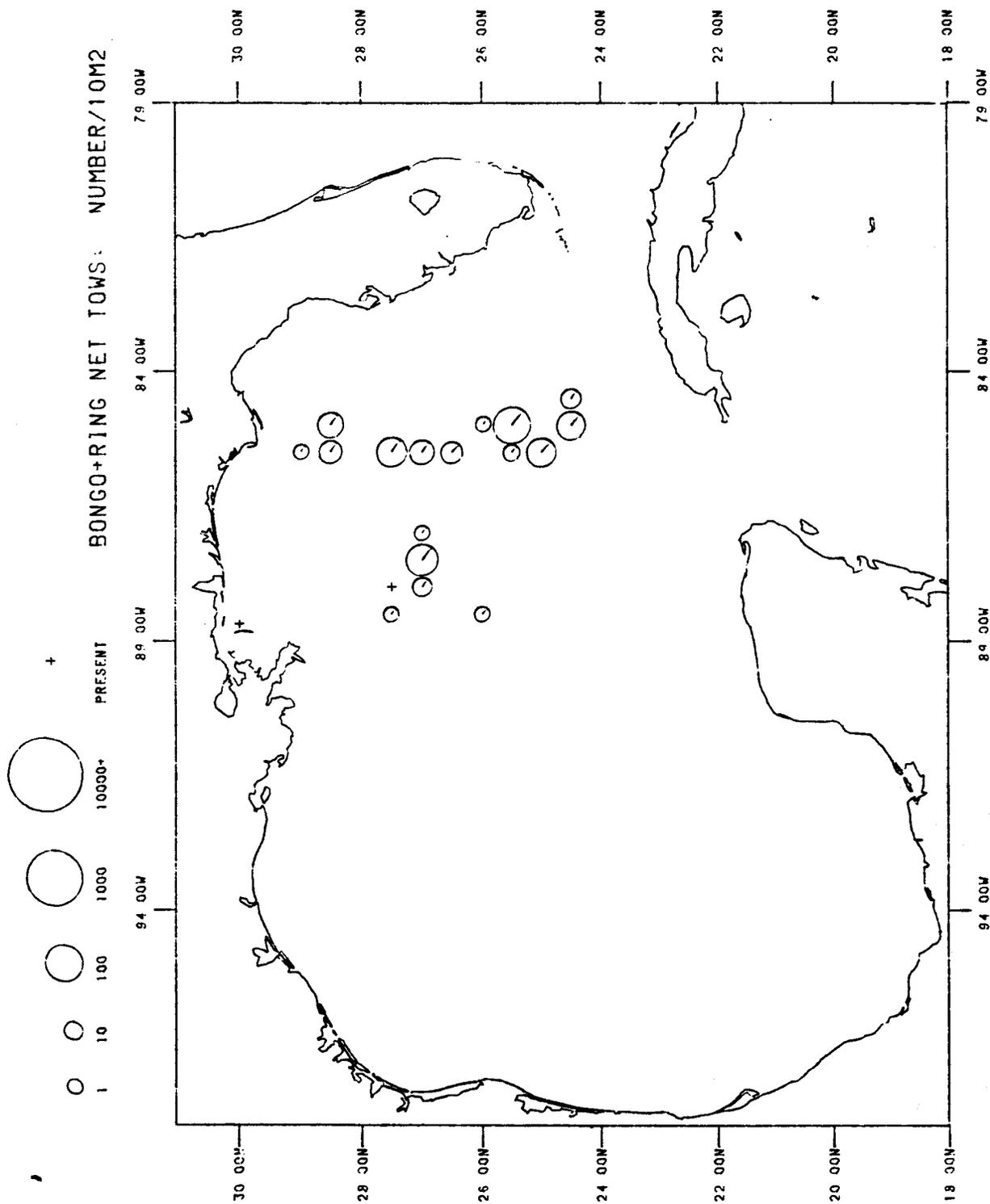
SEAMAP 1983

THUNNUS ATLANTICUS

FIGURE 34



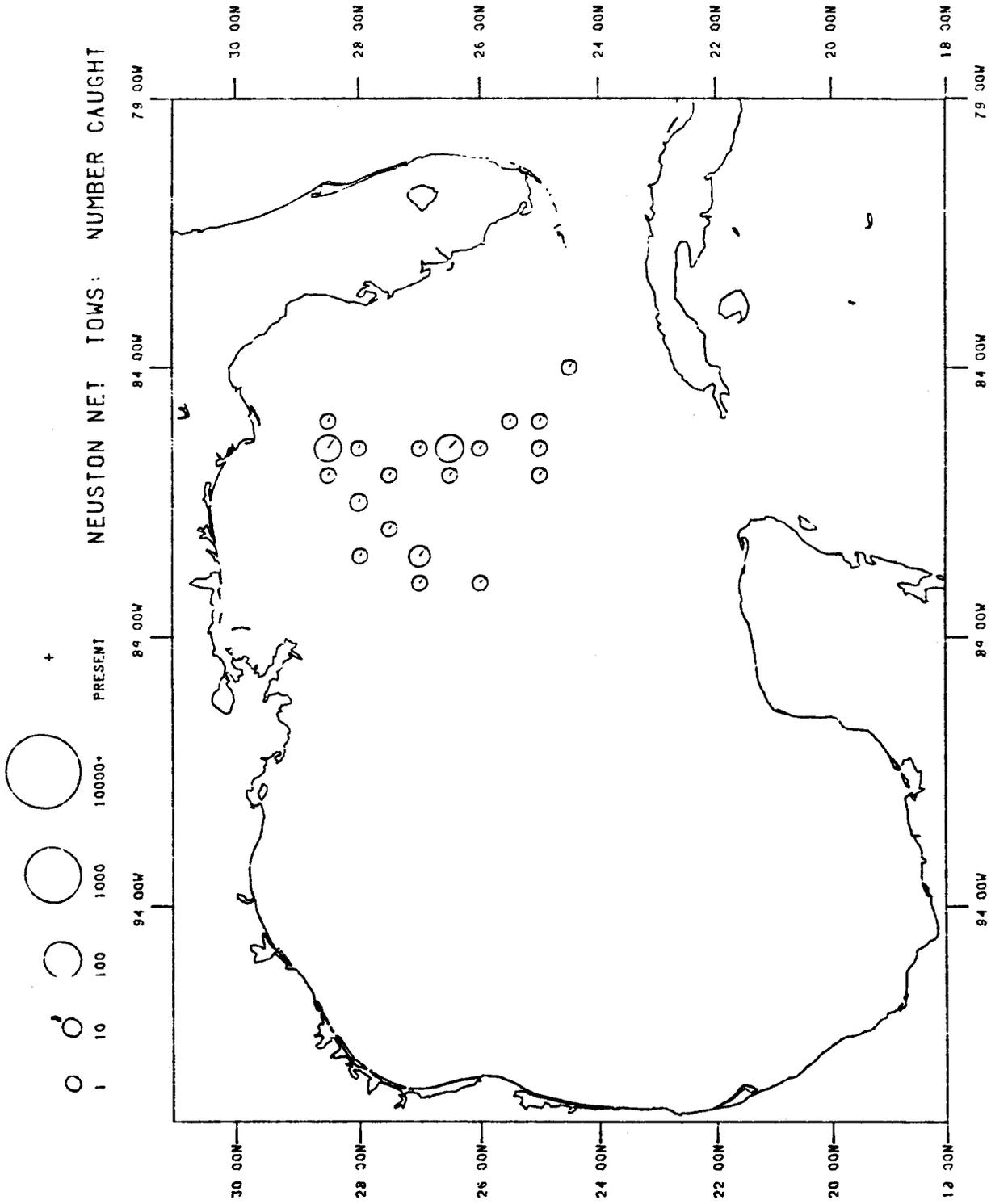
SEAMAP 1983 THUNNUS ATLANTICUS FIGURE 35



