Pamlico Sound Survey: June 2013 Cruise Report

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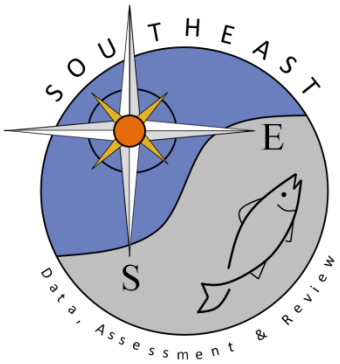

PAMLICO SOUND SURVEY
June 2013
Cruise report

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INTRODUCTION

The North Carolina Fisheries' R/V Carolina Coast departed on June 10th, 2013 for the sixtieth cruise of the Pamlico Sound Survey. The survey was initially designed to provide a long term fishery-independent database for the waters of Pamlico Sound, eastern Albemarle Sound, and the lower Neuse and Pamlico rivers. However, for reasons noted in the March 1990 Pamlico Sound Survey report, the Albemarle Sound was eliminated from the survey and is now called the Pamlico Sound Survey.

OBJECTIVES

1. To determine and monitor the distribution, relative size abundance, and size composition of fish, shrimp, and crab in the survey area and how they vary temporally and spatially.
2. To provide data to ascertain fishery independent estimates of mortality and population size to compare to commercial fishery samples and landings data.
3. To determine which species utilize (and to what extent) the sound during their early life development and identify nursery areas for those species (i.e. *Cynoscion* sp.*, Paralichthys* sp. etc.).
4. To determine if catch rates of various species are correlated with indices of juvenile abundance derived from the juvenile trawl survey.
5. To determine if species distributions are correlated with each other or with some other measured parameter(s).
6. To monitor the movement of organisms out of the nursery area and into the open waters of Pamlico Sound where they are available for commercial and recreational exploitation.

Due to their economic importance, target species are: weakfish (*Cynoscion regalis*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), southern flounder (*Paralichthys lethostigma*), summer flounder (*Paralichthys dentatus*), bluefish (*Pomatomus saltatrix*), southern kingfish (*Menticirrhus americanus*), blue crab (*Callinectes sapidus*), and penaeid shrimp.

METHODS

Sampling occurred from the 10th until the 24th of June 2013. A stratified random sampling design was utilized. Fifty-four randomly selected stations (grids) were sampled. Stations sampled were randomly selected from strata based upon depth and geographic location. The seven designated strata were: Neuse River (NR), Pamlico River (PR), Pungo River (PUR), shallow and deep Pamlico Sound east of Bluff Shoal (PSE and PDE), and shallow and deep Pamlico Sound west of Bluff Shoal (PSW and PDW; Figure 1). The randomly drawn stations were optimally allocated among strata based upon all previous June sampling in order to provide the most accurate abundance estimates (PSE <20). A minimum of three stations (replicates) were maintained in each stratum (Figure 2 and Table 1).

At each station, double rigged 30 ft. demersal mongoose trawls (9.1-m headrope, 1.0-m X 0.6 m doors, 2.2 cm bar mesh body, 1.9 cm bar mesh cod end and a 100 mesh tailbag extension) are deployed from the 44 ft fiberglass hulled R/V Carolina Coast and towed during daylight for a

duration of 20 minutes at 2.5 knots sweeping an area of approximately 97,500 square feet (487,500 cubic feet) per net (these numbers are estimates only and have not been verified in a flow tank or with net sensors). All species were sorted and total number and weight recorded for each species. Environmental data included temperature (^{o}C), salinity (ppt), wind speed (knots), and wind direction.

Catches from both nets were combined to comprise a single sample to reduce variability.

1. Finfish: Samples were sorted as follows: The total catch was separated by species and a total weight and number was recorded for each species. All incidental commercially viable target species were measured to the nearest mm total length (TL) or fork length (FL) (depending on species) and weighed. If a target species was present in large numbers (>30 individuals) they were subsampled in order to determine the proportion of individual measured fish to the total catch. Incidental species not commercially important were enumerated and total weights recorded for each species.

2. Shellfish: The total weight of all penaeid shrimp was recorded and all individuals per species were measured to the nearest mm TL. If penaeid shrimp were present in large numbers subsamples of at least 30 individuals were measured and weighed. If catches of blue crab were greater than 100 crabs, the total weight of the total catch was measured then a subsample of a minimum of 100 crabs was measured to the nearest mm carapace width (CW) and weighed to determine the proportion of measured crabs to the total catch. The unmeasured portion of the catch was enumerated and weighed. Other shellfish species were enumerated and total weights recorded for each species.

RESULTS

During the sampling period, bottom temperatures ranged from 24.9^{o}C in the PDE and PSE strata to 26.7^{o}C in the PUR stratum. Bottom salinities ranged from 3.1 ppt to 36.5 ppt in the PR and PSW strata, respectively (Table 2).

Sixty-seven species of finfish and invertebrates were captured during the cruise (Table 3). Several of the most abundant species are considered economically important and include: spot, Atlantic croaker, blue crab, weakfish, pink shrimp (*Farfantepenaeus duorarum*), summer flounder, brown shrimp (*Farfantepenaeus aztecus*), southern flounder, southern kingfish, white shrimp (*Litopenaeus setiferus*), and bluefish.

Spot were present in all strata, and were the most abundant species collected (n=70,247 total number; Table 3 and 4). The greatest mean catch per station was 2,861 individuals per station in the PDW stratum (Table 5). Spot length frequency distribution ranged from 40-mm to 180-mm fork length (FL), with bi-modal peaks at the 80-mm FL and 140-mm FL size classes (Figure 3). Spot were present at all 54 stations (Table 4) and were most abundant in the Pamlico Sound and the mouth of the Neuse River (Figure 12).

Atlantic croaker were present in all strata, and were the second most abundant species collected (n=31,583 total number; Table 3 and 4). The greatest mean catch per station was 802 individuals per station in the PDE stratum (Table 5). Atlantic croaker length frequency distribution ranged from 40-mm to 240-mm total length (TL), with a single modal peak at the 80-mm TL size class (Figure 4). Atlantic croaker were present at 53 of the 54 stations (Table 4) and were most abundant in the Pamlico Sound (Figure 13).

Blue crab were present in all strata, and were the fourth most abundant species collected and third most abundant amongst the economically important species (n=2,334 total number; Table 3 and 4). The greatest mean catch per station was 90 individuals per station in the PSE stratum (Table 5). Blue crab length frequency distribution ranged from 0-mm to 180-mm carapace width (CW), with a single modal peak occurring at the 40-mm CW size class (Figure 5). Blue crab were present at 53 of the 54 stations (Table 4) and were most abundant the Pamlico Sound east of Bluff Shoal (Figure 14).

Weakfish were present in all but the PUR stratum, and were the eighth most abundant species collected and fourth most abundant amongst the economically important species (n=1,182 total number; Table 3 and 4). The greatest mean catch per station was 50 individuals per station in the PDE stratum (Table 5). Weakfish length frequency distribution ranged from 80-mm to 320-mm FL, with a single modal peak occurring at the 180-mm FL size class (Figure 6). Weakfish were present at 33 of the 54 stations (Table 4) and were most abundant in the Pamlico Sound east of Bluff Shoal (Figure 15).

Pink shrimp were present in all, but the PR and PUR strata, and were the ninth most abundant species collected (n=749 total number; Table 3 and 4) and fifth most abundant amongst the economically important species. The greatest mean catch per station was 23 individuals per station in the PDE stratum (Table 5). Pink shrimp length frequency distribution ranged from 60-mm to 160-mm TL, with a single modal peak at the 100-mm TL size class (Figure 7). Pink shrimp were present at 29 of the 54 stations (Table 4) and were most abundant in the Pamlico Sound and the Neuse River (Figure 16).

Summer flounder were present in all but the PSE and PUR strata, and were the tenth most abundant species collected (n=564 total number; Table 3 and 4) and sixth most abundant amongst the economically important species. The greatest mean catch per station was 14 individuals per station in the PDE stratum (Table 5). Summer flounder length frequency distribution ranged from 60-mm to 260-mm TL, with bi-modal peaks at the 80-mm TL and 200-mm TL size classes (Figure 8). Summer flounder were present at 46 of the total 54 stations (Table 4) and were most abundant in the Pamlico Sound and the Pamlico and Neuse rivers (Figure 17).

Brown shrimp were present in all strata, and were the twelfth most abundant species collected (n=411 total number; Table 3 and 4) and seventh most abundant amongst the economically important species. The greatest mean catch per station was 11 individuals per station in the PDW stratum (Table 5). Brown shrimp length frequency distribution ranged from 40-mm to 180-mm TL, with a single modal peak at 80-mm TL size class (Figure 9). Brown shrimp were present at 34 of the total 54 stations (Table 4) and were abundant in both the Pamlico Sound and the rivers (Figure 18).

Southern flounder were present in all strata, and were the fourteenth most abundant species collected (n=332 total number; Table 3 and 4) and the eighth most abundant amongst the economically important species. The greatest mean catch per station was 18 individuals per station in the PUR stratum (Table 5). Southern flounder length frequency distribution ranged from 40-mm to 340-mm TL, with bi-modal peaks at the 80-mm TL and 340-mm TL size classes (Figure 10). Southern flounder were present at 42 of the 54 stations (Table 4) and were abundant in both the rivers and the sound (Figure 19).

Southern kingfish were present in all but the PUR stratum, and were the fifteenth most abundant species collected (n=282 total number; Table 3 and 4) and the ninth most abundant amongst the economically important species. The greatest mean catch per station was 18 individuals per

station in the NR strata (Table 5). Southern kingfish length frequency distribution ranged from 140-mm to 280-mm TL, with bi-modal peaks at the 180-mm TL and 220-mm TL size classes (Figure 11). Southern kingfish were present at 39 of the 54 stations (Table 4) and were most abundant in the Pamlico Sound and the Neuse River (Figure 20).

White shrimp were present in all but the PUR stratum, and were the nineteenth most abundant species collected (n=46 total number; Table 3 and 4) and the tenth most abundant amongst the economically important species. The greatest mean catch per station was 5 individuals per station in the PDW strata (Table 5). White shrimp length frequency distribution ranged from 0-mm to 180-mm TL, with bi-modal peaks at 100-mm TL and 160-mm TL size classes (Figure 12). White shrimp were present at 22 of the 54 stations (Table 4) and were most abundant in the Pamlico Sound (Figure 21).

Bluefish were present in all, but the PSW stratum, and were the twenty-first most abundant species collected (n=36 total number; Table 3 and 4) and the eleventh most abundant amongst the economically important species. The greatest mean catch per station was 14 individuals per station in the PR strata (Table 5). Bluefish length frequency distribution ranged from 60-mm to 280-mm FL, with a single modal peak at 100-mm FL size class (Figure 13). Bluefish were present at 22 of the 54 stations (Table 4) and were most abundant in the Pamlico River (Figure 22).

CRUISE PARTICIPANTS

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Table 1 June 2013 Pamlico Sound Survey station allocations.

Stratum Abbreviations	Stratum Description	Number of Stations
PUR	Pungo River	3
NR	Neuse River	5
PR	Pamlico River	5
PDE	Pamlico Sound ≥ 3.6 m East of Bluff Shoals	20
PDW	Pamlico Sound ≥ 3.6 m West of Bluff Shoals	9
PSE	Pamlico Sound <3.6 m East of Bluff Shoal	7
PSW	Pamlico Sound <3.6 m West of Bluff Shoal	5

Table 2 Environmental and station data, including station location, date, time of sampling, depth, surface and bottom salinities, temperatures, and dissolved oxygen (D.O.) for the June 2013 Pamlico Sound Survey.

Strata	Station	Latitude	Longitude	Date	Time of Day	Depth (m)	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Temp. (°C)	Bottom Temp. (°C)	Surface D.O. (mg/L)	Bottom D.O. (mg/L)
NR	ZN21	350300	763000	10-Jun	1239	5.1	17.2	17.2	25.6	25.6	7.2	7.6
NR	ZO13	350200	763800	10-Jun	1508	5.7	16.2	16.3	26.1	26.1	7.1	7.5
NR	ZO17	350200	763400	10-Jun	1354	6.0	17.2	17.2	25.8	25.8	7.1	7.3
NR	ZP18	350100	763300	10-Jun	1152	4.8	17.2	17.2	25.8	25.9	7.3	7.5
NR	ZR15	350000	763600	10-Jun	1111	4.3	16.9	16.9	25.8	25.7	7.2	7.3
PDE	U68	354900	754300	19-Jun	1226	2.5	7.7	7.8	25.3	25.2	7.3	7.5
PDE	YB71	354200	753900	19-Jun	1339	3.3	15.2	17.2	25.2	24.9	6.9	6.5
PDE	YC73	354000	753800	19-Jun	807	3.9	20.2	20.1	25.3	25.3	6.3	6.7
PDE	YF75	353800	753500	19-Jun	1509	3.0	19.5	19.5	25.5	25.5	7.0	6.9
PDE	YI71	353400	754000	18-Jun	1913	4.0	20.8	20.9	25.9	25.9	7.2	7.8
PDE	YI78	353500	753300	19-Jun	1533	3.6	20.9	20.9	25.3	25.4	6.9	6.8
PDE	YN69	353000	754100	19-Jun	1713	4.9	21.2	20.8	25.6	25.6	6.9	6.5
PDE	YS64	352500	754700	24-Jun	936	5.4	21.9	22.4	25.8	25.8	6.8	6.5
PDE	YS77	352400	753400	18-Jun	1723	3.6	24.2	24.2	25.7	25.7	6.9	7.5
PDE	YU65	352200	754500	18-Jun	1507	5.4	22.4	22.7	25.7	25.5	7.1	7.0
PDE	YU75	352200	753600	18-Jun	1647	4.0	24.2	24.2	25.8	25.7	6.9	7.1
PDE	YV73	352100	753800	18-Jun	1620	4.5	23.5	23.5	25.7	25.7	6.9	7.2
PDE	YW49	352000	760100	12-Jun	1436	4.5	32.6	35.8	27.6	26.1	7.4	6.0
PDE	YW51	352000	760000	12-Jun	1509	5.4	34.2	22.5	27.4	26.1	7.6	7.4
PDE	YX54	351900	755700	18-Jun	1222	5.7	21.6	21.5	25.8	25.6	6.8	6.6
PDE	YY56	351800	755500	18-Jun	1328	5.8	21.2	21.5	25.8	25.5	7.2	6.6
PDE	ZC53	351400	754800	18-Jun	845	6.4	21.4	21.6	25.8	25.8	6.5	7.2
PDE	ZD48	351300	760300	18-Jun	746	5.4	23.7	23.7	25.6	25.5	7.9	8.4
PDE	ZD55	351400	755600	18-Jun	931	5.8	21.4	21.9	25.4	25.6	6.8	7.2
PDE	ZE57	351300	755400	18-Jun	1021	4.3	22.0	22.5	25.5	25.6	6.9	6.6
PDW	YZ35	351700	761600	12-Jun	844	3.3	28.5	31.7	26.2	26.3	6.6	6.3
PDW	ZB37	351600	761400	12-Jun	924	5.4	28.7	35.9	26.2	26.3	6.9	5.8

