Data Summary Report:

Nekton of Sarasota Bay and a Comparison of Nekton Community Structure in Adjacent Southwest Florida Estuaries

for

Year Five
(June 2013 – April 2014)

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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INTRODUCTION

Sarasota Bay is an urbanized coastal lagoon system located on Florida's Southwest Coast. Since the early 1900s, dredge and fill activities have resulted in significant losses of ecologically important habitats, and historically semi-isolated tidal current regimes within embayments have been joined through the construction of an Intracoastal Waterway (ICW) channel that hydrologically links the embayments. Intense development occurred throughout the system starting in the late 1950's resulting in much of the natural shoreline being replaced by seawalls to retain dredge-and-fill material for housing sites and other construction projects. Mosquito ditching and significant channelization of tidal creeks has altered historical patterns of surface water runoff to the bay and further exacerbated wetland habitat losses (*Sarasota Bay National Estuary Program 2003*). A thorough understanding of the ecology of local nekton assemblages is imperative if the consequences of further anthropogenic or environmental changes are to be determined (*Poulakis et. al. 2004*). In addition, the development of a baseline database documenting habitat use, recruitment and biodiversity can provide a broader understanding of the status of fish populations found within an estuary and help to guide the protection of estuarine-based fisheries and associated habitats (*Paperno et. al. 2001*).

The Sarasota Bay Estuary Program (SBEP) Comprehensive Conservation Management Plan (CCMP) stressed the importance of restoring and protecting juvenile fish habitat as well as the need to maintain fish populations while pursuing restoration efforts (*Sarasota Bay National Estuary Program 1995*). The objectives of this study are to: 1) provide a database of fish and selected invertebrate species that inhabit Sarasota

Bay; 2) examine spatial differences in species composition and relative abundance within the Sarasota Bay estuary; and 3) examine spatial differences in species composition and relative abundance between three estuaries along Florida's Southwest Coast.

METHODS

Study Area

Sarasota Bay is a coastal lagoon, located on the southwest coast of Florida, which extends from Anna Maria Sound south to the Venice Inlet. The bay is comprised of five embayments (Palma Sola, Sarasota, Roberts, Little Sarasota and Blackburn bays) which were formed behind a barrier island complex. This system is connected to the Gulf of Mexico through five inlets; Anna Maria Sound, Longboat Pass, New Pass, Big Sarasota Pass and Venice Inlet. Freshwater inflow enters the estuary through a series of creeks, bayous, and unnamed drainage ditches (*Roat and Alderson 1990*). The main tributaries and receiving water bodies are Bowlees Creek and Whitaker and Hudson bayous (Sarasota Bay proper), Phillippi Creek (Roberts Bay), Clower and Catfish creeks (Little Sarasota Bay) and South Creek (Blackburn Bay). Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof (*Flannery 1989*). Seagrass meadows are the dominant, submerged vegetative cover in Sarasota Bay and are widely distributed throughout the estuary (*Haddad 1989*).

Sampling Design

The FIM program utilized a stratified-random sampling (SRS) design and a multi-gear approach to collect nekton (fish and select invertebrates) from a wide range of habitats and life history stages. This sampling design provides comprehensive data on size-specific, spatial and temporal patterns of abundance for individual species and for the entire nekton community. Specimens collected during this sampling are used for

various assessments, such as fish health, mercury content, diet, age/growth, and reproduction. Three sampling gears (*Table 1*) were used: 1) 21.3-m seines (shoreline and offshore deployment methods); 2) 183-m haul seines; and 3) 6.1-m otter trawls. The data gathered from seine hauls document habitat use by shallow-water organisms (≤1.5m deep for 21.3-m seine and ≤2.5-m deep for 183-m seine) whereas the data collected from trawls document habitat use in deeper areas (1.8 to 7.6m deep). The 21.3 m seine is deployed in two different methods; 1) offshore set, where net is at least 5m from the shoreline; and 2) shoreline set, where one seine wing is against shore. The dominant catch for the 21.3-m seine and 6.1-m otter trawl is juvenile nekton, although subadults and adults of smaller-bodied nekton species are also commonly collected. The 183-m haul seine typically catches larger sub-adult and adult nekton.

The FIM program sampling design divided the Sarasota Bay estuary into zones representing the five embayments designated by the Sarasota Bay Estuary Program (Zone A - Palma Sola Bay, Zone B - Sarasota Bay proper, Zone C - Roberts Bay, Zone D - Little Sarasota Bay, and Zone E - Blackburn Bay; *Figure 1*). Each zone was further subdivided into 1-nm^2 grids. Within each grid, habitat and depth strata were identified, thereby designating the gear types that could be deployed in each. The number of samples designated for collection in each zone with each gear was proportional to the number of grids in the zone that could be sampled with a particular gear. Randomly selected locations within randomly selected grids were designated as sampling sites to be visited during each sampling event. A single deployment with the designated gear was made at each selected site. Thirty primary samples consisting of six 183-m haul seines, eight 6.1-m otter trawls and sixteen 21.3-m seines were collected during each

sampling event. Nine to 12 additional 21.3-m seine samples were collected at randomly selected sites during each sampling event as time allowed.

Sampling events were completed with a bi-monthly periodicity in the Sarasota Bay estuary. Sampling began in June 2009 and is ongoing. This report summarizes the data collected during year five of the study (June 2013 to April 2014), and analyses species distributions and abundance from all five years (June 2009 to April 2014).

Table 1. Description of sampling gears used during the Sarasota Bay stratified random sampling, June 2013 – April 2014. A more detailed description of each gear can be found in the FIM program's Procedure Manual.

Gear	Mesh Size (mm)	Area Sampled Estimate (m^2)	Description of use
21.3-m seine	3.2	140	used in areas ≤ 1.5-m deep
183-m haul seine	38.1	4,120	used along shorelines ≤ 2.5-m deep
6.1-m otter trawl	38.1 (3.2-mm bag liner)	1,440	used in areas from 1.8-m to 7.6-m deep

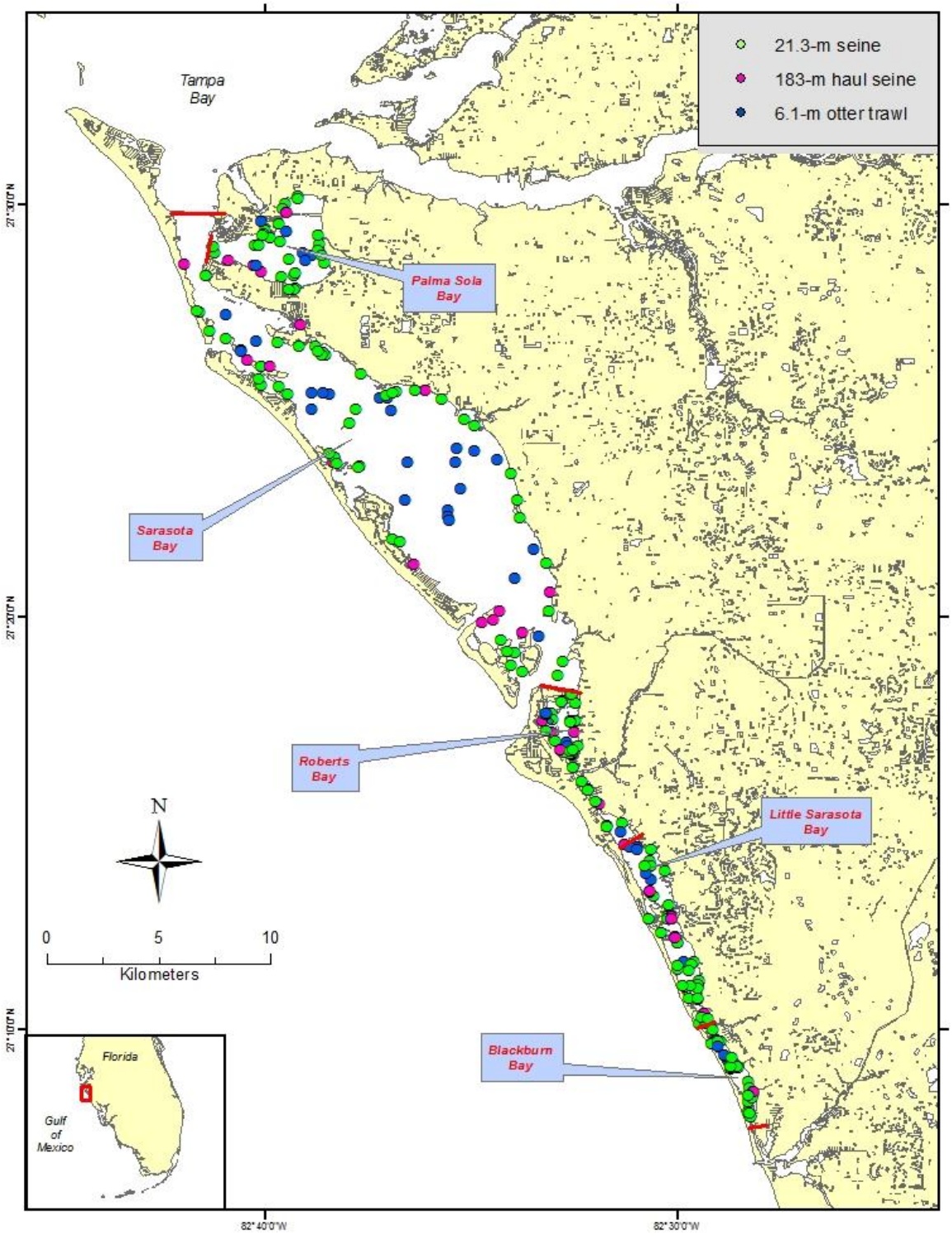

Figure 1. Stations sampled (dots) between June 2013 and April 2014 (Year 5), and geographic strata (solid lines) in Sarasota Bay.

Gear Specifications and Deployment

The gear type used to collect smaller nekton associated with shorelines and on offshore flats (>5 m from shore) was a 21.3-m center-bag seine with 3.2-mm mesh and leads spaced every 150 mm. The 21.3-m seine was pulled, with a crewmember on each wing, for a distance of 9.1 m with the net wings separated by 15.5 m. The seine was deployed into the current and was landed by collapsing the seine around a pivot pole to close the wings and force the catch into the center bag. Each 21.3-m seine deployment sampled an estimated 140 m^2. Sampling sites for the 21.3-m seine were pre-stratified into one of three categories: 1) >5-m from the shore and bottom vegetation present, 2) >5-m from the shore and bottom vegetation absent, and 3) against a shoreline.

The 183-m haul seine targeted larger sub-adult and adult nekton associated with relatively shallow (≤2.5-m), nearshore habitats. Deployment of this gear occurred from the back of a boat in a standardized rectangular shape. Both net wings were simultaneously hauled along the shoreline, keeping the lead lines close to the bottom, forcing the catch into the center bag portion of the gear. Each 183-m haul seine set enclosed an area of approximately 4,120 m^2. In Sarasota Bay proper, where two 183-m haul seine sets were collected during each sampling event, sites were pre-stratified by the presence or absence of overhanging shoreline vegetation (i.e., mangroves). The number of 183-m haul seine hauls collected in Palma Sola, Roberts, Little Sarasota and Blackburn bays during each sampling event were too small (n=1) to pre-stratify by the presence or absence of overhanging shoreline vegetation.

Juvenile and adult nekton that inhabit relatively deeper waters (1.0 – 7.6-m) were collected in the 6.1-m otter trawl which had a 38-mm stretch mesh with a 3.2-mm mesh

cod-end liner. The trawl was towed from the back of a boat for 10 minutes. Tow speeds averaged 0.6-m/s; start and end locations for each trawl were marked using a global positioning system (GPS) so that the distance fished could be estimated. Each trawl deployment sampled an area of approximately 1,440 m^2.

Salinity, temperature, pH, and dissolved oxygen were measured at the surface and at 1-m intervals to the bottom in association with each gear deployment. A variety of qualitative habitat assessments were also made, such as characteristics of the shoreline (e.g., vegetation type, inundation), substrate (e.g., sediment type, presence of submerged aquatic vegetation), and bycatch (i.e., total volume, type, and composition). All sampling was conducted during daylight hours (one hour after sunrise to one hour before sunset). Additional sampling details and habitat assessment procedures are described in the FIM program's Procedure Manual (*FWC-FWRI 2012*).

Sample Processing

Sample work-up was similar for all gear deployments. All fish and selected invertebrate species captured were identified to the lowest practical taxonomic level, generally species. Representative samples (three individuals of each species from the 21.3-m seines and 6.1-m otter trawls on each sampling trip) were brought back to the FWC-FWRI laboratory to confirm field identification. Species for which field identification was uncertain were also brought back to the laboratory. A maximum of 20 measurements (mm) were made per taxon, unless distinct cohorts were identifiable, in which case a maximum of 20 measurements were taken from each cohort; for certain economically valuable fish species (Selected Taxa, *Appendix A*), 40 individuals were measured. Standard length (SL) was recorded for teleost fish, total length (TL) for

seahorses, precaudal length for sharks (PL), disk width (DW) for rays, post-orbital head length (POHL) for shrimp, and carapace width (CW) for crabs. Animals that were not measured were identified and counted. When large numbers of individuals (>1,000) were captured, the total number was estimated by fractional expansion of a sub-sampled portion of the total catch that had been split with a modified Motoda box splitter (*Winner and McMichael 1997*). Animals that did not require further laboratory examination were returned to the water. Additional details concerning sample work-up are described in the FIM program's Procedure Manual (*FWC-FWRI 2012*).

Due to frequent hybridization and/or extreme difficulty in the identification of smaller individuals, members of several abundant species complexes were not identified to species. Species of Menhaden (*Brevoortia* spp.) were not identified to species. *Brevoortia patronus* and *B. smithi* frequently hybridize and juveniles of the hybrids and the parent species are difficult to identify (*Dahlberg 1970*). Two abundant Silverside species (*Menidia beryllina* and *M. peninsulae*) tend to hybridize, form all-female clones, and occur in great abundance that renders identification to species impractical due to the nature of the diagnostic characters (*Duggins et al. 1986*; *Echelle and Echelle 1997*; Chernoff, personal communication). These two species of Silversides are presented in this report as *Menidia* spp. Species-level identification of Mojarras (genus *Eucinostomus*) was limited to individuals ≥40 mm SL due to great difficulty in separating *E. gula* and *E. harengulus* below this size (Matheson, personal observation). The term "Eucinostomus Mojarras" is used for these small specimens. Species-level identification of gobies of the genus *Gobiosoma* (i.e., *G. robustum* and *G. bosc*) was limited to individuals ≥20 mm SL for the same reason; smaller individuals are

hereafter referred to as “Gobiosoma Gobies”. Similarly, Needlefishes (*Strongylura* spp.), other than *Strongylura notata*, were only identified to species at lengths ≥100 mm SL.

Gear-specific data summary tables for the numerically dominant and economically important taxa (Selected Taxa, *Appendix A*) were prepared with data from the fifth year of this study (June 2013 to April 2014). Summaries of all taxa collected by sampling event, gear and habitat, and embayment (sampling zone) were prepared using just the fifth year of the study period (*Appendices B*, *C*, and *D*, respectively). *Appendices E*, *F* and *G* contain catch summaries for all taxa collected with 21.3-m seines, 183-m haul seines, and 6.1-m otter trawls during all five years of the study (June 2009 – April 2014). Gear-specific catch overview plots (*Appendices H*, *I*, *J* and *K*) for relatively abundant (≥ 200 animals collected) and commonly collected (≥ 10% occurrence) taxa, and species profiles for specific taxa were prepared using the five completed years of the study (June 2009 to April 2014).

RESULTS and DISCUSSION

Physiochemical conditions

Monthly average air temperature and total rainfall measured at Tampa International Airport during this five-year study period (June 2009 – April 2014) and during a 30-year historical period prior to FIM sampling in the Sarasota Bay estuary (January 1979 to December 2008) were compared. Generally, the monthly average temperature during this study period followed the 30-year historical trend, but with extreme cold and warm values during some months (*Figure 2*). The monthly average temperature was higher than normal for 42 of the 48 months between May 2010 and April 2014, with seven months (April 2011, December 2011, January 2012, February 2012, January 2013, April 2013, and December 2013) being 2-4^{o}C warmer than the 30-year historical period (*Figure 2*). The average temperature was lower than the historic record by 2^{o}C or more from January 2010 to March 2010, in December 2010 and in March 2013. Differences from the 30-year historic record for rainfall were also apparent (*Figure 2*). Rainfall totals in the spring (March - May) were much higher than (2010 and 2011), much lower than (2012), or fairly close to (2013 and 2014) the average total rainfall from the historic period. Percipitation totals during the winter (December – February) were dryer than the historic 30 year period during 2011/2012, 2012/2013, and 2013/2014. The month with the most perciptation during this study period was June 2012 when over 30 cm more rain than normal fell, largely due to Tropical Storm Debby passing over Florida on June 26 and 27.

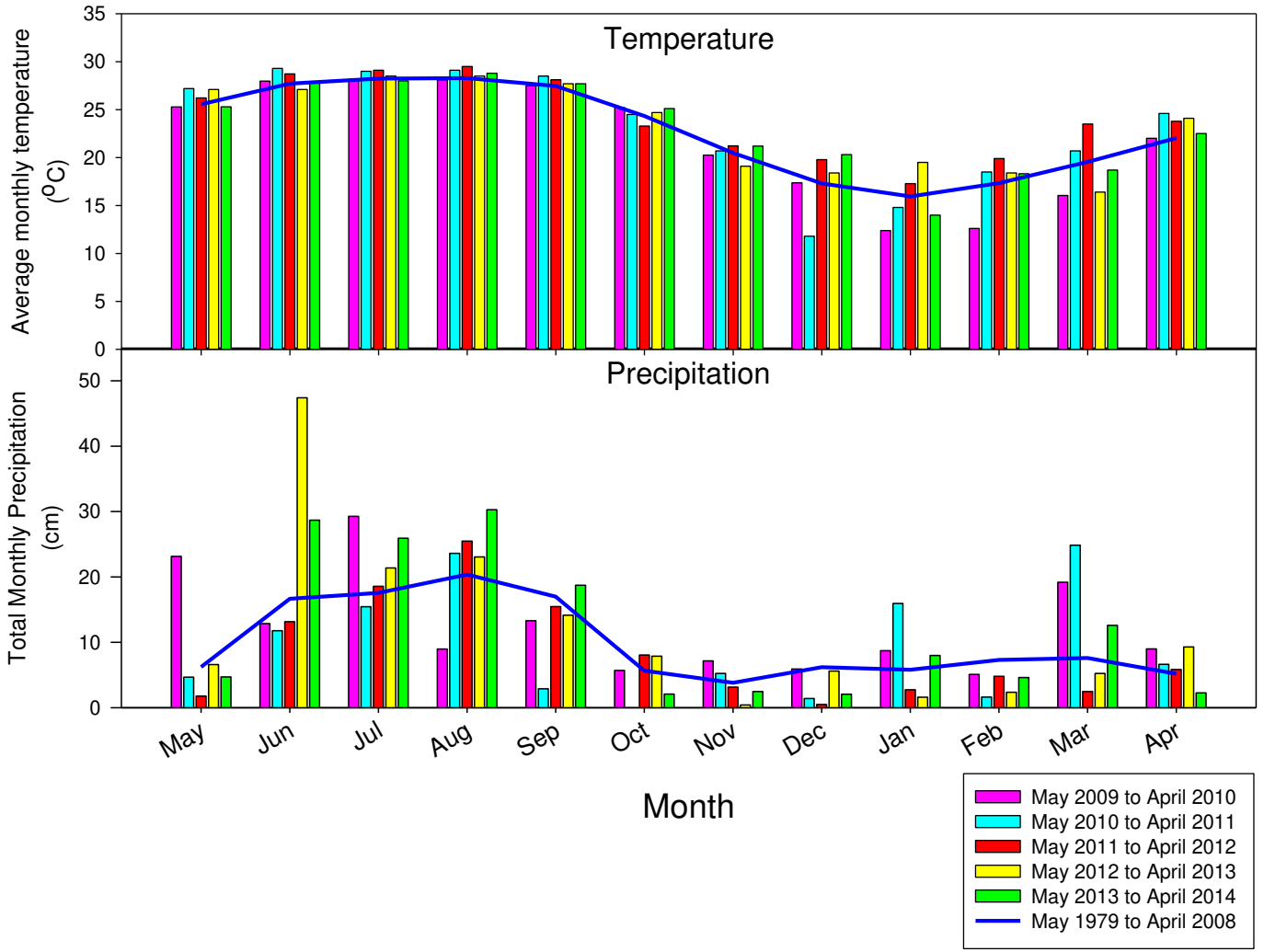

Figure 2. Temperature and total rainfall during the five years of the study (2009 - 2014) and during a thirty-year historical reference period (January 1979 to December 2008). Data are from Tampa International Airport (GHCND:USW00012842) and were downloaded from the National Climatic Data Center ((*http://www.ncdc.noaa.gov/cdo-web/search* accessed on 03/06/2015).

Throughout the five years of this study, average monthly water temperature in each of the five embayments showed very similar trends with little difference between embayments (*Figure 3*). Water temperature followed the typical Florida pattern, with the warmest temperatures during the summer months, decreasing temperatures during the fall and winter, and rising temperatures in the spring. Water temperatures in the February 2012, 2013, and 2014 were noticeably warmer (4-6º C) on average than the two Feburay's at the beginning of the study (2010 and 2011).

Each of the five embayments had similar salinity trends (*Figure 3*) but Little Sarasota and Roberts bays had a more obvious freshwater influence than the other three embayments. Salinity maxima occurred in April (2012 and 2013) or June (2009, 2010 and 2011) in each of the embayments with average salinity values between 33.9 and 36.7 ppt. Salinity minima within each embayment typically occurred at the end of summer, during fall or in early winter (August - December), but in 2010 and 2011 occurred in each of the embayments during February or April. Salinity minima occurring in the late winter or early spring is not typical of Southwest Florida estuaries, in which salinity usually reaches its maximum annual values toward the end of the dry season (April – June). Rainfall totals, however, were unseasonably high in March of both 2010 and 2011 (*Figure 2*) with more than double the long-term average rainfall occurring each year. This unseasonably high rainfall is responsible for this atypical salinity pattern.

Water column average dissolved oxygen was above 5 mg/l in each of the embayments during the sampling period (*Figure 3*), except for Palma Sola Bay in August 2009 (3.3 mg/l), June 2012 (4.5), and August 2012 (4.9) and Blackburn Bay in

August 2012 (4.5). The highest average dissolved oxygen concentration (10.9 mg/l) occurred in Sarasota Bay in February 2014. All five bay segments had dissolved oxygen values above 9.5 mg/l during February 2014.

The climatic and physiochemical conditions experienced during this five-year study of Sarasota Bay were not typical compared to the longer-term average condition for Southwest Florida. January, February, and December 2010 had colder than average temperatures, with fish kills reported throughout Florida in January 2010. Unseasonably heavy winter/spring precipitation was experienced during both 2010 and 2011, resulting in lower than average salinity values in the study area during April of 2010 and 2011.

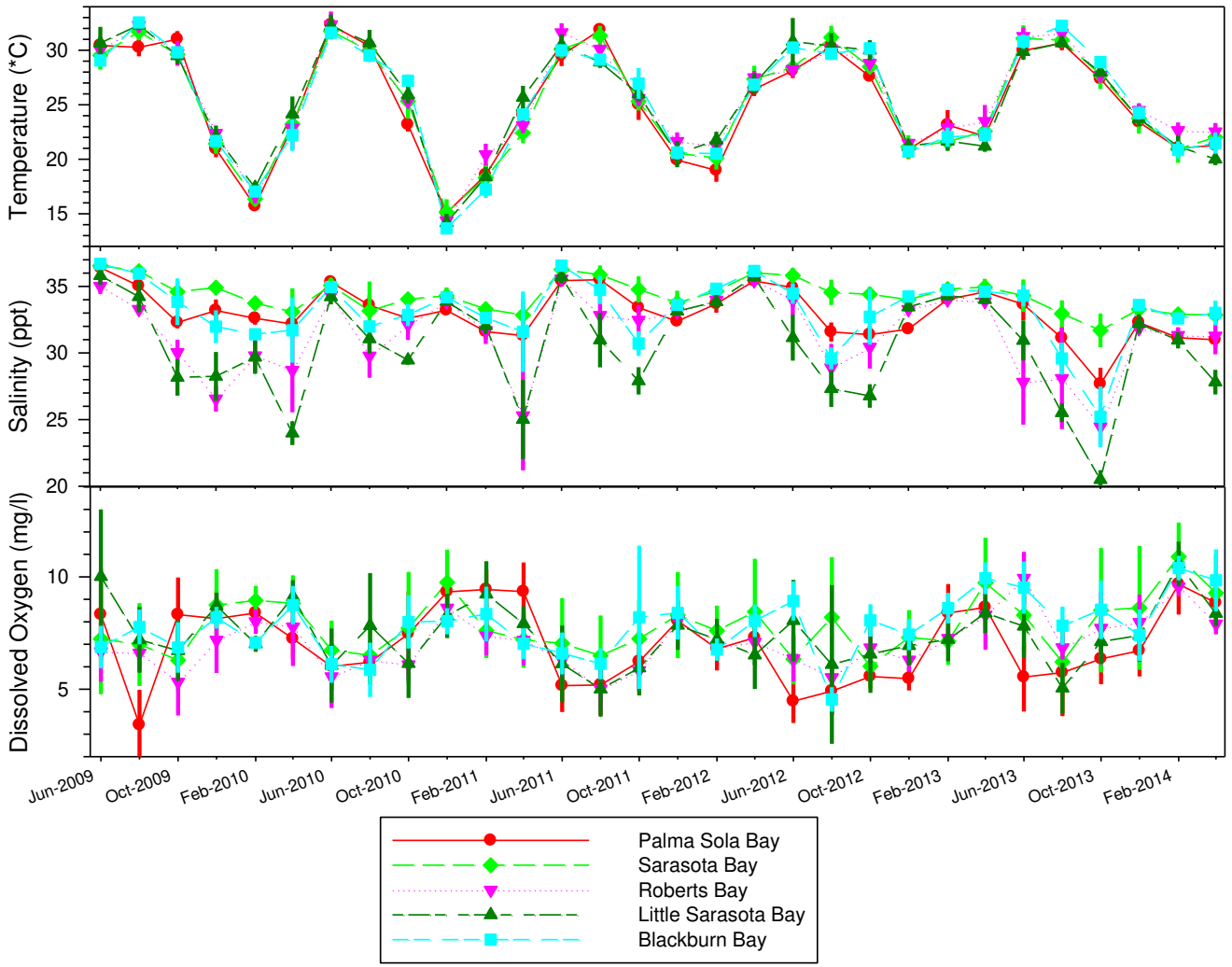

Figure 3. Mean (±standard deviation) water temperature, salinity, and dissolved oxygen (water column average) by embayment, from the nekton sampling in Sarasota Bay, June 2009-April 2014.

Composition of overall nekton community

A total of 131,766 fishes (113 taxa) and selected invertebrates (11 taxa) were collected from 246 samples collected during the fifth year of this study (June 2013 and April 2014; *Table 2*). Species lists with the number of animals collected during year five of this study are provided by sampling event, gear and habitat strata, and embayment in *Appendices B*, *C*, and *D*, respectively. Sarasota Bay proper, in which 34% of the gear sets were made, accounted for 37% of the total animals collected during year five of this study period (*Table 2*). The fewest number of animals (n=14,133, 11% of total catch) were collected in Robert's Bay. Sampling in Little Sarasota Bay represented only 17% of the overall effort but collected 27% of the total animals in year five of the study. The numbers of hauls collected in both Palma Sola and Blackburn bays were similar (38 and 42, respectively), as were their total catches (18,148 and 15,521, respectively).

Table 2. Summary of catch and effort for Sarasota Bay nekton sampling, June 2013 to April 2014.

Bay Segment (Zone)	*21.3-m bay seine*		*183-m haul seine*		*6.1-m otter trawl*		*Totals*	
	Animals	*Hauls*	*Animals*	*Hauls*	*Animals*	*Hauls*	*Animals*	*Hauls*
Palma Sola Bay (A)	15,485	26	2,253	6	410	6	18,148	38
Sarasota Bay (B)	24,524	47	2,038	12	22,223	24	48,785	83
Roberts Bay (C)	12,749	29	818	6	566	6	14,133	41
Little Sarasota Bay (D)	32,135	30	1,327	6	1,717	6	35,179	42
Blackburn Bay (E)	13,389	30	475	6	1,657	6	15,521	42
Totals	98,282	162	6,911	36	26,573	48	131,766	246

Pinfish (*Lagodon rhomboides*, n=41,252) was the most numerous taxon collected, representing 31.3% of the total catch (*Appendices B*, *C*, and *D*).

Eucinostomus Mojarra (*Eucinostomus* spp.*,* n=26,712) was the second most abundant taxon collected, accounting for an additional 20.3% of the total catch. These two taxa accounted for over 51% of the total catch in Sarasota Bay. The 24 Selected Taxa (n=7,987 animals) that were collected comprised 6.1% of the total catch. Spot (*Leiostomus xanthurus*, n = 3,215, 2.4% of total catch) and Pink Shrimp (*Farfantepenaeus duorarum,* n=2,209 and 1.7% of total catch) were the two most abundant Selected Taxa collected.

Shallow water habitats sampled with 21.3-m seines

Seventy-five percent (n= 98,282) of all nekton collected in year five of sampling the Sarasota Bay estuary were captured with 21.3-m seines (n=162 hauls; *Table 2*). Bay Anchovy (*Anchoa mitchilli*, n=23,344) was the most abundant taxon collected, accounting for 23.8% of the 21.3-m seine catch (*Table 3*). The two taxa most frequently collected with 21.3-m seines were Eucinostomus Mojarra (*Eucinostomus* spp.*,* 82.7% occurrence) and Pinfish (*L. rhomboides*, 74.7% occurrence). Animals collected by 21.3-m seines tended to be relatively small, ranging in length from 3mm to 711 mm, with the mean length for each of the 10 dominant taxa ranging from 9mm to 52 mm.

A total of 5,944 animals from 19 Selected Taxa were collected with 21.3-m seines (*Table 4*). Spot (*L. xanthurus,* n=2,719) was the most abundant (2.8% of 21.3-m seine catch) and Pink Shrimp (*F. duorarum,* n=2,147) was the most common occuring (67.9% occurrence) Selected Taxon collected by this gear.

Table 3. Catch statistics for 10 dominant taxa collected in 162 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, June 2013 to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

Species	Number		%	Catch-Per-Unit-Effort (animals•100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	23,344	23.8	30.2	102.93	62.59	774.04	9,710.00	29	0.04	19	52
Eucinostomus spp.	22,560	23.0	82.7	99.47	10.44	133.54	853.57	26	0.05	10	39
Lagodon rhomboides	22,165	22.6	74.7	97.73	15.57	202.76	1,075.71	31	0.11	9	162
Harengula jaguana	5,467	5.6	18.5	24.10	9.73	513.63	1,091.43	45	0.20	20	86
Lucania parva	4,589	4.7	25.9	20.23	5.51	346.89	463.57	25	0.06	12	36
Menidia spp.	3,398	3.5	12.3	14.98	9.24	784.54	1,334.29	45	0.14	16	72
Orthopristis chrysoptera	2,919	3.0	34.6	12.87	4.69	463.46	536.43	36	0.26	14	122
Leiostomus xanthurus	2,719	2.8	19.1	11.99	7.58	804.89	1,206.43	23	0.18	12	208
Farfantepenaeus duorarum	2,147	2.2	67.9	9.47	2.11	284.09	252.86	9	0.09	3	23
Eucinostomus gula	2,104	2.1	54.9	9.28	1.41	193.73	108.57	52	0.18	40	86
Subtotal	91,412	93.0	.	.	.	.	.	.	.	3	208
Totals	**98,282**	**100.0**	**.**	**433.34**	**70.14**	**206.02**	**10,185.71**	**.**	**.**	**3**	**711**

Table 4. Catch statistics for Selected Taxa collected in 162 21.3-m bay seine samples during Sarasota Bay stratified-random sampling, June 2013to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

Species	Number		%	Catch-Per-Unit-Effort (animals•100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	2,719	2.8	19.1	11.99	7.58	804.89	1,206.43	23	0.18	12	208
Farfantepenaeus duorarum	2,147	2.2	67.9	9.47	2.11	284.09	252.86	9	0.09	3	23
Sciaenops ocellatus	337	0.3	13.0	1.49	0.90	768.22	140.71	27	0.39	9	51
Cynoscion arenarius	212	0.2	3.1	0.93	0.53	723.70	61.43	21	0.46	9	45
Cynoscion nebulosus	185	0.2	26.5	0.82	0.16	256.90	12.86	40	2.27	17	328
Lutjanus griseus	108	0.1	21.0	0.48	0.10	270.09	7.86	64	4.63	13	173
Callinectes sapidus	68	0.1	18.5	0.30	0.06	266.49	5.71	25	2.83	6	119
Archosargus probatocephalus	44	0.0	14.2	0.19	0.05	348.26	6.43	68	12.02	20	252
Paralichthys albigutta	30	0.0	13.6	0.13	0.03	283.72	2.14	47	9.13	15	233
Lutjanus synagris	28	0.0	7.4	0.12	0.04	454.06	5.00	46	3.52	20	110
Mugil curema	16	0.0	3.7	0.07	0.03	609.90	4.29	87	9.46	49	172
Centropomus undecimalis	15	0.0	4.3	0.07	0.03	549.05	2.86	162	38.95	29	400
Mugil cephalus	13	0.0	4.3	0.06	0.03	651.14	4.29	207	49.44	21	407
Menticirrhus saxatilis	9	0.0	2.5	0.04	0.02	783.45	3.57	19	1.97	13	30
Mugil trichodon	4	0.0	1.9	0.02	0.01	775.38	1.43	45	11.32	15	63
Mycteroperca microlepis	3	0.0	1.9	0.01	0.01	730.27	0.71	142	17.70	110	171

Table 4. (Continued)

Species	Number		%	Catch-Per-Unit-Effort (animals•100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lutjanus analis	2	0.0	1.2	0.01	0.01	897.20	0.71	21	1.00	20	22
Trachinotus falcatus	1	0.0	0.6	0.00	0.00	1,272.79	0.71	98		98	98
Pogonias cromis	1	0.0	0.6	0.00	0.00	1,272.79	0.71	270		270	270
Totals	**5,944**	**6.1**	**.**	**26.21**	**7.91**	**383.93**	**1,215.00**	**.**	**.**	**3**	**407**

Nearshore habitats sampled with 183-m haul seines

A total of 6,911 animals were collected with 183-m haul seines (n=36 hauls), representing 5.2% of the overall catch (*Table 2*), during the fifth year of sampling the Sarasota Bay estuary. Pinfish (*L. rhomboides*, n=3,333) was the most abundant taxon collected, accounting for almost 48.2% of the total catch (*Table 5*). Pinfish were also the most frequently collected taxon, occurring in 83.3% of 183-m haul seine sets. Animals collected with 183-m haul seines tended to be larger (*Table 5*) than those collected with either 21.3-m seines (*Table 3*) or 6.1-m otter trawls (*Table 7*).