SEAMAP 1983

THUNNUS THYNNUS

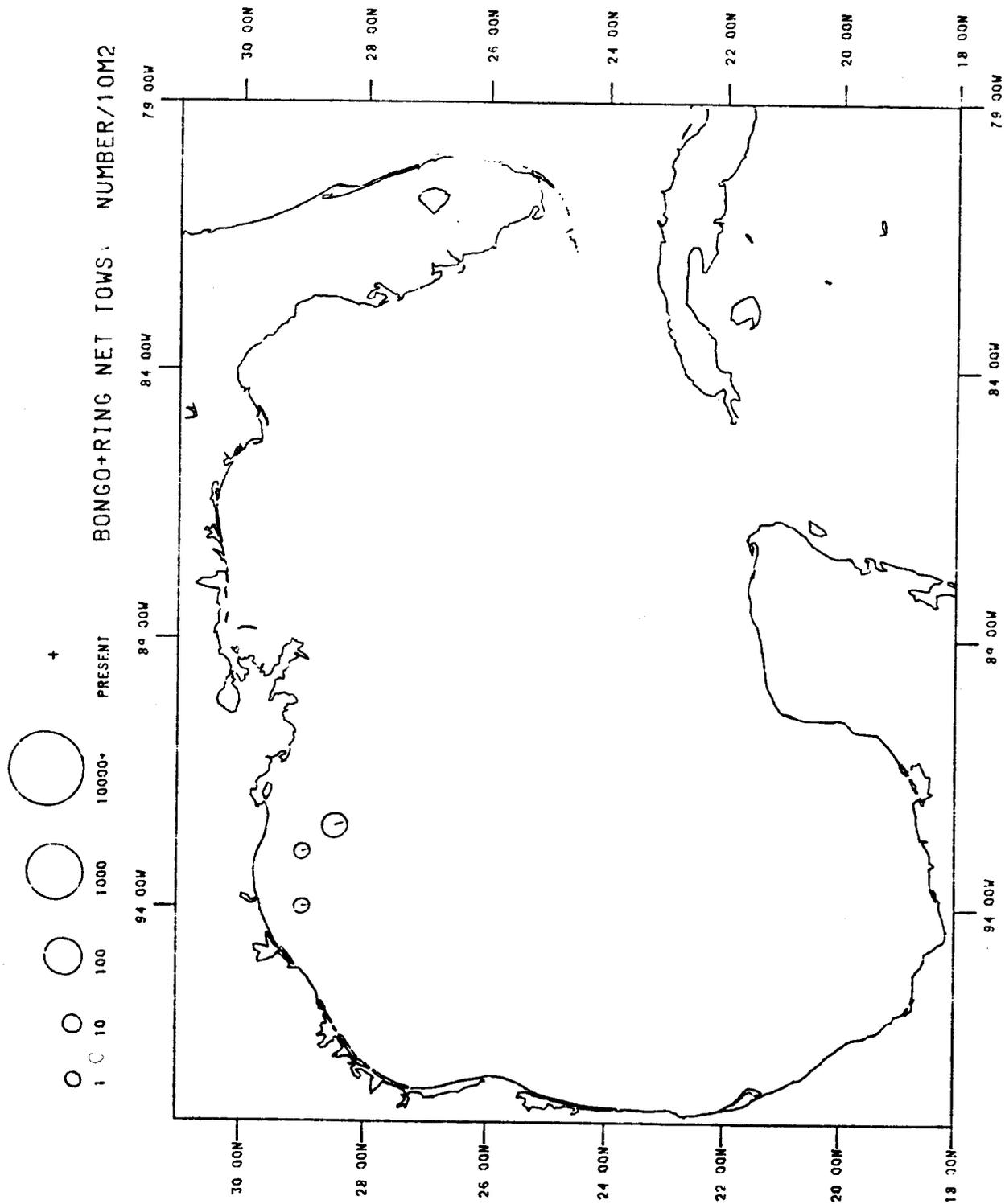
FIGURE 36



SEAMAP 1983