Strata	Station	Latitude	Longitude	Date	Time of Day	Depth (m)	Surface Salinity (ppt)	Bottom Salinity (ppt)	Surface Temp. (°C)	Bottom Temp. (°C)	Surface D.O. (mg/L)	Bottom D.O. (mg/L)
PDW	ZC37	351500	761400	12-Jun	952	3.9	18.2	29.9	26.2	26.0	7.0	7.0
PDW	ZF33	351200	761700	12-Jun	1100	5.2	19.5	22.1	26.7	26.1	7.0	5.4
PDW	ZF35	351100	761600	12-Jun	1134	5.4	30.7	36.0	26.9	26.5	7.4	6.2
PDW	ZJ21	350700	763000	11-Jun	909	6.1	18.4	29.9	25.8	25.8	6.5	6.5
PDW	ZJ29	350700	762100	24-Jun	1603	6.1	20.7	23.4	26.5	25.6	7.3	5.5
PDW	ZM32	350400	761900	24-Jun	1513	6.7	21.6	23.4	26.5	25.8	7.3	7.0
PDW	ZO30	350300	762000	24-Jun	1438	4.3	22.2	22.7	26.2	25.8	7.3	7.1
PR	YP83	352700	765600	11-Jun	1424	3.0	2.8	3.1	26.7	26.5	8.0	8.4
PR	YQ86	352100	765300	11-Jun	1343	2.4	4.1	4.9	26.3	26.1	7.2	6.7
PR	YV13	352100	763700	11-Jun	1139	3.1	19.7	19.6	25.6	25.5	7.1	7.4
PR	YV18	352200	763300	11-Jun	1707	6.4	13.4	13.5	26.5	26.2	7.6	7.3
PR	YV21	352200	763000	12-Jun	638	4.3	23.4	25.1	26.1	26.4	6.8	6.5
PSE	R66	355100	754400	19-Jun	1148	2.8	6.1	6.1	25.3	25.2	7.5	7.5
PSE	S69	352100	754200	19-Jun	1109	2.1	6.7	6.7	25.3	25.2	7.3	7.5
PSE	W72	354600	753800	19-Jun	1003	2.7	12.9	12.9	25.0	25.0	7.0	7.3
PSE	Y73	354400	753800	19-Jun	922	2.4	15.1	15.1	24.9	24.9	6.9	7.0
PSE	YC66	354000	754400	19-Jun	704	1.8	18.7	18.7	25.2	25.2	6.7	6.9
PSE	YC76	354000	753500	19-Jun	1436	2.1	19.1	19.1	25.2	25.2	7.2	7.1
PSE	YU52	352200	755900	12-Jun	1542	3.7	33.4	35.8	27.8	26.2	7.4	6.2
PSW	YY29	351900	762200	12-Jun	748	3.4	25.8	25.8	25.8	25.8	6.6	6.8
PSW	YY44	351800	760700	12-Jun	1338	2.7	26.3	35.6	27.1	26.1	7.5	7.9
PSW	ZA41	351600	761000	12-Jun	1252	2.1	29.2	36.5	27.4	26.3	7.2	5.9
PSW	ZE45	351200	760500	18-Jun	705	3.0	24.9	25.3	25.3	25.2	6.5	7.0
PSW	ZQ36	350300	761400	24-Jun	1343	3.6	23.1	24.1	26.1	25.8	7.1	6.2
PUR	YL18	353100	763300	11-Jun	1931	2.4	10.5	10.7	26.7	26.7	6.8	6.6
PUR	YM14	353000	763600	11-Jun	1848	3.1	19.4	19.4	26.6	26.7	7.2	6.7
PUR	YO15	352800	763500	11-Jun	1814	3.3	12.3	12.4	26.8	26.7	7.1	7.1

Table 3 Total number and biomass of organisms (by species) for the June 2013 Pamlico Sound Survey.

Species	Common Name	Total Number	Total Biomass (kg)
Leiostomus xanthurus	Spot	70,247	1,248.1
Micropogonias undulatus	Atlantic Croaker	31,583	408.7
Lagodon rhomboides	Pinfish	7,793	221.4
Callinectes sapidus	Blue Crab	2,334	51.0
Brevoortia tyrannus	Atlantic Menhaden	1,787	19.0
Trinectes maculatus	Hogchoker	1,497	36.2
Anchoa mitchilli	Bay Anchovy	1,292	2.4
Cynoscion regalis	Weakfish	1,182	96.5
Farfantepenaeus duorarum	Pink Shrimp	749	11.2
Paralichthys dentatus	Summer Flounder	564	10.0
Bairdiella chrysoura	Silver Perch	535	20.3
Farfantepenaeus aztecus	Brown Shrimp	411	4.0
Squilla empusa	Mantis Shrimp	393	3.9
Paralichthys lethostigma	Southern Flounder	332	16.1
Menticirrhus americanus	Southern Kingfish	282	28.4
Peprilus paru	Harvestfish	208	17.5
Opisthonema oglinum	Atlantic Thread Herring	186	9.7
Prionotus evolans	Striped Searobin	149	2.1
Litopenaeus setiferus	White Shrimp	132	4.3
Chaetodipterus faber	Atlantic Spadefish	125	15.5
Pomatomus saltatrix	Bluefish	120	5.1
Peprilus triacanthus	Butterfish	115	5.2
Citharichthys spilopterus	Bay Whiff	86	2.0
Urophycis regia	Spotted Hake	72	3.0
Trichiurus lepturus	Atlantic Cutlassfish	69	3.5
Orthopristis chrysoptera	Pigfish	60	3.6
Lolliguncula brevis	Atlantic Brief Squid	42	1.2
Prionotus scitulus	Leopard Searobin	35	0.7
Chilomycterus schoepfii	Striped Burrfish	29	8.8
Paralichthys oblongus	Fourspot Flounder	27	0.9
Symphurus plagiusa	Blackcheek Tonguefish	23	0.6
Dasyatis americana	Southern Stingray	21	33.3
Anomura paguridea	Hermit Crabs	18	0.4
Dasyatis sabina	Atlantic Stingray	17	21.4
Rhinoptera bonasus	Cownose Ray	16	54.3
Anchoa hepsetus	Striped Anchovy	14	0.2
Crassostrea virginica	Eastern Oyster	13	1.6
Callinectes similis	Lesser Blue Crab	11	0.1
Prionotus carolinus	Northern Searobin	11	0.1
Sphoeroides maculatus	Northern Puffer	11	0.9

Species	Common Name	Total Number	Total Biomass (kg)
Alectis ciliaris	African Pompano	10	<0.1
Libinia emarginata	Portly Spider Crab	9	0.2
Gymnura micrura	Smooth Butterfly Ray	9	11.1
Paralichthys albigutta	Gulf Flounder	9	0.4
Portunus gibbessi	Iridescent Swimming Crab	7	0.1
Selene vomer	Lookdown	5	<0.1
Anadara ovalis	Blood Ark	4	<0.1
Menippe mercenaria	Florida Stone Crab	4	<0.1
Lepisosteus osseus	Longnose Gar	4	7.0
Arenaeus cribarius	Speckled Swimming Crab	3	<0.1
Parapenaeus politus	Rose Shrimp	2	<0.1
Ovalipes ocellatus	Lady Crab	2	<0.1
Chondrichthyes	Sharks	2	0.4
Caranx hippos	Crevalle Jack	2	<0.1
Chasmodes bosquianus	Striped Blenny	2	<0.1
Scophthalmus aquosus	Windowpane	2	<0.1
Stephanolepis hispidus	Planehead Filefish	2	<0.1
Polinices duplicatus	Shark Eye	1	<0.1
Busycotypus canaliculatus	Channeled Whelk	1	0.1
Ameiurus catus	White Catfish	1	1.8
Ophidiidae	Cusk-eels	1	<0.1
Menidia beryllina	Inland Silverside	1	<0.1
Syngnathus louisianae	Chain Pipefish	1	<0.1
Archosargus probatocephalus	Sheepshead	1	4.1
Cynoscion nebulosus	Spotted Seatrout	1	0.3
Larimus fasciatus	Banded Drum	1	0.2
Sciaenops ocellatus	Red Drum	1	0.6
Mugil cephalus	Striped Mullet	1	0.1
Scomberomorus maculatus	Spanish Mackerel	1	0.2
Sphoeroides nephelus	Southern Puffer	1	0.1
Cnidaria*	Jellyfish	-	267.0
Ascidicea*	Tunicates	-	416.7
Codium*	Algae	-	0.8
*Gracilaria verrucosa**	False Red Weed	-	0.3
Zosteraceae*	Sea Grasses	-	5.1

*Only total biomass was recorded for these species. Individual counts were not recorded.

Table 4 Total number of individuals of selected target and economically important species by station for the June 2013 Pamlico Sound Survey.

Strata	Station	Spot	Atlantic Croaker	Blue Crab	Weakfish	Pink Shrimp	Summer Flounder	Brown Shrimp	Southern Flounder	Southern Kingfish	White Shrimp	Bluefish
NR	ZN21	4,269	276	10	1	2	8	0	15	0	2	4
NR	ZO13	1,594	260	21	0	27	3	25	5	0	5	0
NR	ZO17	1,438	120	22	0	40	2	0	6	92	0	2
NR	ZP18	3,560	232	8	0	20	2	0	0	0	0	4
NR	ZR15	1,220	123	3	1	9	1	2	1	0	1	5
PDE	U68	829	218	147	0	0	2	0	10	1	0	0
PDE	YB71	739	839	74	6	5	13	2	0	5	0	0
PDE	YC73	362	1,373	23	15	26	24	0	0	1	0	0
PDE	YF75	378	793	1	1	0	74	0	0	12	0	0
PDE	YI71	248	2,706	246	20	13	2	4	15	11	0	0
PDE	YI78	32	24	1	0	0	16	0	0	0	0	0
PDE	YN69	246	2,432	164	47	0	17	7	5	6	36	0
PDE	YS64	696	1,740	90	29	25	8	24	1	2	1	0
PDE	YS77	37	16	1	0	0	56	0	15	4	0	0
PDE	YU65	697	570	34	78	31	1	22	8	8	1	0
PDE	YU75	113	7	0	0	0	25	0	0	0	0	0
PDE	YV73	314	400	1	0	5	6	0	7	3	0	0
PDE	YW49	975	479	78	33	39	8	11	12	4	1	0
PDE	YW51	1,058	286	30	50	52	6	18	6	4	0	6
PDE	YX54	1,464	821	158	389	127	2	0	7	2	0	0
PDE	YY56	1,080	1,416	150	17	37	1	50	3	2	1	0
PDE	ZC53	3,065	182	21	14	19	0	11	0	6	6	2
PDE	ZD48	2,419	1,118	19	98	78	1	24	1	4	25	0
PDE	ZD55	468	50	27	62	4	0	0	0	0	4	0
PDE	ZE57	5,354	572	10	147	0	24	9	16	11	0	0
PDW	YZ35	598	1,021	30	6	0	24	18	6	2	0	1
PDW	ZB37	983	537	16	30	14	5	13	4	1	1	1
PDW	ZC37	937	679	31	4	8	10	10	5	8	8	0

Strata	Station	Spot	Atlantic Croaker	Blue Crab	Weakfish	Pink Shrimp	Summer Flounder	Brown Shrimp	Southern Flounder	Southern Kingfish	White Shrimp	Bluefish
PDW	ZF33	2,096	621	22	46	24	5	6	11	0	4	0
PDW	ZF35	1,989	387	12	0	24	3	12	10	3	12	0
PDW	ZJ21	4,975	907	6	10	21	1	4	16	5	3	4
PDW	ZJ29	7,286	1,614	12	25	35	4	30	9	4	6	1
PDW	ZM32	4,452	286	2	0	4	2	0	0	4	10	4
PDW	ZO30	2,436	31	1	0	0	0	2	15	7	0	1
PR	YP83	425	243	1	0	0	0	0	5	0	0	51
PR	YQ86	461	686	4	0	0	0	0	7	0	0	10
PR	YV13	363	83	16	0	0	1	5	10	0	0	8
PR	YV18	1,111	298	72	0	0	3	9	12	1	0	1
PR	YV21	1,720	1,330	13	3	0	58	25	6	6	1	2
PSE	R66	233	241	51	0	0	1	0	1	0	0	2
PSE	S69	659	979	334	1	0	8	1	3	4	0	0
PSE	W72	210	1,818	23	10	0	3	2	4	3	1	0
PSE	Y73	529	481	20	2	0	20	0	0	8	0	4
PSE	YC66	561	278	140	5	1	27	33	6	2	0	3
PSE	YC76	97	179	17	0	0	18	0	4	3	0	0
PSE	YU52	629	332	43	19	23	8	8	3	3	0	1
PSW	YY29	1,605	709	10	6	0	6	4	0	4	0	0
PSW	YY44	187	120	4	3	0	19	0	1	17	0	0
PSW	ZA41	280	268	7	3	3	22	3	6	15	2	0
PSW	ZE45	4	0	3	0	0	7	0	0	2	0	0
PSW	ZQ36	30	124	8	1	33	7	3	2	2	1	0
PUR	YL18	460	127	31	0	0	0	1	24	0	0	3
PUR	YM14	742	37	23	0	0	0	2	3	0	0	0
PUR	YO15	1,534	114	43	0	0	0	11	26	0	0	0
	Total	70,247	31,583	2,334	1,182	749	564	411	332	282	132	120

Table 5 Species composition; mean number of individuals and biomass per station, and total number of individuals and biomass by stratum for the June 2013 Pamlico Sound Survey.

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
			Neuse River (NR)				
Leiostomus xanthurus	5	2,416	624.7	12,081	26.3	7.9	131.6
Micropogonias undulatus	5	202	33.7	1,011	1.6	0.3	7.9
Lagodon rhomboides	5	151	127.9	756	3.5	3.0	17.6
Farfantepenaeus duorarum	5	20	6.7	98	0.3	0.1	1.6
Menticirrhus americanus	5	18	18.4	92	1.1	1.1	5.6
Bairdiella chrysoura	5	16	10.7	79	0.6	0.4	2.8
Anchoa mitchilli	5	13	6.8	67	<0.1	<0.1	0.1
Callinectes sapidus	5	13	3.7	64	0.4	0.1	2.2
Peprilus triacanthus	5	6	2.5	28	0.1	<0.1	0.4
Farfantepenaeus aztecus	5	5	4.9	27	<0.1	<0.1	0.1
Paralichthys lethostigma	5	5	2.7	27	0.3	0.2	1.5
Peprilus paru	5	3	1.2	17	0.2	0.1	1.0
Urophycis regia	5	3	0.4	16	0.1	<0.1	0.6
Paralichthys dentatus	5	3	1.2	16	0.1	<0.1	0.3
Pomatomus saltatrix	5	3	0.9	15	0.2	0.1	0.9
Litopenaeus setiferus	5	2	0.9	8	0.1	<0.1	0.3
Prionotus carolinus	5	1	0.6	5	<0.1	<0.1	0.1
Rhinoptera bonasus	5	1	0.4	3	0.9	0.6	4.6
Prionotus evolans	5	1	0.6	3	<0.1	<0.1	<0.1
Citharichthys spilopterus	5	1	0.4	3	<0.1	<0.1	0.1
Brevoortia tyrannus	5	<1	0.4	2	0.1	<0.1	0.2
Anchoa hepsetus	5	<1	0.4	2	<0.1	<0.1	<0.1
Cynoscion regalis	5	<1	0.2	2	0.1	0.1	0.6
Trichiurus lepturus	5	<1	0.4	2	<0.1	<0.1	0.1
Opisthonema oglinum	5	<1	0.2	1	<0.1	<0.1	<0.1