A total of 1,133 animals from 20 Selected Taxa were collected, representing just over 16.4% of the 183-m haul seine catch (*Table 6*). Sheepshead (*Archosargus probatocephalus,* n=388) was the most abundant Selected Taxon, accounting for 34.2% of the Selected Taxa collected by this gear and was the most frequently collected Selected Taxa (77.8%) followed by Snook (*Centropomus undecilmalis*) and Gray Snapper (*Lutjanus griseus*), which occurred in 66.7% and 55.6% of the hauls respectively.

Table 5. Catch statistics for 10 dominant taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, June 2012 to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	3,333	48.2	83.3	92.58	20.64	133.77	533.00	101	0.56	50	212
Bagre marinus	865	12.5	8.3	24.03	23.97	598.57	863.00	387	1.49	238	428
Orthopristis chrysoptera	406	5.9	44.4	11.28	4.01	213.25	110.00	109	1.39	53	205
Archosargus probatocephalus	388	5.6	77.8	10.78	2.87	159.83	93.00	225	2.09	57	365
Brevoortia spp.	349	5.1	8.3	9.69	7.89	488.17	277.00	194	2.81	73	235
Ariopsis felis	190	2.8	50.0	5.28	1.93	219.97	52.00	277	2.97	140	363
Eucinostomus gula	169	2.5	50.0	4.69	1.51	193.55	43.00	79	0.80	53	104
Mugil trichodon	143	2.1	27.8	3.97	2.52	380.25	88.00	199	2.25	132	315
Centropomus undecimalis	104	1.5	66.7	2.89	0.77	158.90	20.00	409	10.47	277	882
Strongylura notata	103	1.5	55.6	2.86	0.92	192.56	26.00	345	3.24	150	406
Subtotal	6,050	87.5	.	.	.	.	.	.	.	50	882
Totals	**6,911**	**100.0**	**.**	**191.97**	**32.24**	**100.78**	**940.00**	**.**	**.**	**15**	**882**

Table 6. Catch statistics for Selected Taxa collected in 36 183-m haul seine samples during Sarasota Bay stratified-random sampling, June 2013 to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Archosargus probatocephalus	388	5.6	77.8	10.78	2.87	159.83	93.00	225	2.09	57	365
Mugil trichodon	143	2.1	27.8	3.97	2.52	380.25	88.00	199	2.25	132	315
Centropomus undecimalis	104	1.5	66.7	2.89	0.77	158.90	20.00	409	10.47	277	882
Lutjanus griseus	87	1.3	55.6	2.42	0.60	149.15	17.00	156	3.94	87	230
Elops saurus	68	1.0	30.6	1.89	0.71	224.53	20.00	300	8.64	205	499
Pogonias cromis	66	1.0	30.6	1.83	0.83	273.04	26.00	263	5.54	210	400
Paralichthys albigutta	53	0.8	44.4	1.47	0.44	178.97	13.00	180	11.60	72	386
Mugil cephalus	47	0.7	44.4	1.31	0.47	216.51	15.00	318	5.55	230	395
Mugil curema	26	0.4	25.0	0.72	0.26	213.51	6.00	235	9.94	132	295
Sciaenops ocellatus	26	0.4	30.6	0.72	0.28	230.77	9.00	461	17.80	180	611
Callinectes sapidus	24	0.4	36.1	0.67	0.17	156.30	4.00	114	7.43	55	182
Trachinotus carolinus	21	0.3	5.6	0.58	0.56	571.33	20.00	281	4.02	245	310
Cynoscion nebulosus	19	0.3	19.4	0.53	0.24	277.31	8.00	268	21.75	138	475
Scomberomorus maculatus	16	0.2	22.2	0.44	0.19	260.43	6.00	312	17.24	261	505
Leiostomus xanthurus	14	0.2	16.7	0.39	0.19	296.57	6.00	129	12.51	69	193
Trachinotus falcatus	13	0.2	13.9	0.36	0.19	318.52	6.00	317	14.89	193	397
Mycteroperca microlepis	6	0.1	11.1	0.17	0.08	304.26	2.00	133	9.45	107	166

Table 5. (Continued)

Species	Number		%	Catch-Per-Unit-Effort (animals•100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lutjanus synagris	6	0.1	11.1	0.17	0.08	304.26	2.00	109	9.93	85	142
Farfantepenaeus duorarum	5	0.1	8.3	0.14	0.09	390.69	3.00	21	2.06	15	27
Menippe spp.	1	0.0	2.8	0.03	0.03	600.00	1.00	36		36	36
Totals	**1,133**	**16.4**	**.**	**31.47**	**4.29**	**81.72**	**122.00**	**.**	**.**	**15**	**882**

Deeper-water habitats sampled with 6.1-m otter trawls

During the fifth year of sampling the Sarasota Bay estuary, 26,573 animals were collected in 6.1-m otter trawls (n=48 hauls), representing 20.2% of the overall catch (*Table 2*). Pinfish (*L. rhomboides*), n=15,754, 59.3% of total catch) was the most abundant taxon collected (*Table 7*). The taxon most frequently collected with 6.1-m otter trawls was Eucinostomus Mojarra (*Eucinostomus* spp.*,* which occurred in over 56.3% of the trawl samples. Trawl collected animals tended to be similar in size to those collected with 21.3-m seines (Table 3) and smaller than those collected with 183-m haul seines (Table 5).

Fourteen Selected Taxa (904 animals, 3.4% of the trawl catch) were collected with 6.1-m otter trawls (*Table 8*). The most abundant Selected Taxon, Spot (*L. xanthurus,* n=482), accounted for 1.9% of the total 6.1-m otter trawl catch. Stone Crab (*Menippe spp.*, n=134, 37.5% occurrence) was the second most abundant Selected Taxon. The Selected Taxon most frequently collected was Pink Shrimp (*F. duorarum*) which occurred in over 50.0% of the trawl collections.

Table 7. Catch statistics for 10 dominant taxa collected in 48 bay 6.1-m otter trawl samples during Sarasota Bay stratified-random sampling, June 2013 to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

Species	Number		%	Catch-per-unit-effort (animals•100m^{-2})				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	15,754	59.3	52.1	22.20	19.32	602.84	928.49	28	0.13	12	172
Orthopristis chrysoptera	4,759	17.9	43.8	6.71	6.22	642.86	299.04	29	0.36	11	199
Eucinostomus spp.	4,152	15.6	56.3	6.14	2.53	285.77	103.44	22	0.09	12	39
Leiostomus xanthurus	482	1.8	14.6	0.68	0.61	629.62	29.41	17	0.37	12	148
Eucinostomus gula	174	0.7	29.2	0.25	0.11	298.88	3.78	61	1.02	40	94
Nicholsina usta	170	0.6	4.2	0.24	0.24	683.64	11.33	43	1.89	16	171
Menippe spp.	134	0.5	37.5	0.19	0.06	235.96	2.43	22	1.19	4	80
Callinectes sapidus	87	0.3	29.2	0.13	0.05	251.14	1.55	82	5.58	12	180
Portunus spp.	70	0.3	47.9	0.10	0.02	156.20	0.71	35	1.47	12	72
Gobiosoma robustum	60	0.2	25.0	0.09	0.04	335.55	1.62	23	0.41	15	32
Subtotal	25,842	97.2	.	.	.	.	.	.	.	4	199
Totals	**26,573**	**100.0**	**.**	**37.77**	**27.04**	**496.02**	**1,301.47**	**.**	**.**	**4**	**333**

Table 8. Catch statistics for Selected Taxa collected in 48 bay 6.1-m otter trawl samples during Sarasota Bay stratified-random sampling, June 2013 to April 2014. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean density.

Species	Number		% Occur	Catch-per-unit-effort (animals•100m^{-2})				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	482	1.8	14.6	0.68	0.61	629.62	29.41	17	0.37	12	148
Menippe spp.	134	0.5	37.5	0.19	0.06	235.96	2.43	22	1.19	4	80
Callinectes sapidus	87	0.3	29.2	0.13	0.05	251.14	1.55	82	5.58	12	180
Farfantepenaeus duorarum	57	0.2	50.0	0.08	0.03	224.15	1.08	12	0.61	4	24
Archosargus probatocephalus	40	0.2	14.6	0.06	0.03	325.85	1.08	113	11.73	20	282
Paralichthys albigutta	37	0.1	47.9	0.05	0.01	128.83	0.27	172	12.09	15	305
Lutjanus synagris	28	0.1	22.9	0.04	0.02	275.30	0.67	96	5.69	26	139
Lutjanus griseus	21	0.1	10.4	0.03	0.02	452.12	0.88	119	11.91	36	215
Cynoscion arenarius	5	0.0	6.3	0.01	0.01	464.48	0.22	24	6.56	12	49
Cynoscion nebulosus	5	0.0	6.3	0.01	0.00	453.30	0.21	42	6.29	27	60
Menticirrhus americanus	5	0.0	8.3	0.01	0.00	356.46	0.13	28	3.22	18	35
Mugil cephalus	1	0.0	2.1	0.00	0.00	692.82	0.07	23		23	23
Elops saurus	1	0.0	2.1	0.00	0.00	692.82	0.07	40		40	40
Penaeidae spp.	1	0.0	2.1	0.00	0.00	692.82	0.06	9		9	9
Totals	904	3.4	.	1.28	0.61	330.38	29.61	.	.	4	305

Species Profiles

The following sections provide abundance, distribution, habitat and length-frequency profiles on various numerically abundant and frequently occurring taxa. Catch summary statistics for the five completed years of this study are included in *Appendices E*, *F* and *G* for the 21.3-m seines, 183-m haul seines and 6.1-m otter trawls, respectively. Gear-specific summary graphs for all taxa that were identified to species (*Mennipe* spp. was included even though it represents a taxonomic group), occurred in at least 10% of the hauls, and for which 200 or more individuals were collected during bi-monthly sampling in Sarasota Bay between June 2009 and April 2014 are provided in *Appendices H*, *I*, *J*, and *K*. The abundance and size distribution results presented in these appendices and in the following species profiles are based on a limited time series (five years of bi-monthly sampling) with a relatively small sample size, so there is considerable variability in the data.

Pink Shrimp, *Farfantepenaeus duorarum*

Pink Shrimp range from the Chesapeake Bay to the Yucatan Peninsula and are of great commercial importance, especially in the Gulf of Mexico (*Carpenter 2002*). Catches in Florida were valued at nearly $21M in 2005 (FWRI, unpublished data). Pink Shrimp spawn offshore and enter estuaries as postlarvae (*Allen et al. 1980*). They probably use selective tidal stream transport (i.e., ascend into the water column on flood tides and descend towards the substrate on ebb tides [*Hughes 1969*]) to recruit to nursery grounds. Different life stages of Pink Shrimp exhibit a broad range of salinity tolerance, although salinities from approximately 12 to 45 ppt seem to be preferred (*Pattillo et al. 1997*).

Although occasionally collected in 183-m haul seines, Pink Shrimp did not comprise a large proportion of the catch (*Appendix F*). Pink Shrimp, however, were commonly collected in 21.3-m seines (58.8% of the hauls, *Appendix E*) and 6.1-m otter trawls (38.3%, *Appendix G*). Pink Shrimp collected in 21.3-m shoreline and offshore seines tended to be smaller (mean post-orbital head length [POH] 9.7 mm; (*Figure 4* and *Figure 5*, respectively) than those collected in 6.1-m otter trawls (14.3 mm POH; Figure 6). In the shallow water habitats sampled with the 21.3-m seine, abundance of Pink Shrimp was typically higher along shoreline (Figure 4) than offshore (Figure 5) habitats. In both offshore and shoreline habitats, abundance was higher over vegetated bottoms and in Little Sarasota and Blackburn bays. Abundance of Pink Shrimp collecte with 6.1-m otter trawls in Little Sarasota Bay was higher than in the other four bay segments (Figure 6). Annual trends in Pink Shrimp abundance were not evident for any of the gear types during the five-year period of this study.

Farfantepenaeus duorarum (Pink Shrimp)

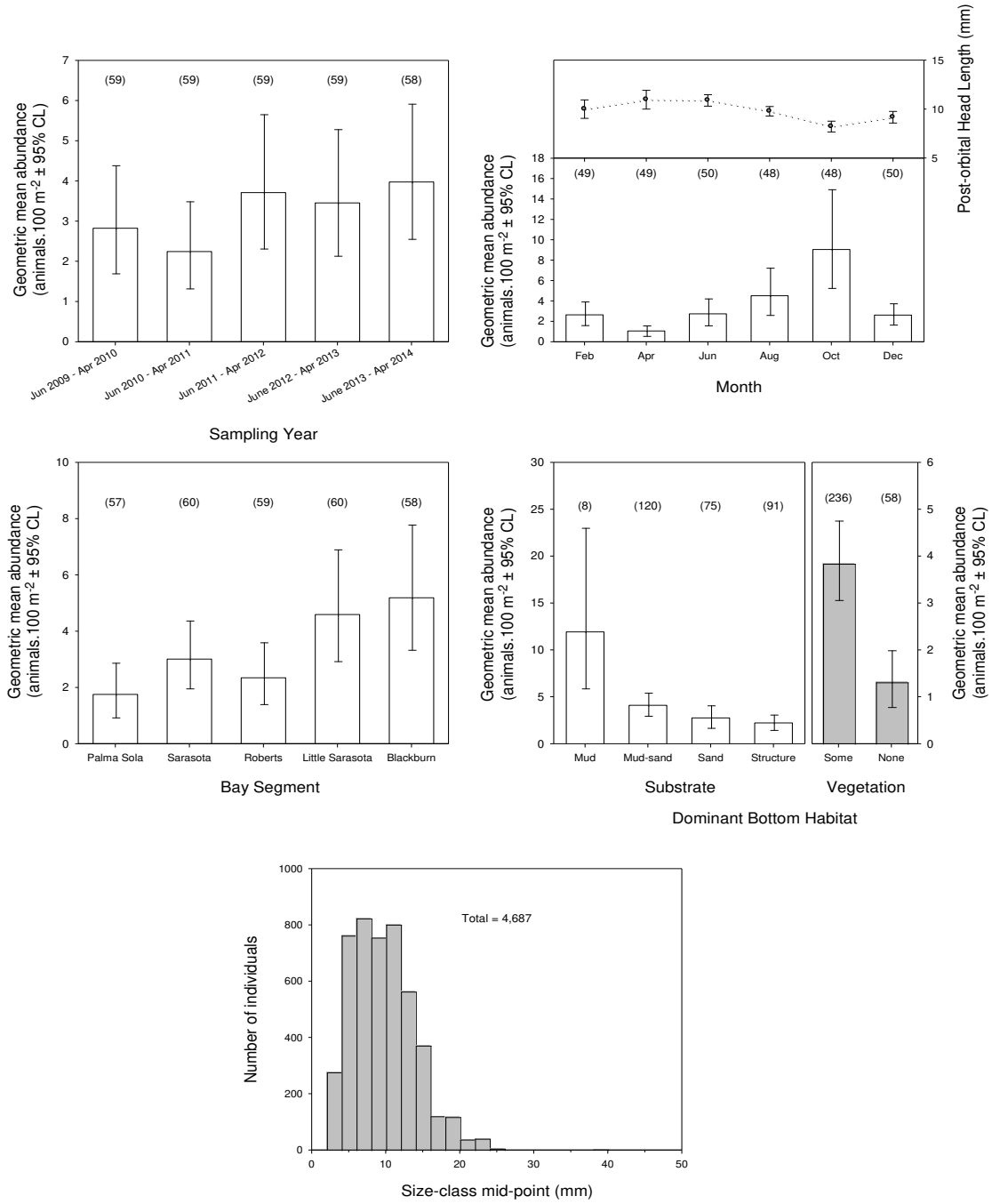

Figure 4. Relative abundance and length-frequency distribution of Pink Shrimp collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Farfantepenaeus duorarum (Pink Shrimp)

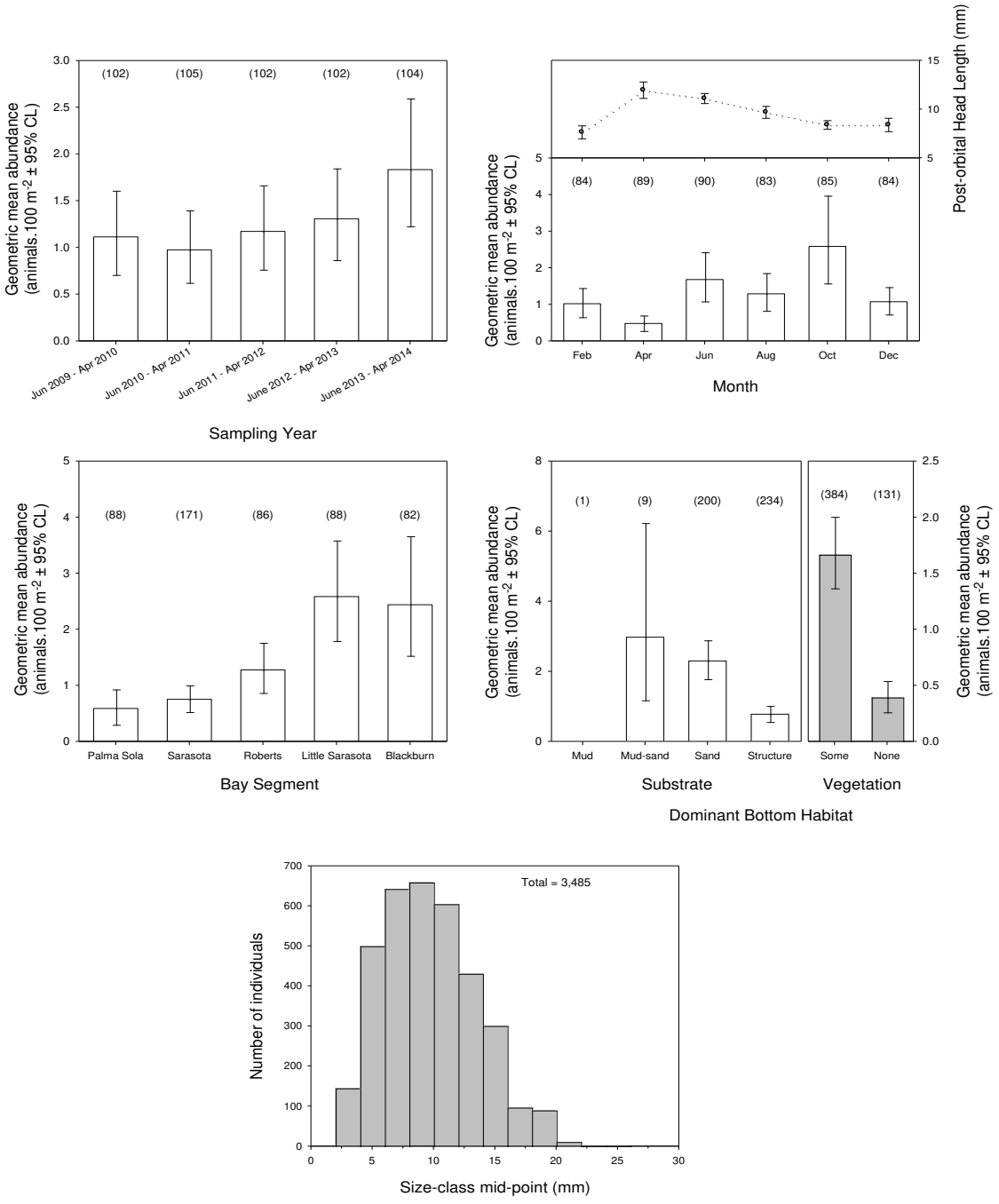

Figure 5. Relative abundance and length-frequency distribution of Pink Shrimp collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Farfantepenaeus duorarum (Pink Shrimp)

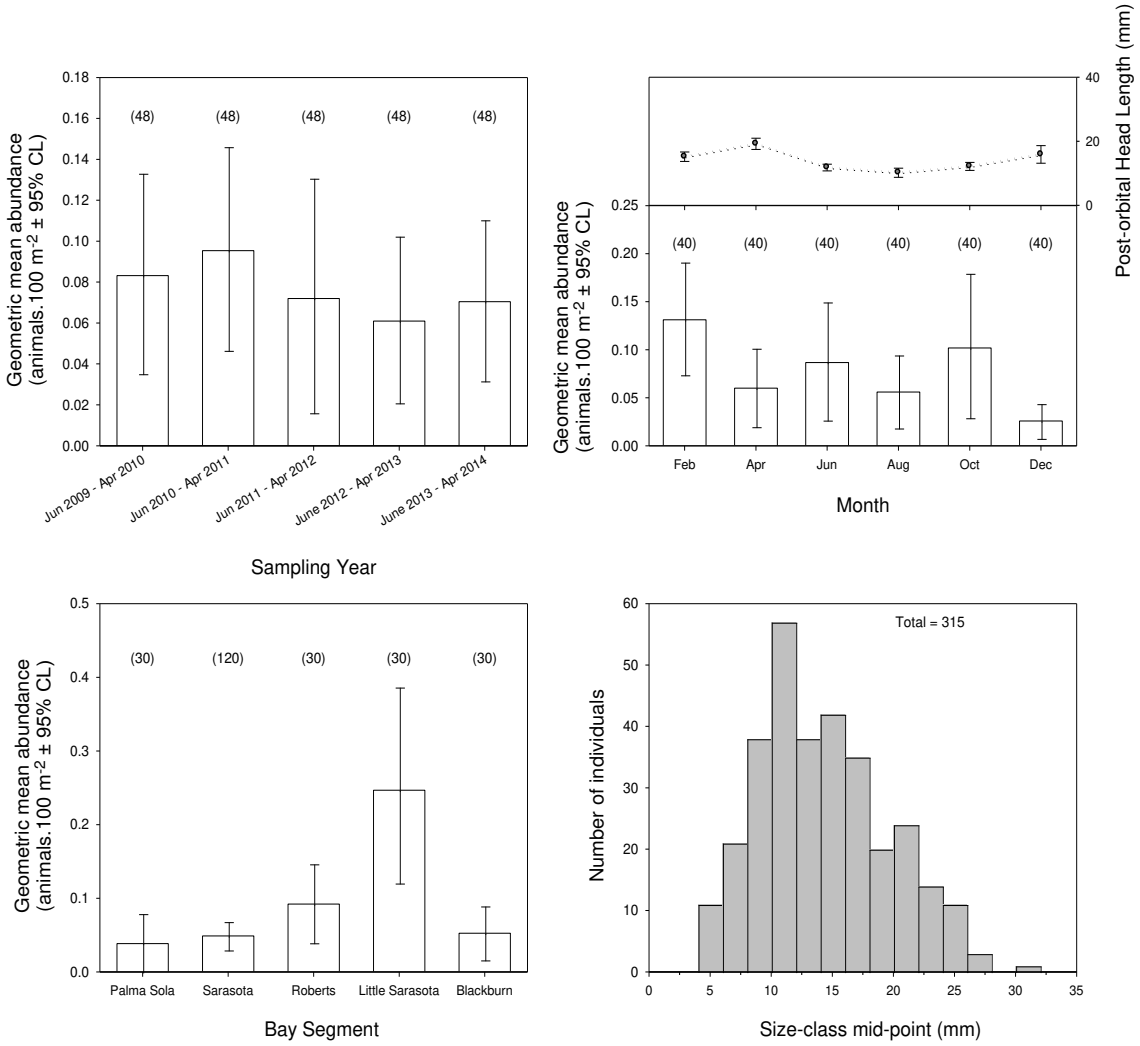

Figure 6. Relative abundance and length-frequency distribution of Pink Shrimp collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Blue crab, *Callinectes sapidus*

Blue Crabs occur in the western Atlantic from Canada to Argentina, including Bermuda and the Antilles, and have been successfully introduced in Europe and Japan (*Carpenter 2002*). This species supports large commercial fisheries in Florida, valued at nearly $12M in 2005 (FWRI, unpublished data), and is an important predator and prey species in inshore waters (*Steele and Bert 1994*). Blue Crabs are transients in estuaries: spawning and larval development occur in marine waters, but juveniles and adults spend most of their time in estuaries (*Steele and Bert 1994*). Larval Blue Crabs recruiting into the estuary and adult females leaving the estuary to spawn use selective tidal stream transport (*Olmi 1994*; *Tankersley et al. 1998*). Chemical cues emanating from estuarine and freshwater watersheds promote settlement by triggering metamorphosis in larvae (*Wolcott and De Vries 1994*; *Forward et al. 1994* and *1997*). Blue Crabs tolerate salinities from freshwater to at least 50 ppt. Optimal salinities differ among life-history stages: 12–36 ppt for larvae, 2–21 ppt for juveniles, less than 10 ppt for adult males, and 23–33 ppt for egg-bearing females (*Pattillo et al. 1997*).

Blue Crabs were collected in all three gear types deployed during this study (*Appendices E*, *F*, and *G*), but were only commonly collected and abundant in hauls made with the 6.1-m otter trawls (*Appendix G*). In deeper-water habitats sampled with 6.1-m otter trawls, Blue Crabs were most abundant in February (Figure 7). Blue Crabs were collected from each of the embayments sampled with the 6.1-m otter trawl but were more abundant in Little Sarasota Bay and least abundant in Sarasota Bay proper. Sizes captured with 6.1-m otter trawls ranged from 8 mm to 198 mm carapace width (CW) with a mean of 60.5 mm CW. Although variable, annual abundance of Blue Crab

peaked during the second year of the study (June 2010 – April 2011) and were lower during the third, fourth and fifth years.

Callinectes sapidus (Blue Crab)

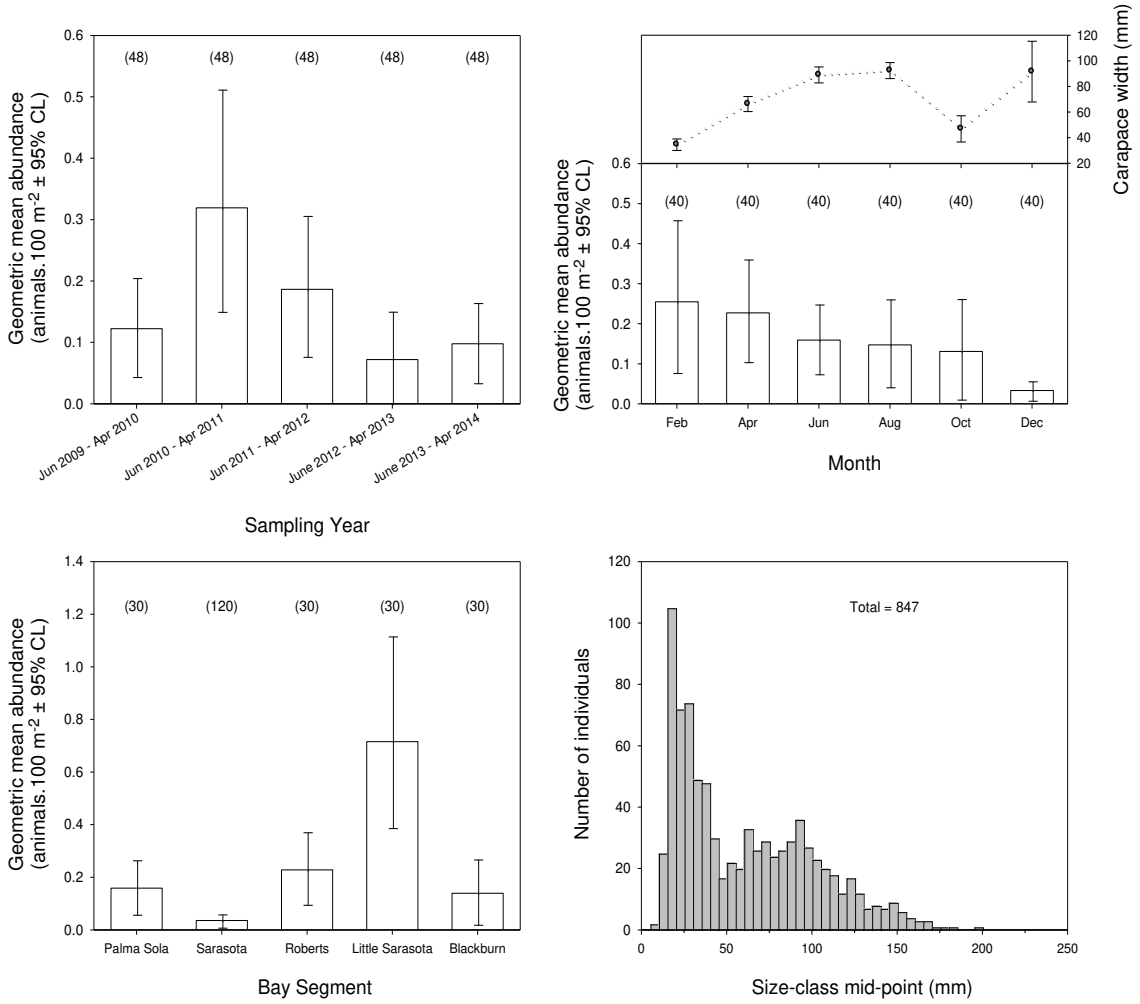

Figure 7. Relative abundance and length-frequency distribution of Blue Crab collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Ladyfish, *Elops saurus*

Ladyfish inhabit estuarine and nearshore waters throughout Florida. Larval and juvenile ladyfish can be found in a variety of nearshore habitats, including coastal beaches, canals, rivers, and mosquito impoundments (*Gilmore et al. 1982*; *McBride et al. 2001*). Length-frequency analysis suggests that Ladyfish grow to 200 – 300 mm standard length by age 1. Their diet consists mainly of fish with decapod crustaceans being of secondary importance (*Darnell 1958*; *Sekavec 1974*). Florida landings were just over 1 million pounds in 2007 with over 75% landed by the commercial fishery (*FWC-FWRI 2008*).

Ladyfish were captured with 21.3-m, 6.1-m otter trawls, and 183-m haul seines during this study (*Appendices E*, *F*, and *G* respectively). They were only common and abundant, however, in the larger seine where they comprised 1.0% of the total catch (n=540 and occurred in 42.2% of the hauls (*Appendix F*). The majority of captured Ladyfish (58.8%) were between 225 and 275 mm SL (mean of 274.9 mm SL; *Figure 8*) with the largest Ladyfish collected measuring 499 mm SL. Variability in abundance data was too high to discern spatial or temporal patterns.

Elops saurus (Ladyfish)

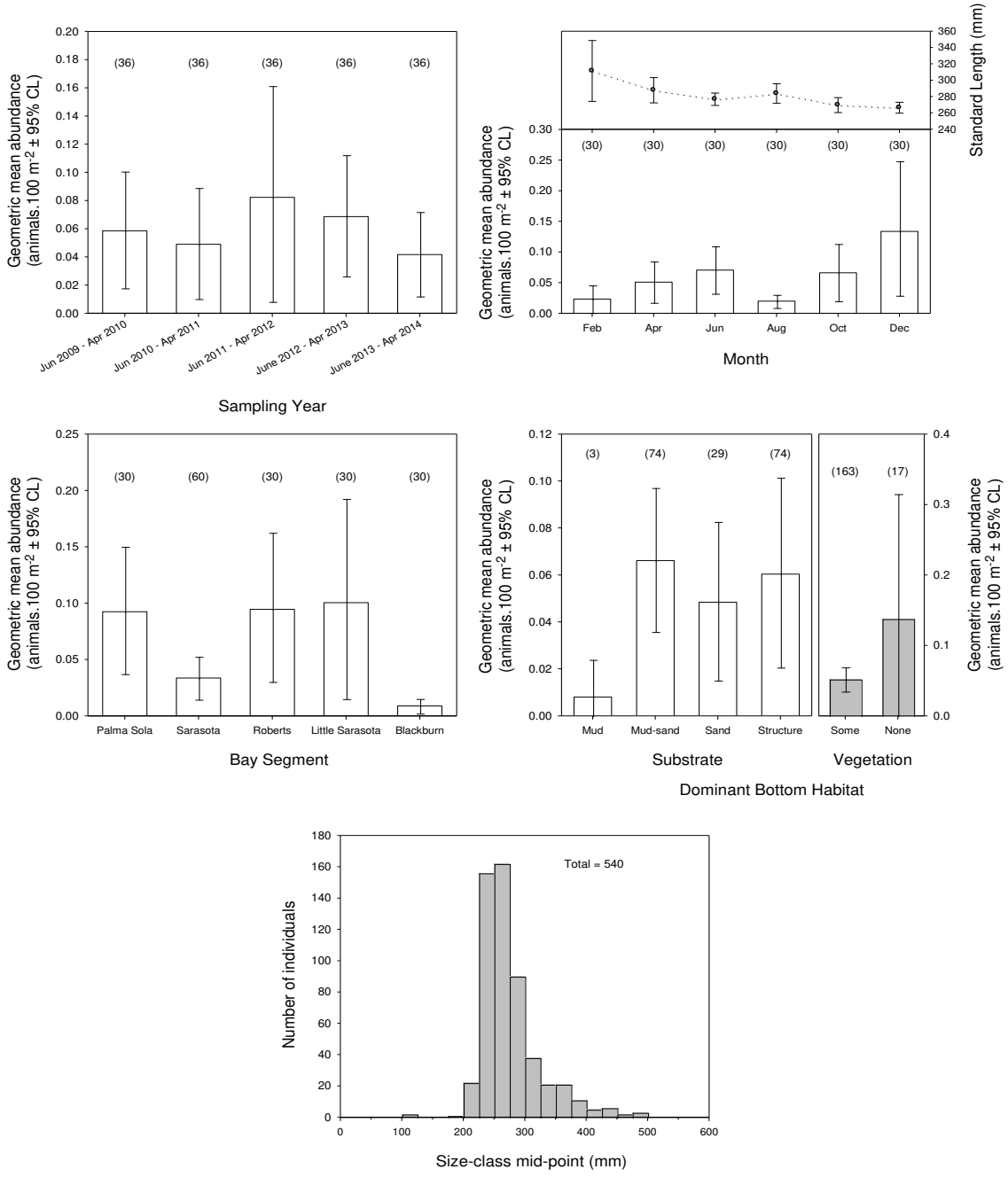

Figure 8. Relative abundance and length-frequency distribution of Ladyfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Bay anchovy, *Anchoa mitchilli*

Bay Anchovy range from Maine to the Yucatan Peninsula and are of great importance in estuarine food chains due to their trophic position, small size, and extreme abundance (*Pattillo et al. 1997*; *Carpenter 2002*). They spawn in nearshore marine waters and estuaries (*Peebles et al. 1996*; *Pattillo et al. 1997*). Larvae use selective tidal stream transport to travel to upstream nursery areas (*Schultz et al. 2003*). Although each life stage of the Bay Anchovy exhibits a broad range of salinity tolerance (*Pattillo et al. 1997*), each tends to distribute differently in relation to salinity: spawning adults, eggs, and newly hatched larvae are found at higher salinities than are later-stage larvae and juveniles (*Peebles et al. 1991*).