THUNNUS THYNNUS

FIGURE 37



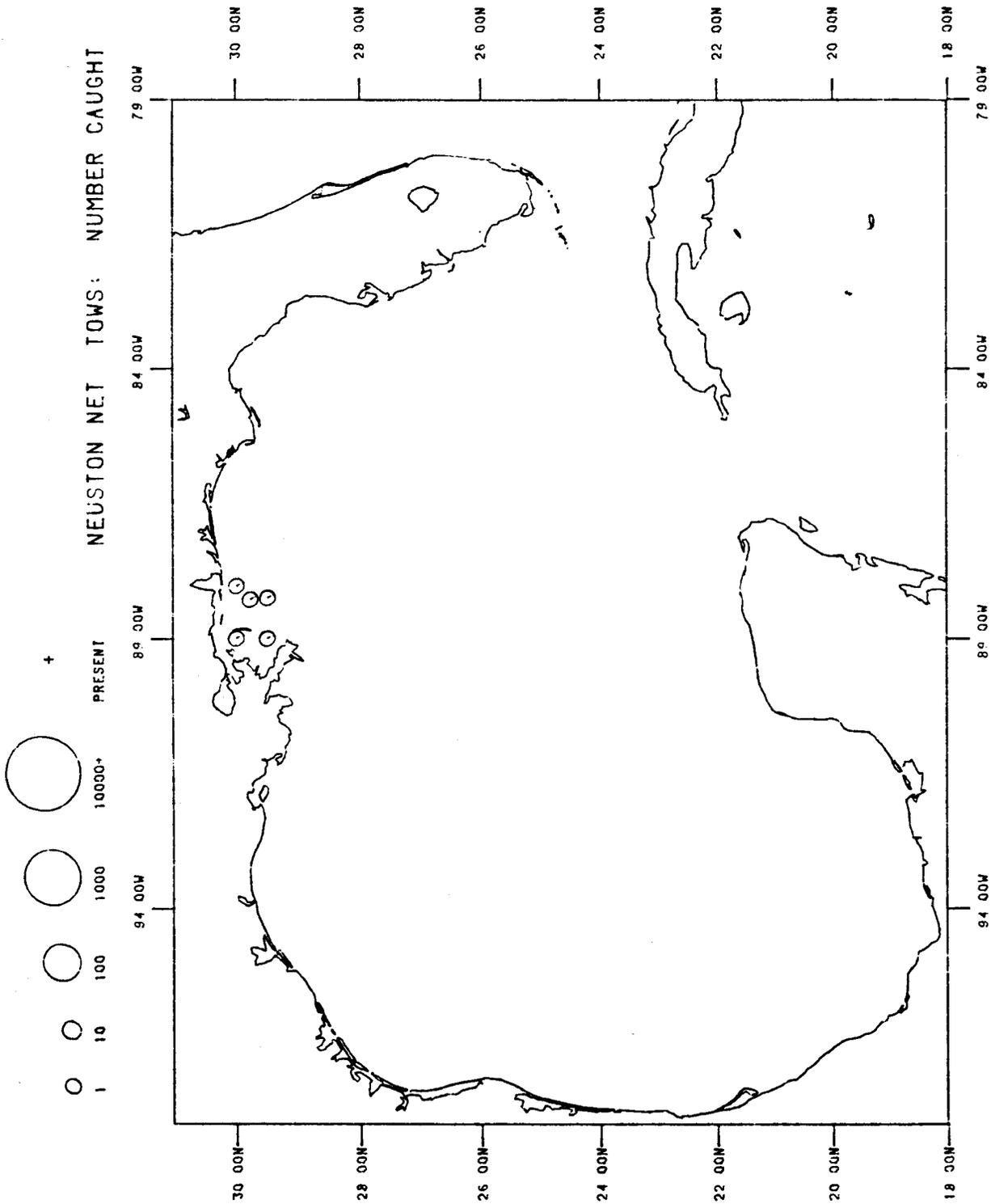
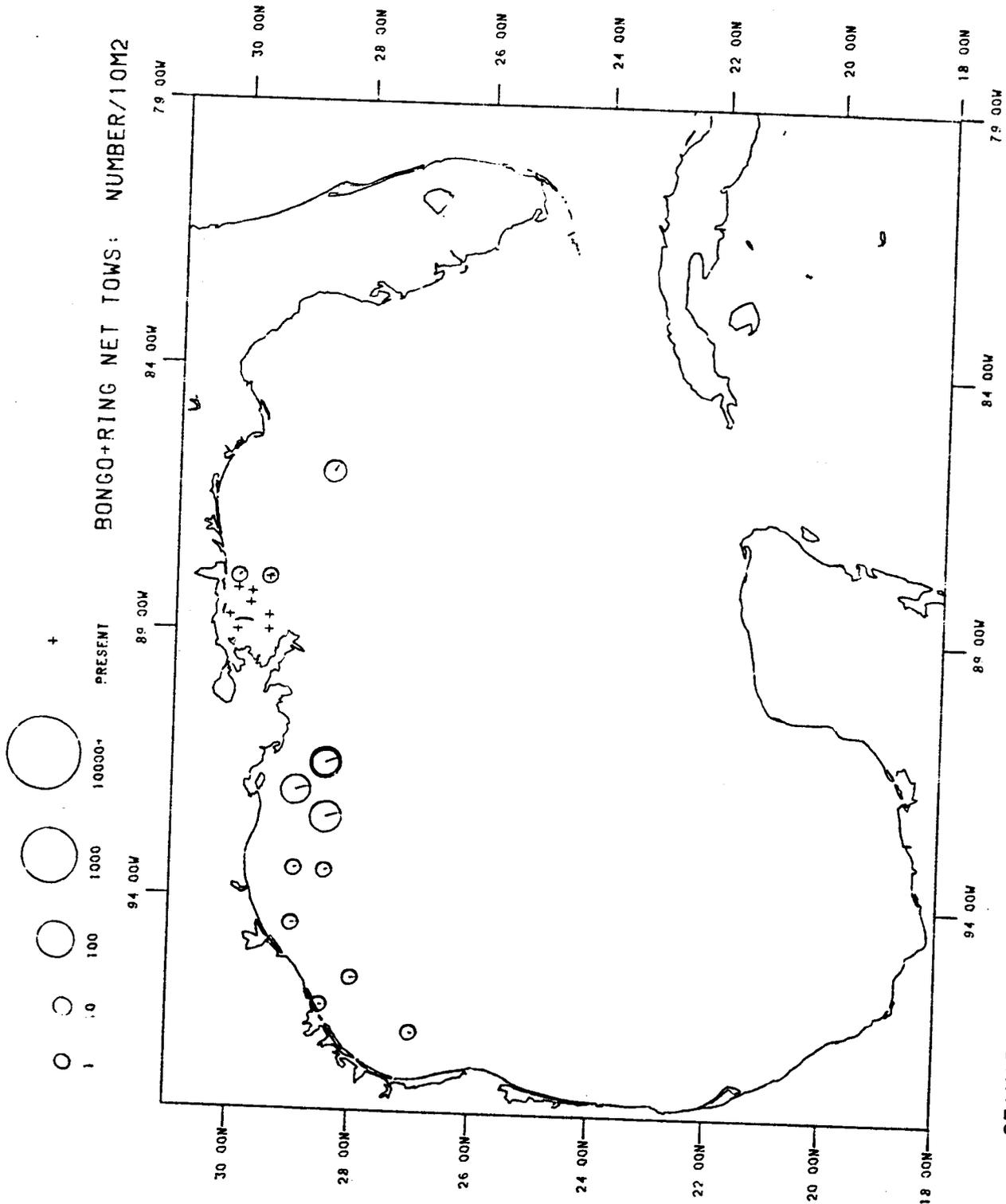