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Trinectes maculatus	5	<1	0.2	1	<0.1	<0.1	<0.1
Symphurus plagiusa	5	<1	0.2	1	<0.1	<0.1	<0.1
Cnidaria*	5	-	-	-	29.1	5.5	145.5
Ascidicea*	5	-	-	-	<0.1	<0.1	0.2
Pamlico Sound ≥ 3.6 m East of Bluff Shoals (PDE)							
Leiostomus xanthurus	20	1,029	285.9	20,574	31.5	9.4	630.8
Micropogonias undulatus	20	802	175.9	16,042	13.2	2.9	264.0
Lagodon rhomboides	20	243	121.3	4,869	7.4	3.6	148.4
Callinectes sapidus	20	64	16.1	1,275	1.1	0.3	21.6
Cynoscion regalis	20	50	19.8	1,006	4.0	1.6	80.5
Trinectes maculatus	20	25	10.7	492	0.6	0.3	12.8
Farfantepenaeus duorarum	20	23	7.3	461	0.3	0.1	6.3
Squilla empusa	20	16	4.3	314	0.2	<0.1	3.2
Anchoa mitchilli	20	15	7.8	296	<0.1	<0.1	0.6
Paralichthys dentatus	20	14	4.4	286	0.3	0.1	5.5
Bairdiella chrysoura	20	12	3.4	235	0.5	0.1	9.5
Farfantepenaeus aztecus	20	9	2.9	182	0.1	<0.1	2.2
Opisthonema oglinum	20	6	3.4	121	0.3	0.2	6.4
Paralichthys lethostigma	20	5	1.3	106	0.3	0.1	6.3
Menticirrhus americanus	20	4	0.8	86	0.5	0.1	10.1
Prionotus evolans	20	4	1.1	83	0.1	<0.1	1.4
Peprilus paru	20	4	1.3	81	0.4	0.1	7.6
Litopenaeus setiferus	20	4	2.1	75	0.1	0.1	2.1
Chaetodipterus faber	20	3	0.9	65	0.4	0.1	7.7
Peprilus triacanthus	20	3	1.2	62	0.2	0.1	4.1
Orthopristis chrysoptera	20	3	1.9	50	0.1	0.1	2.8
Brevoortia tyrannus	20	2	0.7	42	0.1	<0.1	2.8
Lolliguncula brevis	20	2	0.7	36	0.1	<0.1	1.1

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Citharichthys spilopterus	20	2	0.5	30	<0.1	<0.1	0.5
Trichiurus lepturus	20	1	0.5	25	0.1	<0.1	1.5
Paralichthys oblongus	20	1	0.6	25	<0.1	<0.1	0.8
Urophycis regia	20	1	0.3	22	<0.1	<0.1	0.8
Prionotus scitulus	20	1	0.5	18	<0.1	<0.1	0.3
Symphurus plagiusa	20	1	0.2	17	<0.1	<0.1	0.4
Dasyatis sabina	20	1	0.2	16	1.1	0.5	21.2
Anomura paguridea	20	1	0.3	13	<0.1	<0.1	0.3
Chilomycterus schoepfii	20	1	0.3	13	0.2	0.1	4.4
Sphoeroides maculatus	20	<1	0.3	9	<0.1	<0.1	0.8
Libinia emarginata	20	<1	0.2	8	<0.1	<0.1	0.2
Pomatomus saltatrix	20	<1	0.3	8	<0.1	<0.1	0.8
Dasyatis americana	20	<1	0.1	5	0.5	0.4	9.2
Gymnura micrura	20	<1	0.1	5	0.2	0.1	4.8
Rhinoptera bonasus	20	<1	0.2	5	1.0	0.6	19.5
Alectis ciliaris	20	<1	0.2	5	<0.1	<0.1	<0.1
Anadara ovalis	20	<1	0.2	4	<0.1	<0.1	<0.1
Anchoa hepsetus	20	<1	0.2	4	<0.1	<0.1	0.1
Selene vomer	20	<1	0.1	4	<0.1	<0.1	<0.1
Arenaeus cribarius	20	<1	0.1	3	<0.1	<0.1	<0.1
Parapenaeus politus	20	<1	0.1	2	<0.1	<0.1	<0.1
Ovalipes ocellatus	20	<1	0.1	2	<0.1	<0.1	<0.1
Menippe mercenaria	20	<1	0.1	2	<0.1	<0.1	<0.1
Chondrichthyes	20	<1	0.1	2	<0.1	<0.1	0.4
Prionotus carolinus	20	<1	0.1	2	<0.1	<0.1	<0.1
Chasmodes bosquianus	20	<1	0.1	2	<0.1	<0.1	<0.1
Paralichthys albigutta	20	<1	0.1	2	<0.1	<0.1	<0.1
Scophthalmus aquosus	20	<1	0.1	2	<0.1	<0.1	<0.1
Busycotypus canaliculatus	20	<1	0.1	1	<0.1	<0.1	0.1

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Portunus gibbessi	20	<1	0.1	1	<0.1	<0.1	<0.1
Syngnathus louisianae	20	<1	0.1	1	<0.1	<0.1	<0.1
Archosargus probatocephalus	20	<1	0.1	1	0.2	0.2	4.1
Cynoscion nebulosus	20	<1	0.1	1	<0.1	<0.1	0.3
Stephanolepis hispidus	20	<1	0.1	1	<0.1	<0.1	<0.1
Sphoeroides nephelus	20	<1	0.1	1	<0.1	<0.1	0.1
Ascidicea*	20	-	-	-	0.7	0.4	14.6
Codium*	20	-	-	-	<0.1	<0.1	0.8
Zosteraceae*	20	-	-	-	0.3	0.1	5.0
Cnidaria*	20	-	-	-	0.4	0.2	7.2
		Pamlico Sound ≥ 3.6 m West of Bluff Shoals (PDW)					
Leiostomus xanthurus	9	2,861	749.6	25,752	38.2	8.6	343.6
Micropogonias undulatus	9	676	154.8	6,083	6.8	2.0	61.4
Lagodon rhomboides	9	98	80.4	886	1.7	1.3	15.4
Anchoa mitchilli	9	50	15.8	451	0.1	<0.1	1.0
Callinectes sapidus	9	15	3.7	132	0.3	0.1	2.9
Farfantepenaeus duorarum	9	14	4.1	130	0.3	0.1	2.3
Cynoscion regalis	9	13	5.5	121	1.1	0.5	9.9
Farfantepenaeus aztecus	9	11	3.1	95	0.1	<0.1	1.0
Bairdiella chrysoura	9	10	3.8	94	0.4	0.1	3.5
Paralichthys lethostigma	9	8	1.7	76	0.3	0.1	2.3
Peprilus paru	9	7	1.8	64	0.6	0.2	5.7
Squilla empusa	9	6	2.5	54	0.1	<0.1	0.5
Paralichthys dentatus	9	6	2.4	54	0.1	<0.1	0.9
Litopenaeus setiferus	9	5	1.5	44	0.2	0.1	1.8
Opisthonema oglinum	9	5	1.3	44	0.3	0.1	2.3
Menticirrhus americanus	9	4	0.9	34	0.5	0.1	4.8
Urophycis regia	9	3	0.8	29	0.1	<0.1	1.2

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Trichiurus lepturus	9	3	0.8	28	0.1	<0.1	1.3
Trinectes maculatus	9	2	1.0	19	0.1	<0.1	0.7
Peprilus triacanthus	9	2	0.9	14	<0.1	<0.1	0.4
Prionotus evolans	9	1	0.5	13	<0.1	<0.1	0.2
Citharichthys spilopterus	9	1	0.6	13	<0.1	<0.1	0.4
Pomatomus saltatrix	9	1	0.5	12	0.1	0.1	1.1
Callinectes similis	9	1	1.2	11	<0.1	<0.1	0.1
Orthopristis chrysoptera	9	1	0.6	7	0.1	<0.1	0.5
Chaetodipterus faber	9	1	0.4	7	0.1	0.1	1.3
Dasyatis americana	9	1	0.4	6	0.7	0.4	5.9
Portunus gibbessi	9	1	0.4	5	<0.1	<0.1	0.1
Rhinoptera bonasus	9	1	0.2	5	2.7	1.5	23.9
Brevoortia tyrannus	9	1	0.2	5	<0.1	<0.1	0.4
Chilomycterus schoepfii	9	<1	0.3	4	0.2	0.1	1.3
Prionotus carolinus	9	<1	0.2	3	<0.1	<0.1	<0.1
Symphurus plagiusa	9	<1	0.2	3	<0.1	<0.1	0.1
Lolliguncula brevis	9	<1	0.1	2	<0.1	<0.1	0.1
Anomura paguridea	9	<1	0.2	2	<0.1	<0.1	0.1
Anchoa hepsetus	9	<1	0.1	2	<0.1	<0.1	<0.1
Gymnura micrura	9	<1	0.1	1	0.1	0.1	0.6
Menidia beryllina	9	<1	0.1	1	<0.1	<0.1	<0.1
*Gracilaria verrucosa**	9	-	-	-	<0.1	<0.1	0.3
Cnidaria*	9	-	-	-	1.2	0.4	10.4
Ascidicea*	9	-	-	-	8.3	6.3	74.7
		Pamlico River (PR)					
Leiostomus xanthurus	5	816	263.5	4,080	6.2	2.3	31.1
Micropogonias undulatus	5	528	223.6	2,640	3.2	1.3	16.1
Brevoortia tyrannus	5	305	299.0	1,525	1.0	0.8	4.8
Lagodon rhomboides	5	144	135.2	718	3.8	3.7	18.9

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Callinectes sapidus	5	21	13.0	106	0.6	0.3	2.8
Anchoa mitchilli	5	21	9.1	103	<0.1	<0.1	0.2
Pomatomus saltatrix	5	14	9.3	72	0.3	0.2	1.5
Paralichthys dentatus	5	12	11.4	62	0.1	0.1	0.4
Paralichthys lethostigma	5	8	1.3	40	0.3	0.1	1.6
Farfantepenaeus aztecus	5	8	4.6	39	0.0	0.0	0.1
Bairdiella chrysoura	5	7	6.3	34	0.2	0.2	1.1
Trinectes maculatus	5	6	4.4	30	0.1	0.1	0.7
Peprilus paru	5	3	1.7	16	0.2	0.1	1.1
Crassostrea virginica	5	3	2.6	13	0.3	0.3	1.6
Menticirrhus americanus	5	1	1.2	7	0.2	0.2	0.9
Lepisosteus osseus	5	1	0.6	4	1.4	1.1	7.0
Trichiurus lepturus	5	1	0.5	4	<0.1	<0.1	0.2
Cynoscion regalis	5	1	0.6	3	<0.1	<0.1	0.1
Urophycis regia	5	<1	0.4	2	<0.1	<0.1	0.1
Prionotus evolans	5	<1	0.4	2	<0.1	<0.1	0.1
Litopenaeus setiferus	5	<1	0.2	1	<0.1	<0.1	<0.1
Ameiurus catus	5	<1	0.2	1	0.4	0.4	1.8
Prionotus carolinus	5	<1	0.2	1	<0.1	<0.1	<0.1
Orthopristis chrysoptera	5	<1	0.2	1	<0.1	<0.1	<0.1
Stephanolepis hispidus	5	<1	0.2	1	<0.1	<0.1	<0.1
Cnidaria*	5	-	-	-	13.2	9.7	65.8
Ascidicea*	5	-	-	-	3.0	3.0	15.0
Pamlico Sound <3.6 m East of Bluff Shoals (PSE)							
Micropogonias undulatus	7	615	224.7	4,308	6.5	2.2	45.6
Leiostomus xanthurus	7	417	86.7	2,918	8.4	2.8	59.0
Trinectes maculatus	7	135	65.3	942	3.1	1.4	21.7
Callinectes sapidus	7	90	43.8	628	2.4	1.0	16.5

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Brevoortia tyrannus	7	28	20.9	197	1.4	1.1	9.8
Paralichthys dentatus	7	12	3.6	85	0.3	0.1	2.1
Lagodon rhomboides	7	10	7.9	70	0.4	0.3	2.7
Anchoa mitchilli	7	7	3.5	51	<0.1	<0.1	0.1
Bairdiella chrysoura	7	7	2.5	49	0.2	0.1	1.7
Farfantepenaeus aztecus	7	6	4.6	44	0.1	<0.1	0.4
Cynoscion regalis	7	5	2.7	37	0.6	0.3	3.9
Farfantepenaeus duorarum	7	3	3.3	24	0.1	<0.1	0.4
Squilla empusa	7	3	3.4	24	<0.1	<0.1	0.2
Peprilus paru	7	3	1.6	24	0.2	0.1	1.7
Menticirrhus americanus	7	3	0.9	23	0.5	0.2	3.3
Paralichthys lethostigma	7	3	0.8	21	0.3	0.1	2.2
Prionotus evolans	7	3	1.4	20	<0.1	<0.1	0.2
Chaetodipterus faber	7	3	1.5	20	0.3	0.2	2.2
Pomatomus saltatrix	7	1	0.6	10	0.1	0.1	0.7
Trichiurus lepturus	7	1	0.8	10	0.1	<0.1	0.4
Peprilus triacanthus	7	1	1.1	8	<0.1	<0.1	0.3
Opisthonema oglinum	7	1	0.7	6	<0.1	<0.1	0.2
Prionotus scitulus	7	1	0.6	6	<0.1	<0.1	0.1
Anchoa hepsetus	7	<1	0.3	3	<0.1	<0.1	<0.1
Alectis ciliaris	7	<1	0.3	3	<0.1	<0.1	<0.1
Citharichthys spilopterus	7	<1	0.3	3	<0.1	<0.1	0.1
Rhinoptera bonasus	7	<1	0.3	2	0.4	0.4	2.5
Caranx hippos	7	<1	0.3	2	<0.1	<0.1	<0.1
Orthopristis chrysoptera	7	<1	0.3	2	<0.1	<0.1	0.3
Polinices duplicatus	7	<1	0.1	1	<0.1	<0.1	<0.1
Lolliguncula brevis	7	<1	0.1	1	<0.1	<0.1	<0.1
Litopenaeus setiferus	7	<1	0.1	1	<0.1	<0.1	<0.1
Portunus gibbessi	7	<1	0.1	1	<0.1	<0.1	<0.1

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Menippe mercenaria	7	<1	0.1	1	<0.1	<0.1	<0.1
Dasyatis sabina	7	<1	0.1	1	<0.1	<0.1	0.3
Ophidiidae	7	<1	0.1	1	<0.1	<0.1	<0.1
Selene vomer	7	<1	0.1	1	<0.1	<0.1	<0.1
Larimus fasciatus	7	<1	0.1	1	<0.1	<0.1	0.2
Sciaenops ocellatus	7	<1	0.1	1	0.1	0.1	0.6
Mugil cephalus	7	<1	0.1	1	<0.1	<0.1	0.1
Scomberomorus maculatus	7	<1	0.1	1	<0.1	<0.1	0.2
Paralichthys albigutta	7	<1	0.1	1	<0.1	<0.1	<0.1
Symphurus plagiusa	7	<1	0.1	1	<0.1	<0.1	<0.1
Chilomycterus schoepfii	7	<1	0.1	1	<0.1	<0.1	0.1
Zosteraceae*	7	-	-	-	<0.1	<0.1	0.1
Cnidaria*	7	-	-	-	1.7	1.7	12.1
Ascidicea*	7	-	-	-	<0.1	<0.1	0.1
		Pamlico Sound <3.6 m West of Bluff Shoals (PSW)					
Leiostomus xanthurus	5	421	300.3	2,106	5.7	2.8	28.5
Micropogonias undulatus	5	244	123.7	1,221	2.4	1.2	12.0
Lagodon rhomboides	5	98	38.4	488	3.6	1.5	18.2
Anchoa mitchilli	5	60	40.6	298	0.1	0.1	0.5
Paralichthys dentatus	5	12	3.4	61	0.2	0.1	0.8
Bairdiella chrysoura	5	9	6.5	43	0.3	0.2	1.6
Menticirrhus americanus	5	8	3.3	40	0.7	0.2	3.7
Citharichthys spilopterus	5	7	6.2	37	0.2	0.2	0.9
Farfantepenaeus duorarum	5	7	6.5	36	0.1	0.1	0.7
Chaetodipterus faber	5	7	2.2	33	0.9	0.3	4.3
Callinectes sapidus	5	6	1.3	32	0.3	0.1	1.2
Prionotus evolans	5	5	2.9	27	<0.1	<0.1	0.2
Cynoscion regalis	5	3	1.0	13	0.3	0.2	1.5