Bay Anchovy were collected in 21.3-m seine and 6.1-m otter trawl hauls (*Appendices E* and *G*, respectively), but not in 183-m haul seines (*Appendix F*). They were only abundant and frequently collected in 21.3-m seine hauls in which they comprised 33.7% (n= 172,265) of the total catch and were present in 27.3% of hauls (*Appendix E*). Bay Anchovy were more abundant along shoreline habitats (Figure 9) than offshore habitats (Figure 10). Although the average size between shoreline and offshore habitats was similar (31.8 and 31.4 mm SL, respectively), the monthly size frequency distribution between these two habitats differed; the largest mean size occurred in December and April for shoreline and offshore habitats, respectively. For both shoreline and offshore habitats, Bay Anchovy were most abundant over vegetated habitats in Roberts and Little Sarasota bays. No annual trends were descernable in the five years of data collected for this study.

Anchoa mitchilli (Bay Anchovy)

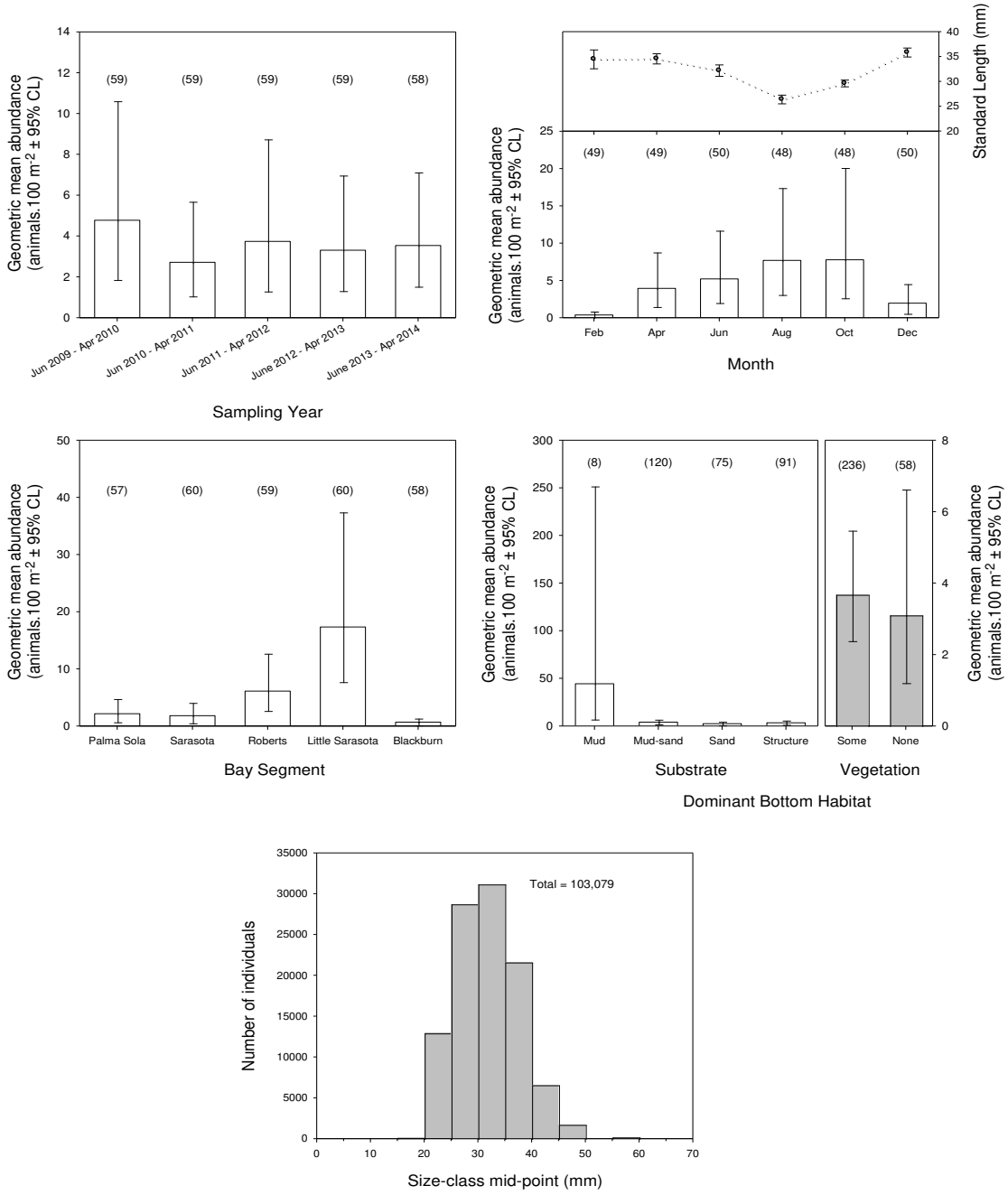

Figure 9. Relative abundance and length-frequency distribution of Bay Anchovy collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Anchoa mitchilli (Bay Anchovy)

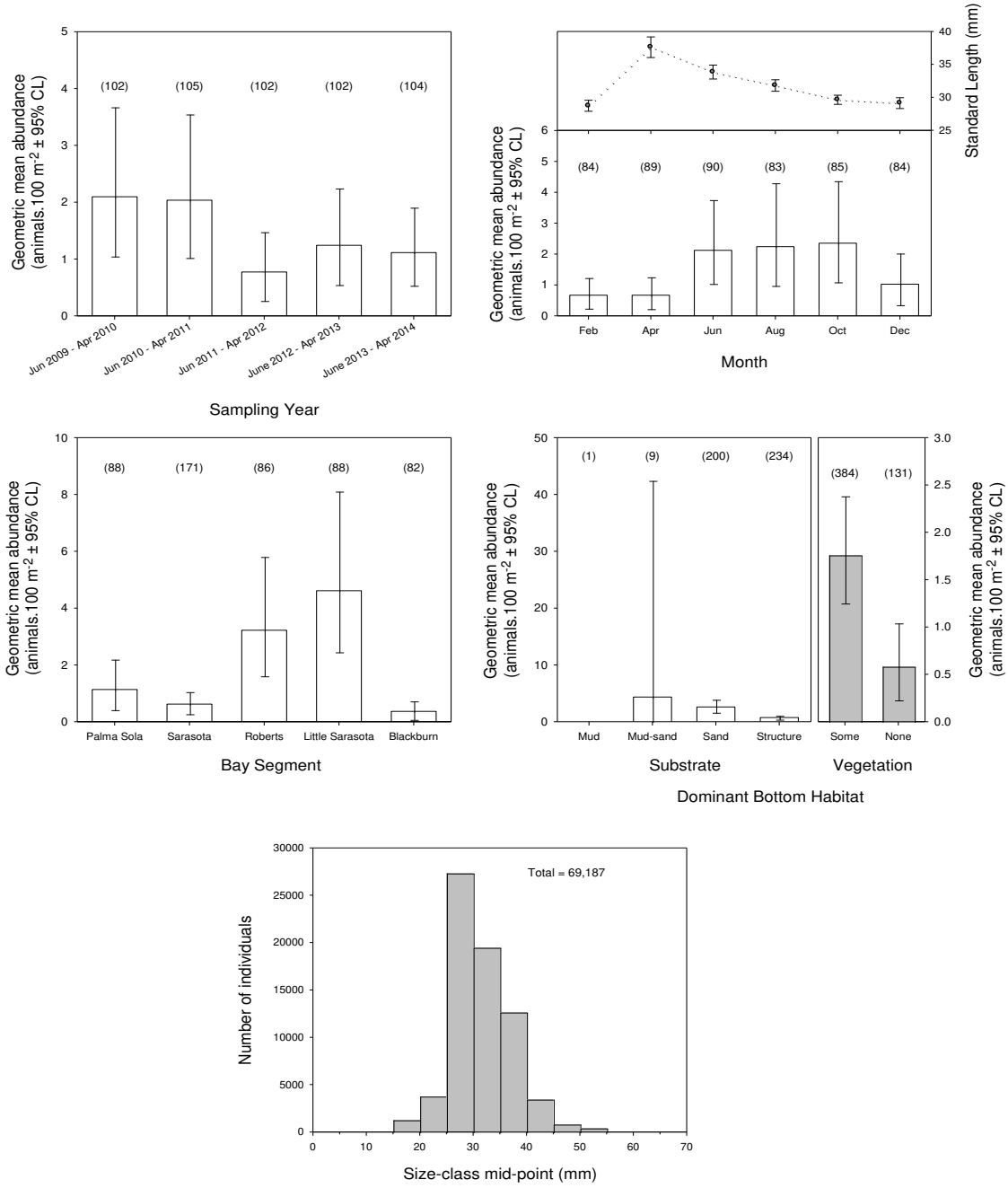

Figure 10. Relative abundance and length-frequency distribution of Bay Anchovy collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Common Snook, *Centropomus undecimalis*

Common Snook occur in tropical and subtropical estuarine systems of the western Atlantic (*Rivas 1986*). In Florida, they occur principally from Cape Canaveral on the Atlantic coast southward around the peninsula to Cedar Key on the Gulf of Mexico coast (*Taylor et al. 2000*). Common Snook are popular sport fish that support a large recreational fishery throughout much of coastal south and central Florida (*Muller and Taylor 2002*). Spawning occurs primarily in ocean passes and secondary embayments (*Taylor et al. 1998*). Small juveniles are found in quiet shallow-water creeks, canals, and lagoons in both low-salinity (riverine) and high-salinity (mangrove and saltmarsh) environments (*McMichael et al. 1989*; *Peters et al. 1998*). As juvenile Common Snook grow to about 150 mm SL, marked changes in their tolerance of high temperature and low dissolved oxygen occur (*Peterson and Gilmore 1991*), and juveniles are no longer abundant at the sites described above. Larger juveniles and adult Common Snook are found in a wide variety of estuarine habitats.

Common Snook were not collected in 6.1-m otter trawls (*Appendix G*), were rarely collected in 21.3-m seines (*Appendix E*), but were encountered in 66.7% of the 183-m haul seine sets (*Appendix F*). Common Snook were most abundant from April to October and least abundant in February and December (Figure 11). Common Snook were most abundant during the third year of the study (June 2011 – April 2012) and were more abundant in Little Sarasota and Blackburn bays than in the other three bay segments. The sizes of Common Snook collected in 183-m haul seines ranged from 138 to 882 mm SL with a mean at 406.5mm SL.

Centropomus undecimalis (Common Snook)

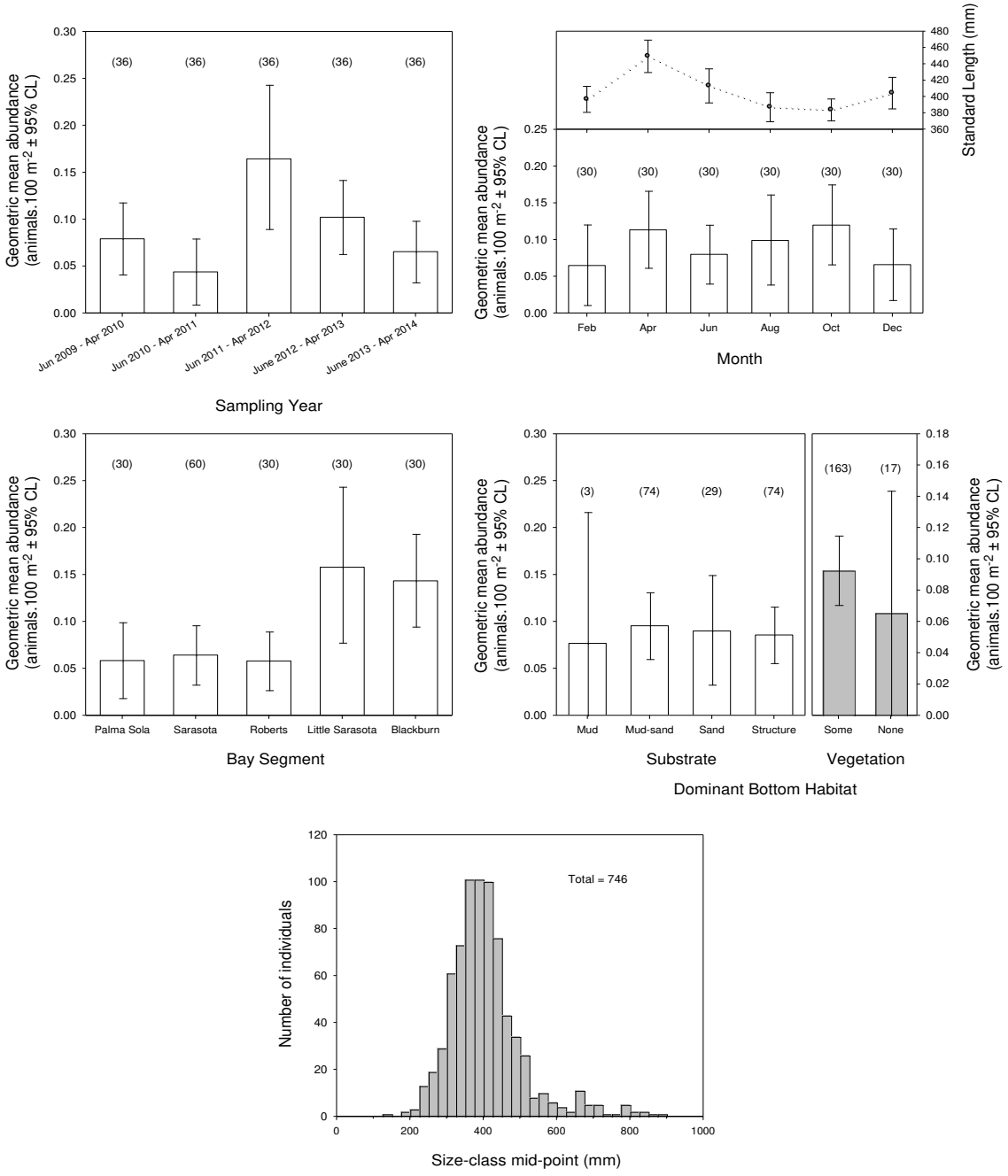

Figure 11. Relative abundance and length-frequency distribution of Common Snook collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Gray Snapper, *Lutjanus griseus*

Gray Snapper are a reef species found along the western Atlantic from Massachusetts south to Rio de Janeiro, Brazil. Adults spawn during summer (June–September) near areas of bottom structure in offshore waters (*Stark 1971*; *Domeier and Colin 1997*). Juvenile Gray Snapper recruit to estuarine areas including seagrass beds and mangrove shorelines (*Nagelkerken et al. 2000*; *Cocheret de la Moriniere et al. 2002*; *Serafy et al. 2003*; *Whaley et al. 2007*; *Faunce and Serafy 2008*) where they typically spend the first year or two of their lives. Juvenile Gray Snapper feed primarily on penaeid shrimp and crabs (*Rutherford et al.1989*) and adults feed on fish, shrimp, and crabs (*Harrigan et al. 1989; Hettler 1989*). Gray Snapper are an economically important species with Florida landings totaling 2,230,737 pounds in 2007 (*FWC-FWRI 2008*).

Gray Snapper were collected in all three gear types deployed in the Sarasota Bay estuary, but were more frequently collected by 21.3-m (19.5%; *Appendix E*) and 183-m (37.2%; *Appendix F*) seines than with the 6.1-m otter trawl (9.5%; *Appendix G*). The 21.3-m shoreline seine tended to collect smaller Gray Snapper (mean at 47.2 mm SL; Figure 12) than did the 21.3-m offshore seine (51.2 mm SL; Figure 13). The 183-m haul seine, however, collected much larger Gray Snapper (mean at 163.9 mm SL; *Figure 14*) than did the 21.3-m seines in either habitat. Regardless of seine type, Gray Snapper were most abundant in October and least abundant in April; less abundant in Palma Sola Bay than the other bay segments; and had higher abundance in collections at sites with some bottom vegetation.

Lutjanus griseus (Gray Snapper)

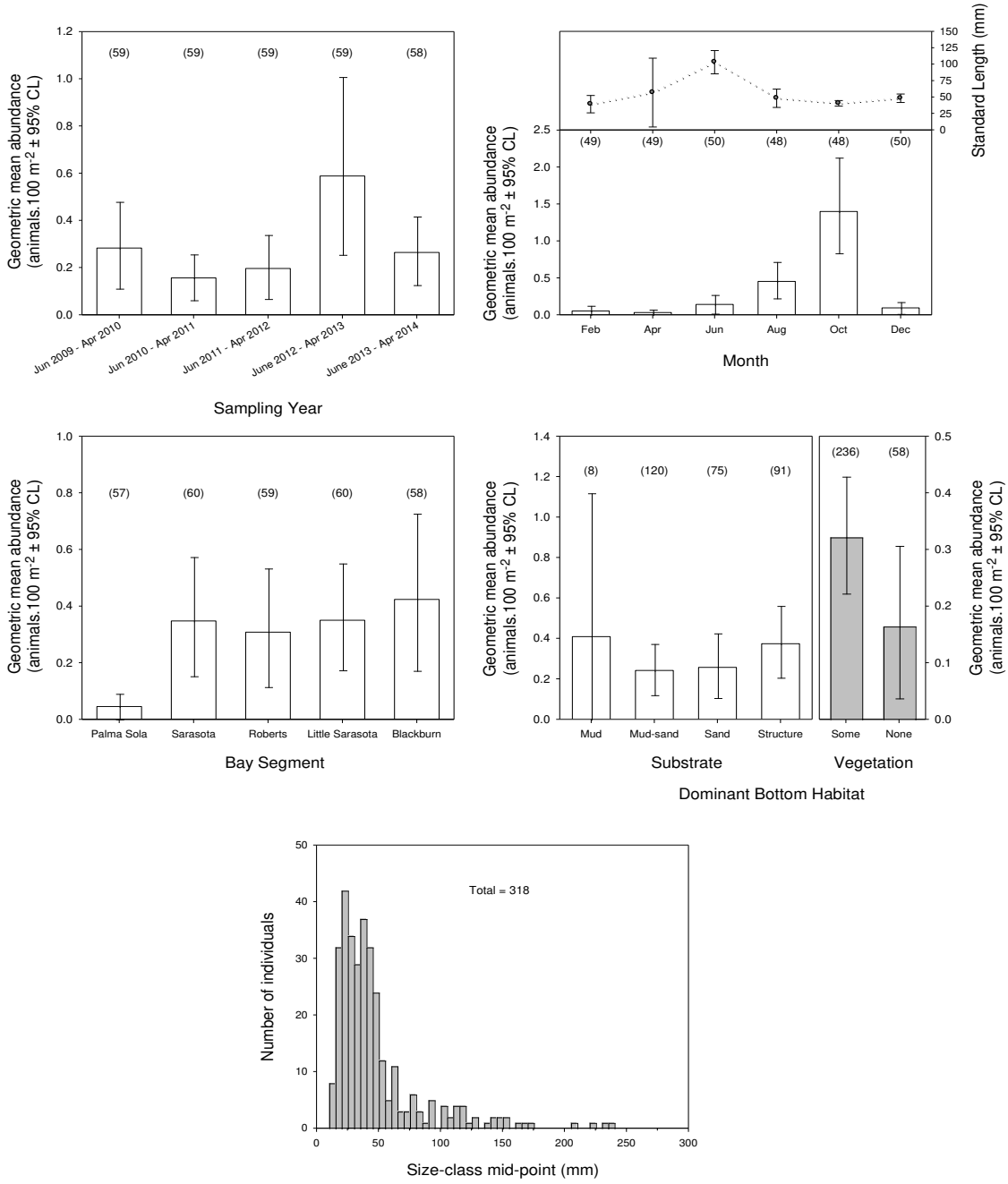

Figure 12. Relative abundance and length-frequency distribution of Gray Snapper collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lutjanus griseus (Gray Snapper)

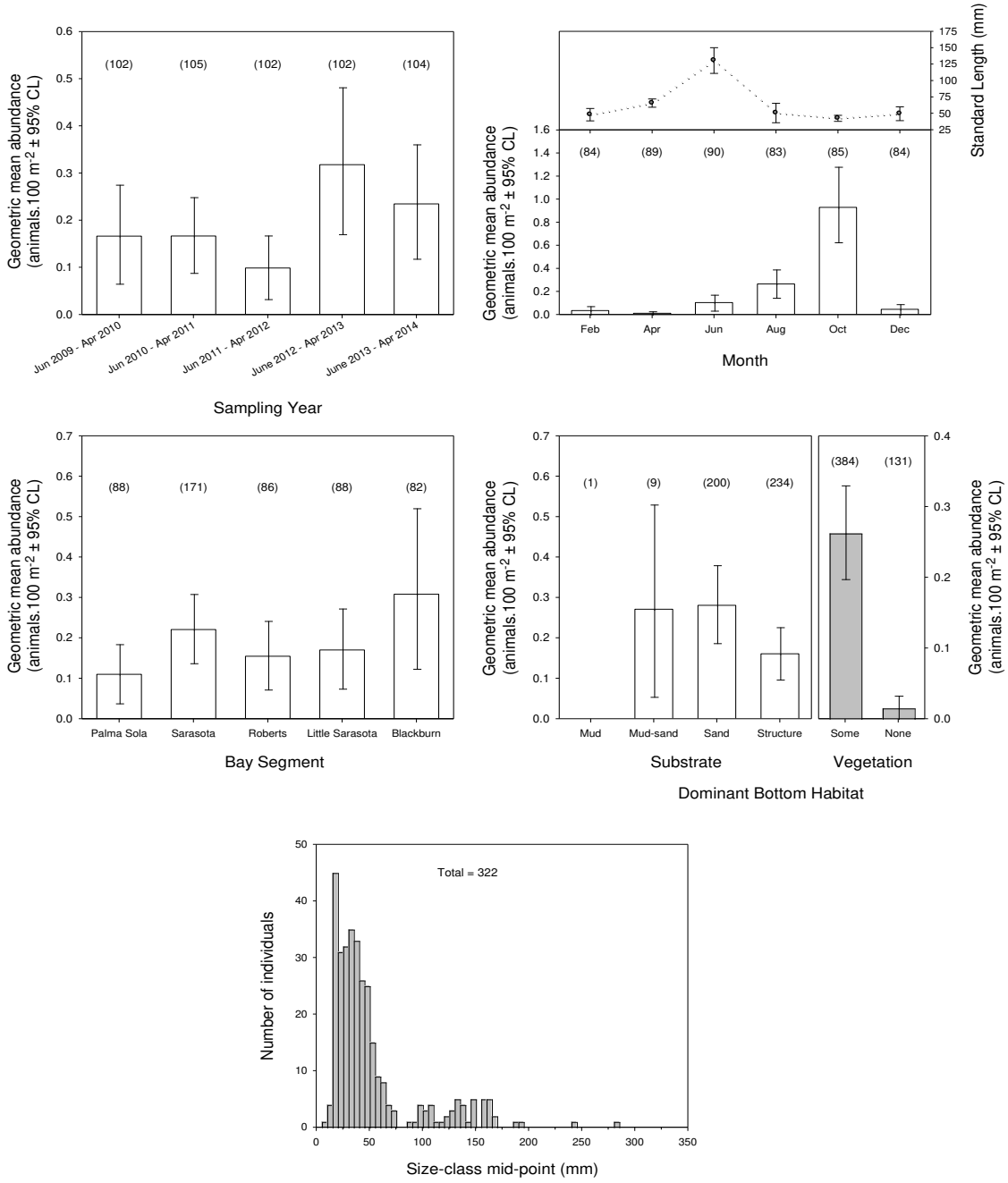

Figure 13. Relative abundance and length-frequency distribution of Gray Snapper collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lutjanus griseus (Gray Snapper)

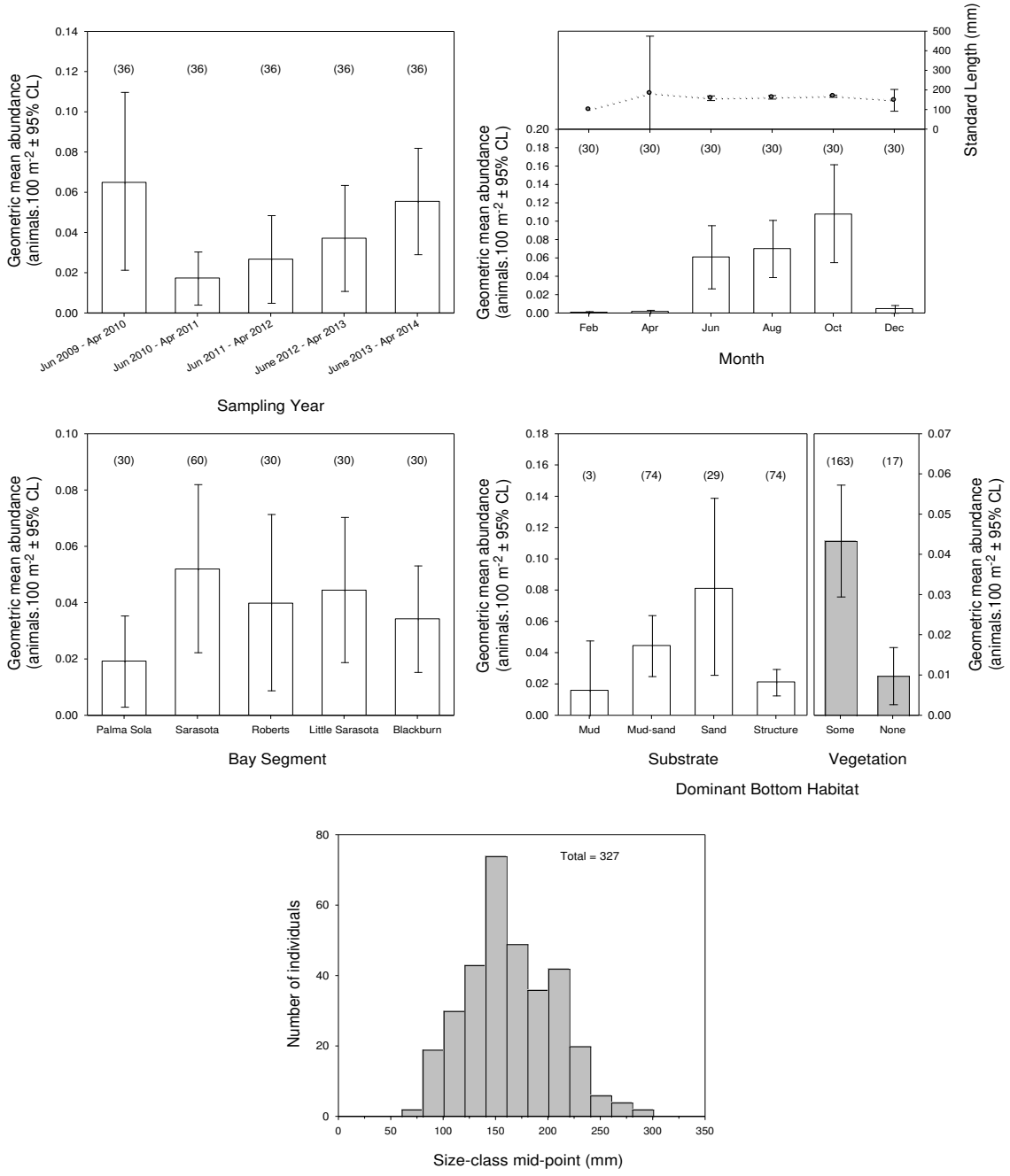

Figure 14. Relative abundance and length-frequency distribution of Gray Snapper collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Pinfish, *Lagodon rhomboides*

Pinfish range from Cape Cod to the Yucatan Peninsula, including Bermuda and northern Cuba. They are most abundant from Cape Hatteras through the northern Gulf of Mexico (*Pattillo et al. 1997*; *Carpenter 2002*). Florida's Pinfish landings in 2007 totaled 2,022,492 pound with 96% being landed by recreational fisherman and 83% coming from the gulf coast (FWRI-FWC 2008). Their high abundance in estuaries and their trophic placement have led some to suggest that they play a more important role in structuring epibenthic communities (*Pattillo et al. 1997*) than they do in the fishery. Spawning occurs offshore and larvae use selective tidal stream transport to travel to nursery areas (*Pattillo et al. 1997*; *Forward et al. 1998*). Pinfish have been recorded in salinities ranging from 0 to >40 ppt, but may avoid the lower end of this range (*Pattillo et al. 1997*).

Pinfish were one of the three most abundant taxa collected in the 21.3-m seines, comprising 21.7%, and the most abundant taxa in the other two gear types, 56.4% (183-m haul seine) and 41.0% (6.1m otter trawl) of the total catch iduring all five years of this study (*Appendices E*, *F*, and *G*, respectively). Pinfish were also one of the most commonly collected taxa, occurring in over 70.8% (6.1m otter trawl), 92.8% (183-m haul seine) and 77.8% (21.3-m seines) of the samples collected with each gear type. The means sizes of Pinfish collected in 21.3-m shoreline seines (Figure 15), offshore seines (Figure 16) and 6.1-m otter trawls (Figure 17) were similar (34.7, 32.4, and 35.4 mm SL, respectively), while those collected in 183-m haul seines (Figure 18) were larger (107.9 mm SL).

Pinfish were most abundant during late winter and spring (February and April) in collections with 21.3-m shoreline and offshore seines (Figure 15 and Figure 16, respectively). For 6.1-m otter trawl collections, Pinfish were most abundant late winter through early summer (February, April and June; Figure 17). The larger and older Pinfish collected with 183-m haul seines were most abundant during August and October (Figure 18). Pinfish did not show any strong distributional or annual trends that were consistant between gear types. Pinfish were more abundant in 21.3-m and 183-m hauls seine collections that sampled some seagrass (Figure 15 , Figure 16 and Figure 18).

Lagodon rhomboides (Pinfish)

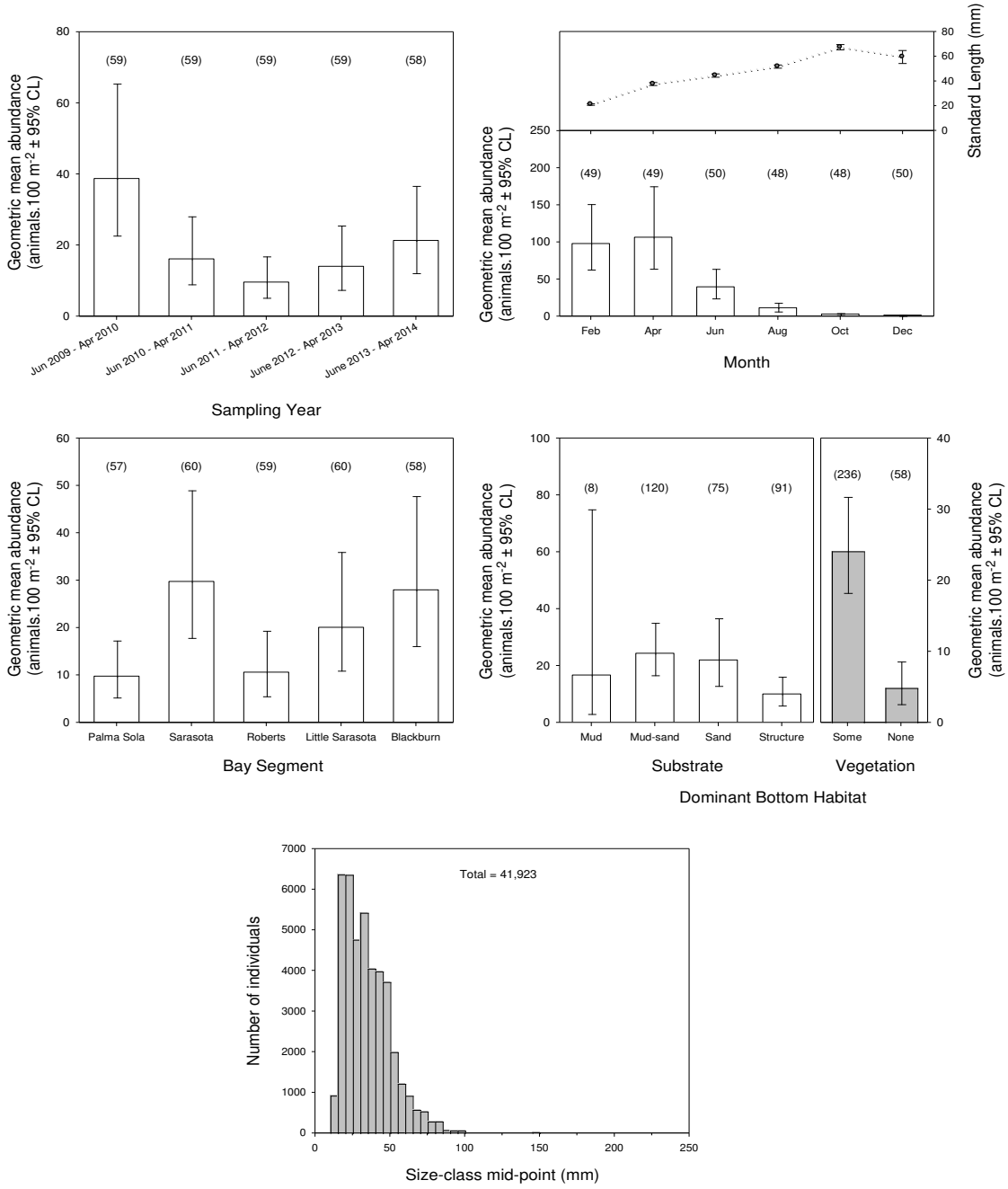

Figure 15. Relative abundance and length-frequency distribution of Pinfish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