FIGURE 39

SCOMBEROMORUS SP

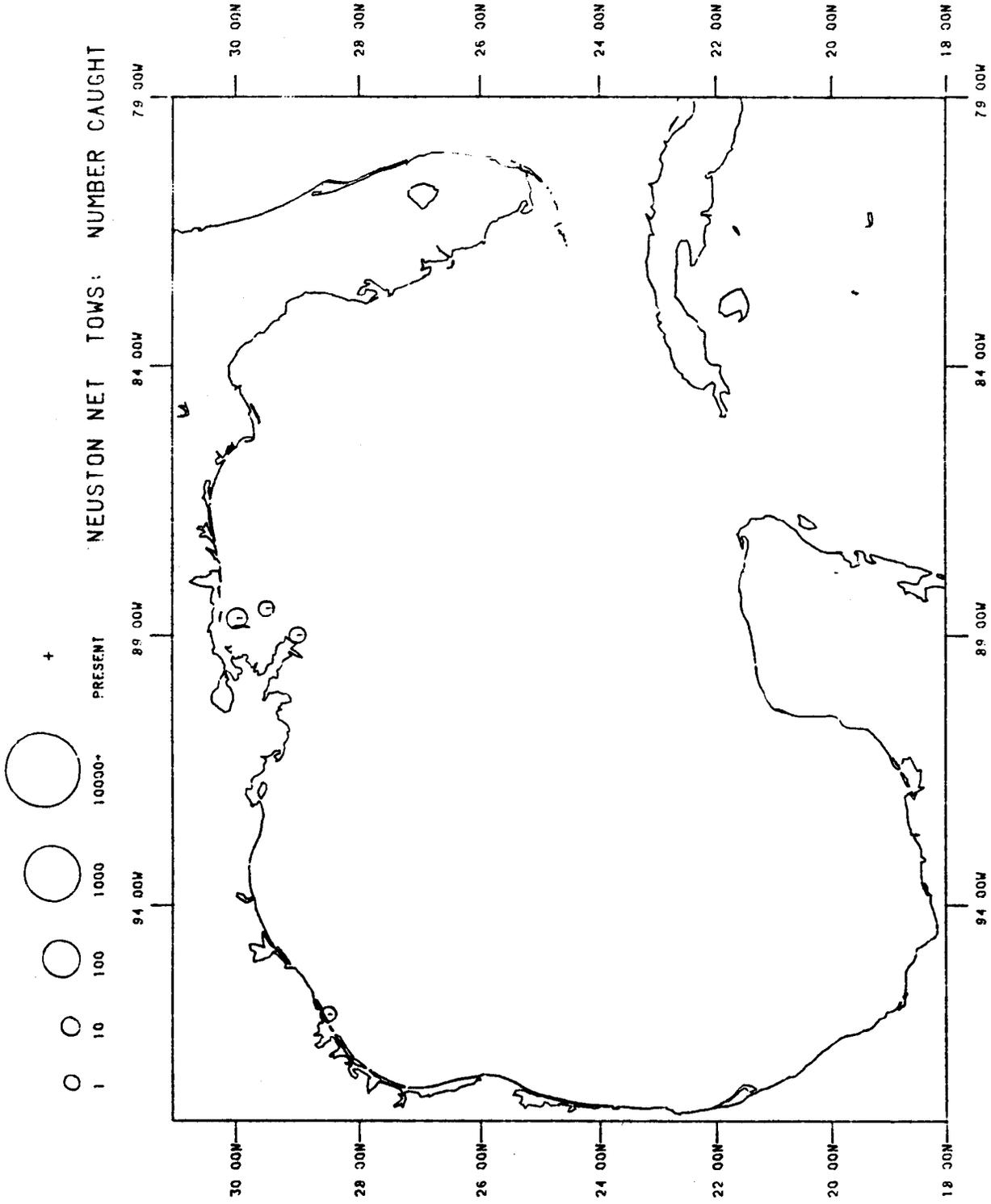
SEAMAP 1983



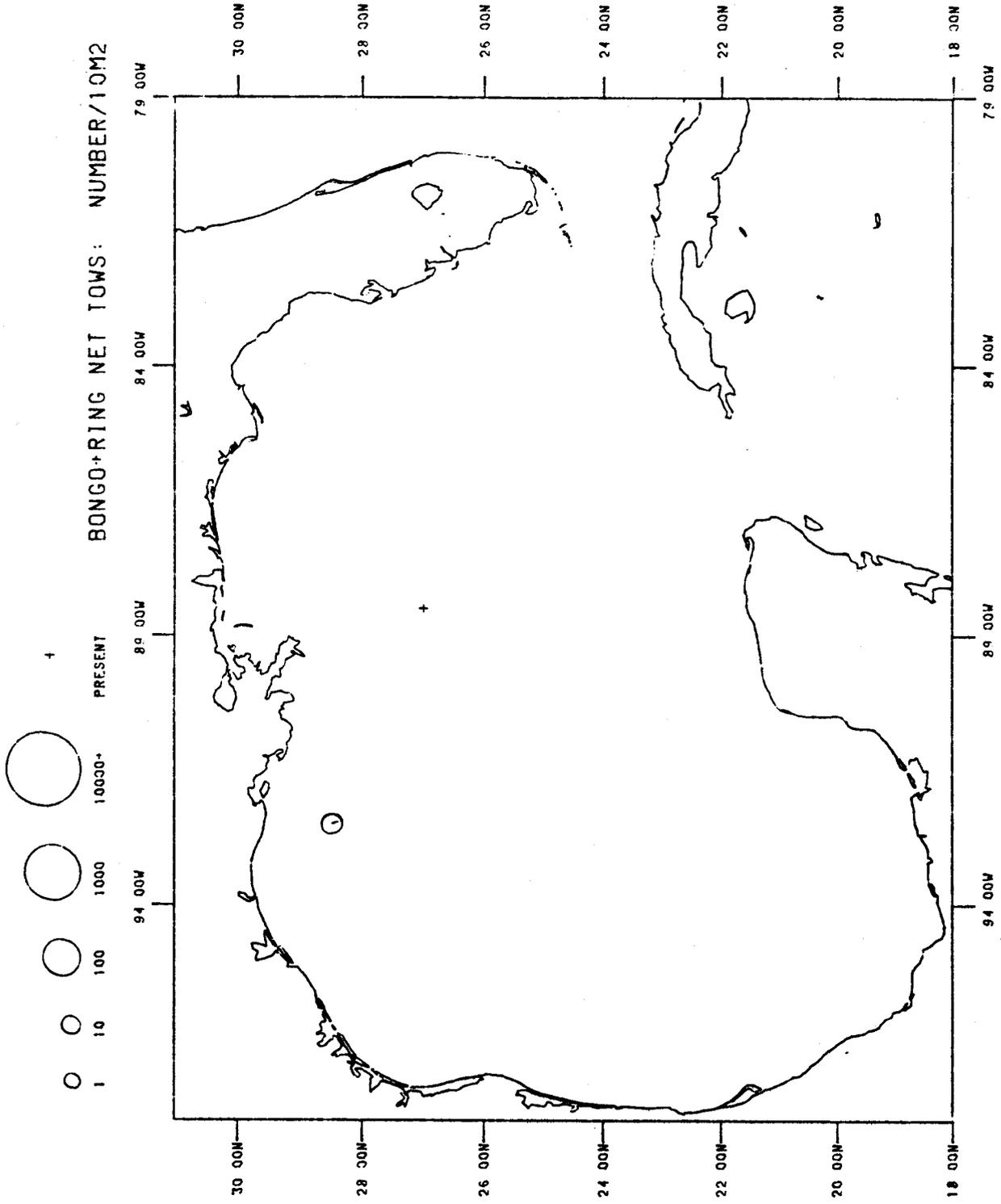
SEAMAP 1983