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Opisthonema oglinum	5	2	1.1	11	0.1	<0.1	0.5
Prionotus scitulus	5	2	2.2	11	0.1	0.1	0.3
Chilomycterus schoepfii	5	2	1.1	11	0.6	0.4	2.9
Farfantepenaeus aztecus	5	2	0.8	10	<0.1	<0.1	0.1
Dasyatis americana	5	2	1.5	10	3.6	3.2	18.2
Paralichthys lethostigma	5	2	1.1	9	0.1	0.0	0.3
Paralichthys albigutta	5	1	1.0	6	0.1	0.1	0.3
Peprilus paru	5	1	0.5	4	0.1	<0.1	0.3
Trinectes maculatus	5	1	0.4	4	<0.1	<0.1	0.1
Lolliguncula brevis	5	1	0.4	3	<0.1	<0.1	0.1
Litopenaeus setiferus	5	1	0.4	3	<0.1	<0.1	0.1
Anomura paguridea	5	1	0.4	3	<0.1	<0.1	0.1
Gymnura micrura	5	1	0.4	3	1.1	1.1	5.6
Anchoa hepsetus	5	1	0.4	3	<0.1	<0.1	0.1
Urophycis regia	5	1	0.2	3	0.1	0.1	0.4
Peprilus triacanthus	5	1	0.4	3	<0.1	<0.1	0.1
Alectis ciliaris	5	<1	0.4	2	<0.1	<0.1	<0.1
Paralichthys oblongus	5	<1	0.4	2	<0.1	<0.1	0.1
Sphoeroides maculatus	5	<1	0.2	2	<0.1	<0.1	0.1
Libinia emarginata	5	<1	0.2	1	<0.1	<0.1	<0.1
Menippe mercenaria	5	<1	0.2	1	<0.1	<0.1	<0.1
Squilla empusa	5	<1	0.2	1	<0.1	<0.1	<0.1
Rhinoptera bonasus	5	<1	0.2	1	0.8	0.8	3.8
Symphurus plagiusa	5	<1	0.2	1	<0.1	<0.1	0.1
Cnidaria*	5	-	-	-	0.5	0.3	2.4
Ascidicea*	5	-	-	-	62.4	60.5	312.1
			Pungo River (PUR)				
Leiostomus xanthurus	3	912	321.5	2,736	7.9	2.3	23.6
Micropogonias undulatus	3	93	28.1	278	0.6	0.2	1.7

Species	Number of Stations	Mean Number of Individuals per Station	Standard Error	Total Number of individuals per Stratum	Mean Biomass per Station (kg)	Standard Error	Total Biomass per Stratum
Callinectes sapidus	3	32	5.8	97	1.3	0.2	3.7
Paralichthys lethostigma	3	18	7.4	53	0.6	0.3	1.9
Anchoa mitchilli	3	9	6.3	26	<0.1	<0.1	0.1
Brevoortia tyrannus	3	5	3.4	16	0.3	0.2	1.0
Farfantepenaeus aztecus	3	5	3.2	14	<0.1	<0.1	0.1
Trinectes maculatus	3	3	1.5	9	0.1	0.1	0.3
Lagodon rhomboides	3	2	1.0	6	0.1	<0.1	0.2
Opisthonema oglinum	3	1	1.0	3	0.1	0.1	0.2
Pomatomus saltatrix	3	1	1.0	3	<0.1	<0.1	0.1
Peprilus paru	3	1	0.3	2	0.1	<0.1	0.3
Prionotus evolans	3	<1	0.3	1	<0.1	<0.1	<0.1
Bairdiella chrysoura	3	<1	0.3	1	<0.1	<0.1	0.1
Cnidaria*	3	-	-	-	7.9	3.5	23.5

*Only total biomass was recorded for these species. Individual counts were not recorded

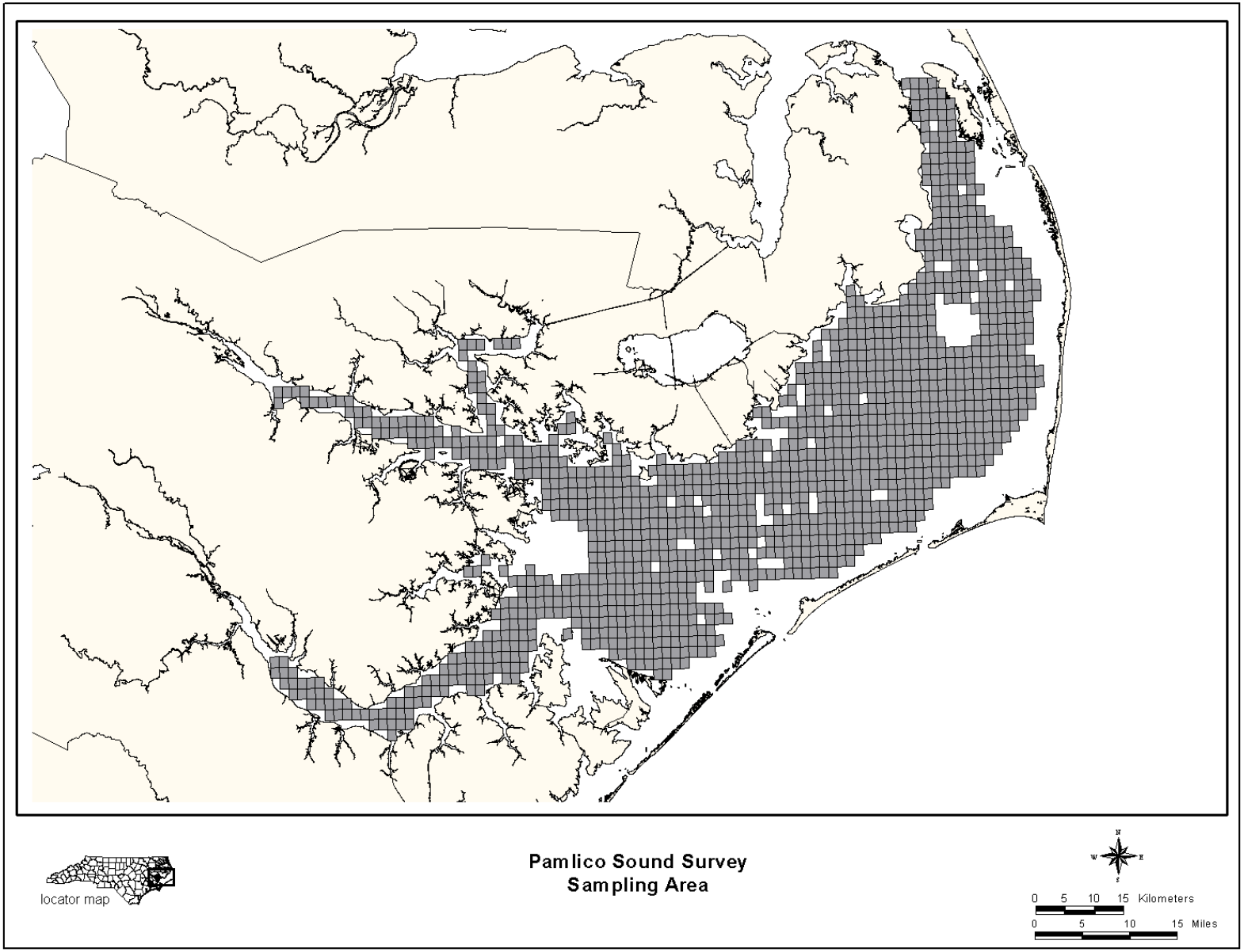

Figure 1 Area coverage and stations by strata of the North Carolina Pamlico Sound Survey.

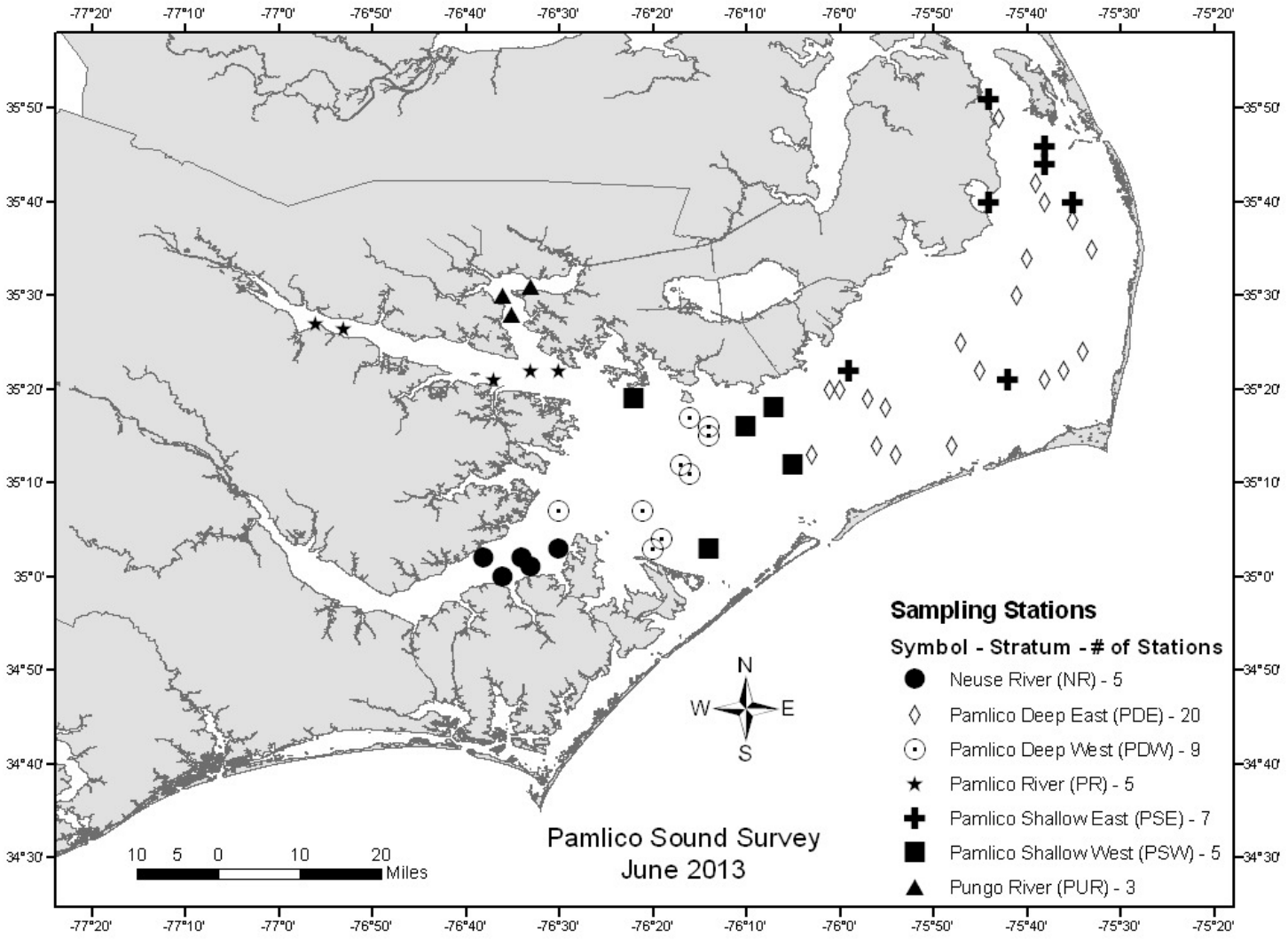

Figure 2 Station locations for each stratum from the June 2013 Pamlico Sound Survey. Symbols indicate the stratum.

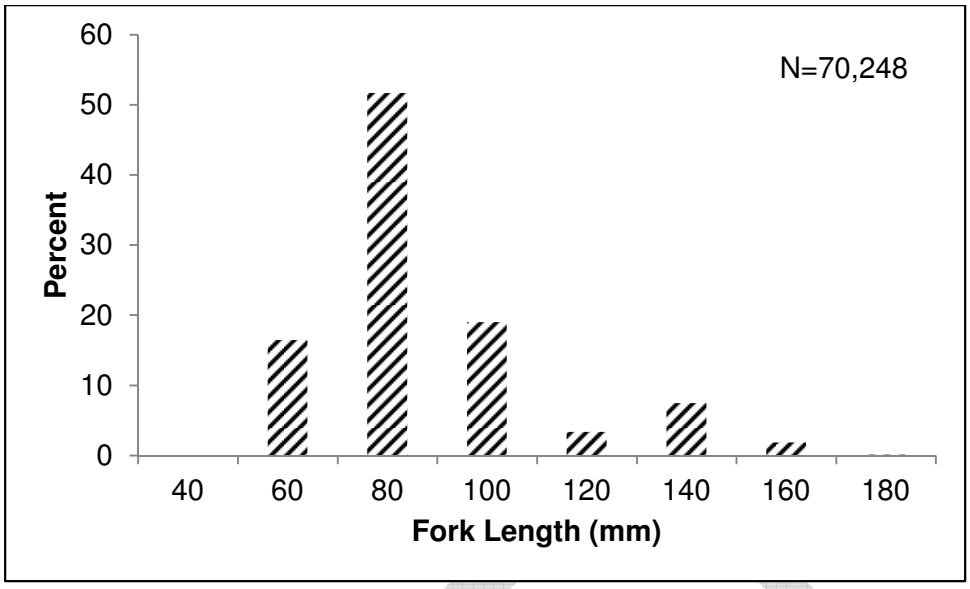

Figure 3 Expanded length frequency of spot (*Leiostomus xanthurus*) for the June 2013 Pamlico Sound Survey.

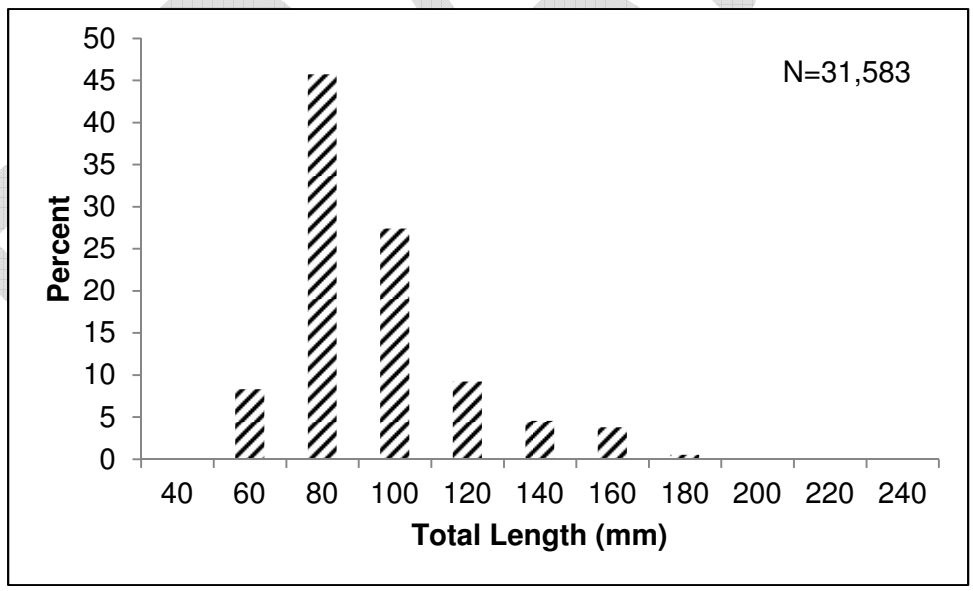

Figure 4 Expanded length frequency of Atlantic croaker (*Micropogonias undulatus*) for the June 2013 Pamlico Sound Survey.