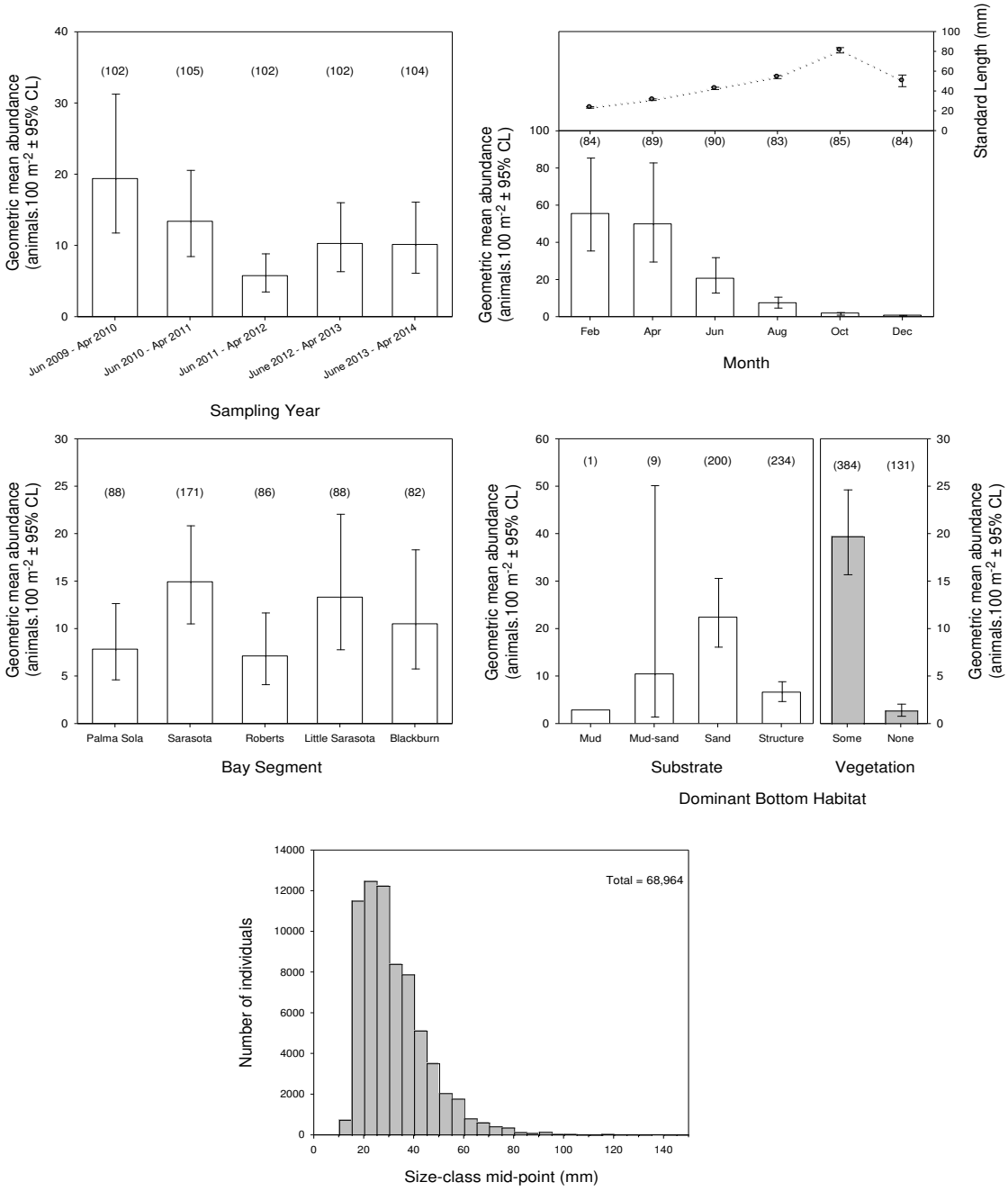

Figure 16. Relative abundance and length-frequency distribution of Pinfish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

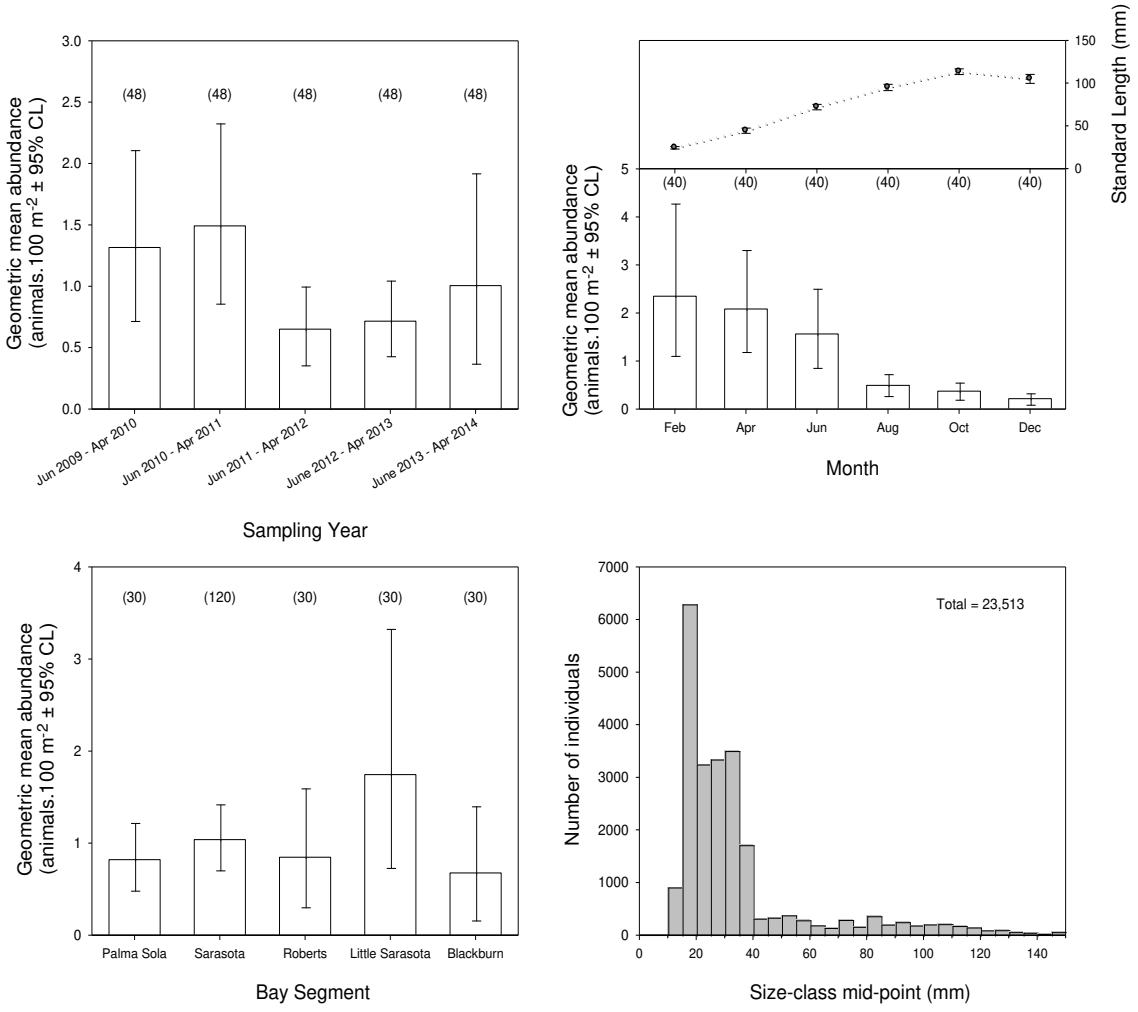

Figure 17. Relative abundance and length-frequency distribution of Pinfish collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

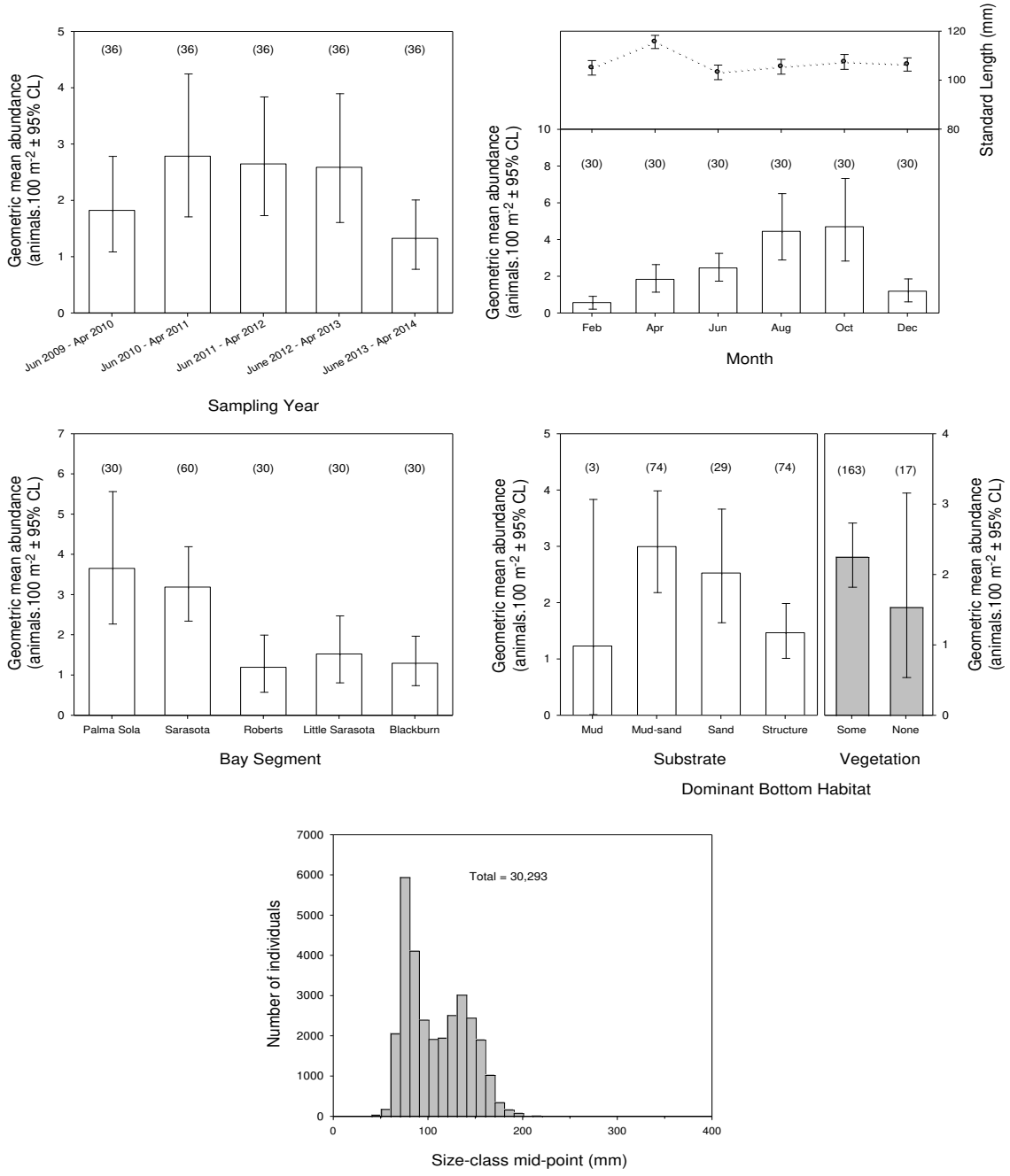

Figure 18. Relative abundance and length-frequency distribution of Pinfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Sheepshead, *Archosargus probatocephalus*

Sheepshead, *Archosargus probatocephalus*, are found in coastal estuarine and inner- to mid-shelf waters from Cape Cod to Brazil (*Jennings 1985*). Larval Sheepshead are pelagic and metamorphose into juveniles at about 8 mm (*Parsons and Peters 1989*; *Tucker and Alshuth 1997*). Juvenile Sheepshead are most abundant in grass flats and over mud bottoms (*Springer and Woodburn 1960*, *Odum and Heald 1972*, *Jennings 1985*). In late summer, juvenile Sheepshead begin to congregate with adults around stone jetties, breakwaters, piers, wrecks, and bulkheads (*Jennings 1985*). Recreational and commercial fishermen commonly harvest Sheepshead, with the recreational fishery accounting for almost 90% of the total pounds landed in recent years (*Munyandorero et al. 2006*).

Sheepshead were commonly collected in 183-m haul seines (69.4% occurrence; *Appendix F*) and 6.1-m otter trawls (13.8%; *Appendix G*). Sheepshead collected in 21.3-m shoreline and offshore seines did not meet the abundance criteria for inclusion (n<200 and <10% occurrence) in this section. More than 94% of the Sheepshead collected by 183-m haul seine were less than 300 mm SL (mean of 226.5 mm SL; *Figure 19*). Sheepshead collected with 6.1-m otter trawls tended to by smaller than those collected with 183-m haul seines, with just over 74% being less than 200 mm SL (mean = 163.5 mm SL; *Figure 20*). There were no obvious seasonal trends for Sheepshead collected with 183-m haul seines (Figure 19). Abundance of Sheepshead was highest in Little Sarasota (183-m haul seines; Figure 19) and Blackburn (6.1-m otter trawl; Figure 20) bays.

Archosargus probatocephalus (Sheepshead)

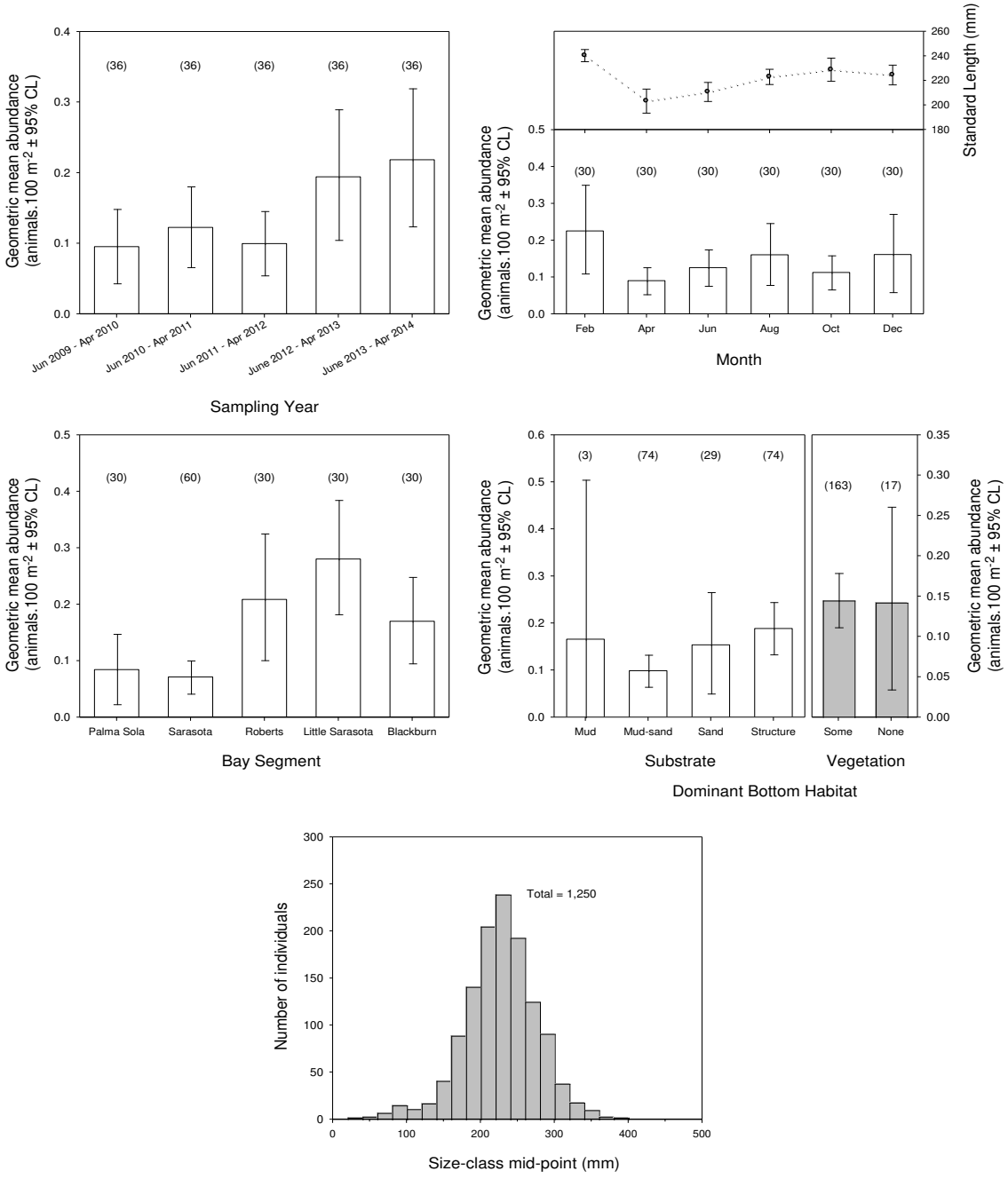

Figure 19. Relative abundance and length-frequency distribution of Sheepshead collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Archosargus probatocephalus (Sheepshead)

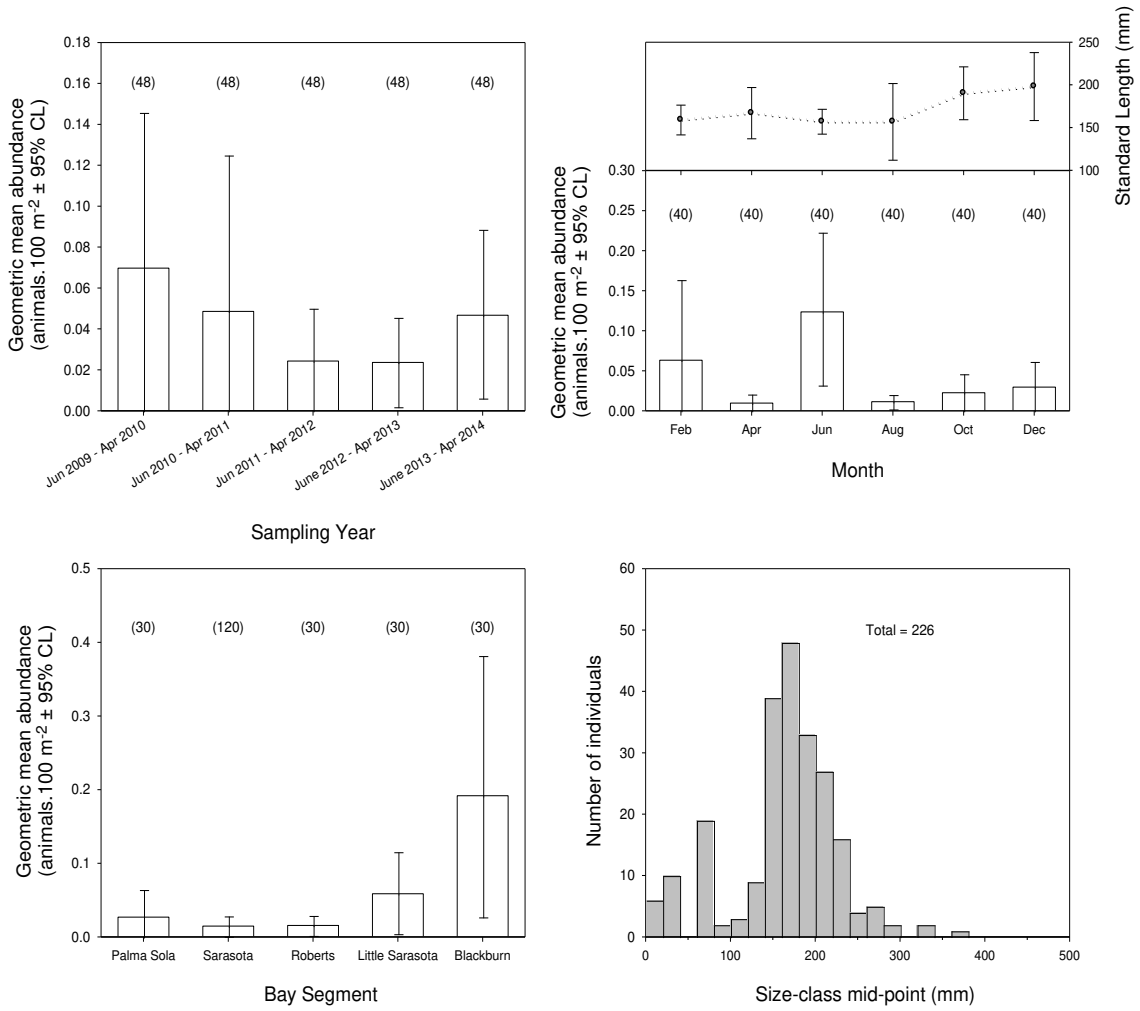

Figure 20. Relative abundance and length-frequency distribution of Sheepshead collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Spotted Seatrout, *Cynoscion nebulosus*

Spotted Seatrout occur along the U.S. east coast from New York south to Florida and in the Gulf of Mexico from Florida to Laguna Madre (*Carpenter 2002*). Over much of its range, Spotted Seatrout are the target of important recreational and commercial fisheries (*Bortone 2003*). Spawning occurs within estuaries or near passes into estuaries (*Brown-Peterson, 2003*). Spotted Seatrout have been collected at salinities ranging from 0 to 75 ppt, but juveniles may prefer 8-25 ppt, with 20-25 ppt possibly representing the physiological optimum for larger juveniles and adults (*Pattillo et al. 1997*).

Spotted Seatrout were collected in each of the gear types (*Appendices E*, *F*, and *G*), but were only abundant and frequently collected in 21.3-m shoreline and offshore seine hauls. The 21.3-m shoreline (Figure 21) and offshore (Figure 22) seines tended to collect small-sized Spotted Seatrout (mean of 43.3 and 41.9 mm SL, respectively), which represent early young-of-the-year animals. Abundance was higher during summer and fall months (June, August and October; Figure 21 and Figure 22) than during other months (February, April and December). Spotted Seatrout were most abundant in collections that sampled some bottom vegetation, with this trend especially pronounced for 21.3-m offshore seine sets (Figure 22). Although present in all bay segments, mean abundance was higher in Palma Sola, Roberts and Little Sarasota bays than in the other segments with the difference between bay segments most obvious for the 21.3-m shoreline seines (Figure 21).

Cynoscion nebulosus (Spotted Seatrout)

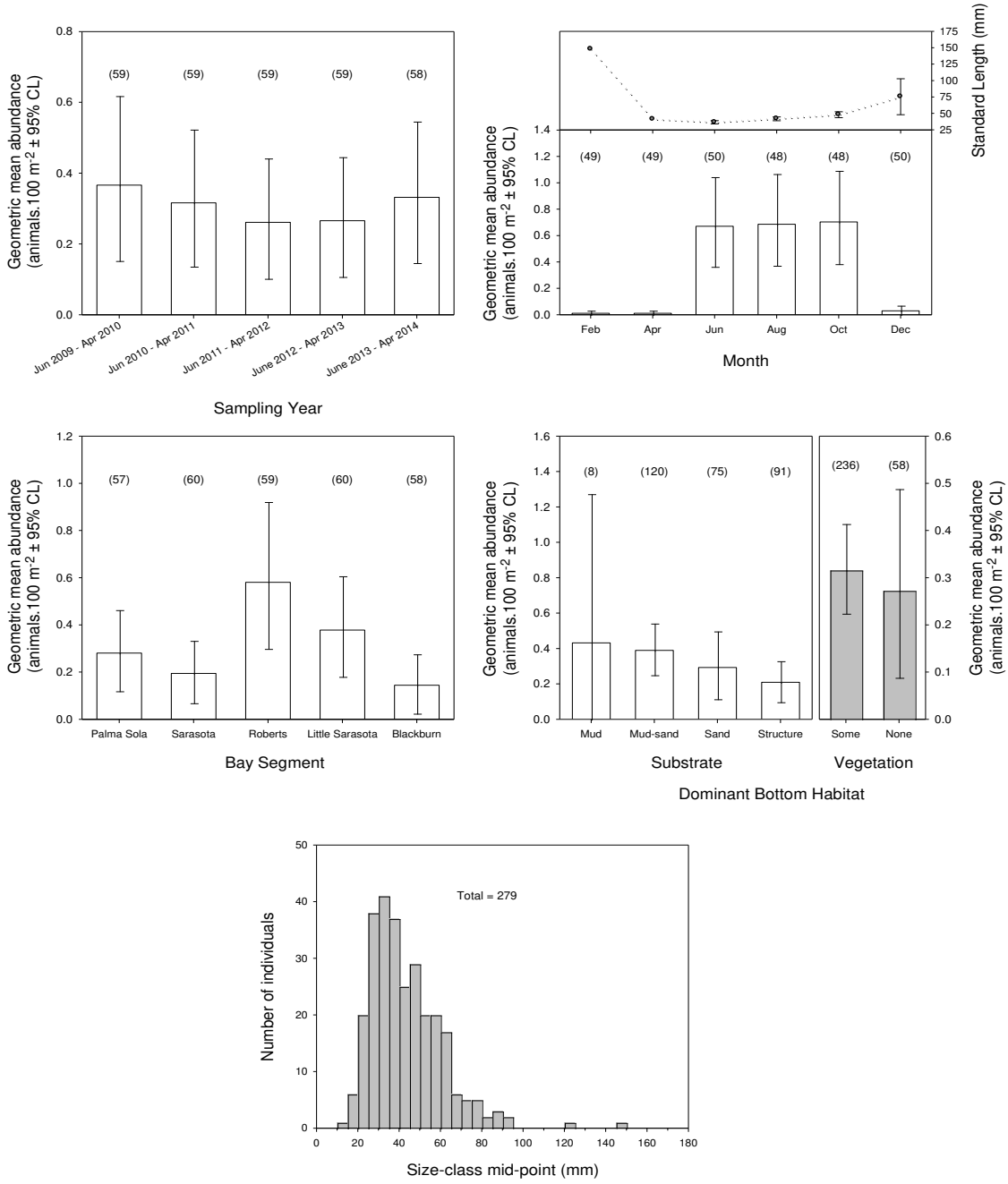

Figure 21. Relative abundance and length-frequency distribution of Spotted Seatrout collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Cynoscion nebulosus (Spotted Seatrout)

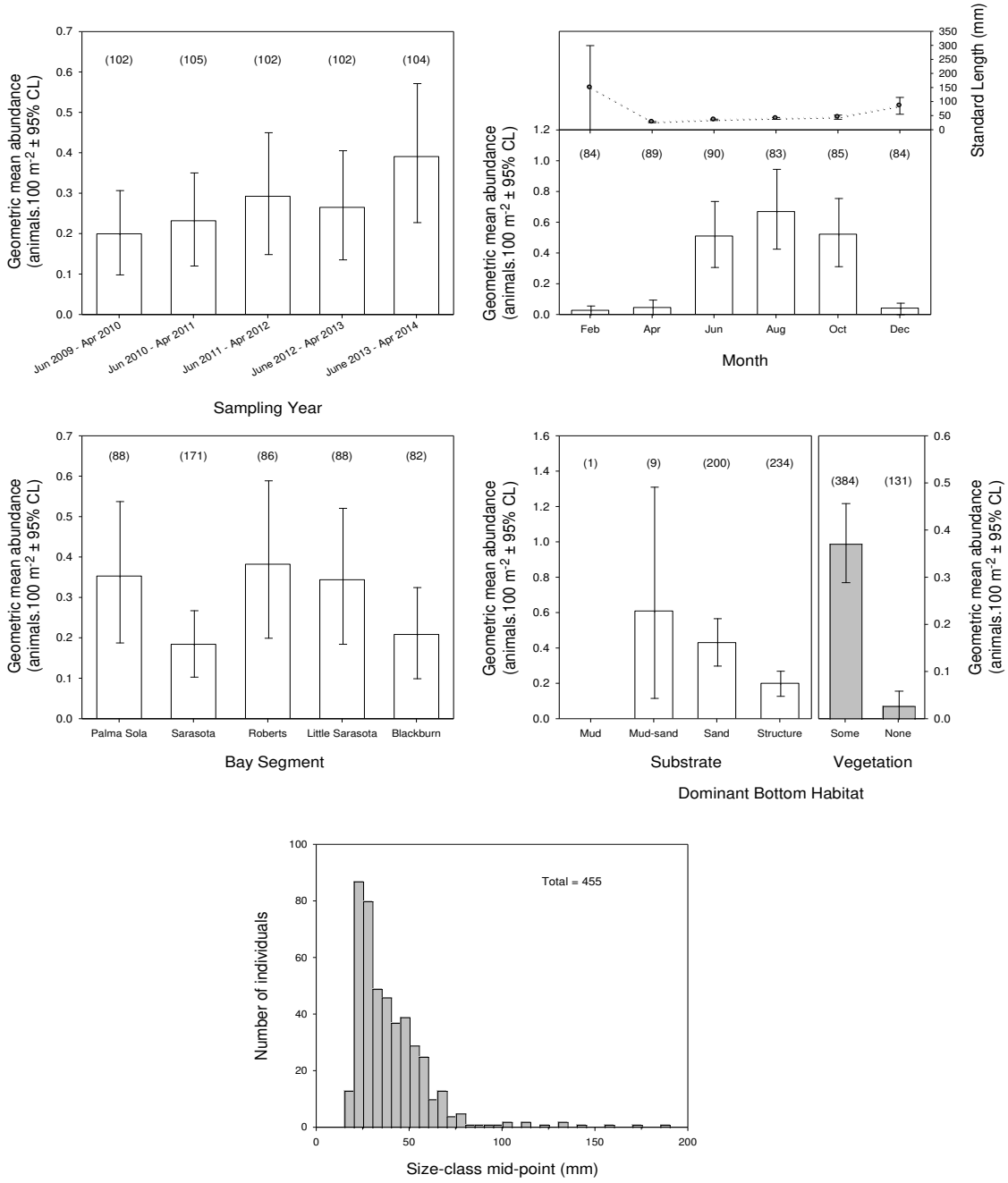

Figure 22. Relative abundance and length-frequency distribution of Spotted Seatrout collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Striped Mullet, *Mugil cephalus*

Striped Mullet are a cosmopolitan species; in the Western Atlantic, they range from Nova Scotia to Argentina (*Carpenter 2002*). This species supports large fisheries in many areas, including Florida. Landings in Florida were valued at over $5M in 2005; this value was less than half of the value in 1994 (FWRI, unpublished data), the year before the constitutional restriction on entangling nets was initiated. Striped Mullet are a major prey item for many fishes and birds (*Pattillo et al. 1997*; *Withers and Brooks 2004*; *Bacheler et al. 2005*; *Blewett et al. 2006*). They spawn on the continental shelf and recruit to estuaries as slender, silvery pelagic juveniles (*Pattillo et al. 1997*; *McDonough and Wenner 2003*). Recruiting juveniles are strong swimmers capable of traversing long distances to locate nursery habitats, perhaps aided by olfactory cues (*Etnier and Starnes 1993*; Peters and Matheson, pers. obs.). Juvenile and adult Striped Mullet exhibit a broad range of salinity tolerance and can be extremely abundant in tidal rivers (*Pattillo et al. 1997*; *Paperno and Brodie 2004*; *Idelberger and Greenwood 2005*). Adults sometimes move hundreds of miles inland in major river systems such as the Mississippi, but juveniles are most common at salinities higher than freshwater (*Etnier and Starnes 1993*; *Boschung and Mayden 2004*).

Only one Striped Mullet was collected in 6.1-m otter trawls (*Appendix G*), but they were relatively abundant in 21.3-m seines (*Appendix E*) and 183-m haul seines (*Appendix F*). Frequency of occurrence and number of animals collected, however, was only high enough to assess trends from 21.3-m shoreline and 183-m haul seine collections. Striped Mullet collected with 21.3-m shoreline seines were typically small (mean = 28.8 mm SL; *Figure 23*), newly recruited, young-of-the-year animals.

Abundance of these smaller animals peaked in February and abundance during the first two years of the study was higher than in the later three years. Striped Mullet collected in 183-m seines tended to be much larger than in 21.3-m shoreline seines (mean = 318.2; *Figure 24*). Seasonally, these larger Striped Mullet were most abundant during the winter (December and February) and least abundant during the early summer (June). Abundance of Striped Mullet in 183-m haul seines was lowest in Roberts Bay and highest in Little Sarasota Bay (*Figure 24*). An increasing trend in annual abundance from years one through four was followed by a return to lower, year one abundance levels during the fifth year of the study.

Mugil cephalus (Striped Mullet)

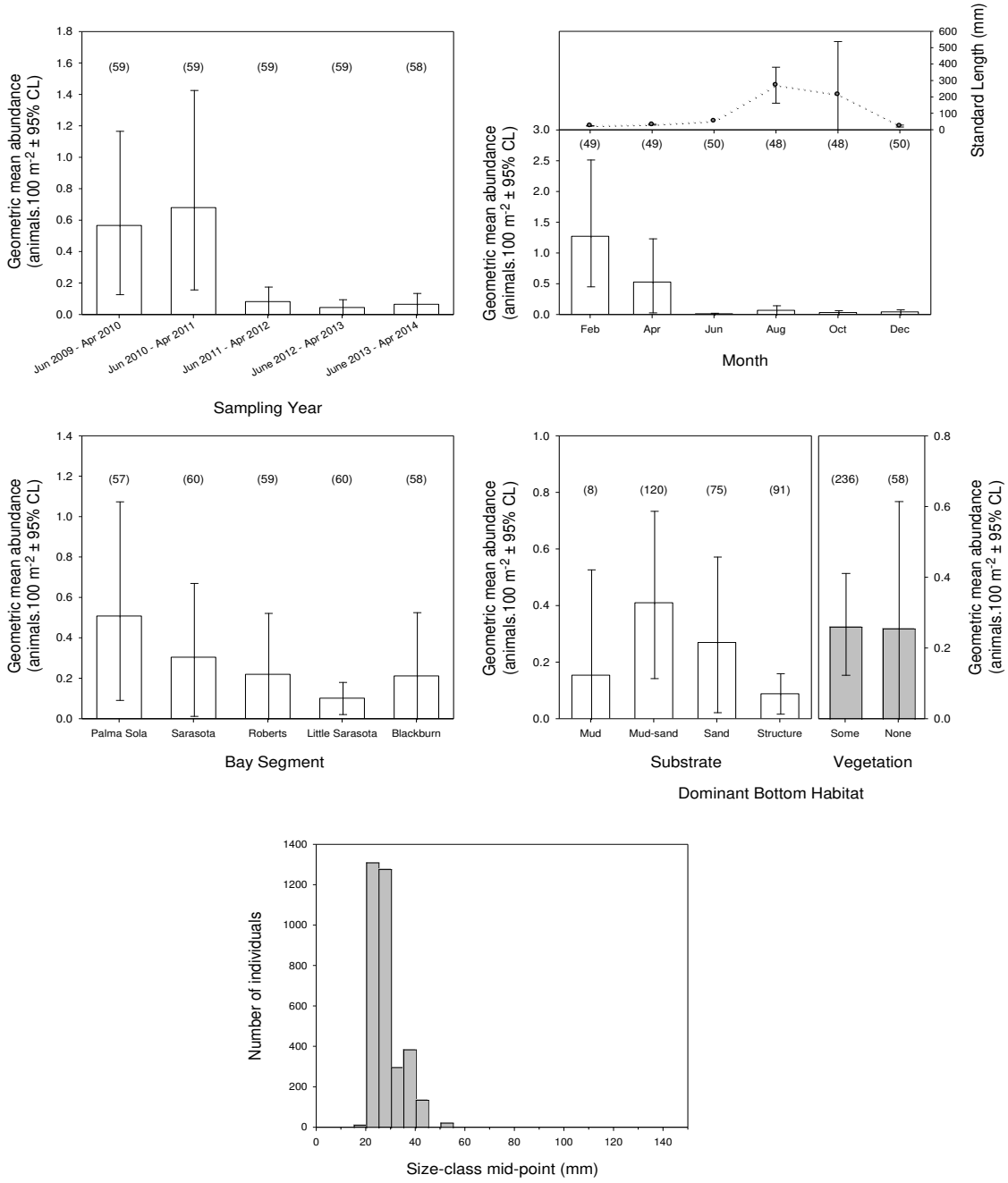

Figure 23. Relative abundance and length-frequency distribution of Striped Mullet collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Mugil cephalus (Striped Mullet)

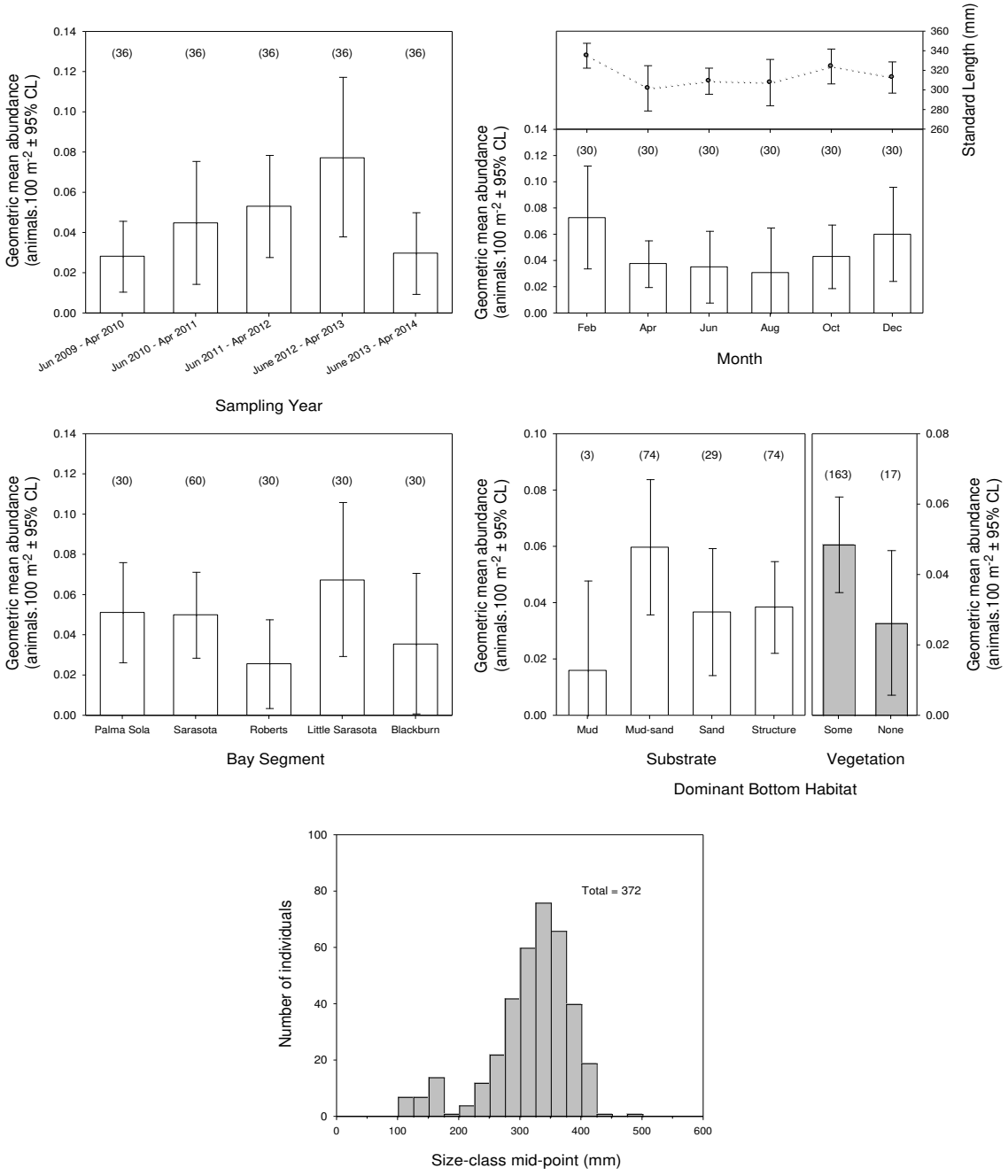

Figure 24. Relative abundance and length-frequency distribution of Striped Mullet collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

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APPENDICES

Appendix A. Animals designated as Selected Taxa because of their commercial or recreational importance.