SCOMBEROMORUS MACULATUS

FIGURE 40



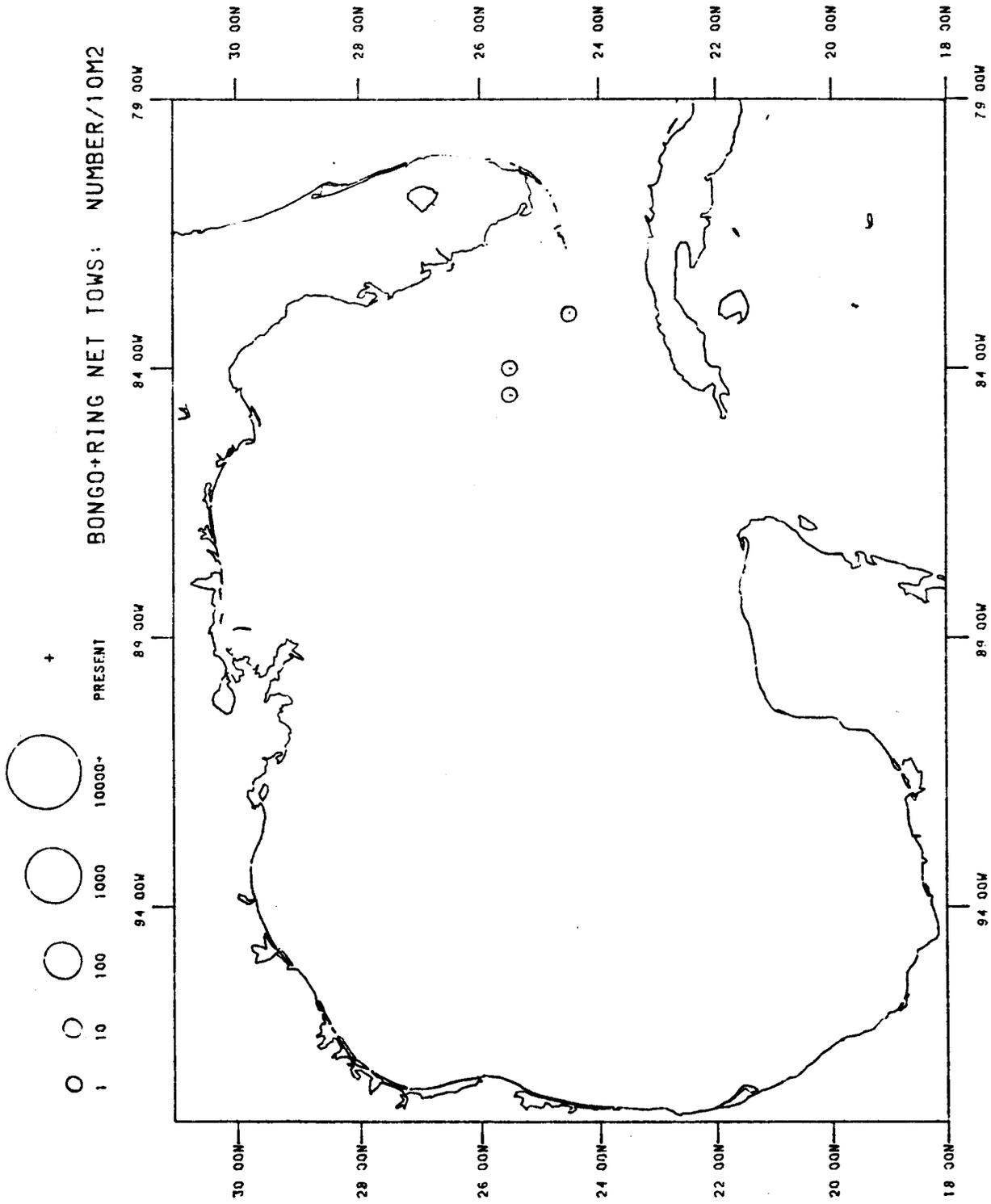
SEAMAP 1983 SCOMBEROMORUS MACULATUS FIGURE 41