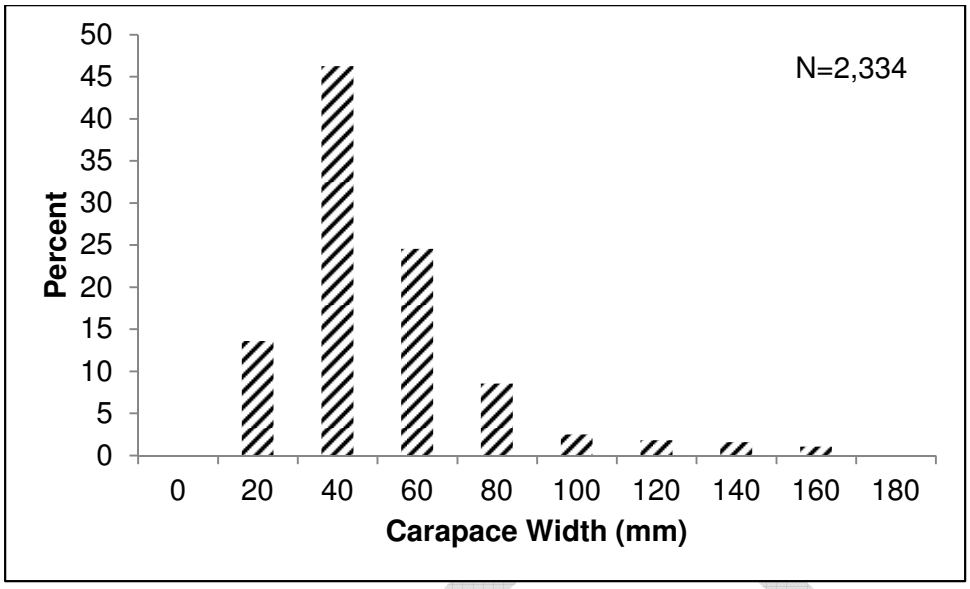

Figure 5 Expanded length frequency of blue crab (*Callinectes sapidus*) for the June 2013 Pamlico Sound Survey.

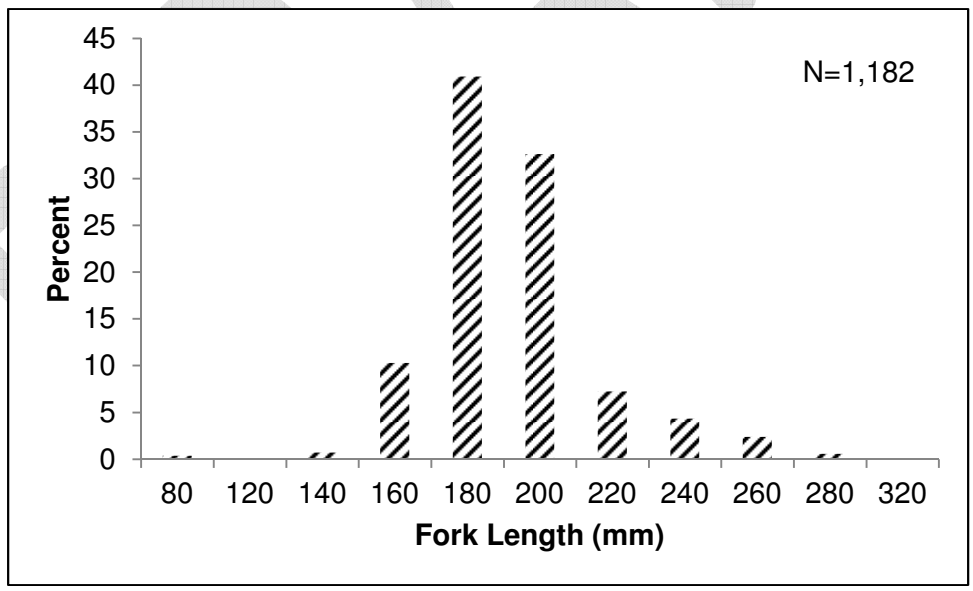

Figure 6 Expanded length frequency of weakfish (*Cynoscion regalis*) for the June 2013 Pamlico Sound Survey.

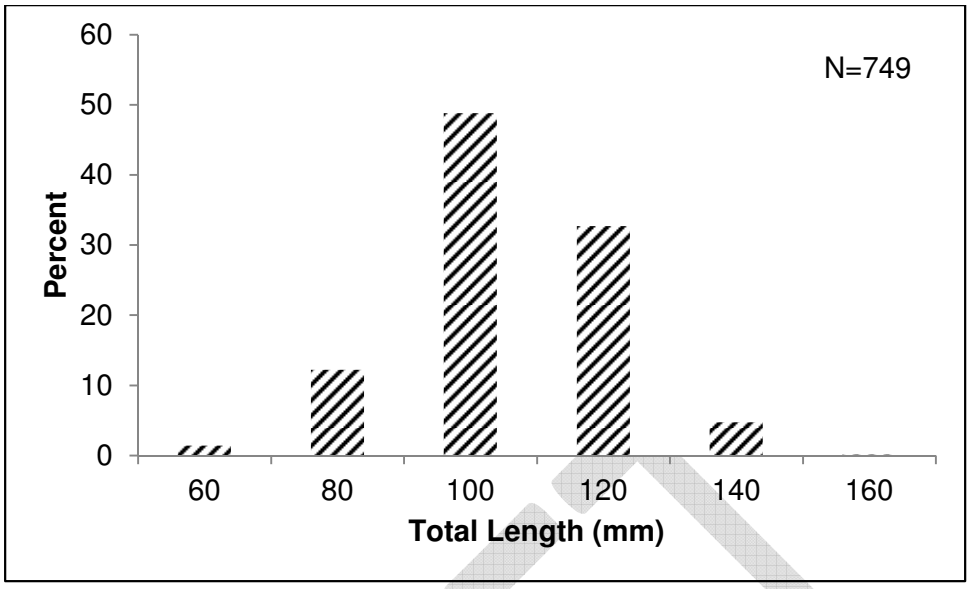

Figure 7 Expanded length frequency of pink shrimp (*Farfantepenaeus duorarum*) for the June 2013 Pamlico Sound Survey.

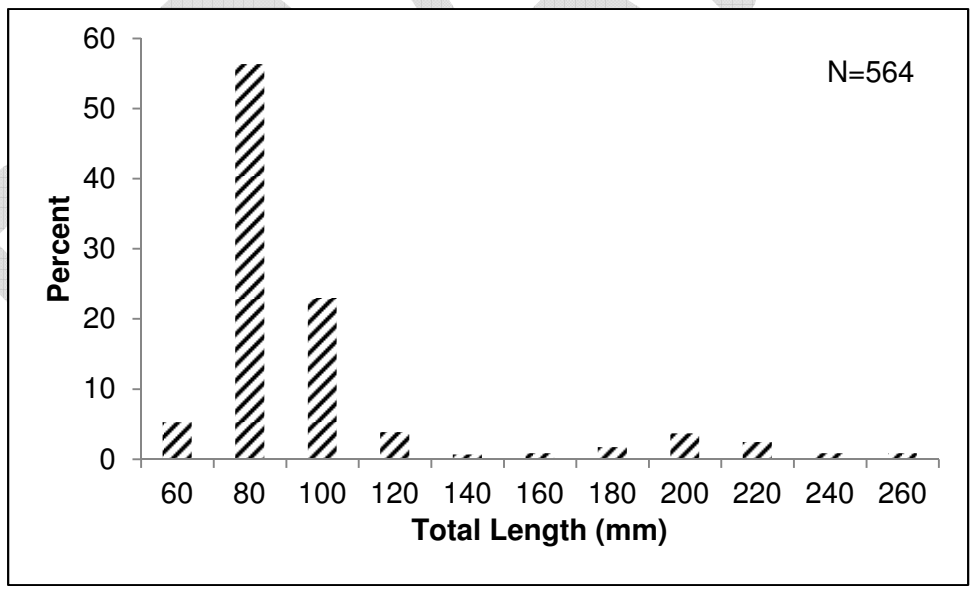

Figure 8 Expanded length frequency of summer flounder (*Paralichthys dentatus*) for the June 2013 Pamlico Sound Survey.

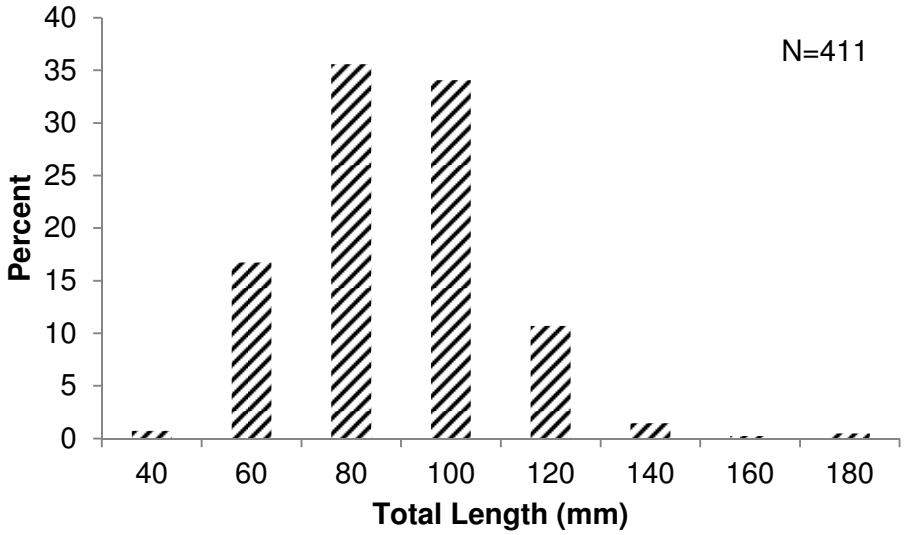

Figure 9 Expanded length frequency of brown shrimp (Farfantepenaeus aztectus) for the June 2013 Pamlico Sound Survey.

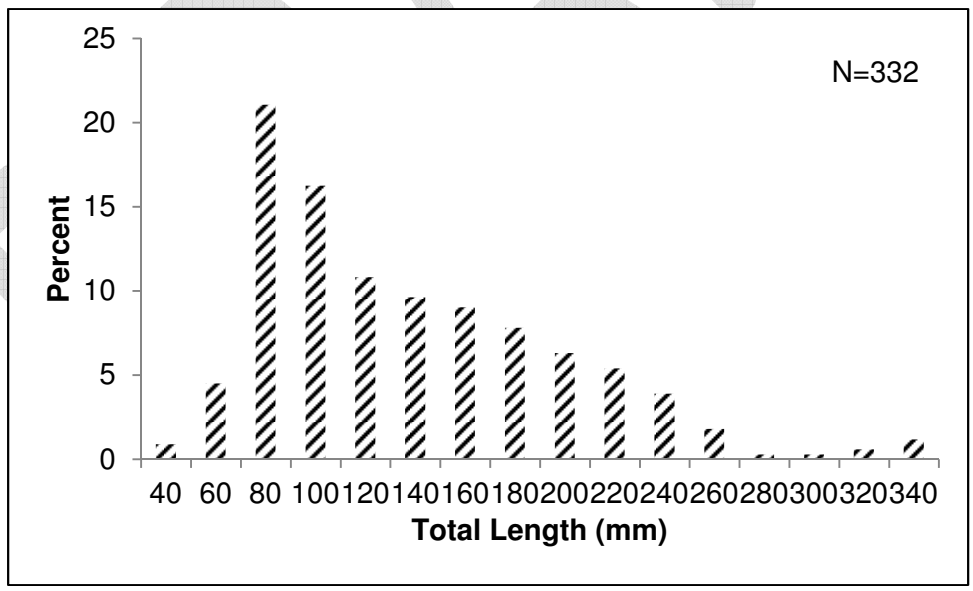

Figure 10 Expanded length frequency of southern flounder (*Paralichthys lethostigma*) for the June 2013 Pamlico Sound Survey.

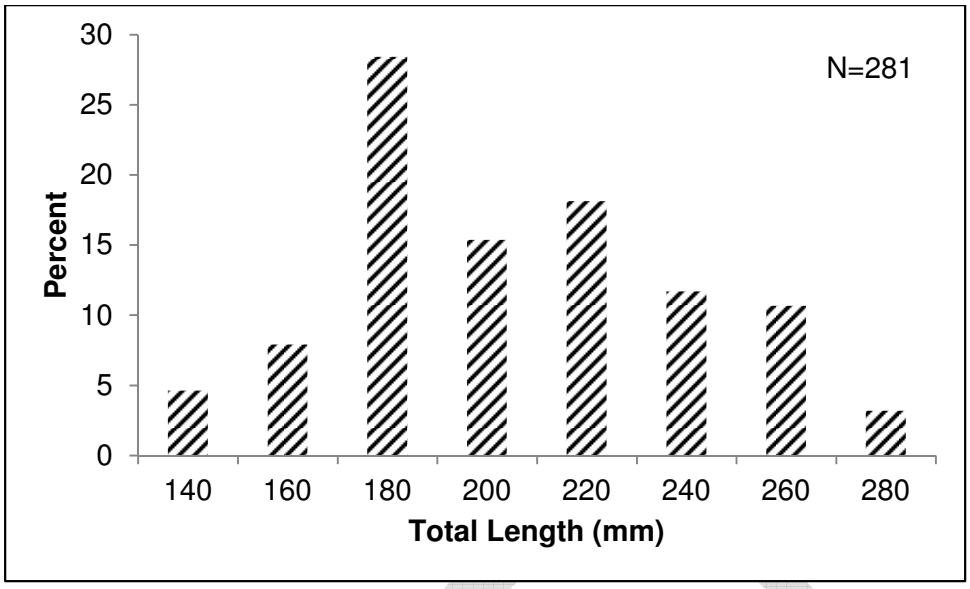

Figure 11 Expanded length frequency of southern kingfish (*Menticirrhus americanus*) for the June 2013 Pamlico Sound Survey.

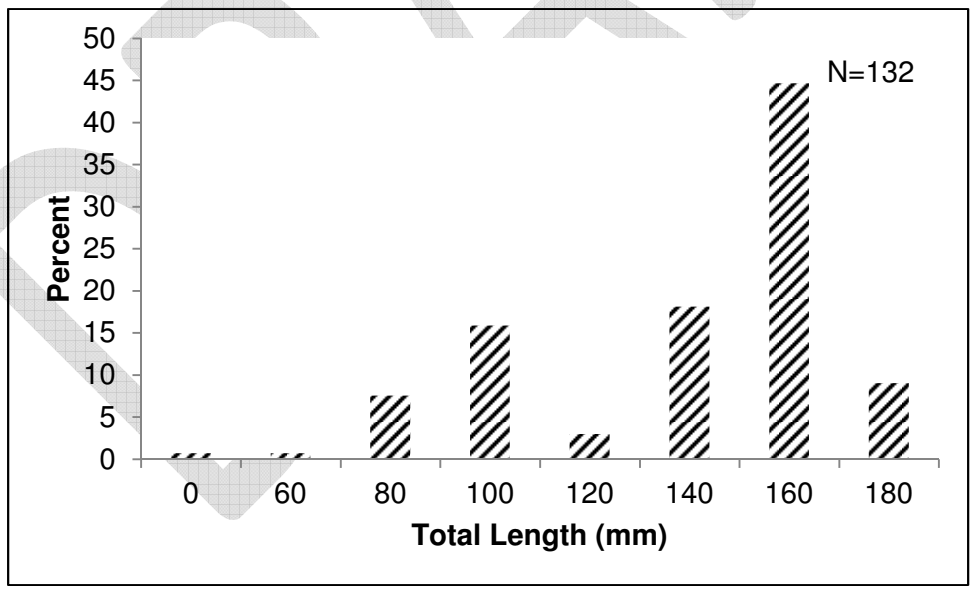

Figure 12 Expanded length frequency of white shrimp (*Litopenaeus setiferus*) for the June 2013 Pamlico Sound Survey.