Scientific Name	Common Name
Albula vulpes	*Bonefish*
Archosargus probatocephalus	*Sheepshead*
Callinectes sapidus	*Blue Crab*
Centropomus undecimalis	*Common Snook*
Cynoscion arenarius	*sand Seatrout*
Cynoscion nebulosus	Spotted Seatrout
Cynoscion nothus	Silver Seatrout
Cynoscion regalis	Weakfish
Cynoscion complex	Seatrout
Elops saurus	Ladyfish
Epinephelus adscensionis	Rock hind
Epinephelus afer	Mutton Hamlet
Epinephelus cruentatus	Graysby
Epinephelus drummondhayi	Speckled Hind
Epinephelus flavolimbatus	Yellowedge Grouper
Epinephelus fulvus	Coney
Epinephelus guttatus	Red hind
Epinephelus inermis	Marbled Grouper
Epinephelus itajara	Goliath Grouper
Epinephelus morio	Red Grouper
Epinephelus mystacinus	Misty Grouper
Epinephelus nigritus	Warsaw Grouper
Epinephelus niveatus	Snowy Grouper
Epinephelus striatus	Nassau Grouper
Farfantepenaeus aztecus	Brown Shrimp
Farfantepenaeus duorarum	Pink Shrimp
Farfantepenaeus brasiliensis	Pinkspotted Shrimp
Farfantepenaeus spp.	Penaeid Shrimps
Leiostomus xanthurus	Spot
Litopenaeus setiferus	White Shrimp
Lutjanus analis	Mutton Snapper
Lutjanus apodus	Schoolmaster
Lutjanus buccanella	Blackfin Snapper
Lutjanus campechanus	Red Snapper
Lutjanus cyanopterus	Cubera Snapper
Lutjanus griseus	Gray Snapper
Lutjanus jocu	Dog Snapper
Lutjanus mahogoni	Mahogany Snapper
Lutjanus synagris	Lane Snapper
Lutjanus vivanus	Silk Snapper
Megalops atlanticus	Tarpon
Menippe spp.	Stone Crab
Menticirrhus americanus	Southern Kingfish
Menticirrhus littoralis	Gulf Kingfish
Menticirrhus saxatillis	Northern Kingfish
Micropogonias undulatus	Atlantic Croaker
Mugil cephalus	Striped Mullet
Mugil curema	White Mullet
Mugil gaimardianus	Redeye Mullet
Mugil gyrans	Whirligig Mullet
Mugil liza	Liza
Mycteroperca bonaci	Black Grouper
Mycteroperca microlepis	Gag
Mycteroperca phenax	Scamp
Mycteroperca tigris	Tiger Grouper
Mycteroperca venenosa	Yellowfin Grouper
Panulirus argus	Spiny Lobster
Paralichthys albigutta	Gulf Flounder
Paralichthys dentatus	Summer Flounder
Paralichthys lethostigma	Southern Flounder
Paralichthys oblongus	Fourspot Flounder
Paralichthys squamilentus	Broad Flounder
Penaeidae spp.	Shrimps
Pogonias cromis	Black Drum
Pomatomus saltatrix	Bluefish
Rachycentron canadum	Cobia
Sciaenops ocellatus	Red Drum
Scomberomorus cavalla	King Mackerel
Scomberomorus maculatus	Spanish Mackerel
Scomberomorus regalis	Cero
Trachinotus carolinus	Pompano
Trachinotus falcatus	Permit
Trachinotus goodei	Palometa

Appendix B. Summary of species collected, by sampling event (bi-monthly), during Sarasota Bay nekton sampling, June 2013 to April 2014. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name.

Species	Common Name	Month						Totals
		Feb	Apr	Jun	Aug	Oct	Dec	
		E=38	E=40	E=42	E=42	E=42	E=42	E=246
Acanthostracion quadricornis	Scrawled Cowfish	3	14	9	10	10	6	52
Achirus lineatus	Lined Sole	6	2	4	12	9	4	37
Aluterus schoepfii	Orange Filefish	1	.	1	.	3	.	5
Anarchopterus criniger	Fringed Pipefish	5	1	.	.	.	.	6
Anchoa cubana	Cuban Anchovy	.	.	.	61	.	273	334
Anchoa hepsetus	Striped Anchovy	.	.	82	62	1	2	147
Anchoa lyolepis	Dusky Anchovy	.	.	.	74	.	2	76
Anchoa mitchilli	Bay Anchovy	13	90	1,024	18,346	2,682	1,192	23,347
Ancylopsetta quadrocellata	Ocellated Flounder	2	1	.	.	.	.	3
Archosargus probatocephalus	Sheepshead	184	29	99	44	41	75	472
Argopecten spp.	Scallops	.	.	.	.	1	.	1
Ariopsis felis	Hardhead Catfish	5	13	122	29	23	9	201
Astroscopus y-graecum	Southern Stargazer	.	3	.	.	.	.	3
Bagre marinus	Gafftopsail Catfish	863	.	1	1	.	.	865
Bairdiella chrysoura	Silver Perch	18	25	330	915	30	.	1,318
Bathygobius soporator	Frillfin Goby	1	.	.	.	.	.	1
Brevoortia spp.	Menhadens	2	2	13	80	1	277	375
Calamus arctifrons	Grass Porgy	.	.	.	.	1	.	1
Calamus spp.		2	1	.	.	.	3	6
Callinectes ornatus	Shelligs	.	.	2	1	.	.	3
Callinectes sapidus	Blue Crab	28	36	28	51	14	22	179
Callinectes similis	Lesser Blue Crab	.	1	.	.	.	.	1
Callinectes spp.		.	1	.	.	.	.	1
Caranx hippos	Crevalle Jack	7	6	8	5	4	10	40
Centropomus undecimalis	Common Snook	24	16	15	22	18	24	119
Centropristis striata	Black Sea Bass	38	1	3	2	7	.	51
Chaetodipterus faber	Atlantic Spadefish	2	5	1	3	1	.	12

Appendix B. (Continued)

Species	Common Name	Month						Totals
		Feb	Apr	Jun	Aug	Oct	Dec	
		E=38	E=40	E=42	E=42	E=42	E=42	E=246
Chasmodes saburrae	Florida Blenny	4	2	3	10	4	3	26
Chilomycterus schoepfii	Striped Burrfish	5	14	12	10	16	4	61
Citharichthys macrops	Spotted Whiff	4	.	.	.	.	.	4
Ctenogobius boleosoma	Darter Goby	16	27	.	2	51	.	96
Ctenogobius smaragdus	Emerald Goby	.	.	.	.	.	1	1
Cynoscion arenarius	Sand Seatrout	.	.	.	2	215	.	217
Cynoscion nebulosus	Spotted Seatrout	10	3	46	79	67	4	209
Cyprinodon variegatus	Sheepshead Minnow	.	.	39	2	.	36	77
Dasyatis americana	Southern Stingray	.	.	.	.	1	1	2
Dasyatis sabina	Atlantic Stingray	3	1	12	5	14	3	38
Dasyatis say	Bluntnose Stingray	3	2	.	1	.	.	6
Diapterus auratus	Irish Pompano	.	1	10	1	10	.	22
Diodon holocanthus	Balloonfish	1	.	.	1	.	.	2
Diplectrum formosum	Sand Perch	1	.	1	.	.	.	2
Diplodus holbrookii	Spottail Pinfish	.	9	2	9	.	.	20
Diplogrammus pauciradiatus	Spotted Dragonet	.	.	.	.	.	1	1
Elops saurus	Ladyfish	22	8	16	2	.	23	71
Etropus crossotus	Fringed Flounder	.	.	1	6	1	1	9
Eucinostomus argenteus	Spotfin Mojarra	.	2	.	.	.	.	2
Eucinostomus gula	Silver Jenny	122	94	139	835	1,013	244	2,447
Eucinostomus harengulus	Tidewater Mojarra	108	35	145	60	57	10	415
Eucinostomus spp.	Eucinostomus	2,106	664	8,342	4,957	5,587	5,057	26,713
Eugerres plumieri	Striped Mojarra	.	.	64	10	8	1	83
Farfantepenaeus duorarum	Pink Shrimp	128	52	180	533	1,078	238	2,209
Floridichthys carpio	Goldspotted Killifish	9	10	536	131	171	143	1,000
Fundulus grandis	Gulf Killifish	.	.	16	.	6	28	50
Fundulus similis	Longnose Killifish	.	.	35	1	.	4	40
Gobiosoma bosc	Naked Goby	3	.	2	.	.	.	5
Gobiosoma longipala	Twoscale Goby	1	3	.	.	.	3	7
Gobiosoma robustum	Code Goby	76	95	17	24	23	43	278
Gobiosoma spp.	Gobiosoma Gobies	12	1	32	8	39	25	117
Gymnura micrura	Smooth Butterfly Ray	2	3	5	2	1	.	13
Haemulon plumierii	White Grunt	1	.	1	23	18	.	43

Appendix B. (Continued)

Species	Common Name	Month						Totals
		Feb	Apr	Jun	Aug	Oct	Dec	
		E=38	E=40	E=42	E=42	E=42	E=42	E=246
Halichoeres bivittatus	Slippery Dick	.	.	1	.	.	.	1
Harengula jaguana	Scaled Sardine	3	.	2,466	1,439	1,562	.	5,470
Hippocampus erectus	Lined Seahorse	2	2	2	2	1	.	9
Hippocampus zosterae	Dwarf Seahorse	3	5	2	1	3	1	15
Hypleurochilus caudovittatus	Zebratail Blenny	.	1	.	1	.	.	2
Hyporhamphus meeki	False Silver Halfbeak	.	.	12	.	.	.	12
Hyporhamphus spp.	Halfbeaks	.	.	71	.	.	.	71
Hyporhamphus unifasciatus	Halfbeak	.	.	.	1	.	.	1
Hypsoblennius hentz	Feather Blenny	.	1	.	.	.	.	1
Lachnolaimus maximus	Hogfish	16	.	.	.	.	.	16
Lactophrys spp.	Trunkfishes	.	.	.	1	.	.	1
Lactophrys trigonus	Trunkfish	.	.	.	1	.	.	1
Lagodon rhomboides	Pinfish	23,163	10,286	3,831	2,793	853	326	41,252
Leiostomus xanthurus	Spot	2,932	270	3	7	3	.	3,215
Limulus polyphemus	Horseshoe Crab	1	1	.	.	11	.	13
Lucania parva	Rainwater Killifish	1	479	1,704	516	702	1,187	4,589
Lupinoblennius nicholsi	Highfin Blenny	.	.	.	.	.	1	1
Lutjanus analis	Mutton Snapper	.	.	.	.	2	.	2
Lutjanus griseus	Gray Snapper	.	1	38	42	129	6	216
Lutjanus synagris	Lane Snapper	1	2	3	20	25	11	62
Membras martinica	Rough Silverside	.	.	4	4	.	.	8
Menidia spp.	Menidia Silversides	.	13	3,205	133	47	3	3,401
Menippe spp.	Stone Crab	1	68	11	5	25	25	135
Menticirrhus americanus	Southern Kingfish	.	.	.	1	1	3	5
Menticirrhus saxatilis	Northern Kingfish	5	1	.	.	.	3	9
Microgobius gulosus	Clown Goby	63	36	37	97	316	145	694
Microgobius thalassinus	Green Goby	1	.	.	.	8	1	10
Monacanthus ciliatus	Fringed Filefish	1	3	.	.	1	1	6
Mugil cephalus	Striped Mullet	15	7	24	7	6	2	61
Mugil curema	White Mullet	4	5	2	10	8	13	42
Mugil trichodon	Fantail Mullet	133	.	1	3	5	5	147
Mycteroperca microlepis	Gag	.	.	2	5	2	.	9
Nicholsina usta	Emerald Parrotfish	168	17	2	.	4	10	201

Appendix B. (Continued)

Species	Common Name	Month						Totals
		Feb	Apr	Jun	Aug	Oct	Dec	
		E=38	E=40	E=42	E=42	E=42	E=42	E=246
Ogcocephalus cubifrons	Polka-dot Batfish	.	3	.	.	.	2	5
Oligoplites saurus	Leatherjacket	.	.	45	79	7	.	131
Opisthonema oglinum	Atlantic Thread Herring	.	.	88	97	4	.	189
Opsanus beta	Gulf Toadfish	.	5	12	2	5	1	25
Orthopristis chrysoptera	Pigfish	5,482	1,667	495	249	128	63	8,084
Ostraciidae spp.	Boxfishes	1	.	.	.	.	.	1
Paralichthys albigutta	Gulf Flounder	22	26	44	11	12	5	120
Penaeidae spp.	Penaeid Shrimps	1	.	.	.	.	.	1
Poecilia latipinna	Sailfin Molly	.	.	1	.	.	24	25
Pogonias cromis	Black Drum	2	22	29	1	10	3	67
Portunus spp.	Portunus Crabs	8	10	22	15	3	12	70
Prionotus scitulus	Leopard Searobin	24	11	8	1	10	13	67
Prionotus tribulus	Bighead Searobin	9	2	.	.	2	17	30
Rhinoptera bonasus	Cownose Ray	.	.	2	.	.	.	2
Rimapenaeus constrictus	Roughneck Shrimp	1	.	.	.	.	.	1
Sciaenops ocellatus	Red Drum	28	2	4	3	34	292	363
Scomberomorus maculatus	Spanish Mackerel	1	8	2	2	.	3	16
Scorpaena brasiliensis	Barbfish	1	.	.	.	1	.	2
Selene vomer	Lookdown	.	1	1	.	.	2	4
Serranus subligarius	Belted Sandfish	1	.	.	.	.	.	1
Sicyonia laevigata	Hardback	1	.	.	.	.	1	2
Sicyonia typica	Kinglet Rock Shrimp	2	.	.	.	.	1	3
Sphoeroides nephelus	Southern Puffer	4	5	5	5	8	18	45
Sphoeroides spengleri	Bandtail Puffer	.	1	.	.	.	.	1
Sphyraena barracuda	Great Barracuda	1	1	7	12	3	28	52
Sphyraena borealis	Sennet	.	6	.	.	.	.	6
Sphyrna tiburo	Bonnethead	.	1	.	.	.	.	1
Stephanolepis hispidus	Planehead Filefish	7	23	28	14	19	18	109
Strongylura marina	Atlantic Needlefish	1	.	5	.	.	.	6
Strongylura notata	Redfin Needlefish	26	23	42	56	43	4	194
Symphurus plagiusa	Blackcheek Tonguefish	1	3	.	2	3	1	10
Syngnathidae spp.		.	.	.	.	1	.	1
Syngnathus floridae	Dusky Pipefish	24	4	4	3	7	8	50

Appendix B. (Continued)

Species	Common Name	Month						Totals
		Feb	Apr	Jun	Aug	Oct	Dec	
		E=38	E=40	E=42	E=42	E=42	E=42	E=246
Syngnathus louisianae	Chain Pipefish	1	1	4	14	2	6	28
Syngnathus scovelli	Gulf Pipefish	52	60	47	31	18	29	237
Syngnathus spp.	Pipefishes	.	.	.	.	1	.	1
Synodus foetens	Inshore Lizardfish	36	20	32	26	20	22	156
Trachinotus carolinus	Florida Pompano	20	1	.	.	.	.	21
Trachinotus falcatus	Permit	4	8	1	.	1	.	14
Trinectes maculatus	Hogchoker	.	.	.	.	.	1	1
Tylosurus spp.		.	.	.	.	1	3	4
Totals		**36,115**	**14,385**	**23,747**	**32,144**	**15,283**	**10,092**	**131,766**

Appendix C. Summary of species collected, by gear and stratum, during Sarasota Bay nekton sampling, June 2013 to April 2014. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name.

Species	Common Name	Gear and Strata						Totals
		21.3-m bay seine			183-m haul seine		6.1-m otter trawl	
		Veg	Unveg	Shore	Over	Nonover		
		E=64	E=40	E=58	E=25	E=10	E=48	E=246
Acanthostracion quadricornis	Scrawled Cowfish	14	1	.	3	9	25	52
Achirus lineatus	Lined Sole	4	1	24	.	.	8	37
Aluterus schoepfii	Orange Filefish	3	.	1	1	.	.	5
Anarchopterus criniger	Fringed Pipefish	.	.	.	.	.	6	6
Anchoa cubana	Cuban Anchovy	2	.	332	.	.	.	334
Anchoa hepsetus	Striped Anchovy	86	.	59	.	.	2	147
Anchoa lyolepis	Dusky Anchovy	.	.	76	.	.	.	76
Anchoa mitchilli	Bay Anchovy	5,801	161	17,382	.	.	3	23,347
Ancylopsetta quadrocellata	Ocellated Flounder	.	.	.	.	.	3	3
Archosargus probatocephalus	Sheepshead	15	3	26	236	149	40	472
Argopecten spp.	Scallops	.	.	.	.	.	1	1
Ariopsis felis	Hardhead Catfish	3	1	.	112	78	7	201
Astroscopus y-graecum	Southern Stargazer	.	.	.	2	1	.	3
Bagre marinus	Gafftopsail Catfish	.	.	.	865	.	.	865
Bairdiella chrysoura	Silver Perch	940	1	349	11	.	17	1,318
Bathygobius soporator	Frillfin Goby	.	.	1	.	.	.	1
Brevoortia spp.	Menhadens	11	.	15	278	.	.	375
Calamus arctifrons	Grass Porgy	.	.	.	.	.	1	1
Calamus spp.		2	2	2	.	.	.	6
Callinectes ornatus	Shelligs	.	.	.	.	.	3	3
Callinectes sapidus	Blue Crab	15	11	42	17	5	87	179
Callinectes similis	Lesser Blue Crab	.	.	.	.	.	1	1
Callinectes spp.		.	.	1	.	.	.	1
Caranx hippos	Crevalle Jack	2	.	.	28	8	.	40
Centropomus undecimalis	Common Snook	2	1	12	87	15	.	119

Appendix C. (Continued)

Species	Common Name	Gear and Strata						Totals
		21.3-m bay seine			183-m haul seine		6.1-m otter trawl	
		Veg	Unveg	Shore	Over	Nonover		
		E=64	E=40	E=58	E=25	E=10	E=48	E=246
Centropristis striata	Black Sea Bass	8	.	1	2	1	39	51
Chaetodipterus faber	Atlantic Spadefish	2	1	.	2	5	2	12
Chasmodes saburrae	Florida Blenny	23	.	2	.	.	1	26
Chilomycterus schoepfii	Striped Burrfish	6	.	.	13	4	38	61
Citharichthys macrops	Spotted Whiff	.	.	.	.	.	4	4
Ctenogobius boleosoma	Darter Goby	44	2	50	.	.	.	96
Ctenogobius smaragdus	Emerald Goby	.	.	1	.	.	.	1
Cynoscion arenarius	Sand Seatrout	9	87	116	.	.	5	217
Cynoscion nebulosus	Spotted Seatrout	121	8	56	16	3	5	209
Cyprinodon variegatus	Sheepshead Minnow	2	.	75	.	.	.	77
Dasyatis americana	Southern Stingray	.	.	.	2	.	.	2
Dasyatis sabina	Atlantic Stingray	1	1	6	21	7	2	38
Dasyatis say	Bluntnose Stingray	.	.	1	2	3	.	6
Diapterus auratus	Irish Pompano	1	.	1	11	9	.	22
Diodon holocanthus	Balloonfish	1	.	.	.	.	1	2
Diplectrum formosum	Sand Perch	.	.	.	.	.	2	2
Diplodus holbrookii	Spottail Pinfish	12	.	.	8	.	.	20
Diplogrammus pauciradiatus	Spotted Dragonet	1	.	.	.	.	.	1
Elops saurus	Ladyfish	2	.	.	58	10	1	71
Etropus crossotus	Fringed Flounder	.	4	.	.	.	5	9
Eucinostomus argenteus	Spotfin Mojarra	1	1	.	.	.	.	2
Eucinostomus gula	Silver Jenny	967	64	1,073	79	90	174	2,447
Eucinostomus harengulus	Tidewater Mojarra	39	125	226	2	5	18	415
Eucinostomus spp.	Eucinostomus	9,975	1,828	10,757	1	.	4,152	26,713
Eugerres plumieri	Striped Mojarra	.	.	21	48	9	5	83
Farfantepenaeus duorarum	Pink Shrimp	1,105	68	974	5	.	57	2,209
Floridichthys carpio	Goldspotted Killifish	27	14	959	.	.	.	1,000
Fundulus grandis	Gulf Killifish	.	.	50	.	.	.	50
Fundulus similis	Longnose Killifish	.	.	40	.	.	.	40
Gobiosoma bosc	Naked Goby	.	2	.	.	.	3	5
Gobiosoma longipala	Twoscale Goby	.	.	.	.	.	7	7
Gobiosoma robustum	Code Goby	122	19	77	.	.	60	278

Appendix C. (Continued)

Species	Common Name	Gear and Strata						Totals
		21.3-m bay seine			183-m haul seine		6.1-m otter trawl	
		Veg	Unveg	Shore	Over	Nonover		
		E=64	E=40	E=58	E=25	E=10	E=48	E=246
Gobiosoma spp.	Gobiosoma Gobies	36	19	28	.	.	34	117
Gymnura micrura	Smooth Butterfly Ray	.	1	.	6	1	5	13
Haemulon plumierii	White Grunt	40	.	.	.	.	3	43
Halichoeres bivittatus	Slippery Dick	.	.	.	.	.	1	1
Harengula jaguana	Scaled Sardine	3,421	202	1,844	.	3	.	5,470
Hippocampus erectus	Lined Seahorse	.	2	2	.	.	5	9
Hippocampus zosterae	Dwarf Seahorse	8	.	7	.	.	.	15
Hypleurochilus caudovittatus	Zebratail Blenny	.	.	.	.	.	2	2
Hyporhamphus meeki	False Silver Halfbeak	12	.	.	.	.	.	12
Hyporhamphus spp.	Halfbeaks	2	69	.	.	.	.	71
Hyporhamphus unifasciatus	Halfbeak	.	1	.	.	.	.	1
Hypsoblennius hentz	Feather Blenny	.	.	1	.	.	.	1
Lachnolaimus maximus	Hogfish	.	.	.	.	.	16	16
Lactophrys spp.	Trunkfishes	1	.	.	.	.	.	1
Lactophrys trigonus	Trunkfish	.	.	.	.	.	1	1
Lagodon rhomboides	Pinfish	12,324	739	9,102	2,459	341	15,754	41,252
Leiostomus xanthurus	Spot	261	63	2,395	11	3	482	3,215
Limulus polyphemus	Horseshoe Crab	1	3	.	2	.	7	13
Lucania parva	Rainwater Killifish	1,570	7	3,012	.	.	.	4,589
Lupinoblennius nicholsi	Highfin Blenny	.	1	.	.	.	.	1
Lutjanus analis	Mutton Snapper	2	.	.	.	.	.	2
Lutjanus griseus	Gray Snapper	72	1	35	61	24	21	216
Lutjanus synagris	Lane Snapper	25	.	3	2	4	28	62
Membras martinica	Rough Silverside	6	.	2	.	.	.	8
Menidia spp.	Menidia Silversides	1,902	1	1,495	.	.	3	3,401
Menippe spp.	Stone Crab	.	.	.	.	1	134	135
Menticirrhus americanus	Southern Kingfish	.	.	.	.	.	5	5
Menticirrhus saxatilis	Northern Kingfish	5	3	1	.	.	.	9
Microgobius gulosus	Clown Goby	409	74	209	.	.	2	694
Microgobius thalassinus	Green Goby	.	8	.	.	.	2	10
Monacanthus ciliatus	Fringed Filefish	1	.	.	.	2	3	6
Mugil cephalus	Striped Mullet	3	.	10	37	10	1	61

Appendix C. (Continued)

Species	Common Name	Gear and Strata						Totals
		21.3-m bay seine			183-m haul seine		6.1-m otter trawl	
		Veg	Unveg	Shore	Over	Nonover		
		E=64	E=40	E=58	E=25	E=10	E=48	E=246
Mugil curema	White Mullet	.	3	13	19	7	.	42
Mugil trichodon	Fantail Mullet	.	.	4	49	94	.	147
Mycteroperca microlepis	Gag	3	.	.	6	.	.	9
Nicholsina usta	Emerald Parrotfish	22	.	2	.	7	170	201
Ogcocephalus cubifrons	Polka-dot Batfish	.	.	.	.	2	3	5
Oligoplites saurus	Leatherjacket	35	9	82	4	.	.	131
Opisthonema oglinum	Atlantic Thread Herring	180	5	3	1	.	.	189
Opsanus beta	Gulf Toadfish	.	1	3	8	1	12	25
Orthopristis chrysoptera	Pigfish	2,556	37	326	391	15	4,759	8,084
Ostraciidae spp.	Boxfishes	1	.	.	.	.	.	1
Paralichthys albigutta	Gulf Flounder	9	9	12	40	13	37	120
Penaeidae spp.	Penaeid Shrimps	.	.	.	.	.	1	1
Poecilia latipinna	Sailfin Molly	.	.	25	.	.	.	25
Pogonias cromis	Black Drum	.	.	1	39	26	.	67
Portunus spp.	Portunus Crabs	.	.	.	.	.	70	70
Prionotus scitulus	Leopard Searobin	1	6	8	3	.	49	67
Prionotus tribulus	Bighead Searobin	3	2	8	2	.	15	30
Rhinoptera bonasus	Cownose Ray	.	.	2	.	.	.	2
Rimapenaeus constrictus	Roughneck Shrimp	.	.	.	.	.	1	1
Sciaenops ocellatus	Red Drum	214	2	121	22	4	.	363
Scomberomorus maculatus	Spanish Mackerel	.	.	.	8	8	.	16
Scorpaena brasiliensis	Barbfish	.	.	.	.	.	2	2
Selene vomer	Lookdown	.	.	.	3	1	.	4
Serranus subligarius	Belted Sandfish	.	.	.	.	.	1	1
Sicyonia laevigata	Hardback	.	.	.	.	.	2	2
Sicyonia typica	Kinglet Rock Shrimp	.	3	.	.	.	.	3
Sphoeroides nephelus	Southern Puffer	14	3	15	5	1	7	45
Sphoeroides spengleri	Bandtail Puffer	.	.	.	1	.	.	1
Sphyraena barracuda	Great Barracuda	.	.	4	47	1	.	52
Sphyraena borealis	Sennet	6	.	.	.	.	.	6
Sphyrna tiburo	Bonnethead	1	.	.	.	.	.	1
Stephanolepis hispidus	Planehead Filefish	41	9	8	23	2	26	109

Appendix C. (Continued)

Species	Common Name	Gear and Strata						Totals
		21.3-m bay seine			183-m haul seine		6.1-m otter trawl	
		Veg	Unveg	Shore	Over	Nonover		
		E=64	E=40	E=58	E=25	E=10	E=48	E=246
Strongylura marina	Atlantic Needlefish	5	.	.	.	.	1	6
Strongylura notata	Redfin Needlefish	21	5	60	70	33	5	194
Symphurus plagiusa	Blackcheek Tonguefish	1	5	1	.	.	3	10
Syngnathidae spp.		1	.	.	.	.	.	1
Syngnathus floridae	Dusky Pipefish	16	.	7	1	.	26	50
Syngnathus louisianae	Chain Pipefish	9	.	7	.	.	12	28
Syngnathus scovelli	Gulf Pipefish	156	13	42	.	.	26	237
Syngnathus spp.	Pipefishes	.	.	1	.	.	.	1
Synodus foetens	Inshore Lizardfish	25	19	51	10	.	51	156
Trachinotus carolinus	Florida Pompano	.	.	.	20	1	.	21
Trachinotus falcatus	Permit	.	1	.	4	9	.	14
Trinectes maculatus	Hogchoker	.	.	.	1	.	.	1
Tylosurus spp.		.	.	.	3	1	.	4
Totals		**42,790**	**3,732**	**51,760**	**5,268**	**1,026**	**26,573**	**131,766**

Appendix D. Summary of species collected, by embayment, during Sarasota Bay stratified-random sampling, June 2013 to April 2014. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name

Species	Common Name	Zone					Totals
		Palma Sola Bay (A)	Sarasota Bay (B)	Roberts Bay (C)	Little Sarasota Bay (D)	Blackburn Bay (E)	
		E=38	E=83	E=41	E=42	E=42	E=246
Acanthostracion quadricornis	Scrawled Cowfish	15	37	.	.	.	52
Achirus lineatus	Lined Sole	1	8	11	8	9	37
Aluterus schoepfii	Orange Filefish	1	2	2	.	.	5
Anarchopterus criniger	Fringed Pipefish	.	6	.	.	.	6
Anchoa cubana	Cuban Anchovy	.	.	332	2	.	334
Anchoa hepsetus	Striped Anchovy	.	3	98	43	3	147
Anchoa lyolepis	Dusky Anchovy	.	.	76	.	.	76
Anchoa mitchilli	Bay Anchovy	4,445	690	1,598	16,457	157	23,347
Ancylopsetta quadrocellata	Ocellated Flounder	.	1	.	.	2	3
Archosargus probatocephalus	Sheepshead	48	84	180	85	75	472
Argopecten spp.	Scallops	.	1	.	.	.	1
Ariopsis felis	Hardhead Catfish	7	59	58	64	13	201
Astroscopus y-graecum	Southern Stargazer	2	1	.	.	.	3
Bagre marinus	Gafftopsail Catfish	.	.	.	865	.	865
Bairdiella chrysoura	Silver Perch	100	53	715	372	78	1,318
Bathygobius soporator	Frillfin Goby	.	1	.	.	.	1
Brevoortia spp.	Menhadens	349	2	1	23	.	375
Calamus arctifrons	Grass Porgy	.	1	.	.	.	1
Calamus spp.		.	3	3	.	.	6
Callinectes ornatus	Shelligs	2	.	1	.	.	3
Callinectes sapidus	Blue Crab	30	19	43	66	21	179
Callinectes similis	Lesser Blue Crab	.	.	.	1	.	1
Callinectes spp.		.	.	1	.	.	1
Caranx hippos	Crevalle Jack	4	4	7	20	5	40
Centropomus undecimalis	Common Snook	11	13	11	17	67	119
Centropristis striata	Black Sea Bass	.	48	2	.	1	51

Appendix D. (Continued)