SEAMAP 1983

SCOMBEROMORUS CAVALLA

FIGURE 42



SEAMAP 1983

ACANTHOCYBIUM SOLANDERI

FIGURE 43

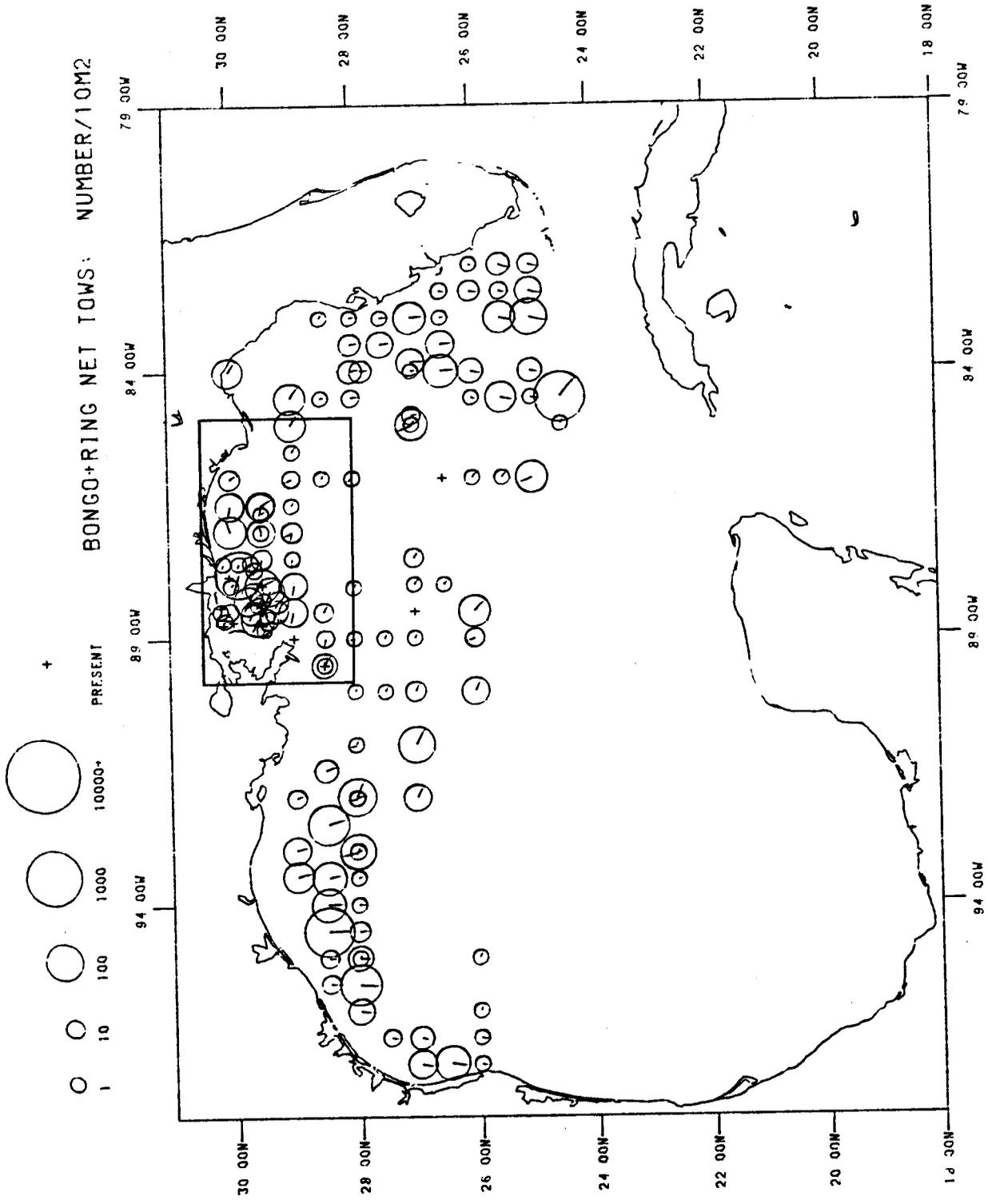