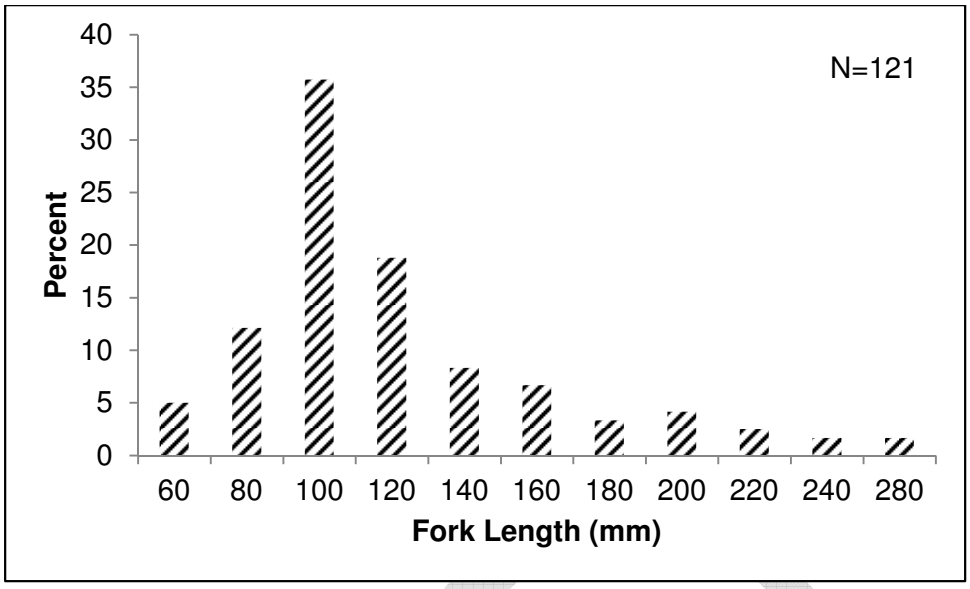

Figure 13 Expanded length frequency of bluefish (*Pomatomus saltatrix*) for the June 2013 Pamlico Sound Survey.

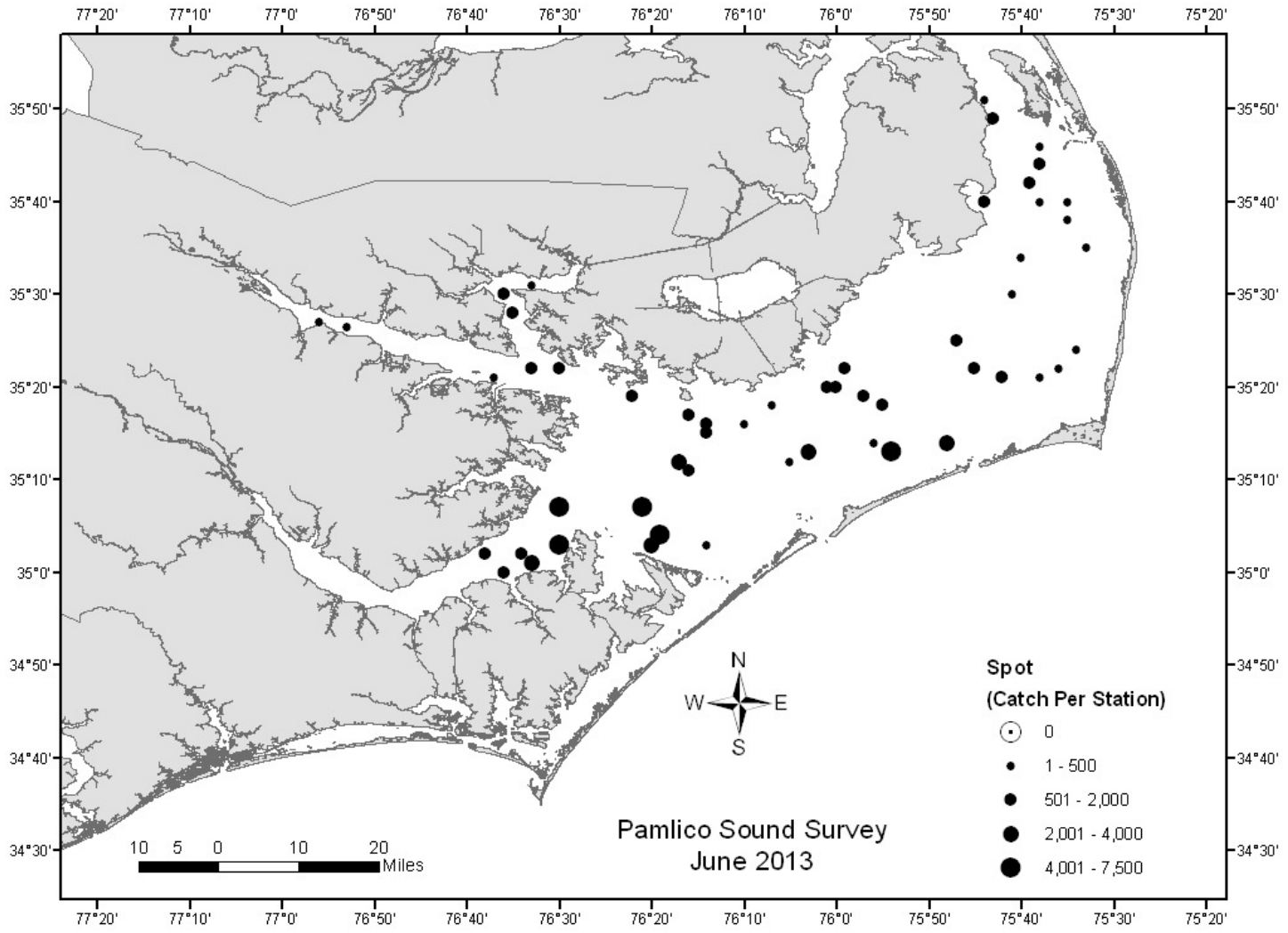

Figure 12 Abundance distribution by station of spot (*Leiostomus xanthurus*) for the June 2013 Pamlico Sound Survey.

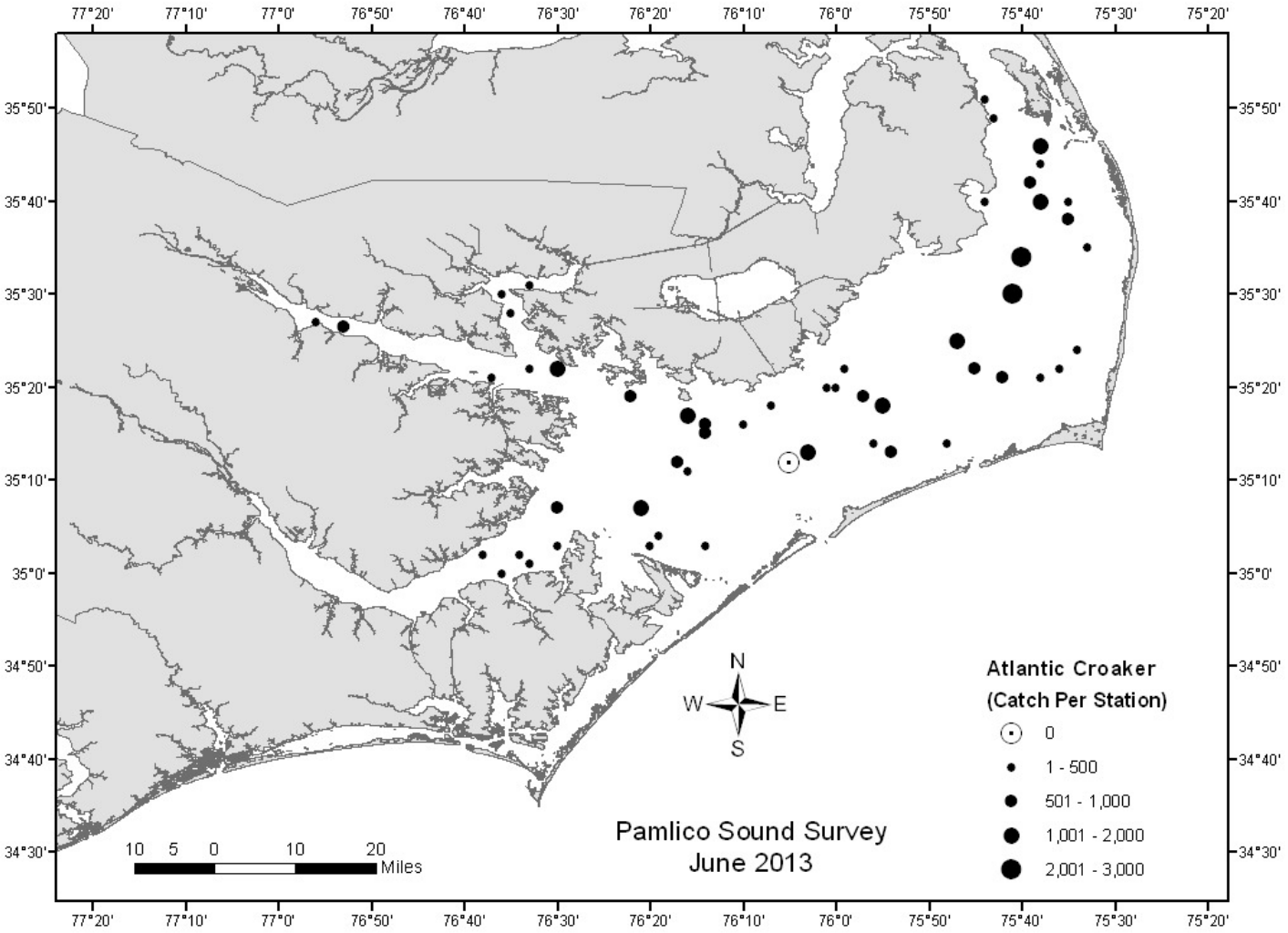

Figure 13 Abundance distribution by station of Atlantic croaker (*Micropogonias undulatus*) for the June 2013 Pamlico Sound Survey.

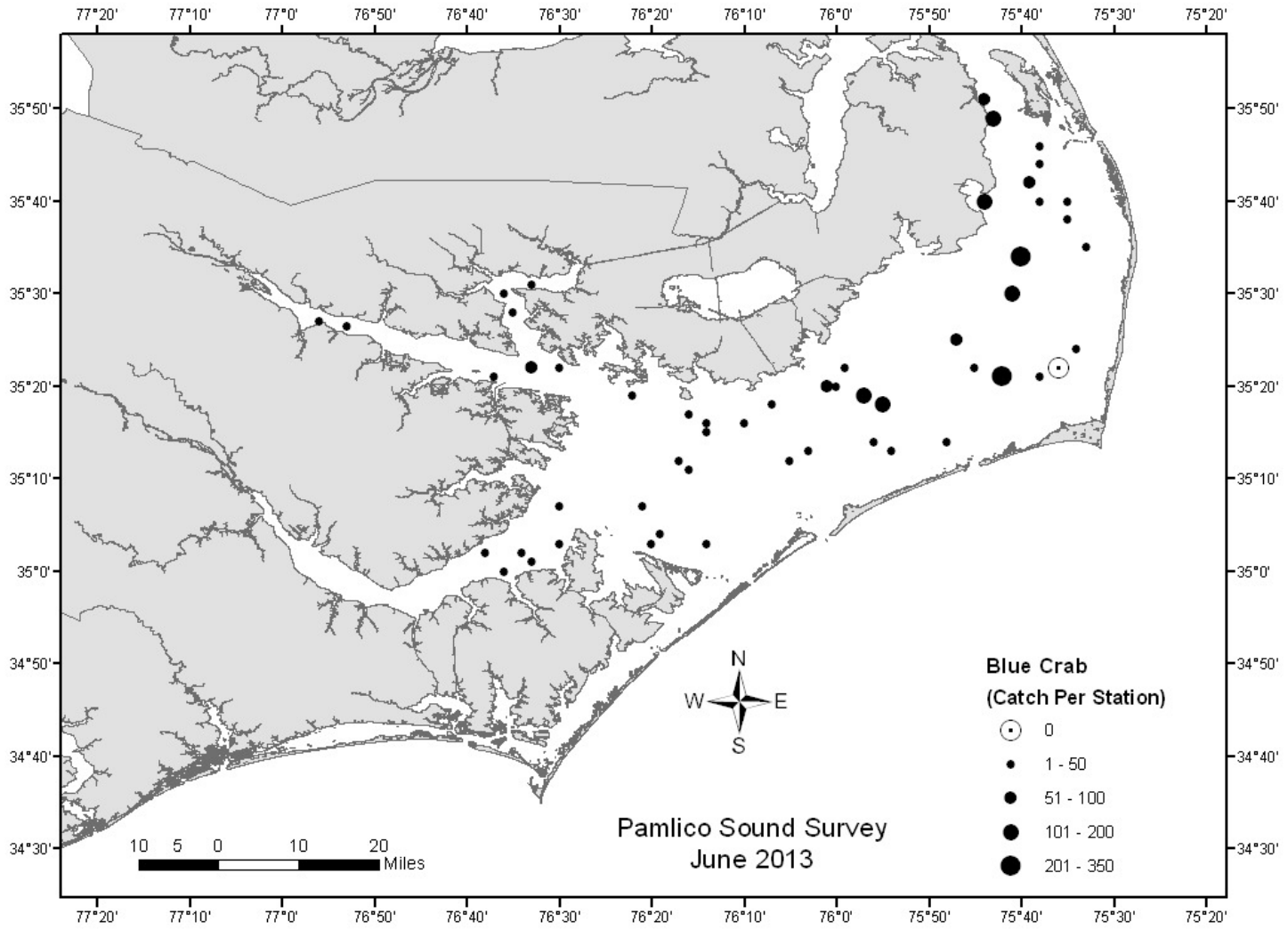

Figure 14 Abundance distribution by station of blue crab (*Callinectes sapidus*) for the June 2013 Pamlico Sound Survey.