Species	Common Name	Zone					Totals
		Palma Sola Bay (A)	Sarasota Bay (B)	Roberts Bay (C)	Little Sarasota Bay (D)	Blackburn Bay (E)	
		E=38	E=83	E=41	E=42	E=42	E=246
Chaetodipterus faber	Atlantic Spadefish	4	5	1	1	1	12
Chasmodes saburrae	Florida Blenny	10	13	2	.	1	26
Chilomycterus schoepfii	Striped Burrfish	15	32	3	7	4	61
Citharichthys macrops	Spotted Whiff	.	3	.	.	1	4
Ctenogobius boleosoma	Darter Goby	.	12	4	4	76	96
Ctenogobius smaragdus	Emerald Goby	.	.	.	.	1	1
Cynoscion arenarius	Sand Seatrout	.	1	212	4	.	217
Cynoscion nebulosus	Spotted Seatrout	56	29	48	44	32	209
Cyprinodon variegatus	Sheepshead Minnow	32	45	.	.	.	77
Dasyatis americana	Southern Stingray	.	.	.	.	2	2
Dasyatis sabina	Atlantic Stingray	.	6	9	17	6	38
Dasyatis say	Bluntnose Stingray	.	2	2	2	.	6
Diapterus auratus	Irish Pompano	.	.	13	1	8	22
Diodon holocanthus	Balloonfish	.	2	.	.	.	2
Diplectrum formosum	Sand Perch	.	2	.	.	.	2
Diplodus holbrookii	Spottail Pinfish	2	15	1	1	1	20
Diplogrammus pauciradiatus	Spotted Dragonet	.	.	.	.	1	1
Elops saurus	Ladyfish	35	12	.	23	1	71
Etropus crossotus	Fringed Flounder	1	.	4	.	4	9
Eucinostomus argenteus	Spotfin Mojarra	.	1	.	.	1	2
Eucinostomus gula	Silver Jenny	472	681	397	376	521	2,447
Eucinostomus harengulus	Tidewater Mojarra	57	113	21	125	99	415
Eucinostomus spp.	Eucinostomus	4,067	8,612	3,608	5,463	4,963	26,713
Eugerres plumieri	Striped Mojarra	.	29	.	51	3	83
Farfantepenaeus duorarum	Pink Shrimp	296	222	201	509	981	2,209
Floridichthys carpio	Goldspotted Killifish	643	210	110	.	37	1,000
Fundulus grandis	Gulf Killifish	22	20	.	1	7	50
Fundulus similis	Longnose Killifish	36	4	.	.	.	40
Gobiosoma bosc	Naked Goby	.	.	3	2	.	5
Gobiosoma longipala	Twoscale Goby	.	5	1	.	1	7
Gobiosoma robustum	Code Goby	42	111	35	52	38	278
Gobiosoma spp.	Gobiosoma Gobies	8	13	19	60	17	117

Appendix D. (Continued)

Species	Common Name	Zone					Totals
		Palma Sola Bay (A)	Sarasota Bay (B)	Roberts Bay (C)	Little Sarasota Bay (D)	Blackburn Bay (E)	
		E=38	E=83	E=41	E=42	E=42	E=246
Gymnura micrura	Smooth Butterfly Ray	2	4	1	6	.	13
Haemulon plumierii	White Grunt	.	43	.	.	.	43
Halichoeres bivittatus	Slippery Dick	.	1	.	.	.	1
Harengula jaguana	Scaled Sardine	157	2,580	480	239	2,014	5,470
Hippocampus erectus	Lined Seahorse	.	2	2	2	3	9
Hippocampus zosterae	Dwarf Seahorse	1	10	1	2	1	15
Hypleurochilus caudovittatus	Zebratail Blenny	.	2	.	.	.	2
Hyporhamphus meeki	False Silver Halfbeak	.	10	.	.	2	12
Hyporhamphus spp.	Halfbeaks	.	70	.	1	.	71
Hyporhamphus unifasciatus	Halfbeak	.	.	.	.	1	1
Hypsoblennius hentz	Feather Blenny	.	.	1	.	.	1
Lachnolaimus maximus	Hogfish	.	16	.	.	.	16
Lactophrys spp.	Trunkfishes	.	1	.	.	.	1
Lactophrys trigonus	Trunkfish	.	.	.	.	1	1
Lagodon rhomboides	Pinfish	3,097	25,214	4,560	5,036	3,345	41,252
Leiostomus xanthurus	Spot	285	219	264	2,436	11	3,215
Limulus polyphemus	Horseshoe Crab	9	2	.	.	2	13
Lucania parva	Rainwater Killifish	1,644	1,958	76	507	404	4,589
Lupinoblennius nicholsi	Highfin Blenny	.	.	.	1	.	1
Lutjanus analis	Mutton Snapper	.	.	.	1	1	2
Lutjanus griseus	Gray Snapper	39	92	29	17	39	216
Lutjanus synagris	Lane Snapper	2	38	5	1	16	62
Membras martinica	Rough Silverside	.	6	2	.	.	8
Menidia spp.	Menidia Silversides	1,362	35	12	42	1,950	3,401
Menippe spp.	Stone Crab	48	75	.	7	5	135
Menticirrhus americanus	Southern Kingfish	1	.	3	1	.	5
Menticirrhus saxatilis	Northern Kingfish	.	8	.	.	1	9
Microgobius gulosus	Clown Goby	23	42	121	424	84	694
Microgobius thalassinus	Green Goby	.	.	8	2	.	10
Monacanthus ciliatus	Fringed Filefish	.	4	1	.	1	6
Mugil cephalus	Striped Mullet	8	16	24	10	3	61
Mugil curema	White Mullet	6	17	4	4	11	42

Appendix D. (Continued)

Species	Common Name	Zone					Totals
		Palma Sola Bay (A)	Sarasota Bay (B)	Roberts Bay (C)	Little Sarasota Bay (D)	Blackburn Bay (E)	
		E=38	E=83	E=41	E=42	E=42	E=246
Mugil trichodon	Fantail Mullet	5	115	3	2	22	147
Mycteroperca microlepis	Gag	.	3	3	.	3	9
Nicholsina usta	Emerald Parrotfish	.	197	.	.	4	201
Ogcocephalus cubifrons	Polka-dot Batfish	1	2	1	.	1	5
Oligoplites saurus	Leatherjacket	19	14	38	56	4	131
Opisthonema oglinum	Atlantic Thread Herring	40	27	75	46	1	189
Opsanus beta	Gulf Toadfish	10	9	1	1	4	25
Orthopristis chrysoptera	Pigfish	338	6,139	393	1,092	122	8,084
Ostraciidae spp.	Boxfishes	.	1	.	.	.	1
Paralichthys albigutta	Gulf Flounder	21	38	19	17	25	120
Penaeidae spp.	Penaeid Shrimps	.	1	.	.	.	1
Poecilia latipinna	Sailfin Molly	.	24	1	.	.	25
Pogonias cromis	Black Drum	5	15	12	29	6	67
Portunus spp.	Portunus Crabs	11	35	8	12	4	70
Prionotus scitulus	Leopard Searobin	12	31	7	9	8	67
Prionotus tribulus	Bighead Searobin	4	8	3	13	2	30
Rhinoptera bonasus	Cownose Ray	2	.	.	.	.	2
Rimapenaeus constrictus	Roughneck Shrimp	.	1	.	.	.	1
Sciaenops ocellatus	Red Drum	16	10	11	301	25	363
Scomberomorus maculatus	Spanish Mackerel	4	8	2	2	.	16
Scorpaena brasiliensis	Barbfish	.	2	.	.	.	2
Selene vomer	Lookdown	2	1	1	.	.	4
Serranus subligarius	Belted Sandfish	.	1	.	.	.	1
Sicyonia laevigata	Hardback	.	1	.	.	1	2
Sicyonia typica	Kinglet Rock Shrimp	.	.	.	.	3	3
Sphoeroides nephelus	Southern Puffer	4	19	12	4	6	45
Sphoeroides spengleri	Bandtail Puffer	.	.	.	.	1	1
Sphyraena barracuda	Great Barracuda	3	33	4	1	11	52
Sphyraena borealis	Sennet	.	6	.	.	.	6
Sphyrna tiburo	Bonnethead	.	1	.	.	.	1
Stephanolepis hispidus	Planehead Filefish	12	61	14	5	17	109
Strongylura marina	Atlantic Needlefish	.	5	1	.	.	6

Appendix D. (Continued)

Species	Common Name	Zone					Totals
		Palma Sola Bay (A)	Sarasota Bay (B)	Roberts Bay (C)	Little Sarasota Bay (D)	Blackburn Bay (E)	
		E=38	E=83	E=41	E=42	E=42	E=246
Strongylura notata	Redfin Needlefish	51	60	33	12	38	194
Symphurus plagiusa	Blackcheek Tonguefish	1	1	3	.	5	10
Syngnathidae spp.		.	.	.	.	1	1
Syngnathus floridae	Dusky Pipefish	2	40	4	2	2	50
Syngnathus louisianae	Chain Pipefish	8	11	2	3	4	28
Syngnathus scovelli	Gulf Pipefish	60	116	21	12	28	237
Syngnathus spp.	Pipefishes	1	.	.	.	.	1
Synodus foetens	Inshore Lizardfish	19	42	26	32	37	156
Trachinotus carolinus	Florida Pompano	.	.	1	20	.	21
Trachinotus falcatus	Permit	.	4	6	3	1	14
Trinectes maculatus	Hogchoker	.	.	1	.	.	1
Tylosurus spp.		.	2	.	.	2	4
Totals		**18,148**	**48,785**	**14,133**	**35,179**	**15,521**	**131,766**

Appendix E. Catch summary for taxa collected during five years, June 2009 to April 2014, of nekton sampling in Sarasota Bay with 21.3-m seines. S_u is the density-weighted average salinity (salinity at each sampling site weighted by the number of animals collected). Taxa are arranged phylogenetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name.

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Argopecten spp.	Scallops	5	0.001	0.494	35.29	0.004	1.429
Limulus polyphemus	Horseshoe Crab	7	0.001	0.742	31.88	0.006	1.429
Farfantepenaeus duorarum *	Pink Shrimp	8,147	1.594	58.838	31.40	7.193	459.286
Sicyonia typica	Kinglet Rock Shrimp	3	0.001	0.247	32.88	0.003	1.429
Sicyonia laevigata	Hardback	3	0.001	0.371	33.92	0.003	0.714
Callinectes spp.		1	0.000	0.124	33.35	0.001	0.714
Callinectes sapidus *	Blue Crab	268	0.052	15.822	32.13	0.237	7.857
Callinectes ornatus	Shelligs	1	0.000	0.124	33.00	0.001	0.714
Portunus spp.	Portunus Crabs	6	0.001	0.618	33.56	0.005	1.429
Menippe spp. *	Stone Crab	3	0.001	0.371	31.32	0.003	0.714
Sphyrna tiburo	Bonnethead	1	0.000	0.124	33.20	0.001	0.714
Dasyatis sabina	Atlantic Stingray	16	0.003	1.607	30.40	0.014	2.857
Dasyatis say	Bluntnose Stingray	2	0.000	0.247	29.40	0.002	0.714
Gymnura micrura	Smooth Butterfly Ray	2	0.000	0.247	29.15	0.002	0.714
Rhinoptera bonasus	Cownose Ray	4	0.001	0.371	33.84	0.004	1.429
Elops saurus *	Ladyfish	7	0.001	0.865	32.20	0.006	0.714
Myrophis punctatus	Speckled Worm Eel	2	0.000	0.247	34.38	0.002	0.714
Brevoortia spp.	Menhadens	97	0.019	1.978	29.03	0.086	11.429
Opisthonema oglinum	Atlantic Thread Herring	1,382	0.270	5.439	31.36	1.220	443.571
Harengula jaguana	Scaled Sardine	17,997	3.521	15.080	32.46	15.890	1,757.857
Sardinella aurita	Spanish Sardine	6	0.001	0.247	35.09	0.005	3.571
Anchoa spp.	Anchovies	3,776	0.739	0.124	29.25	3.334	2,697.143
Anchoa hepsetus	Striped Anchovy	1,163	0.228	3.956	32.76	1.027	280.714
Anchoa mitchilli	Bay Anchovy	172,265	33.700	27.318	31.79	152.097	15,405.714
Anchoa cubana	Cuban Anchovy	4,822	0.943	2.225	32.20	4.257	1,135.714
Anchoa lyolepis	Dusky Anchovy	142	0.028	0.371	33.18	0.125	52.857
Synodus foetens	Inshore Lizardfish	387	0.076	24.351	32.48	0.342	5.714
Ariopsis felis	Hardhead Catfish	57	0.011	2.967	32.37	0.050	10.000
Opsanus beta	Gulf Toadfish	25	0.005	2.349	32.32	0.022	2.857
Urophycis floridana	Southern Hake	7	0.001	0.742	33.36	0.006	1.429

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Hyporhamphus spp.	Halfbeaks	91	0.018	0.989	33.92	0.080	49.286
Hyporhamphus unifasciatus	Halfbeak	1	0.000	0.124	30.60	0.001	0.714
Hyporhamphus meeki	False Silver Halfbeak	53	0.010	1.854	34.13	0.047	7.143
Strongylura spp.	Needlefishes	13	0.003	1.236	32.53	0.011	1.429
Strongylura marina	Atlantic Needlefish	63	0.012	2.225	35.58	0.056	15.714
Strongylura notata	Redfin Needlefish	430	0.084	19.159	32.70	0.380	18.571
Strongylura timucu	Timucu	2	0.000	0.247	34.43	0.002	0.714
Cyprinodon variegatus	Sheepshead Minnow	447	0.087	3.956	33.85	0.395	125.714
Fundulus confluentus	Marsh Killifish	1	0.000	0.124	31.30	0.001	0.714
Fundulus grandis	Gulf Killifish	218	0.043	3.090	30.98	0.192	59.286
Fundulus similis	Longnose Killifish	161	0.031	2.349	33.51	0.142	25.000
Lucania parva	Rainwater Killifish	24,066	4.708	29.913	33.84	21.248	1,689.286
Adinia xenica	Diamond Killifish	9	0.002	0.247	32.54	0.008	3.571
Floridichthys carpio	Goldspotted Killifish	3,516	0.688	17.182	32.93	3.104	219.286
Poecilia latipinna	Sailfin Molly	204	0.040	1.483	31.95	0.180	45.714
Membras martinica	Rough Silverside	81	0.016	1.854	33.74	0.072	24.286
Menidia spp.	Menidia Silversides	12,002	2.348	19.530	33.79	10.597	1,334.286
Syngnathidae spp.		1	0.000	0.124	23.10	0.001	0.714
Syngnathus spp.	Pipefishes	1	0.000	0.124	27.80	0.001	0.714
Syngnathus floridae	Dusky Pipefish	90	0.018	6.551	33.48	0.079	5.714
Syngnathus louisianae	Chain Pipefish	79	0.015	7.417	33.44	0.070	4.286
Syngnathus scovelli	Gulf Pipefish	1,115	0.218	42.892	33.37	0.984	28.571
Hippocampus erectus	Lined Seahorse	10	0.002	1.236	33.23	0.009	0.714
Hippocampus zosterae	Dwarf Seahorse	75	0.015	7.417	32.69	0.066	5.000
Anarchopterus criniger	Fringed Pipefish	2	0.000	0.124	34.30	0.002	1.429
Scorpaena brasiliensis	Barbfish	3	0.001	0.124	34.90	0.003	2.143
Prionotus scitulus	Leopard Searobin	40	0.008	3.832	31.89	0.035	2.857
Prionotus tribulus	Bighead Searobin	37	0.007	3.832	31.92	0.033	2.143
*Centropomus undecimalis **	Common Snook	43	0.008	2.349	28.74	0.038	7.857
Centropristis striata	Black Sea Bass	17	0.003	0.989	32.90	0.015	4.286
*Mycteroperca microlepis **	Gag	7	0.001	0.865	33.36	0.006	0.714
Serraniculus pumilio	Pygmy Sea Bass	2	0.000	0.247	34.55	0.002	0.714
Serranus subligarius	Belted Sandfish	4	0.001	0.371	32.35	0.004	1.429
Caranx hippos	Crevalle Jack	13	0.003	0.989	32.18	0.011	3.571
Caranx latus	Horse-eye Jack	1	0.000	0.124	31.50	0.001	0.714
Chloroscombrus chrysurus	Atlantic Bumper	2	0.000	0.247	31.53	0.002	0.714
Oligoplites saurus	Leatherjacket	460	0.090	18.294	31.80	0.406	34.286
*Trachinotus falcatus **	Permit	11	0.002	0.742	33.33	0.010	2.143
*Lutjanus griseus **	Gray Snapper	640	0.125	19.530	31.80	0.565	24.286

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Lutjanus analis *	Mutton Snapper	2	0.000	0.247	25.05	0.002	0.714
Lutjanus synagris *	Lane Snapper	243	0.048	7.911	32.98	0.215	17.143
Eucinostomus spp.	Eucinostomus	84,648	16.559	73.548	32.28	74.738	3,285.714
Eucinostomus argenteus	Spotfin Mojarra	5	0.001	0.494	33.90	0.004	1.429
Eucinostomus gula	Silver Jenny	8,093	1.583	54.017	31.56	7.146	377.143
Eucinostomus harengulus	Tidewater Mojarra	2,750	0.538	25.340	32.41	2.428	97.143
Eugerres plumieri	Striped Mojarra	111	0.022	1.483	29.53	0.098	27.857
Diapterus auratus	Irish Pompano	3	0.001	0.371	25.36	0.003	0.714
Haemulon plumierii	White Grunt	121	0.024	2.101	32.94	0.107	17.143
Orthopristis chrysoptera	Pigfish	5,326	1.042	28.307	32.53	4.702	536.429
Lagodon rhomboides	Pinfish	110,823	21.680	77.750	33.00	97.848	1,751.429
Archosargus probatocephalus *	Sheepshead	278	0.054	12.979	32.88	0.245	17.857
Diplodus holbrookii	Spottail Pinfish	46	0.009	2.349	34.62	0.041	5.714
Calamus spp.		10	0.002	0.989	32.70	0.009	1.429
Calamus arctifrons	Grass Porgy	3	0.001	0.371	34.13	0.003	0.714
Calamus penna	Sheepshead Porgy	7	0.001	0.371	32.80	0.006	2.857
Cynoscion nebulosus *	Spotted Seatrout	734	0.144	22.002	31.59	0.648	26.429
Cynoscion arenarius *	Sand Seatrout	239	0.047	1.236	24.44	0.211	61.429
Bairdiella chrysoura	Silver Perch	6,881	1.346	23.609	33.00	6.075	460.000
Leiostomus xanthurus *	Spot	25,728	5.033	22.991	31.60	22.716	1,206.429
Menticirrhus saxatilis *	Northern Kingfish	10	0.002	0.618	33.07	0.009	3.571
Pogonias cromis *	Black Drum	6	0.001	0.618	30.41	0.005	1.429
Sciaenops ocellatus *	Red Drum	636	0.124	7.787	32.15	0.562	140.714
Chaetodipterus faber	Atlantic Spadefish	10	0.002	1.112	32.64	0.009	1.429
Mugil cephalus *	Striped Mullet	3,577	0.700	7.664	30.85	3.158	650.000
Mugil curema *	White Mullet	28	0.005	1.236	31.45	0.025	6.429
Mugil trichodon *	Fantail Mullet	133	0.026	2.225	34.83	0.117	67.143
Sphyraenidae spp.		1	0.000	0.124	32.30	0.001	0.714
Sphyraena borealis	Sennet	15	0.003	0.618	34.07	0.013	4.286
Sphyraena barracuda	Great Barracuda	14	0.003	1.483	32.38	0.012	1.429
Nicholsina usta	Emerald Parrotfish	76	0.015	3.214	33.91	0.067	8.571
Astroscopus y-graecum	Southern Stargazer	1	0.000	0.124	33.50	0.001	0.714
Hypsoblennius hentz	Feather Blenny	3	0.001	0.247	34.25	0.003	1.429
Chasmodes saburrae	Florida Blenny	77	0.015	5.439	32.53	0.068	7.857
Lupinoblennius nicholsi	Highfin Blenny	1	0.000	0.124	32.75	0.001	0.714
Diplogrammus pauciradiatus	Spotted Dragonet	1	0.000	0.124	33.80	0.001	0.714
Ctenogobius boleosoma	Darter Goby	120	0.023	3.090	31.44	0.106	25.000
Ctenogobius smaragdus	Emerald Goby	1	0.000	0.124	33.35	0.001	0.714
Gobiosoma spp.	Gobiosoma Gobies	502	0.098	20.766	30.63	0.443	37.143

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Gobiosoma bosc	Naked Goby	6	0.001	0.618	30.91	0.005	1.429
Gobiosoma robustum	Code Goby	1,226	0.240	31.150	32.40	1.082	30.714
Gobiosoma longipala	Twoscale Goby	1	0.000	0.124	28.20	0.001	0.714
Microgobius gulosus	Clown Goby	3,145	0.615	39.061	30.14	2.777	135.000
Microgobius thalassinus	Green Goby	10	0.002	0.371	24.51	0.009	5.000
Bathygobius soporator	Frillfin Goby	6	0.001	0.494	33.65	0.005	1.429
Scomberomorus maculatus *	Spanish Mackerel	2	0.000	0.247	31.88	0.002	0.714
Etropus crossotus	Fringed Flounder	5	0.001	0.371	29.69	0.004	2.143
Paralichthys albigutta *	Gulf Flounder	111	0.022	9.271	32.81	0.098	8.571
Symphurus plagiusa	Blackcheek Tonguefish	30	0.006	2.967	30.98	0.026	2.857
Achirus lineatus	Lined Sole	80	0.016	6.180	29.91	0.071	6.429
Aluterus schoepfii	Orange Filefish	5	0.001	0.618	29.23	0.004	0.714
Monacanthus ciliatus	Fringed Filefish	13	0.003	1.112	33.67	0.011	2.857
Stephanolepis hispidus	Planehead Filefish	383	0.075	10.507	33.77	0.338	68.571
Ostraciidae spp.	Boxfishes	2	0.000	0.247	33.93	0.002	0.714
Lactophrys spp.	Trunkfishes	1	0.000	0.124	33.15	0.001	0.714
Acanthostracion quadricornis	Scrawled Cowfish	29	0.006	2.225	33.24	0.026	2.857
Sphoeroides nephelus	Southern Puffer	200	0.039	16.316	33.27	0.177	5.000
Sphoeroides spengleri	Bandtail Puffer	1	0.000	0.124	34.40	0.001	0.714
Chilomycterus schoepfii	Striped Burrfish	44	0.009	4.079	33.55	0.039	2.857
Diodon holocanthus	Balloonfish	1	0.000	0.124	33.15	0.001	0.714

Appendix F. Catch summary for taxa collected during five years, June 2009 to April 2014, of nekton sampling in Sarasota Bay with 183-m haul seines. S_u is the density-weighted average salinity (salinity at each sampling site weighted by the number of animals collected). Taxa are arranged phylogenetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name.

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Argopecten spp.	Scallops	2	0.004	1.111	36.71	0.000	0.024
Limulus polyphemus	Horseshoe Crab	7	0.013	2.778	29.42	0.001	0.049
Farfantepenaeus duorarum *	Pink Shrimp	10	0.019	3.889	31.74	0.001	0.073
Callinectes spp.		1	0.002	0.556	33.53	0.000	0.024
Callinectes sapidus *	Blue Crab	99	0.184	24.444	32.84	0.013	0.243
Callinectes similis	Lesser Blue Crab	1	0.002	0.556	35.00	0.000	0.024
Callinectes ornatus	Shelligs	2	0.004	0.556	35.10	0.000	0.049
Portunus spp.	Portunus Crabs	3	0.006	1.667	31.14	0.000	0.024
Menippe spp. *	Stone Crab	2	0.004	1.111	31.40	0.000	0.024
Rhizoprionodon terraenovae	Atlantic Sharpnose Shark	1	0.002	0.556	36.03	0.000	0.024
Sphyrna tiburo	Bonnethead	8	0.015	2.222	35.05	0.001	0.073
Dasyatis spp.	Whiptail Stingrays	1	0.002	0.556	33.75	0.000	0.024
Dasyatis americana	Southern Stingray	5	0.009	2.778	32.79	0.001	0.024
Dasyatis sabina	Atlantic Stingray	57	0.106	13.889	30.39	0.008	0.243
Dasyatis say	Bluntnose Stingray	13	0.024	5.000	33.74	0.002	0.073
Gymnura micrura	Smooth Butterfly Ray	16	0.030	5.000	31.94	0.002	0.097
Rhinoptera bonasus	Cownose Ray	48	0.089	11.667	33.52	0.006	0.243
Elops saurus *	Ladyfish	540	1.006	42.222	32.77	0.073	2.403
Brevoortia spp.	Menhadens	2,733	5.089	17.778	32.68	0.369	44.369
Opisthonema oglinum	Atlantic Thread Herring	635	1.182	7.778	34.15	0.086	7.354
Harengula jaguana	Scaled Sardine	2,277	4.240	19.444	33.31	0.307	25.340
Sardinella aurita	Spanish Sardine	1	0.002	0.556	34.40	0.000	0.024
Synodus foetens	Inshore Lizardfish	73	0.136	18.889	33.22	0.010	0.340
Bagre marinus	Gafftopsail Catfish	877	1.633	5.000	30.72	0.118	20.947
Ariopsis felis	Hardhead Catfish	1,245	2.318	42.222	31.49	0.168	10.607
Opsanus beta	Gulf Toadfish	42	0.078	15.000	33.23	0.006	0.121
Ogcocephalus cubifrons	Polka-dot Batfish	12	0.022	4.444	33.35	0.002	0.121
Hyporhamphus meeki	False Silver Halfbeak	11	0.020	3.333	34.59	0.001	0.097
Strongylura marina	Atlantic Needlefish	25	0.047	5.000	34.20	0.003	0.146
Strongylura notata	Redfin Needlefish	666	1.240	51.111	33.51	0.090	4.272

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Tylosurus spp.		4	0.007	1.667	33.73	0.001	0.049
Tylosurus crocodilus	Houndfish	1	0.002	0.556	36.45	0.000	0.024
Cyprinodon variegatus	Sheepshead Minnow	1	0.002	0.556	31.95	0.000	0.024
Fundulus grandis	Gulf Killifish	4	0.007	1.667	32.66	0.001	0.049
Fundulus similis	Longnose Killifish	10	0.019	1.667	35.60	0.001	0.146
Floridichthys carpio	Goldspotted Killifish	1	0.002	0.556	32.80	0.000	0.024
Syngnathus floridae	Dusky Pipefish	1	0.002	0.556	33.43	0.000	0.024
Hippocampus erectus	Lined Seahorse	5	0.009	2.778	35.21	0.001	0.024
Scorpaena brasiliensis	Barbfish	12	0.022	2.778	33.98	0.002	0.146
Prionotus scitulus	Leopard Searobin	14	0.026	3.889	34.33	0.002	0.121
Prionotus tribulus	Bighead Searobin	7	0.013	3.889	31.12	0.001	0.024
*Centropomus undecimalis **	Common Snook	747	1.391	58.889	33.03	0.101	0.995
Centropristis striata	Black Sea Bass	25	0.047	3.889	34.49	0.003	0.218
*Mycteroperca microlepis **	Gag	77	0.143	8.889	34.43	0.010	0.437
Diplectrum formosum	Sand Perch	1	0.002	0.556	34.53	0.000	0.024
Echeneis spp.	Sharksuckers	1	0.002	0.556	34.50	0.000	0.024
Echeneis neucratoides	Whitefin Sharksucker	1	0.002	0.556	31.57	0.000	0.024
Caranx hippos	Crevalle Jack	127	0.236	21.667	32.13	0.017	0.340
Caranx latus	Horse-eye Jack	1	0.002	0.556	34.50	0.000	0.024
Caranx crysos	Blue Runner	68	0.127	1.111	34.99	0.009	1.626
Oligoplites saurus	Leatherjacket	48	0.089	12.778	32.97	0.006	0.243
Selene vomer	Lookdown	60	0.112	10.000	31.65	0.008	0.583
*Trachinotus carolinus **	Florida Pompano	26	0.048	2.778	31.46	0.004	0.485
*Trachinotus falcatus **	Permit	25	0.047	6.111	32.28	0.003	0.146
Hemicaranx amblyrhynchus	Bluntnose Jack	1	0.002	0.556	29.30	0.000	0.024
*Lutjanus griseus **	Gray Snapper	327	0.609	37.222	32.96	0.044	0.704
*Lutjanus synagris **	Lane Snapper	87	0.162	7.222	33.28	0.012	0.825
Eucinostomus spp.	Eucinostomus	1	0.002	0.556	29.90	0.000	0.024
Eucinostomus gula	Silver Jenny	1,457	2.713	63.333	33.74	0.196	4.199
Eucinostomus harengulus	Tidewater Mojarra	150	0.279	17.778	34.95	0.020	0.583
Eugerres plumieri	Striped Mojarra	109	0.203	16.111	30.59	0.015	0.874
Diapterus auratus	Irish Pompano	33	0.061	3.889	31.03	0.004	0.218
Haemulon plumierii	White Grunt	34	0.063	5.556	35.02	0.005	0.170
Orthopristis chrysoptera	Pigfish	3,208	5.973	48.889	33.24	0.433	20.243
Lagodon rhomboides	Pinfish	30,282	56.387	92.778	33.27	4.083	38.058
*Archosargus probatocephalus **	Sheepshead	1,255	2.337	69.444	32.03	0.169	2.257
Diplodus holbrookii	Spottail Pinfish	469	0.873	8.889	35.34	0.063	4.515
Calamus arctifrons	Grass Porgy	1	0.002	0.556	33.53	0.000	0.024
*Cynoscion nebulosus **	Spotted Seatrout	172	0.320	29.444	32.40	0.023	0.510

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Cynoscion arenarius *	Sand Seatrout	2	0.004	1.111	35.37	0.000	0.024
Bairdiella chrysoura	Silver Perch	2,193	4.083	30.000	34.56	0.296	13.180
Leiostomus xanthurus *	Spot	812	1.512	32.222	32.94	0.109	3.835
Menticirrhus americanus *	Southern Kingfish	9	0.017	1.667	31.91	0.001	0.097
Menticirrhus littoralis *	Gulf Kingfish	1	0.002	0.556	35.00	0.000	0.024
Micropogonias undulatus *	Atlantic Croaker	25	0.047	5.000	34.03	0.003	0.170
Pogonias cromis *	Black Drum	158	0.294	19.444	32.45	0.021	0.874
Sciaenops ocellatus *	Red Drum	148	0.276	30.556	31.47	0.020	0.461
Chaetodipterus faber	Atlantic Spadefish	71	0.132	13.889	34.08	0.010	0.291
Sarotherodon melanotheron	Blackchin Tilapia	2	0.004	1.111	35.23	0.000	0.024
Oreochromis niloticus	Nile Tilapia	1	0.002	0.556	28.17	0.000	0.024
Mugil spp.	Mullets	10	0.019	0.556	31.70	0.001	0.243
Mugil cephalus *	Striped Mullet	372	0.693	47.222	32.44	0.050	0.631
Mugil curema *	White Mullet	369	0.687	39.444	33.30	0.050	0.704
Mugil trichodon *	Fantail Mullet	253	0.471	21.667	32.86	0.034	2.136
Sphyraena barracuda	Great Barracuda	122	0.227	19.444	33.70	0.016	0.558
Lachnolaimus maximus	Hogfish	2	0.004	1.111	34.53	0.000	0.024
Nicholsina usta	Emerald Parrotfish	250	0.466	11.111	35.08	0.034	2.015
Astroscopus y-graecum	Southern Stargazer	3	0.006	1.111	32.54	0.000	0.049
Chasmodes saburrae	Florida Blenny	1	0.002	0.556	34.40	0.000	0.024
Scomberomorus maculatus *	Spanish Mackerel	43	0.080	11.111	32.67	0.006	0.194
Etropus crossotus	Fringed Flounder	6	0.011	1.667	33.83	0.001	0.097
Paralichthys albigutta *	Gulf Flounder	158	0.294	37.778	32.78	0.021	0.316
Ancylopsetta quadrocellata	Ocellated Flounder	3	0.006	1.667	32.38	0.000	0.024
Trinectes maculatus	Hogchoker	1	0.002	0.556	31.93	0.000	0.024
Achirus lineatus	Lined Sole	2	0.004	1.111	35.60	0.000	0.024
Aluterus schoepfii	Orange Filefish	3	0.006	1.667	35.35	0.000	0.024
Monacanthus ciliatus	Fringed Filefish	25	0.047	4.444	34.57	0.003	0.170
Stephanolepis hispidus	Planehead Filefish	159	0.296	13.333	35.02	0.021	1.068
Acanthostracion quadricornis	Scrawled Cowfish	71	0.132	12.778	34.19	0.010	0.316
Sphoeroides nephelus	Southern Puffer	56	0.104	15.556	33.72	0.008	0.194
Sphoeroides spengleri	Bandtail Puffer	2	0.004	1.111	34.48	0.000	0.024
Chilomycterus schoepfii	Striped Burrfish	105	0.196	24.444	33.59	0.014	0.291

Appendix G. Catch summary for taxa collected during five years, June 2009 to April 2014, of nekton sampling in Sarasota Bay with 6.1-m otter trawls. S_u is the density-weighted average salinity (salinity at each sampling site weighted by the number of animals collected). Taxa are arranged phylogenetically. Species of commercial or recreational importance (Selected Taxa) are denoted with an asterisk (*) after the species name.