FIGURE 44

SERRANIDAE

SEAMAP 1983

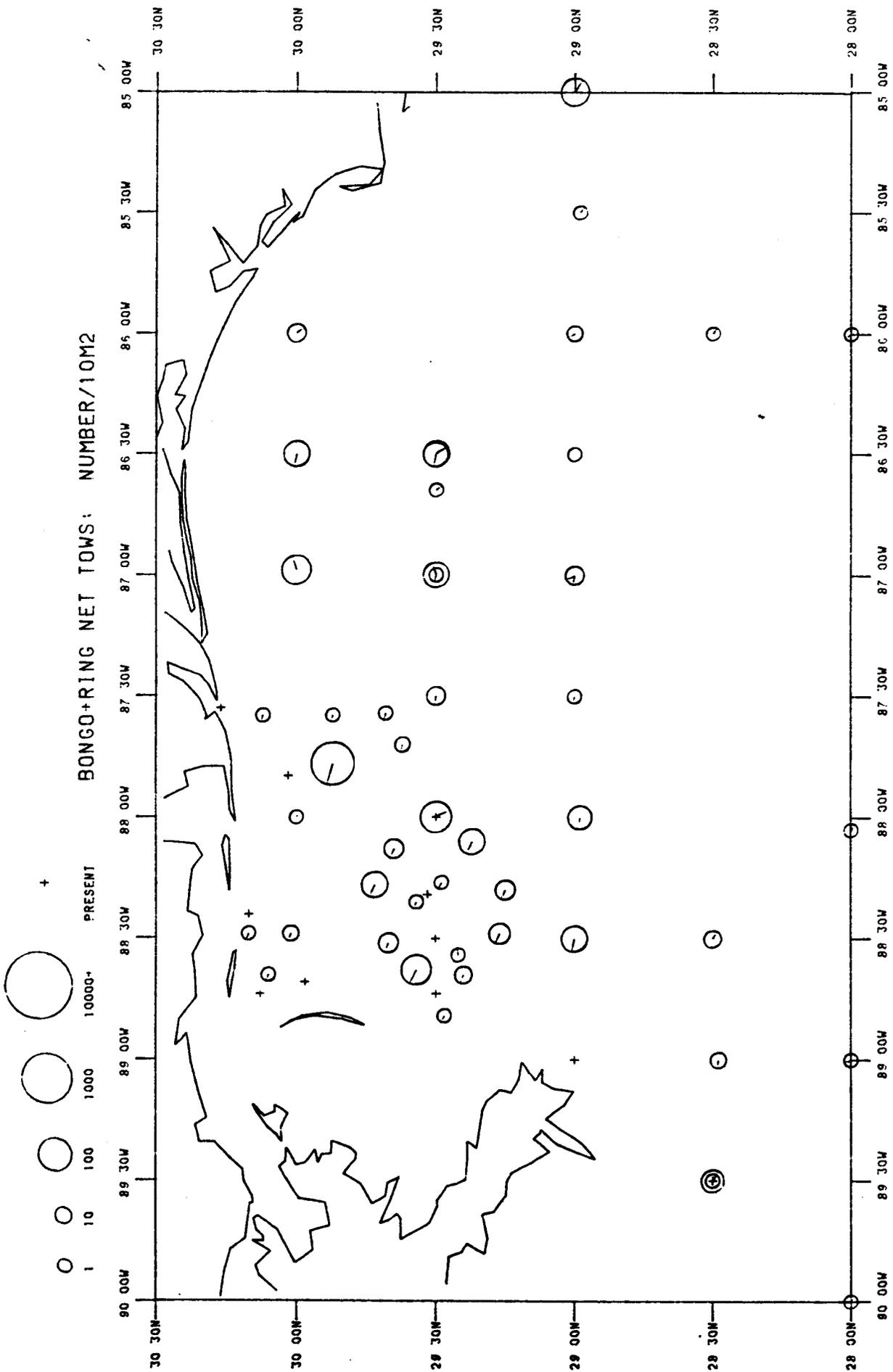
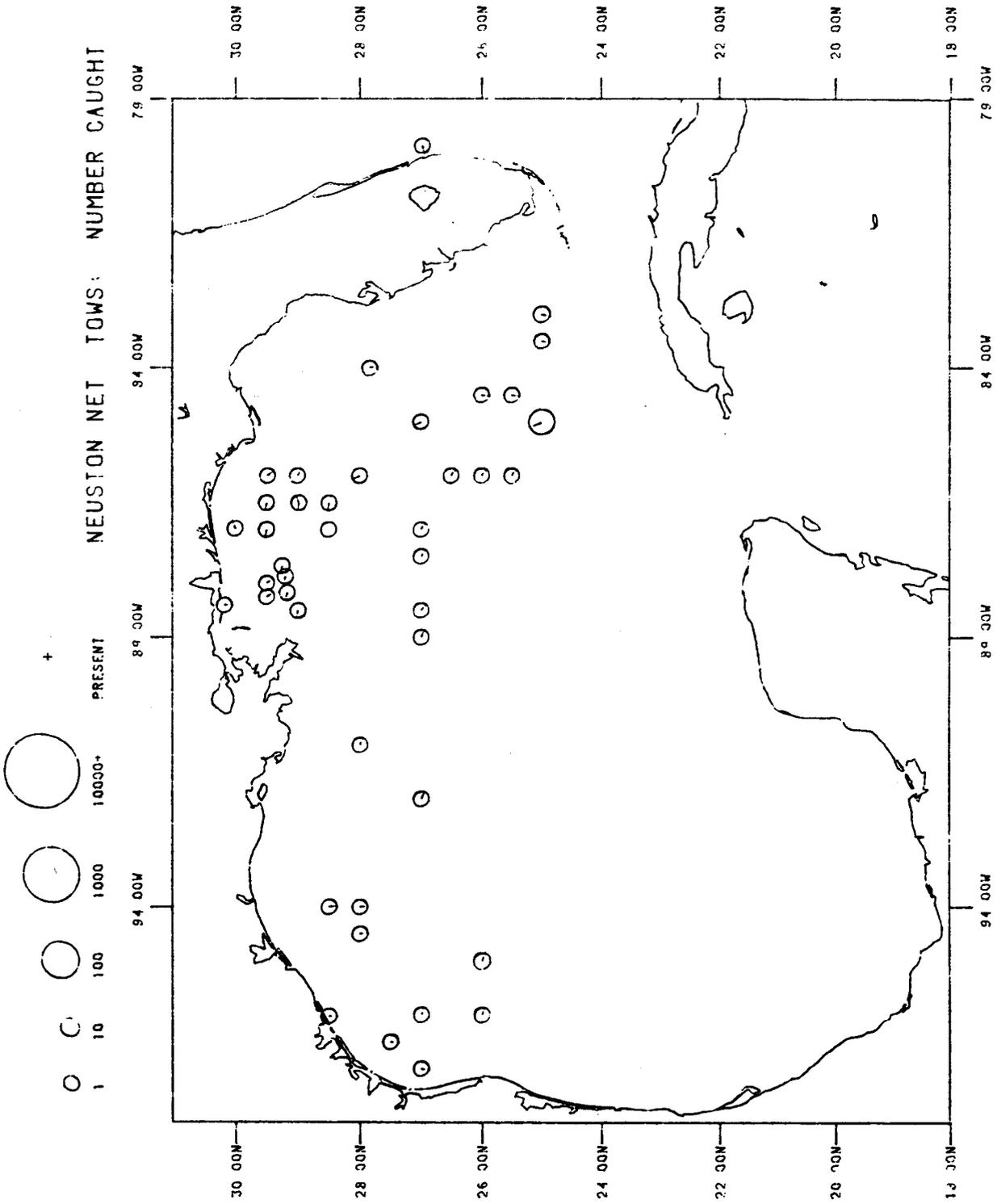