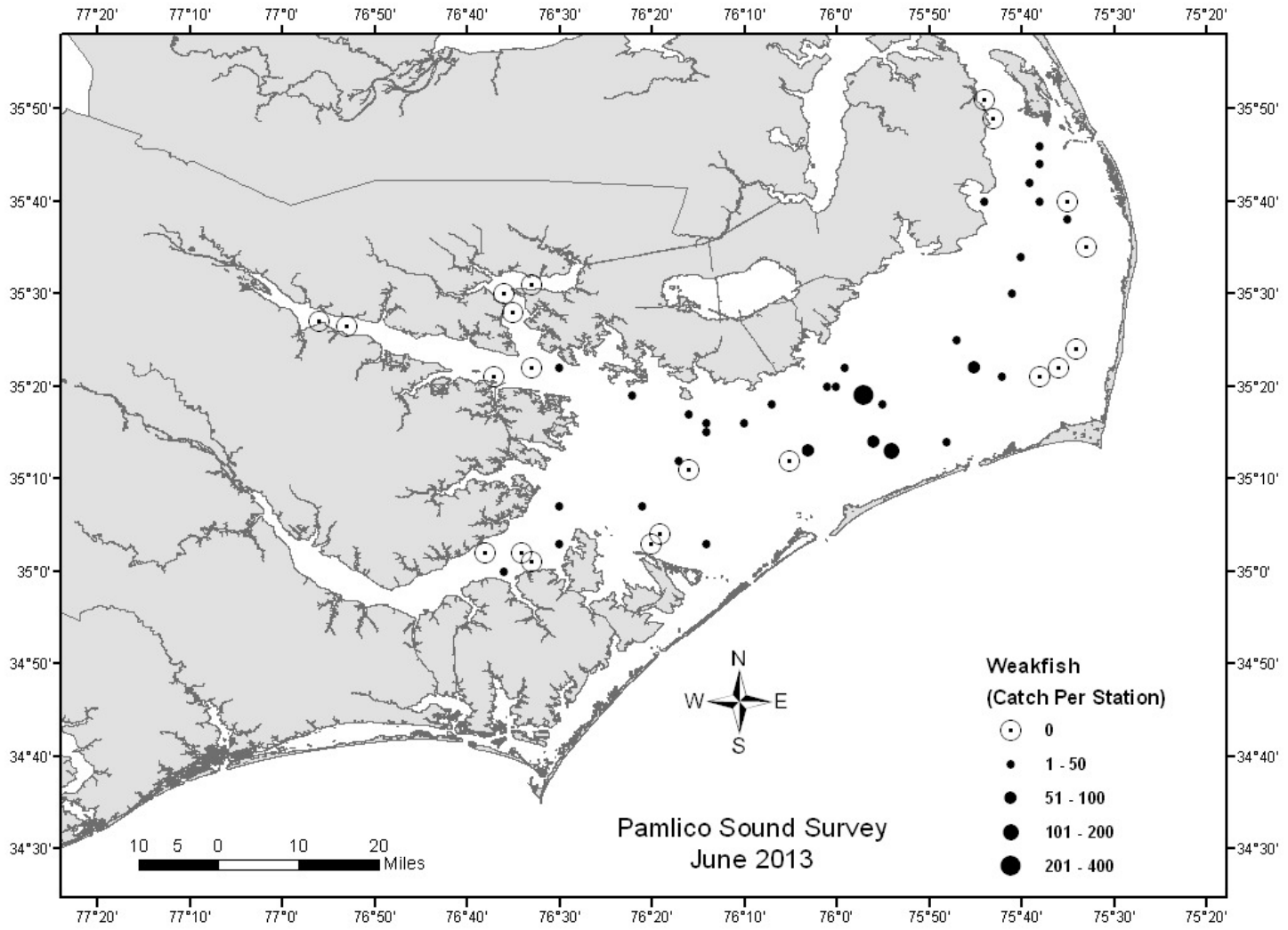

Figure 15 Abundance distribution by station of weakfish (*Cynoscion regalis*) for the June 2013 Pamlico Sound Survey.

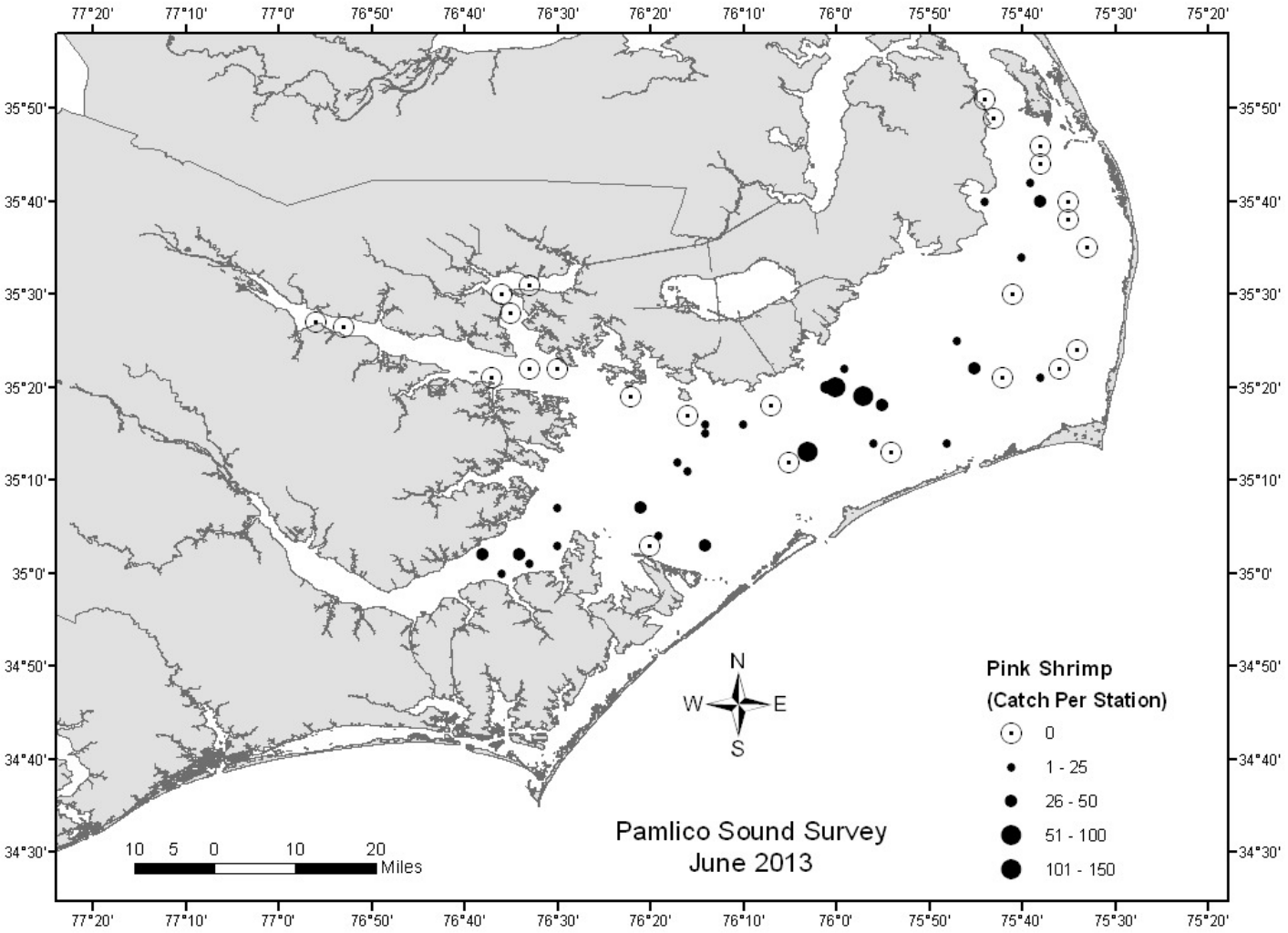

Figure 16 Abundance distribution by station of pink shrimp (*Farfantepenaeus duorarum*) for the June 2013 Pamlico Sound Survey.

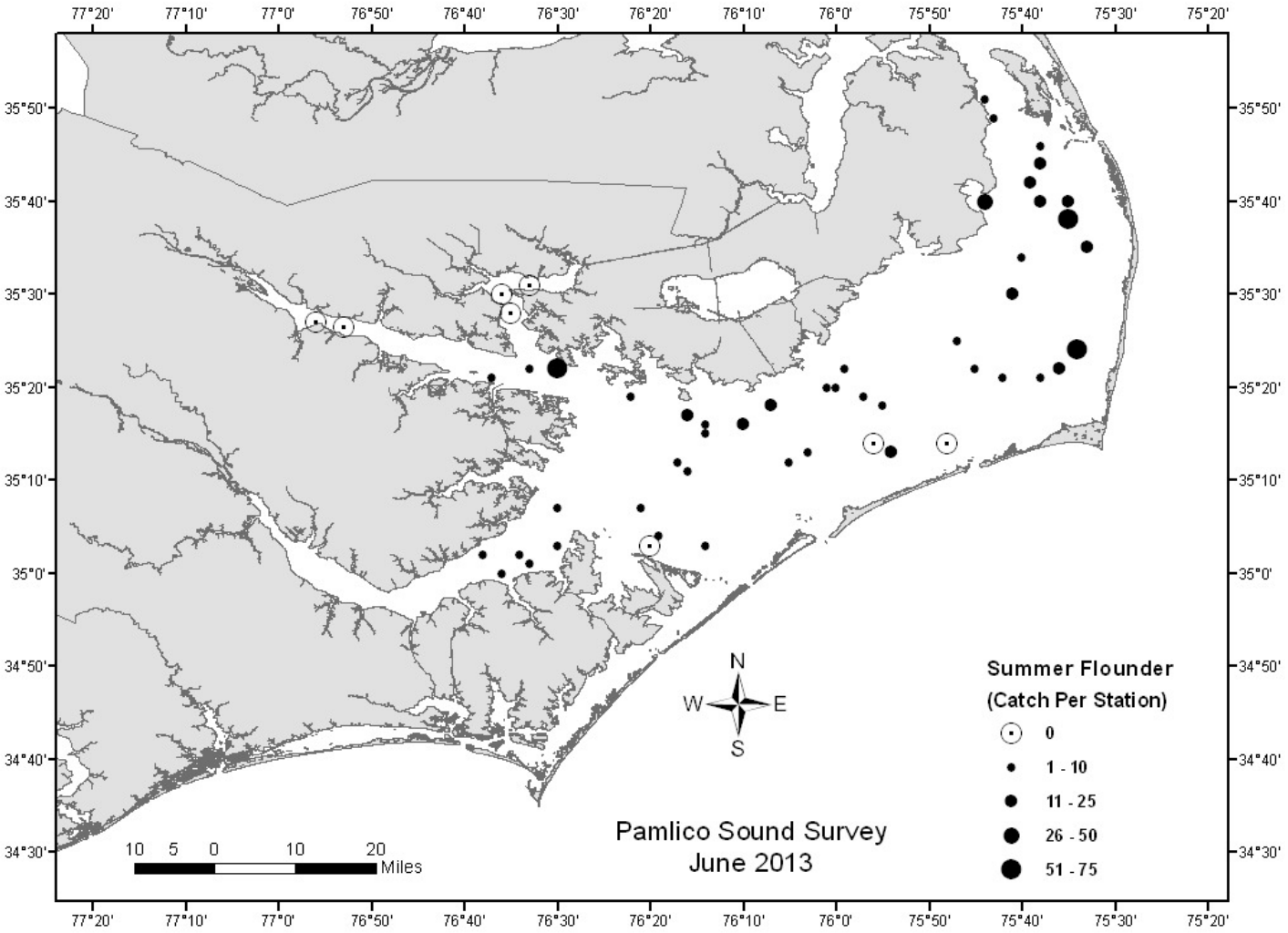

Figure 17 Abundance distribution by station of summer flounder (*Paralichthys* dentatus) for the June 2013 Pamlico Sound Survey.

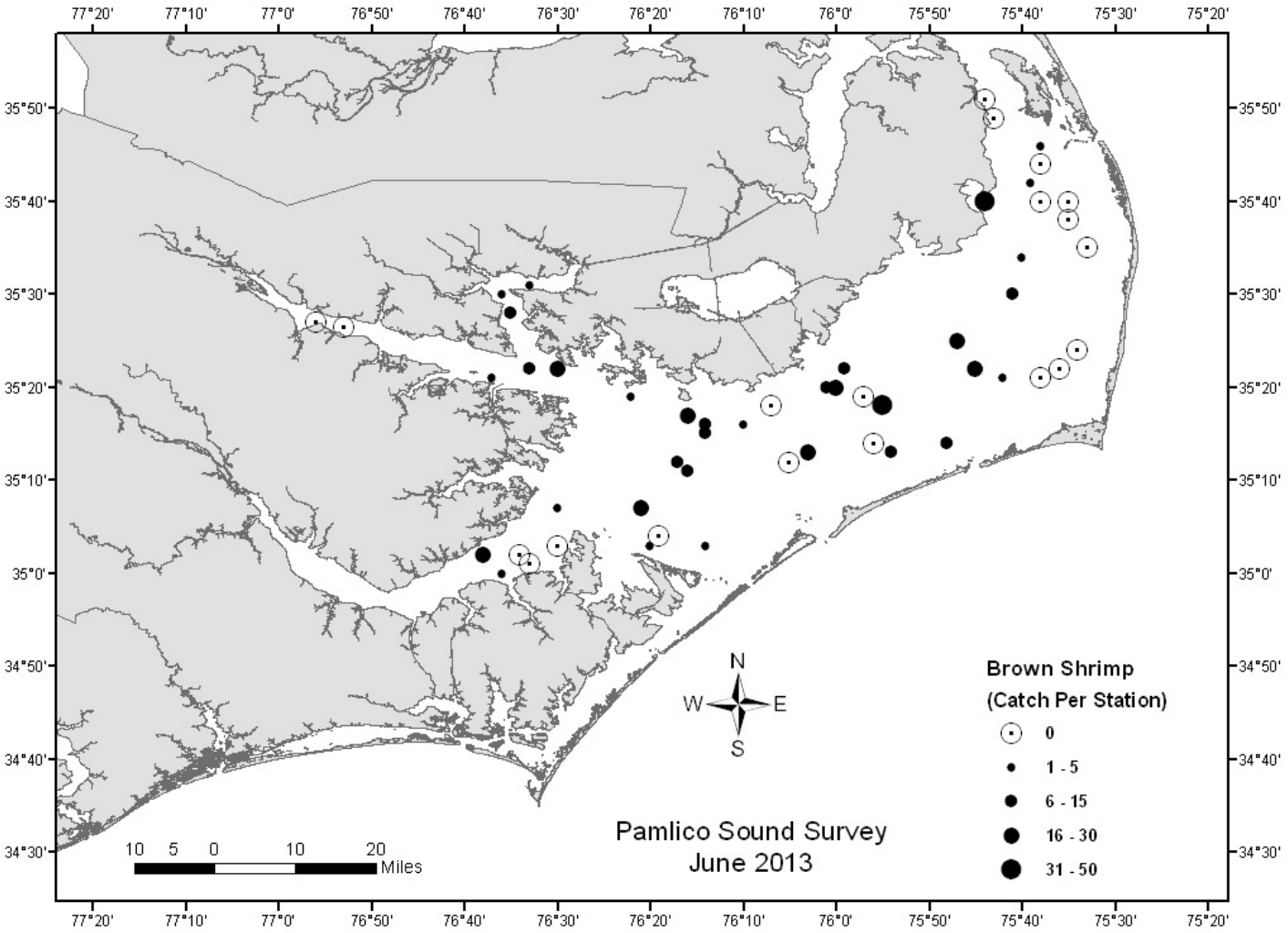

Figure 18 Abundance distribution by station of brown shrimp (*Farfantepenaeus aztecus*) for the June 2013 Pamlico Sound Survey.