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Argopecten spp.	Scallops	3	0.005	1.250	34.14	0.001	0.075
Limulus polyphemus	Horseshoe Crab	21	0.037	4.583	31.04	0.007	0.472
*Penaeidae spp. **	Penaeid Shrimps	1	0.002	0.417	33.00	0.000	0.064
*Farfantepenaeus duorarum **	Pink Shrimp	317	0.553	38.333	32.09	0.092	1.754
Rimapenaeus constrictus	Roughneck Shrimp	3	0.005	1.250	32.51	0.001	0.112
Sicyonia typica	Kinglet Rock Shrimp	1	0.002	0.417	34.73	0.000	0.071
Sicyonia laevigata	Hardback	9	0.016	2.083	34.41	0.006	1.124
*Callinectes sapidus **	Blue Crab	854	1.489	35.833	31.56	0.254	9.309
Callinectes similis	Lesser Blue Crab	1	0.002	0.417	26.73	0.000	0.067
Callinectes ornatus	Shelligs	28	0.049	4.167	32.95	0.008	1.012
Portunus spp.	Portunus Crabs	513	0.894	43.750	33.81	0.151	6.476
*Menippe spp. **	Stone Crab	668	1.164	43.333	33.71	0.197	5.464
Dasyatis americana	Southern Stingray	1	0.002	0.417	34.68	0.000	0.067
Dasyatis sabina	Atlantic Stingray	23	0.040	7.500	32.75	0.007	0.355
Dasyatis say	Bluntnose Stingray	14	0.024	3.750	33.72	0.004	0.213
Gymnura micrura	Smooth Butterfly Ray	14	0.024	4.583	30.80	0.004	0.150
*Elops saurus **	Ladyfish	1	0.002	0.417	32.40	0.000	0.067
*Albula vulpes **	Bonefish	1	0.002	0.417	32.33	0.000	0.067
Opisthonema oglinum	Atlantic Thread Herring	5	0.009	2.083	34.01	0.001	0.075
Harengula jaguana	Scaled Sardine	7	0.012	2.083	31.72	0.002	0.135
Anchoa hepsetus	Striped Anchovy	18	0.031	2.500	32.27	0.005	0.540
Anchoa mitchilli	Bay Anchovy	2,215	3.861	6.250	31.19	0.635	80.208
Anchoa cubana	Cuban Anchovy	61	0.106	1.667	28.35	0.017	3.508
Synodus foetens	Inshore Lizardfish	200	0.349	40.417	33.22	0.058	0.675
Ariopsis felis	Hardhead Catfish	82	0.143	14.167	32.40	0.023	0.710
Opsanus beta	Gulf Toadfish	103	0.180	20.417	33.44	0.030	0.578
Gobiesox strumosus	Skilletfish	1	0.002	0.417	36.63	0.000	0.079
Ogcocephalus parvus	Roughback Batfish	2	0.003	0.417	35.78	0.001	0.135
Ogcocephalus cubifrons	Polka-dot Batfish	36	0.063	9.583	34.55	0.011	0.405
Urophycis floridana	Southern Hake	33	0.058	5.833	32.99	0.010	0.540

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Strongylura marina	Atlantic Needlefish	1	0.002	0.417	30.93	0.000	0.071
Strongylura notata	Redfin Needlefish	5	0.009	0.417	30.93	0.001	0.355
Lucania parva	Rainwater Killifish	2	0.003	0.833	35.26	0.001	0.067
Floridichthys carpio	Goldspotted Killifish	1	0.002	0.417	36.60	0.000	0.079
Menidia spp.	Menidia Silversides	3	0.005	0.417	33.50	0.001	0.202
Syngnathus floridae	Dusky Pipefish	35	0.061	3.750	33.54	0.010	1.484
Syngnathus louisianae	Chain Pipefish	58	0.101	18.750	33.88	0.017	0.225
Syngnathus scovelli	Gulf Pipefish	99	0.173	12.500	33.32	0.029	1.349
Hippocampus erectus	Lined Seahorse	31	0.054	10.000	33.53	0.009	0.142
Hippocampus zosterae	Dwarf Seahorse	5	0.009	1.250	33.09	0.001	0.202
Anarchopterus criniger	Fringed Pipefish	8	0.014	2.083	33.57	0.002	0.284
Scorpaena brasiliensis	Barbfish	9	0.016	2.917	33.49	0.003	0.213
Prionotus scitulus	Leopard Searobin	231	0.403	42.917	33.69	0.067	0.771
Prionotus tribulus	Bighead Searobin	73	0.127	16.250	32.10	0.021	0.450
Centropristis striata	Black Sea Bass	45	0.078	3.333	33.30	0.013	2.361
*Epinephelus morio **	Red Grouper	1	0.002	0.417	36.00	0.000	0.071
*Mycteroperca microlepis **	Gag	2	0.003	0.833	34.32	0.001	0.071
Diplectrum formosum	Sand Perch	7	0.012	2.917	34.55	0.002	0.075
Serraniculus pumilio	Pygmy Sea Bass	4	0.007	1.667	34.04	0.001	0.135
Serranus subligarius	Belted Sandfish	9	0.016	2.917	34.80	0.003	0.150
Echeneis neucratoides	Whitefin Sharksucker	1	0.002	0.417	36.60	0.000	0.067
Chloroscombrus chrysurus	Atlantic Bumper	1	0.002	0.417	34.85	0.000	0.067
*Lutjanus griseus **	Gray Snapper	76	0.132	9.583	32.23	0.022	0.877
*Lutjanus synagris **	Lane Snapper	97	0.169	16.250	33.80	0.028	1.349
Eucinostomus spp.	Eucinostomus	6,766	11.794	36.667	32.75	1.998	103.436
Eucinostomus argenteus	Spotfin Mojarra	1	0.002	0.417	35.18	0.001	0.135
Eucinostomus gula	Silver Jenny	1,007	1.755	39.583	32.21	0.293	8.297
Eucinostomus harengulus	Tidewater Mojarra	98	0.171	9.583	32.00	0.029	1.199
Eugerres plumieri	Striped Mojarra	5	0.009	0.417	20.17	0.002	0.375
Haemulon plumierii	White Grunt	18	0.031	4.583	35.24	0.005	0.284
Orthopristis chrysoptera	Pigfish	7,102	12.380	51.667	33.18	2.020	299.042
Lagodon rhomboides	Pinfish	23,507	40.976	70.833	32.68	6.710	928.494
*Archosargus probatocephalus **	Sheepshead	224	0.390	13.750	33.97	0.068	4.545
Diplodus holbrookii	Spottail Pinfish	26	0.045	2.083	35.39	0.007	1.349
Calamus spp.		1	0.002	0.417	34.07	0.000	0.067
Calamus arctifrons	Grass Porgy	5	0.009	1.667	34.66	0.001	0.128
*Cynoscion nebulosus **	Spotted Seatrout	29	0.051	6.250	34.68	0.008	0.809
*Cynoscion arenarius **	Sand Seatrout	434	0.757	4.583	27.64	0.124	23.880
Bairdiella chrysoura	Silver Perch	804	1.401	9.167	35.87	0.228	44.320

Scientific Name	*Common Name*	*Number Collected*	*% Catch*	*% Occurrence*	S_u *(psu)*	CPUE (Animals •100m^2) *Average*	*Maximum*
Leiostomus xanthurus *	Spot	9,434	16.445	13.750	29.99	2.726	314.142
Menticirrhus americanus *	Southern Kingfish	22	0.038	6.250	30.82	0.006	0.284
Sciaenops ocellatus *	Red Drum	27	0.047	0.833	26.84	0.008	1.949
Chaetodipterus faber	Atlantic Spadefish	11	0.019	2.917	32.79	0.003	0.270
Mugil cephalus *	Striped Mullet	1	0.002	0.417	30.93	0.000	0.071
Halichoeres bivittatus	Slippery Dick	1	0.002	0.417	35.90	0.000	0.075
Lachnolaimus maximus	Hogfish	16	0.028	0.417	32.75	0.004	1.079
Nicholsina usta	Emerald Parrotfish	219	0.382	5.417	33.35	0.062	11.333
Hypsoblennius hentz	Feather Blenny	2	0.003	0.833	35.13	0.001	0.112
Chasmodes saburrae	Florida Blenny	5	0.009	2.083	33.55	0.001	0.075
Hypleurochilus caudovittatus	Zebratail Blenny	21	0.037	5.833	34.62	0.006	0.405
Ctenogobius boleosoma	Darter Goby	4	0.007	0.833	33.60	0.002	0.450
Gobiosoma spp.	Gobiosoma Gobies	196	0.342	13.750	34.14	0.056	3.238
Gobiosoma bosc	Naked Goby	3	0.005	0.417	30.93	0.001	0.213
Gobiosoma robustum	Code Goby	220	0.383	18.750	33.67	0.066	2.901
Gobiosoma longipala	Twoscale Goby	30	0.052	9.583	33.45	0.009	0.270
Microgobius gulosus	Clown Goby	46	0.080	5.000	31.84	0.014	1.147
Microgobius thalassinus	Green Goby	16	0.028	2.083	29.38	0.005	0.809
Citharichthys macrops	Spotted Whiff	17	0.030	4.583	33.93	0.005	0.284
Etropus crossotus	Fringed Flounder	48	0.084	14.167	33.29	0.014	0.225
Paralichthys albigutta *	Gulf Flounder	197	0.343	40.833	33.46	0.059	1.136
Ancylopsetta quadrocellata	Ocellated Flounder	28	0.049	8.333	33.43	0.008	0.142
Symphurus plagiusa	Blackcheek Tonguefish	70	0.122	10.417	29.63	0.020	1.821
Trinectes maculatus	Hogchoker	7	0.012	1.250	34.17	0.002	0.225
Achirus lineatus	Lined Sole	83	0.145	20.000	32.44	0.024	0.750
Aluterus schoepfii	Orange Filefish	9	0.016	2.917	34.73	0.003	0.135
Monacanthus ciliatus	Fringed Filefish	8	0.014	3.333	33.38	0.002	0.071
Stephanolepis hispidus	Planehead Filefish	213	0.371	24.167	35.12	0.062	2.769
Lactophrys trigonus	Trunkfish	1	0.002	0.417	28.97	0.000	0.071
Acanthostracion quadricornis	Scrawled Cowfish	120	0.209	27.500	34.12	0.035	0.355
Sphoeroides nephelus	Southern Puffer	38	0.066	9.583	34.71	0.011	0.540
Sphoeroides spengleri	Bandtail Puffer	2	0.003	0.833	34.69	0.001	0.071
Chilomycterus schoepfii	Striped Burrfish	185	0.322	37.500	33.91	0.054	0.497
Diodon holocanthus	Balloonfish	1	0.002	0.417	32.75	0.000	0.067

Appendix H. Species overview plots for dominant taxa (≥200 animals collected and ≥10 occurrence in a gear type) collected in 21.3-m shoreline seines in Sarasota Bay, June 2009 to April 2014. Taxa are arranged phylogenetically.

Farfantepenaeus duorarum (Pink Shrimp)

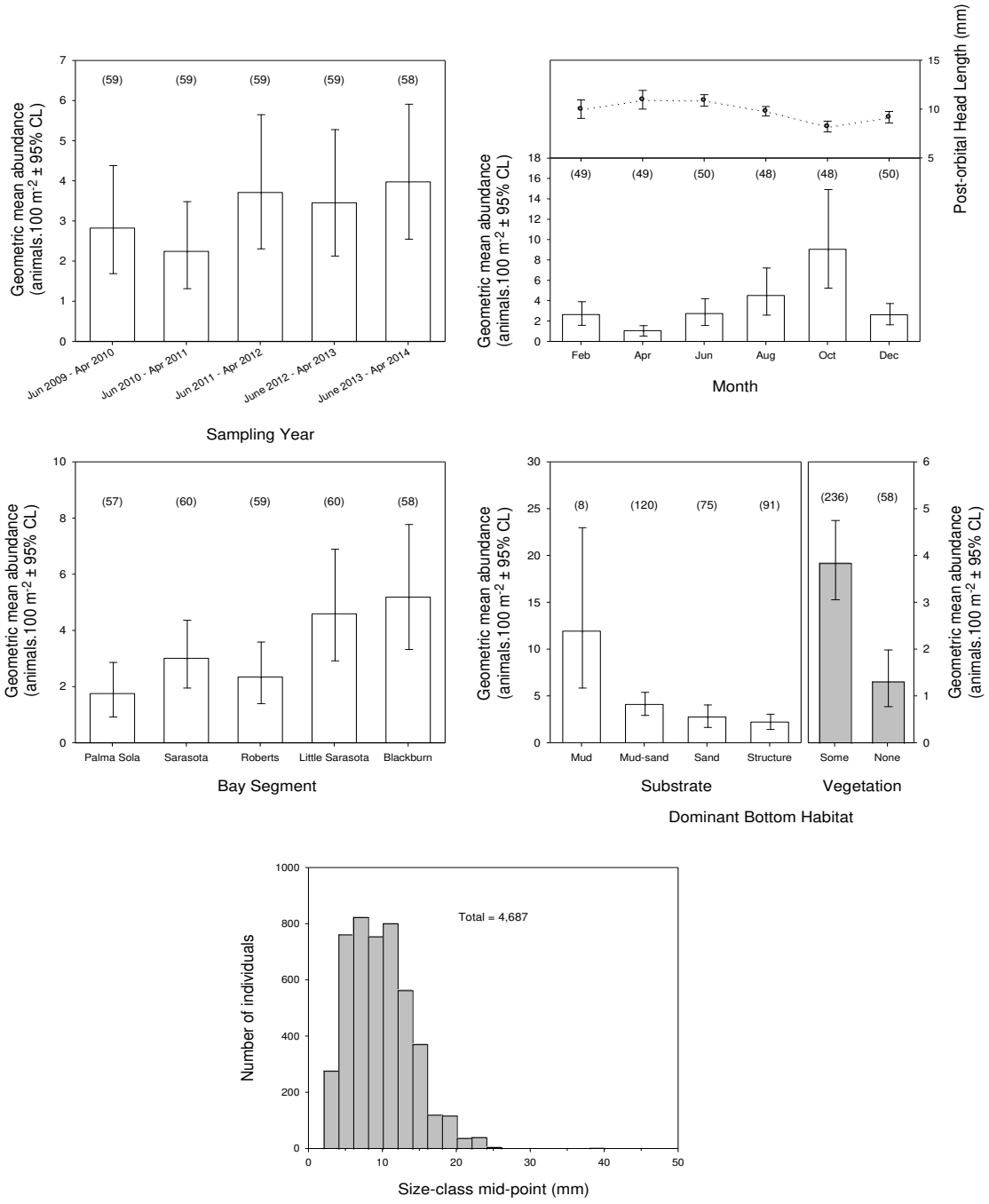

Fig. H1. Relative abundance and length-frequency distribution of Pink Shrimp collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Harengula jaguana (Scaled Sardine)

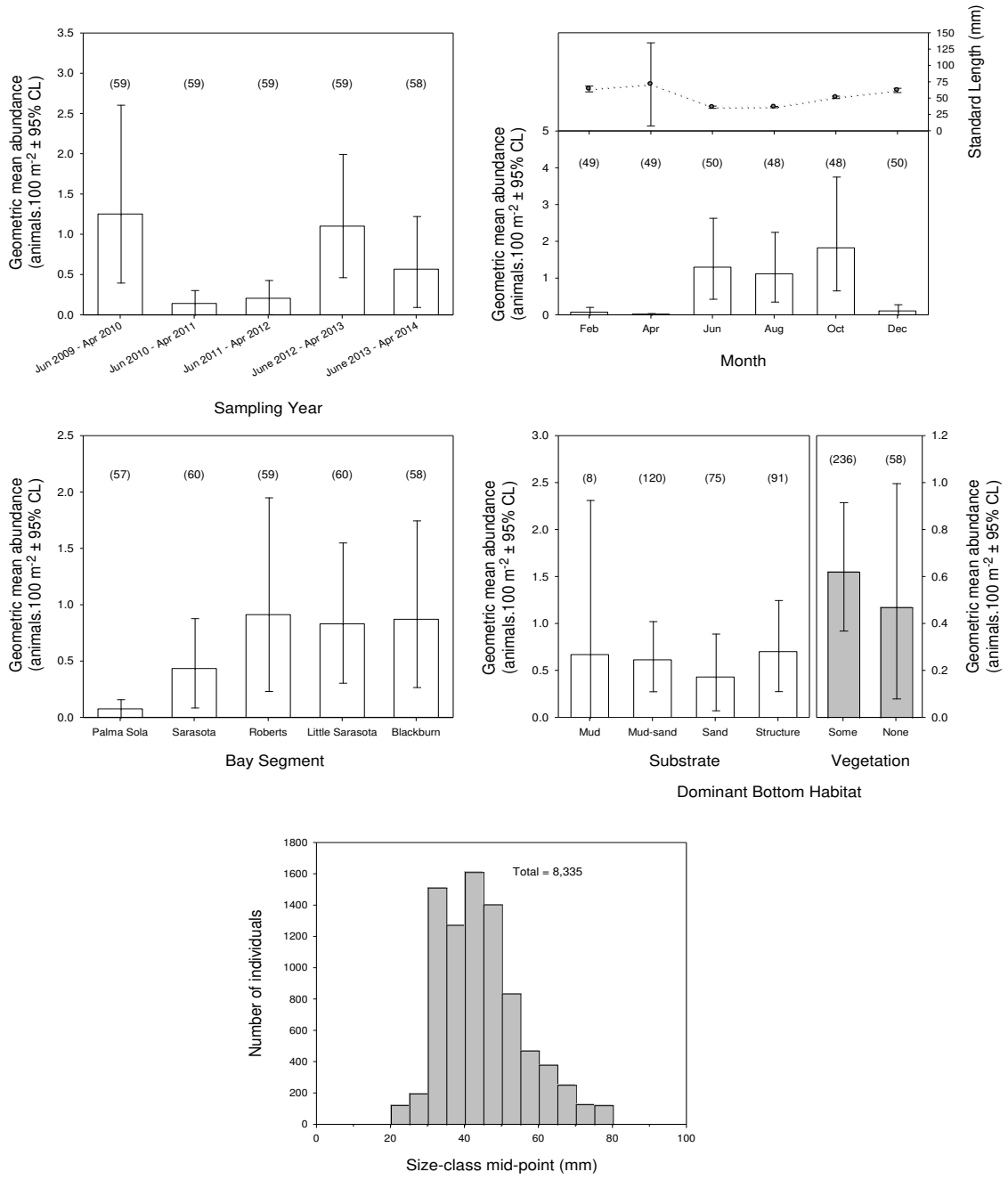

Fig. H2. Relative abundance and length-frequency distribution of Scaled Sardine collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Anchoa mitchilli (Bay Anchovy)

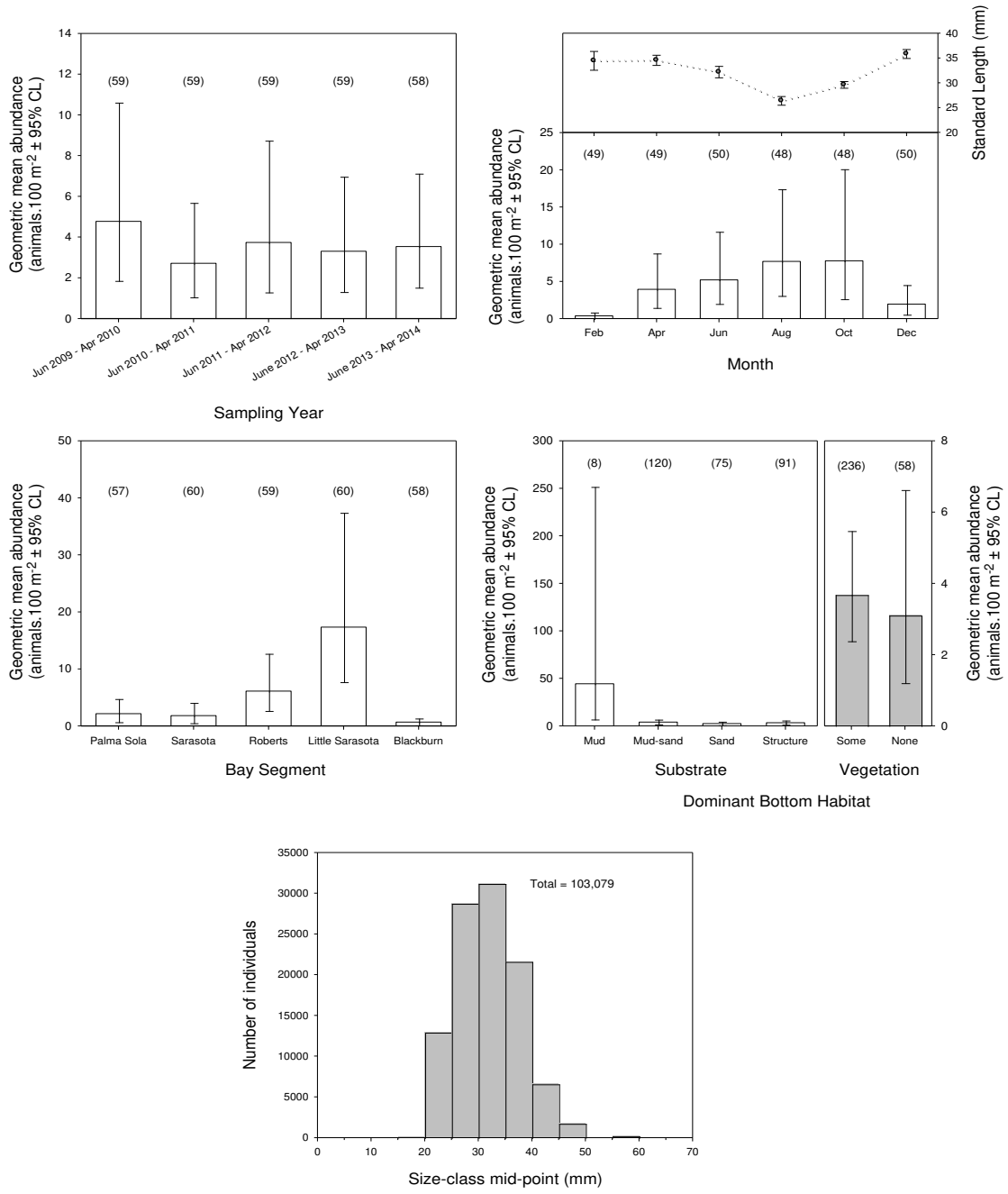

Fig. H3. Relative abundance and length-frequency distribution of Bay Anchovy collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Strongylura notata (Redfin Needlefish)

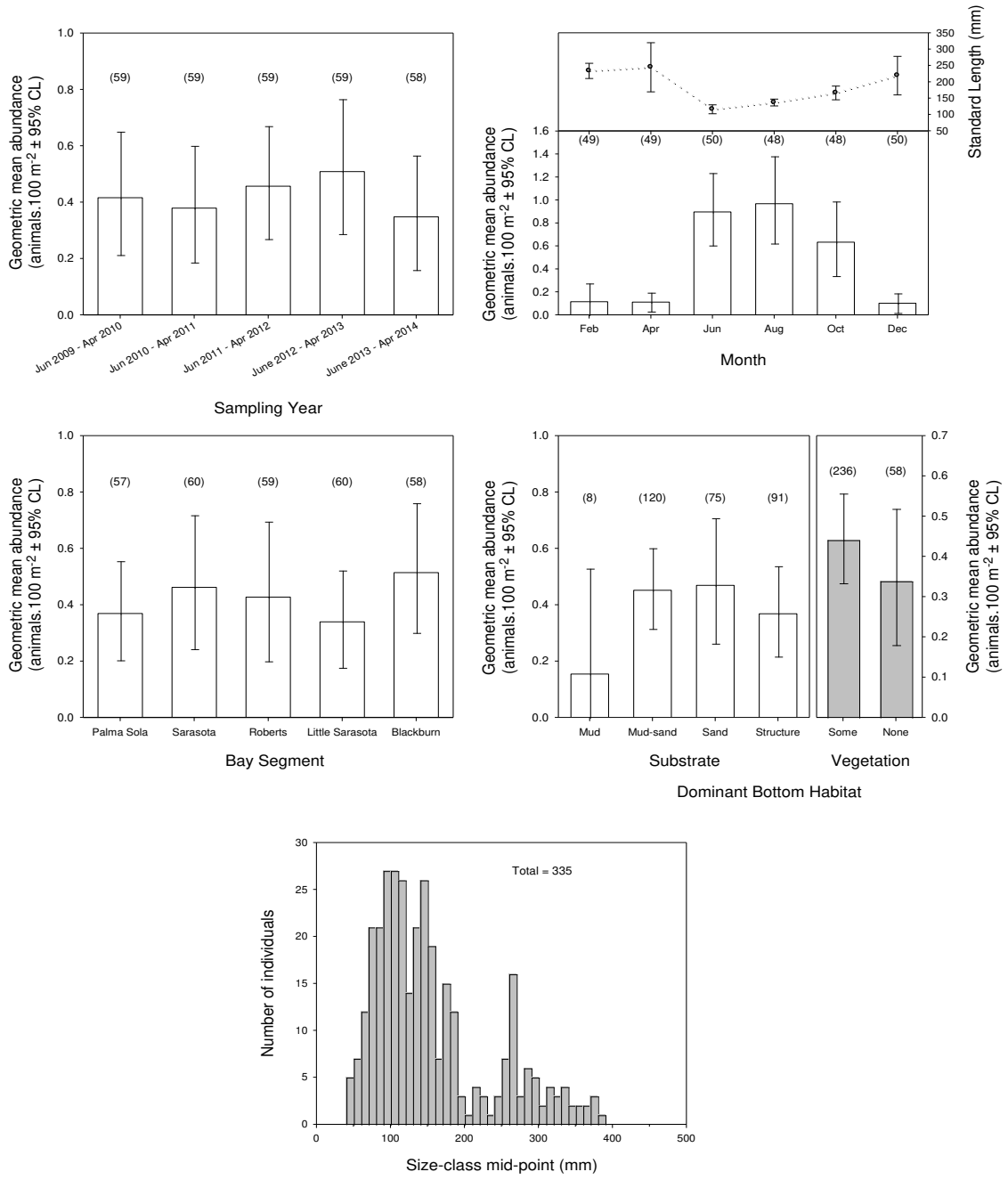

Fig. H4. Relative abundance and length-frequency distribution of Redfin Needlefish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lucania parva (Rainwater Killifish)

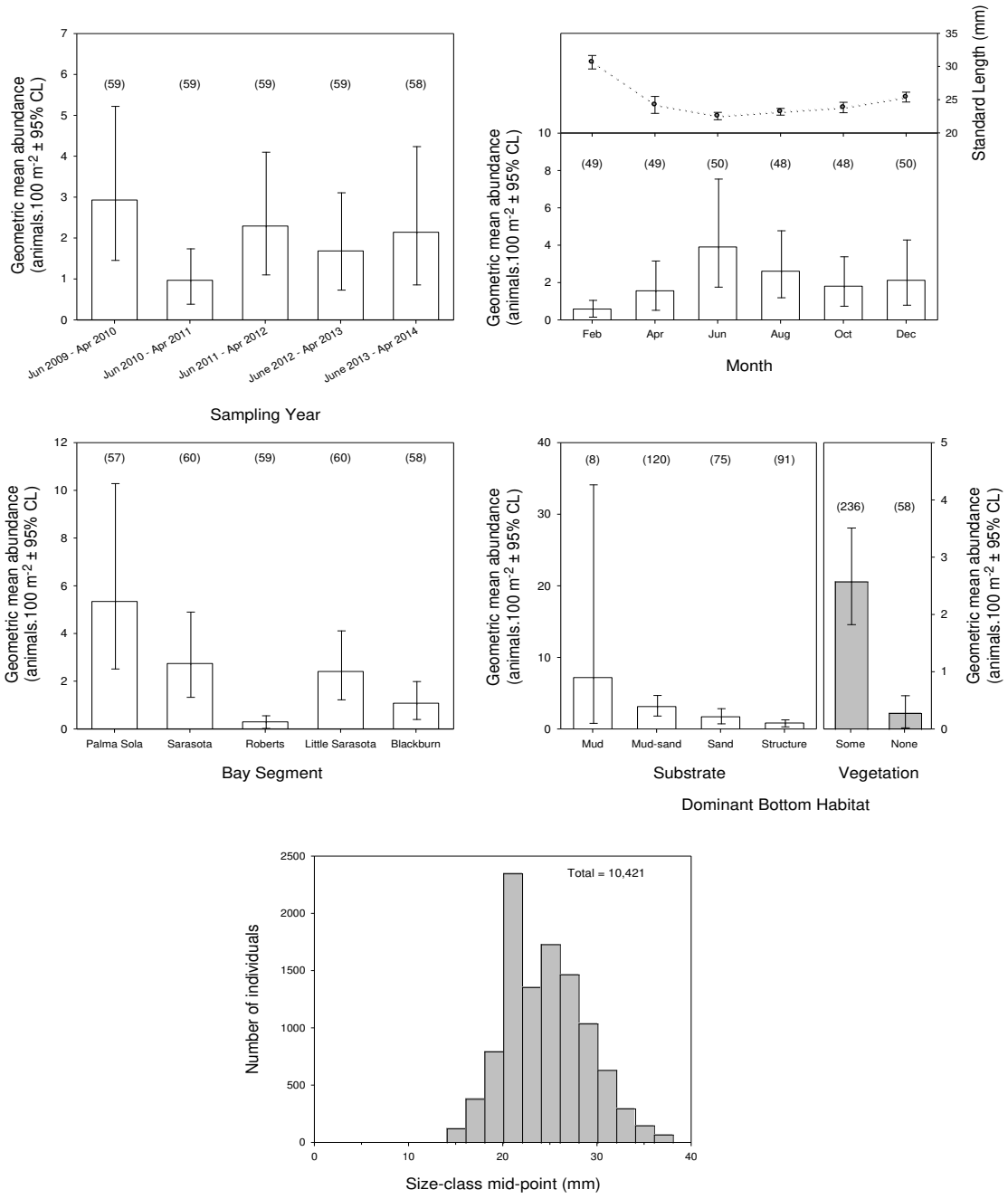

Fig. H5. Relative abundance and length-frequency distribution of Rainwater Killifish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Floridichthys carpio (Goldspotted Killifish)

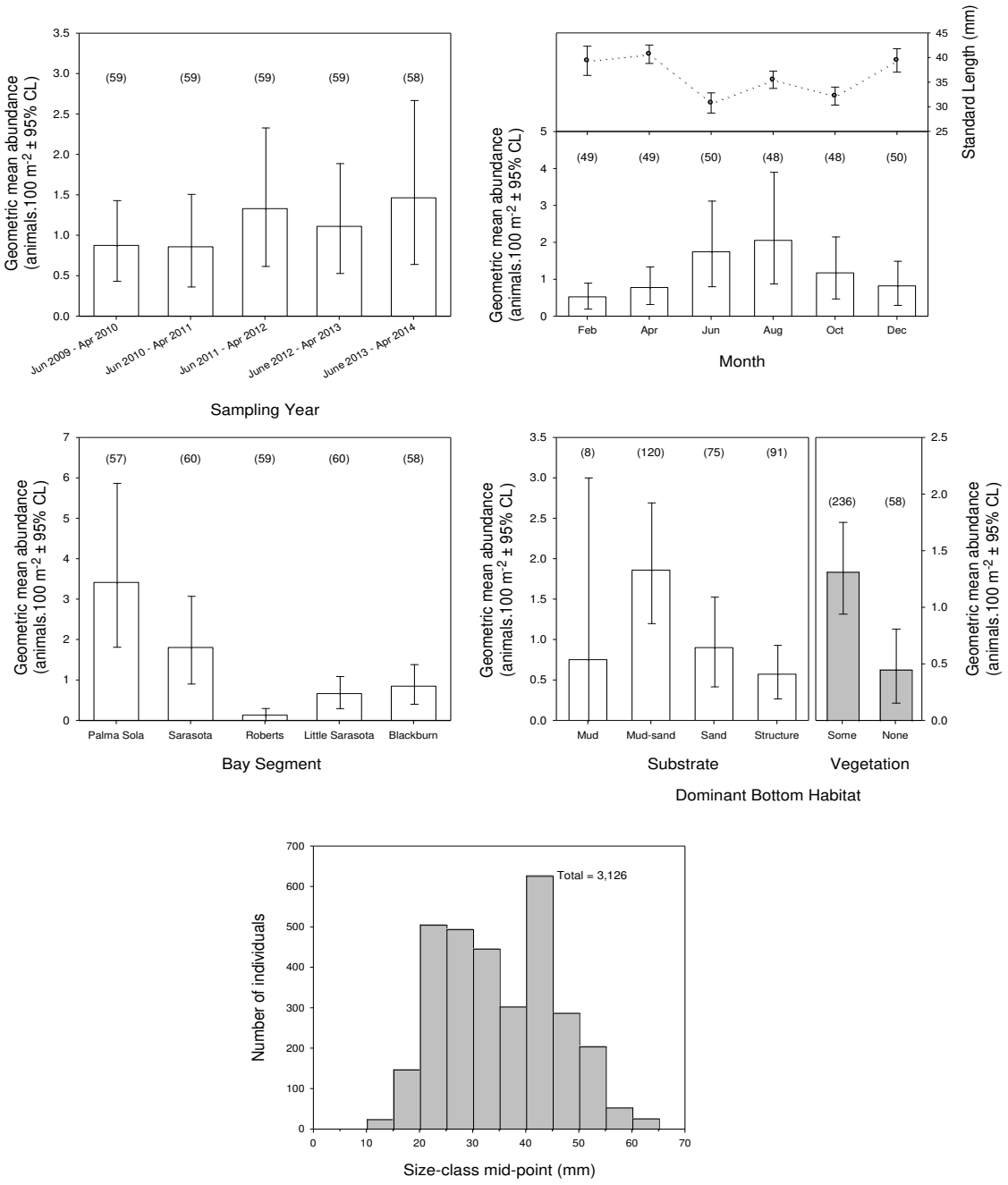

Fig. H6. Relative abundance and length-frequency distribution of Goldspotted Killifish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Syngnathus scovelli (Gulf Pipefish)

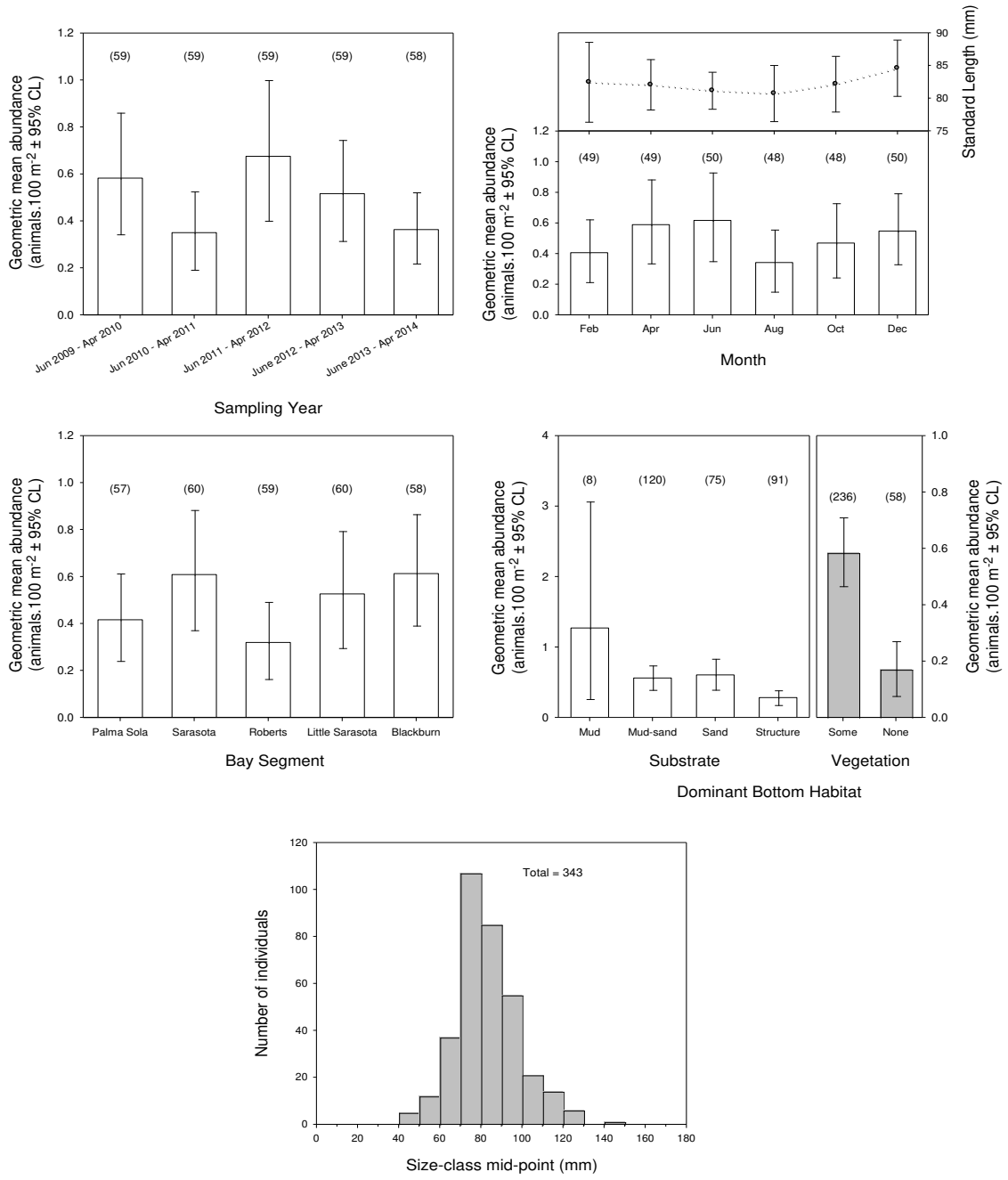

Fig. H7. Relative abundance and length-frequency distribution of Gulf Pipefish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Oligoplites saurus (Leatherjacket)