FIGURE 45

SERRANIDAE

SEAMAP 1983 011



SEAMAP 1983

SERRANIDAE

FIGURE 46

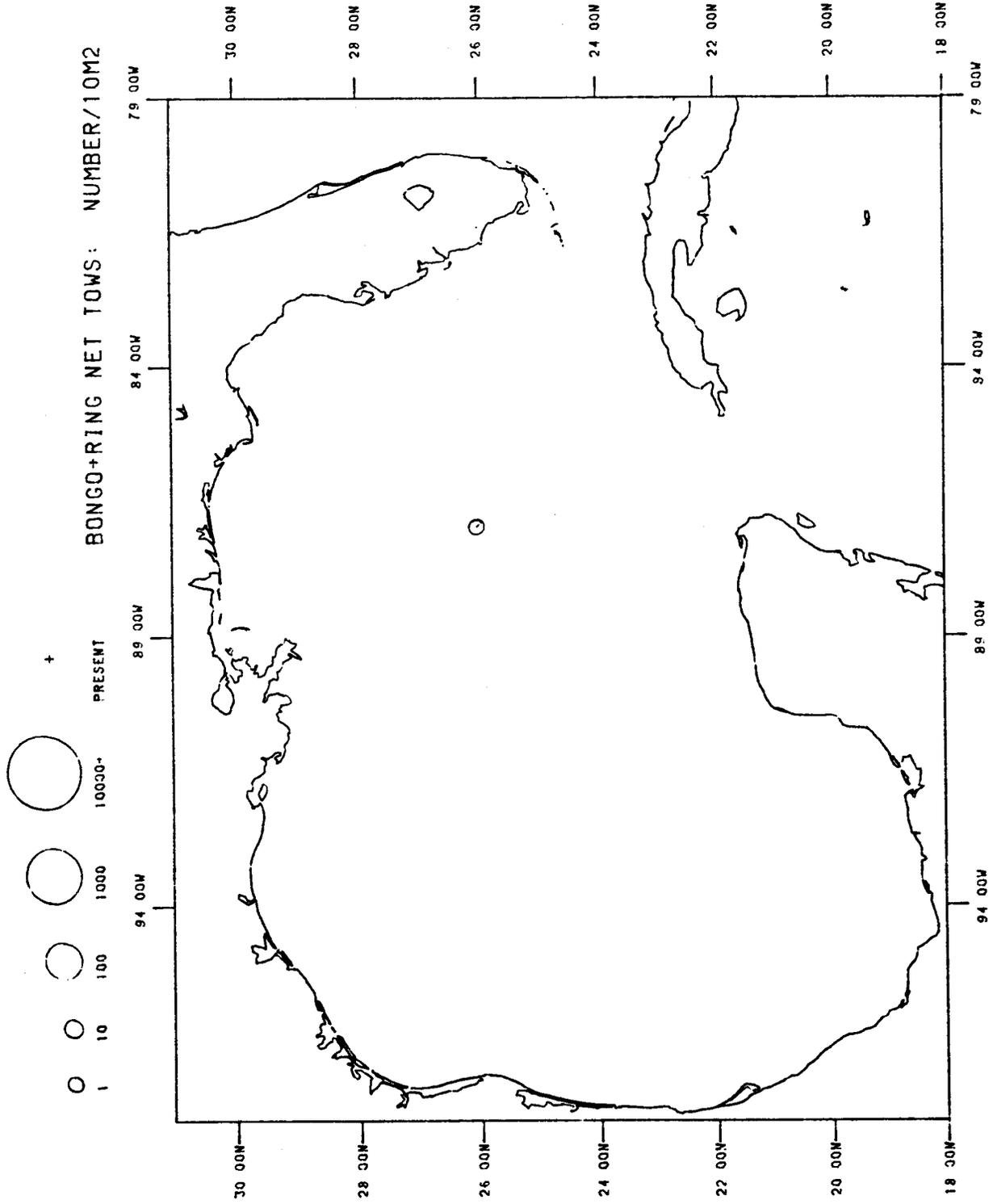


FIGURE 47

XIPHIAS GLADIUS

SEAMAP 1983

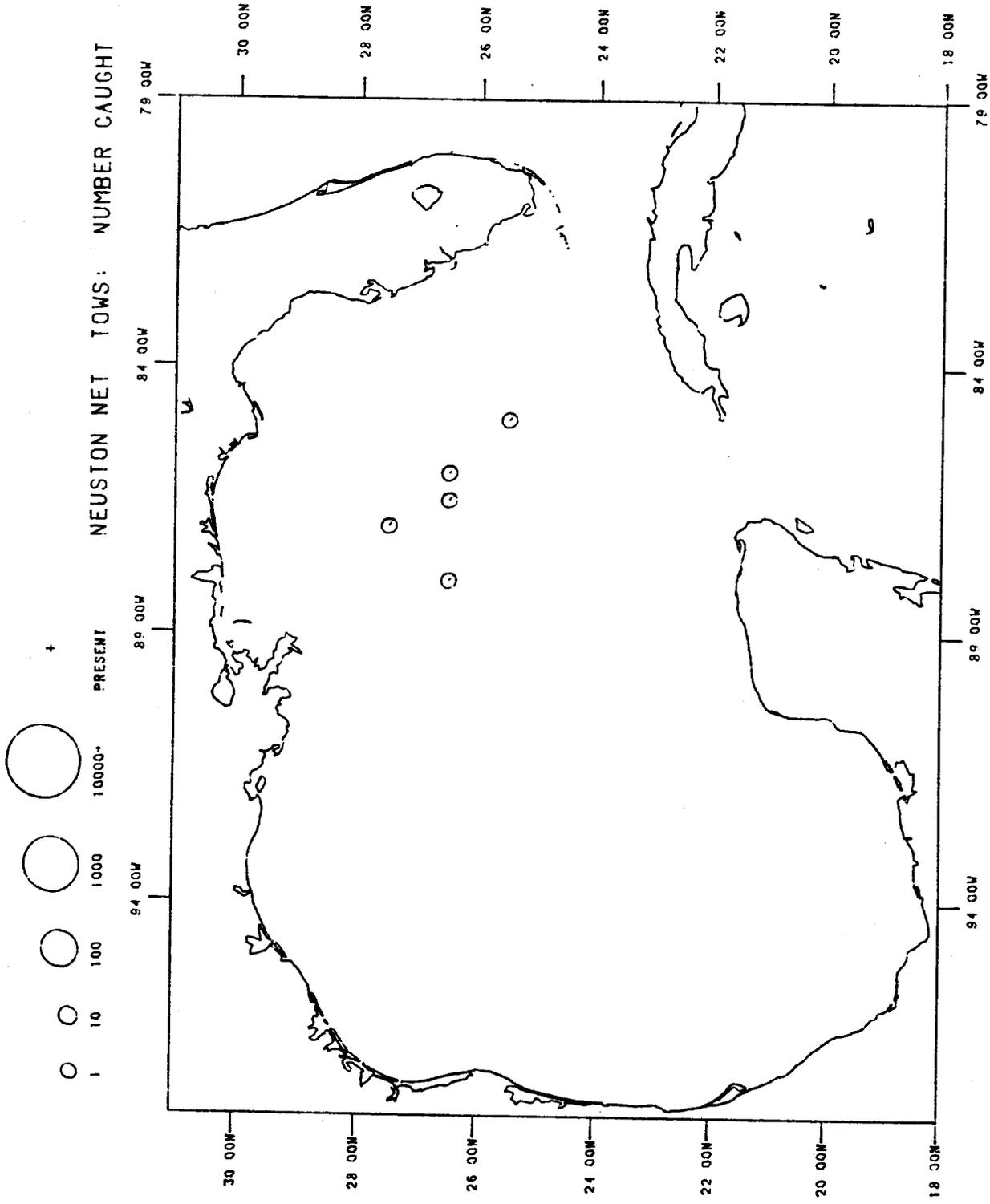


FIGURE 48

XIPHIAS GLADIUS

SEAMAP 1983