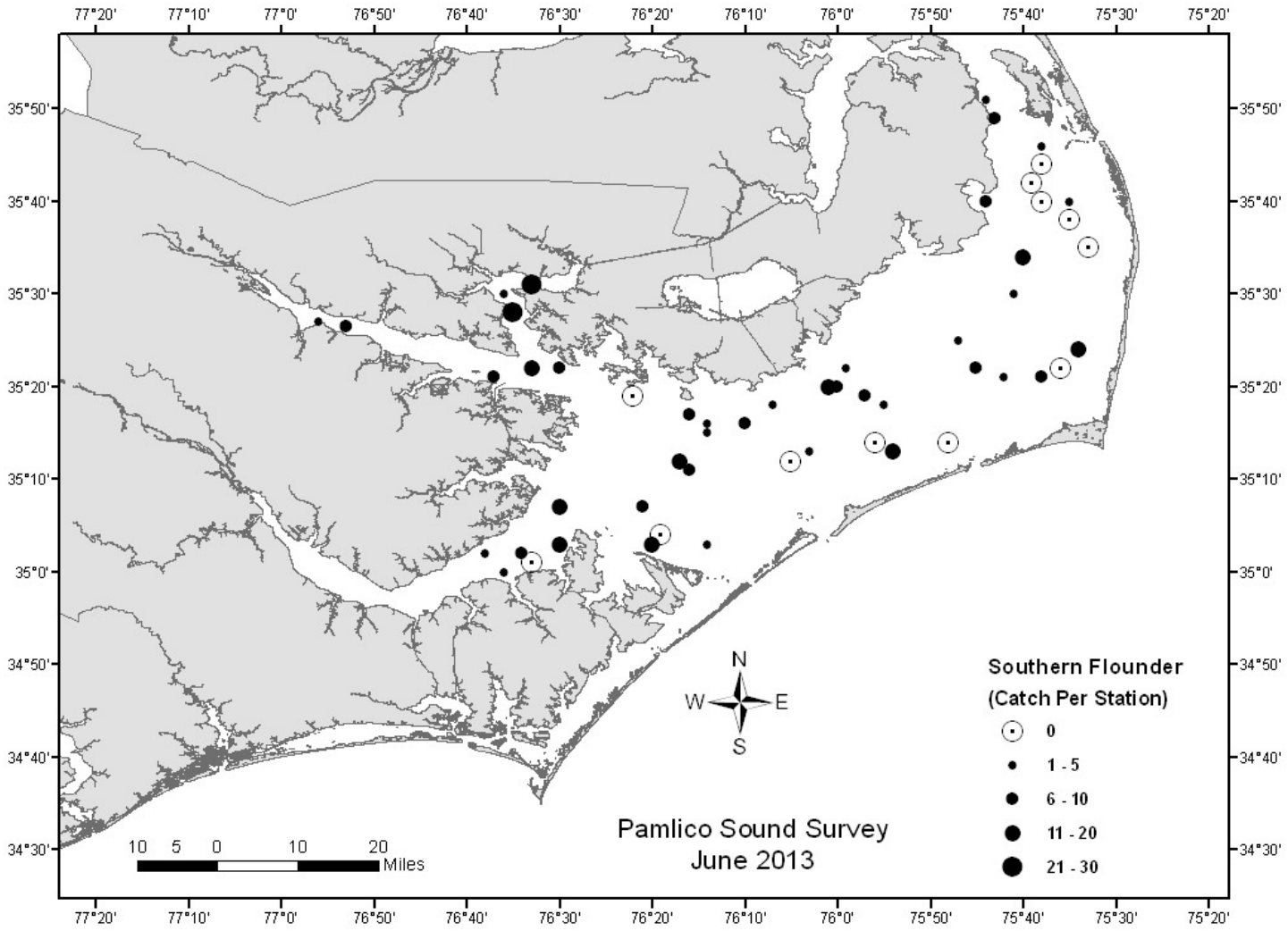

Figure 19 Abundance distribution by station of southern flounder (*Paralichthys lethostigma*) for the June 2013 Pamlico Sound Survey.

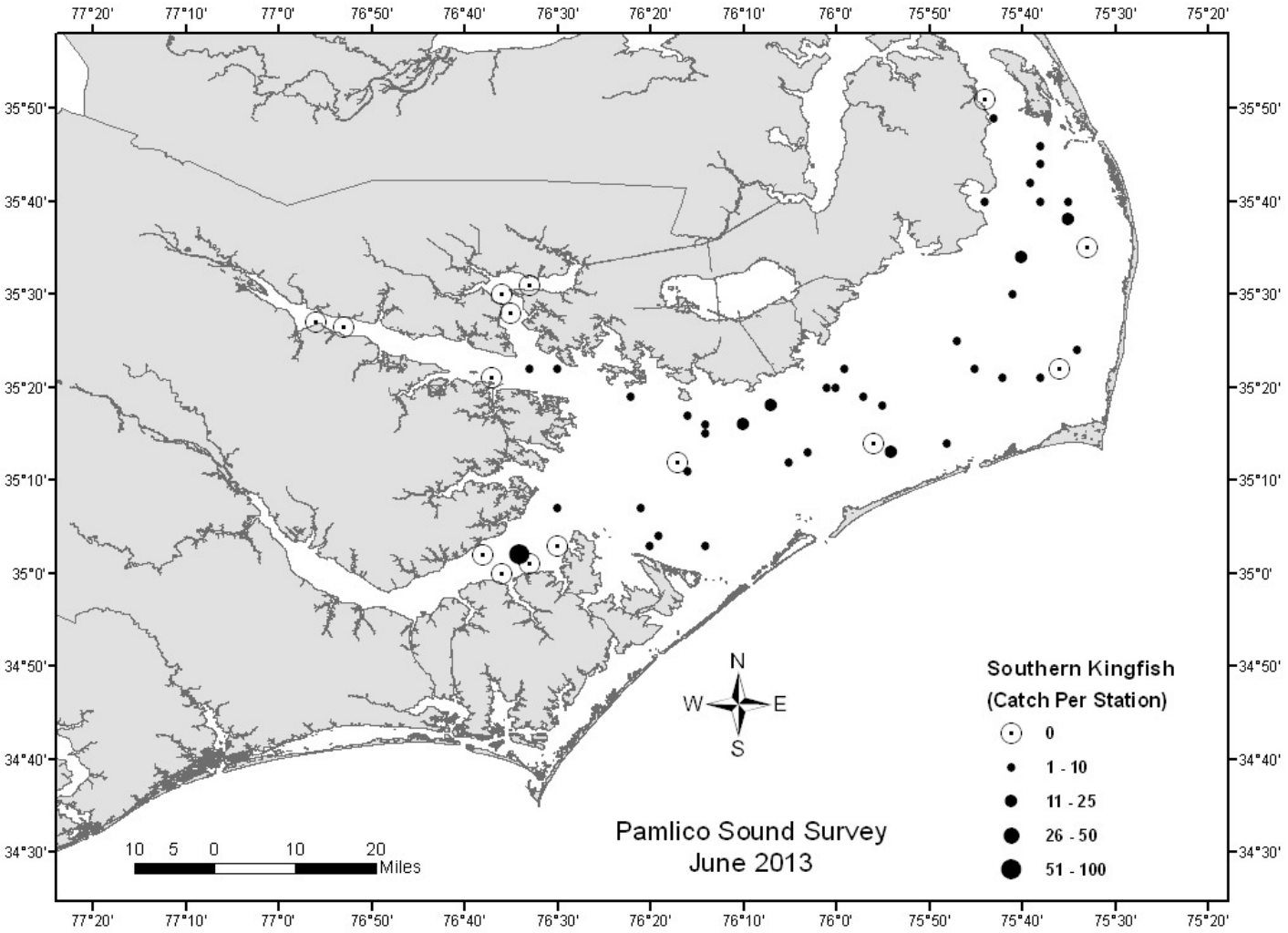

Figure 20 Abundance distribution by station of southern kingfish (*Menticirrhus americanus)* for the June 2013 Pamlico Sound Survey.

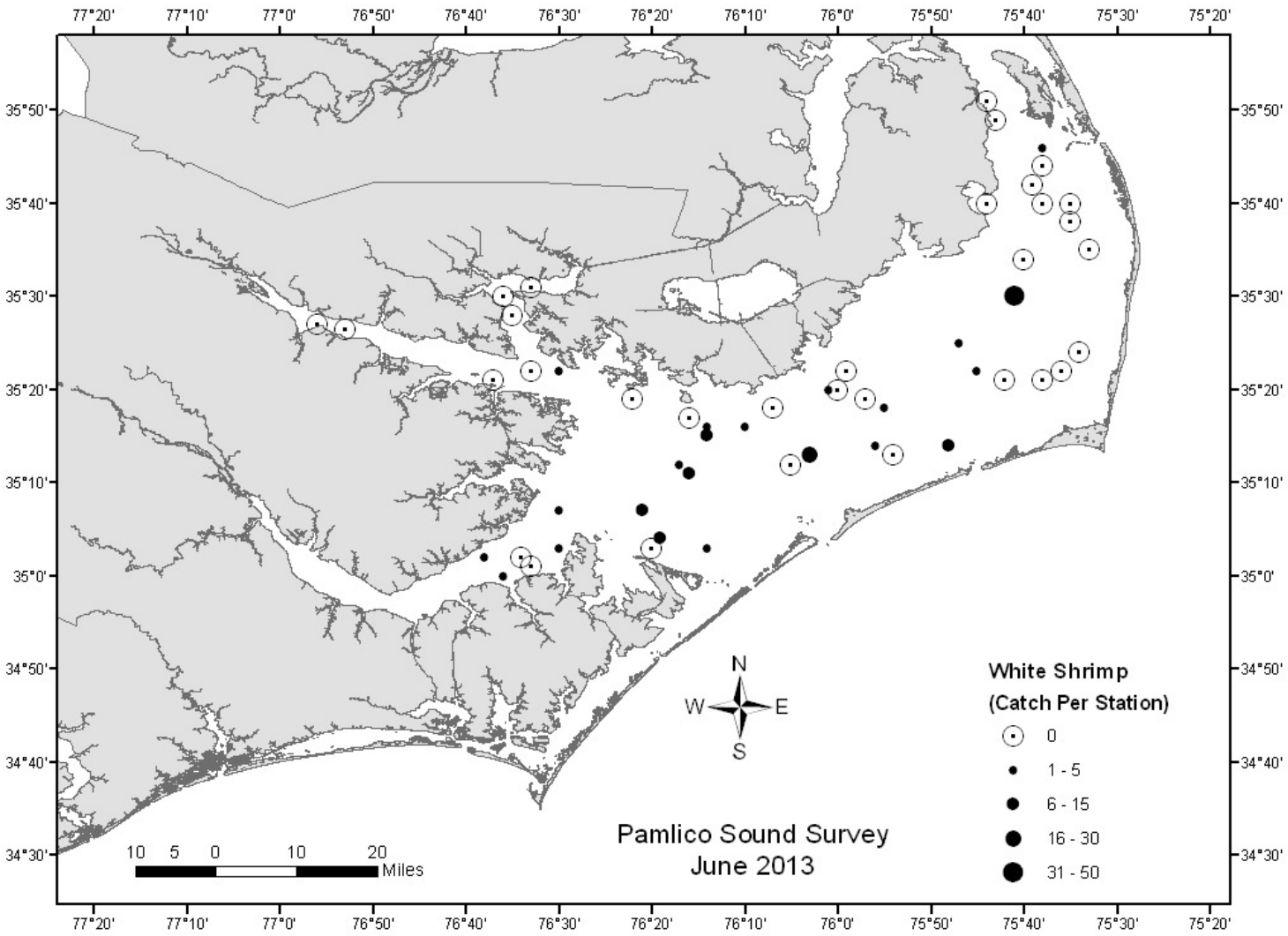

Figure 21 Abundance distribution by station of white shrimp (*Litopenaeus setiferus*) for the June 2013 Pamlico Sound Survey.

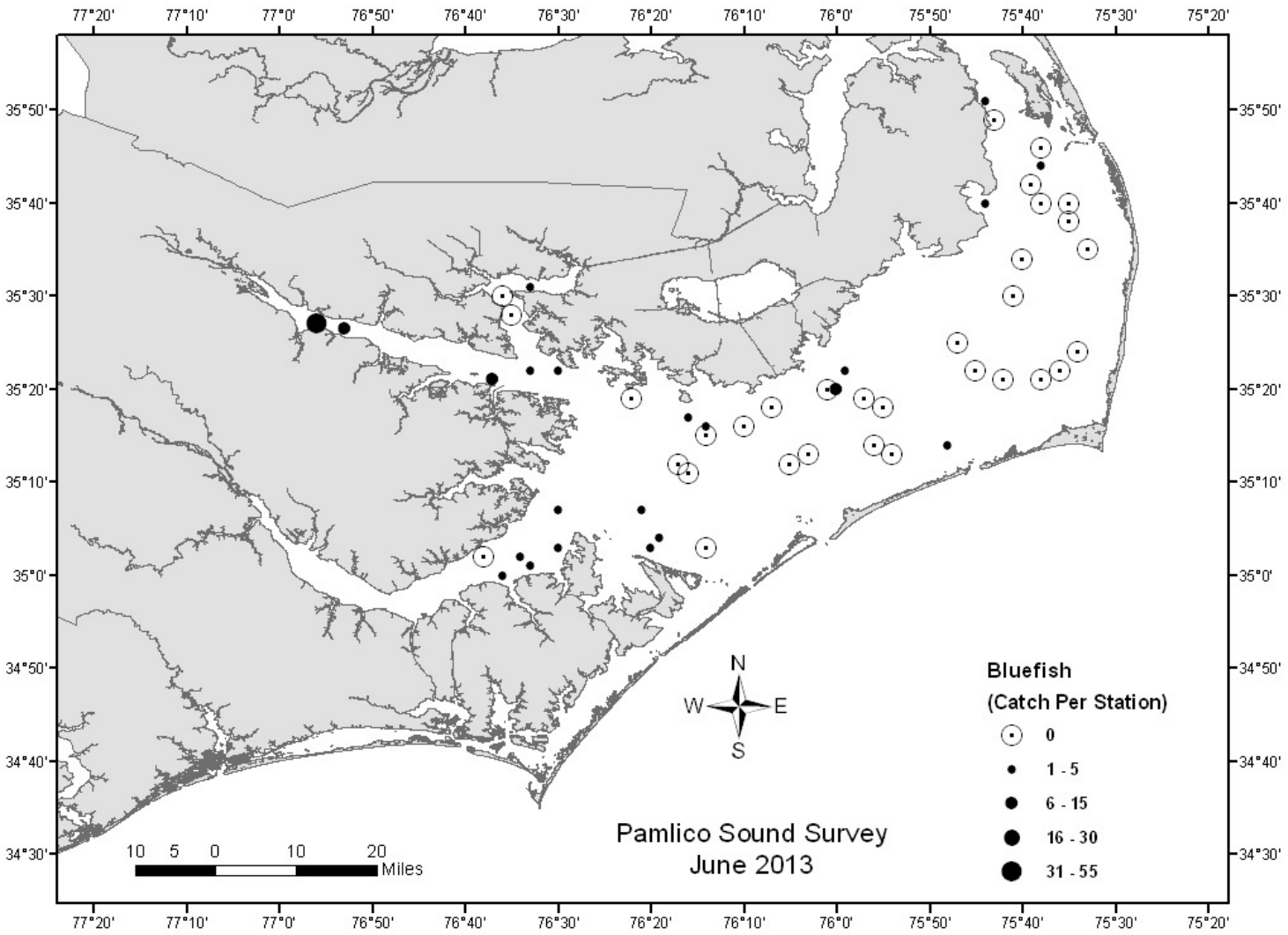

Figure 22 Abundance distribution by station of bluefish (*Pomatomus saltatrix*) for the June 2013 Pamlico Sound Survey.