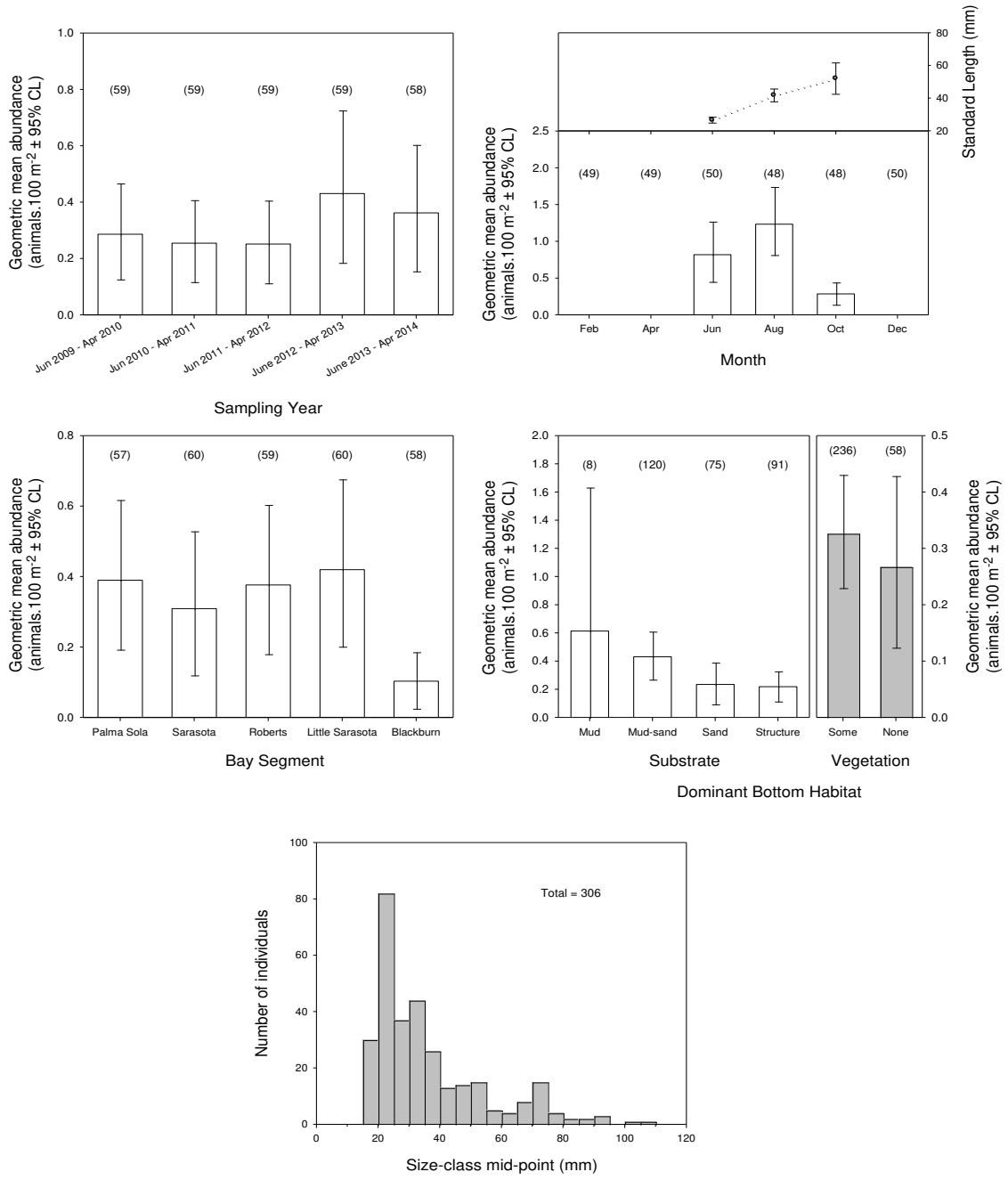

Fig. H8. Relative abundance and length-frequency distribution of Leatherjacket collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lutjanus griseus (Gray Snapper)

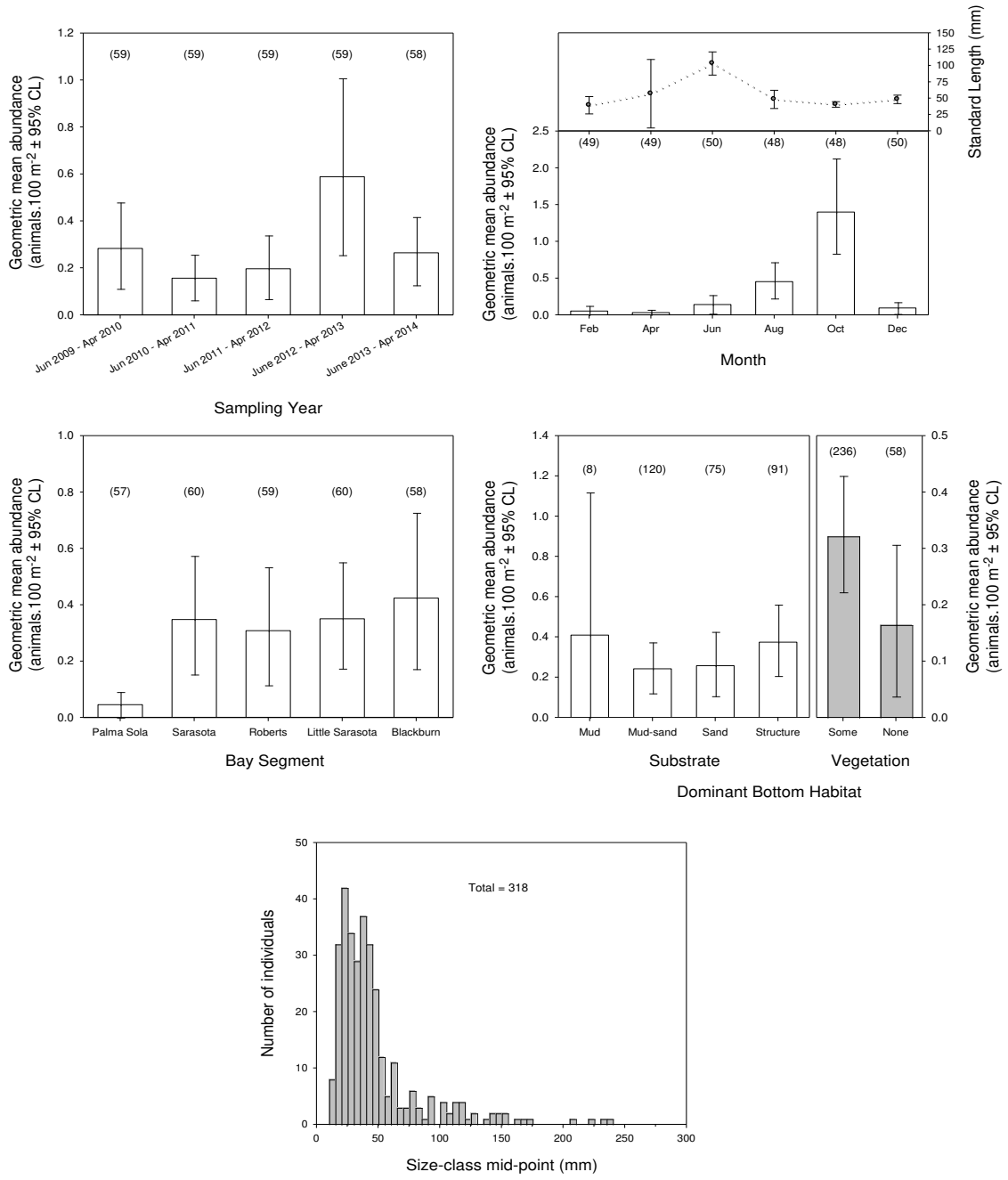

Fig. H9. Relative abundance and length-frequency distribution of Gray Snapper collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus gula (Silver Jenny)

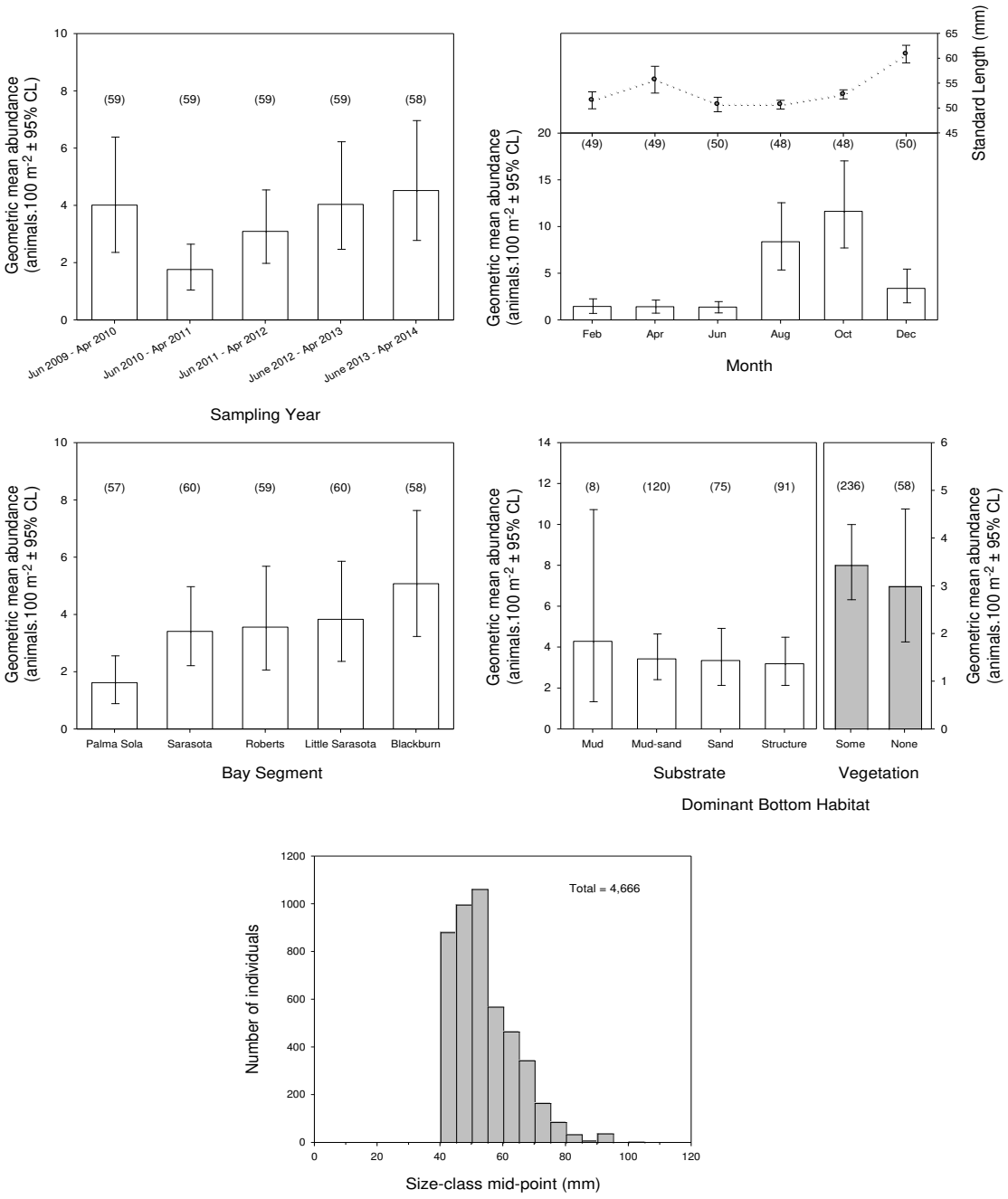

Fig. H10. Relative abundance and length-frequency distribution of Silver Jenny collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus harengulus (Tidewater Mojarra)

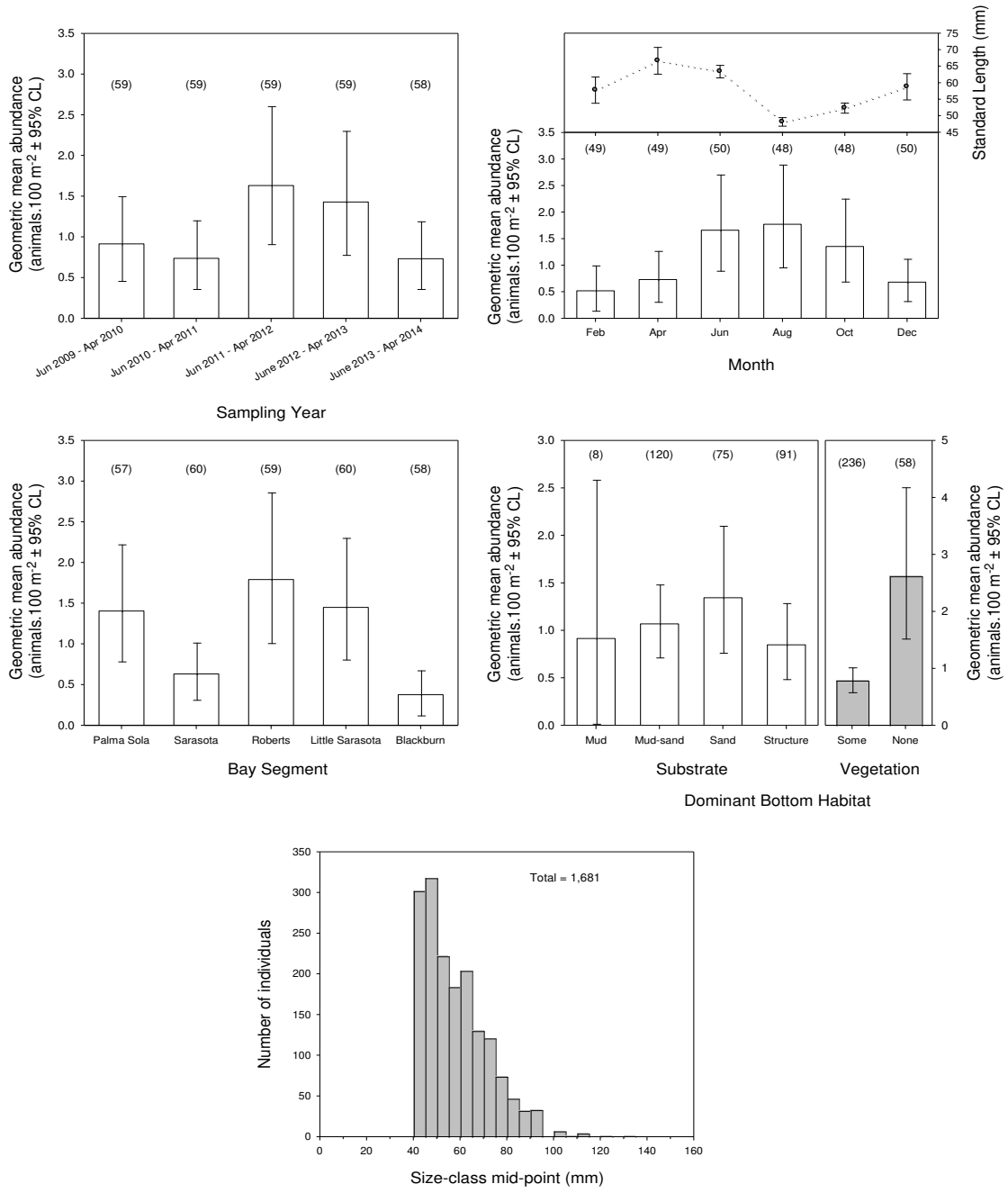

Fig. H11. Relative abundance and length-frequency distribution of Tidewater Mojarra collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Orthopristis chrysoptera (Pigfish)

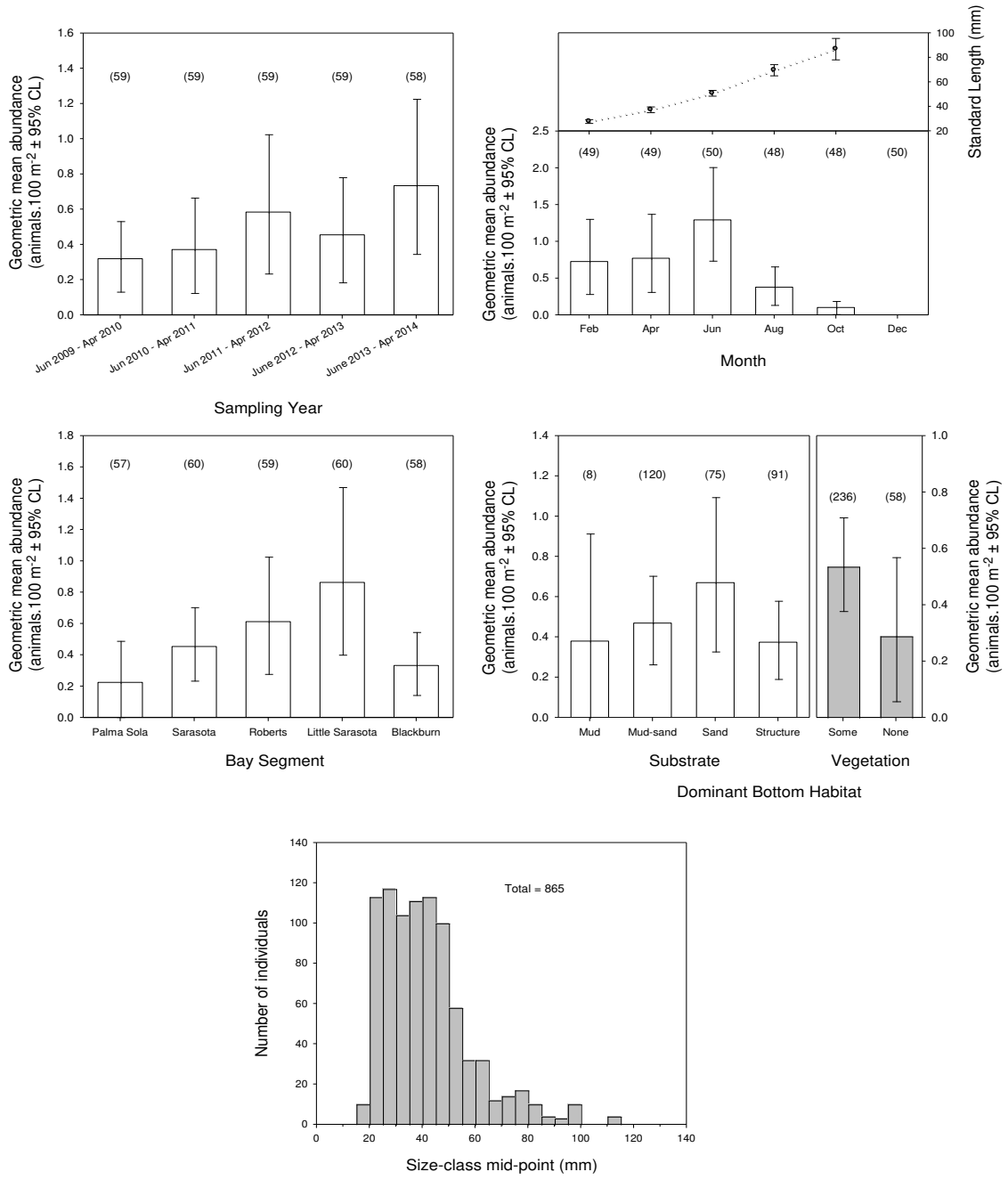

Fig. H12. Relative abundance and length-frequency distribution of Pigfish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

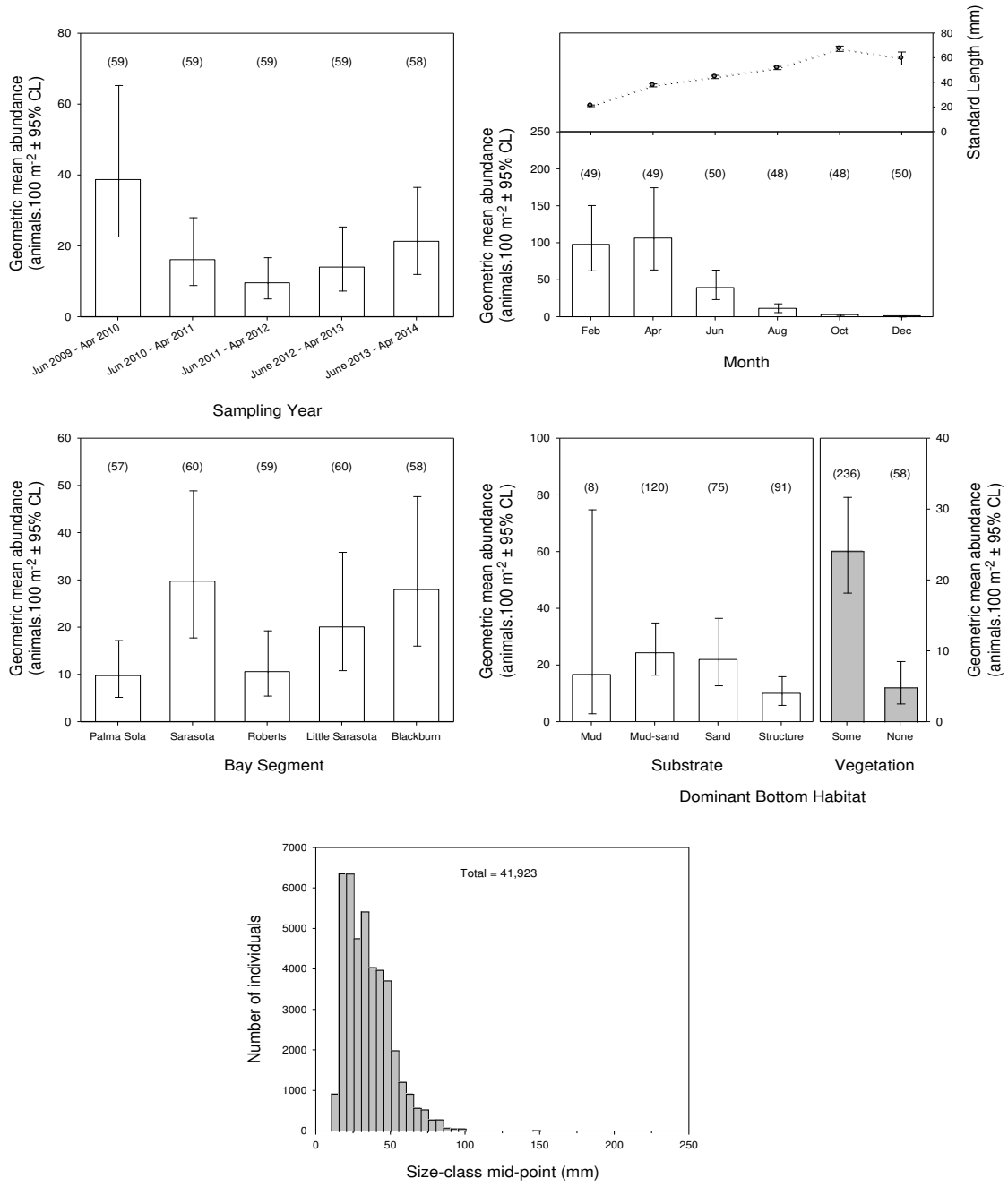

Fig. H13. Relative abundance and length-frequency distribution of Pinfish collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Cynoscion nebulosus (Spotted Seatrout)

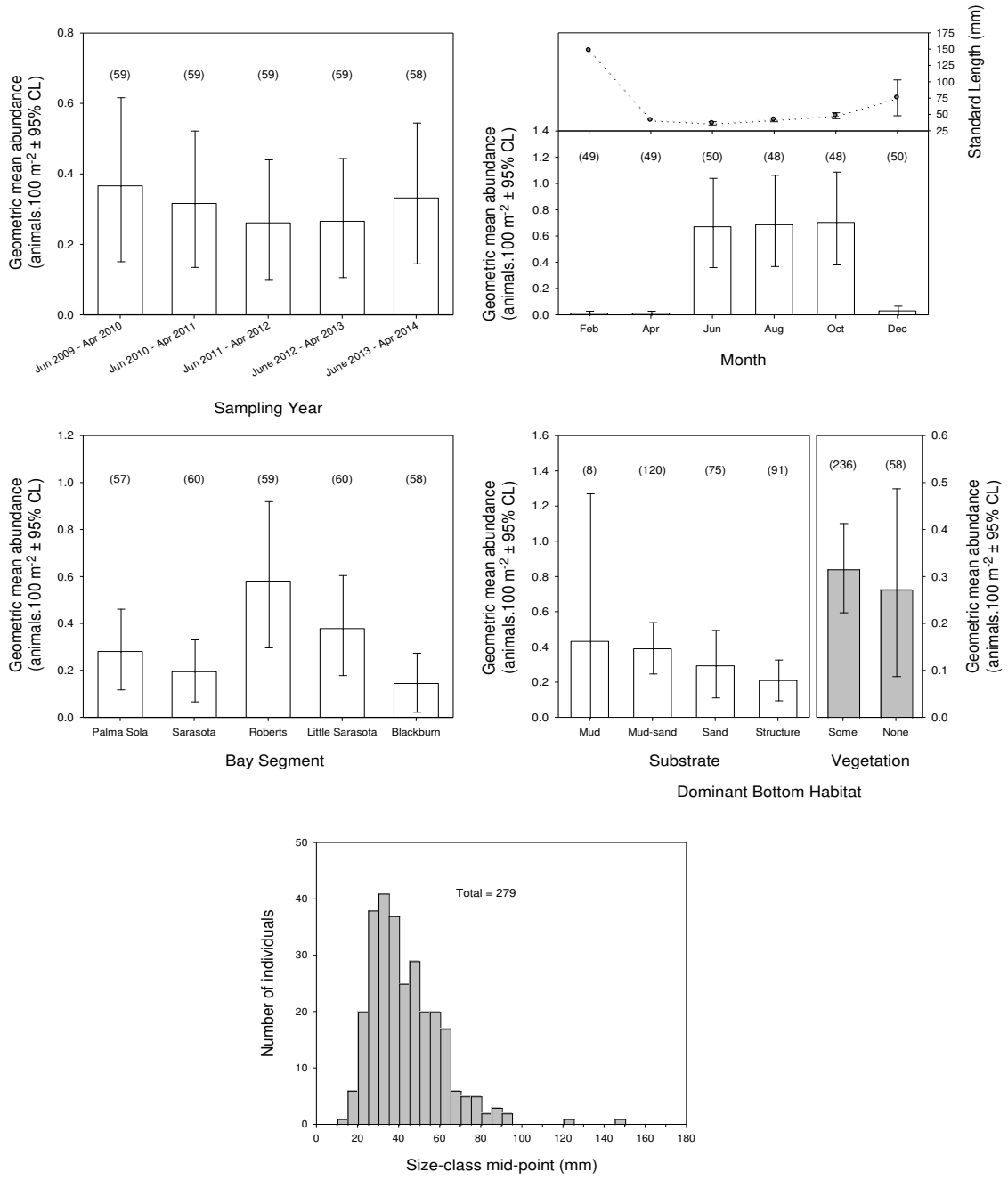

Fig. H14. Relative abundance and length-frequency distribution of Spotted Seatrout collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Bairdiella chrysoura (Silver Perch)

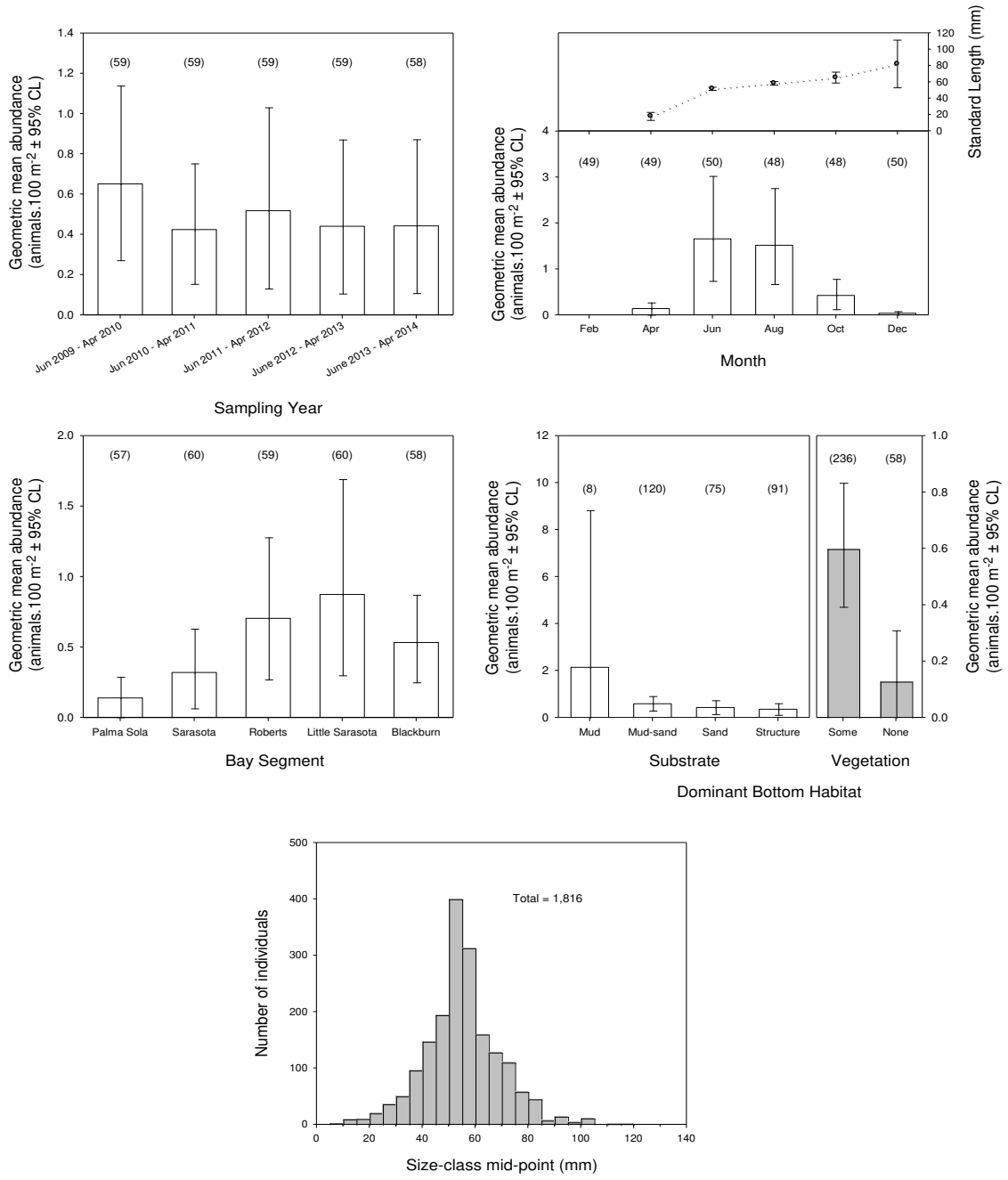

Fig. H15. Relative abundance and length-frequency distribution of Silver Perch collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Leiostomus xanthurus (Spot)

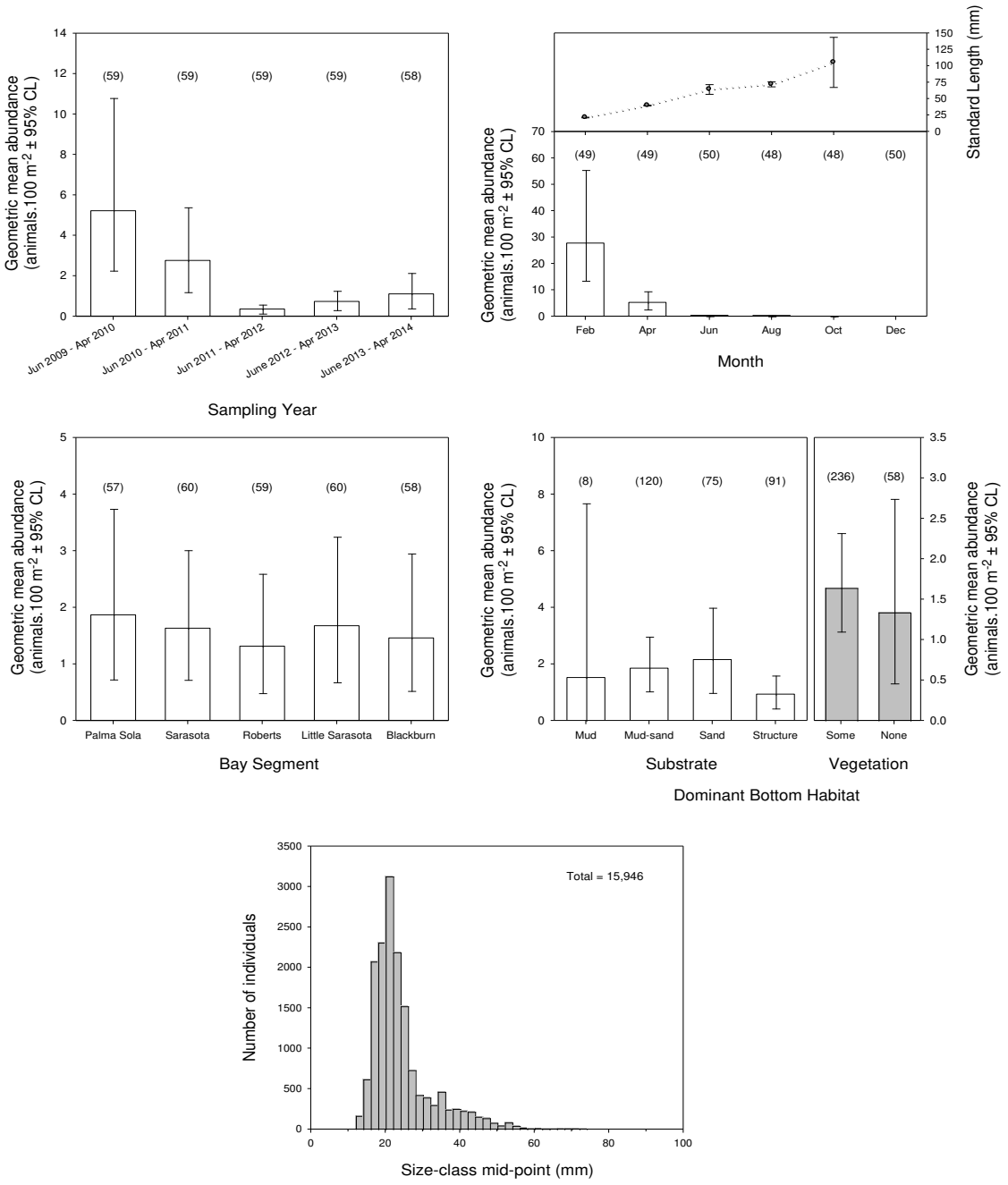

Fig. H16. Relative abundance and length-frequency distribution of Spot collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Sciaenops ocellatus (Red Drum)

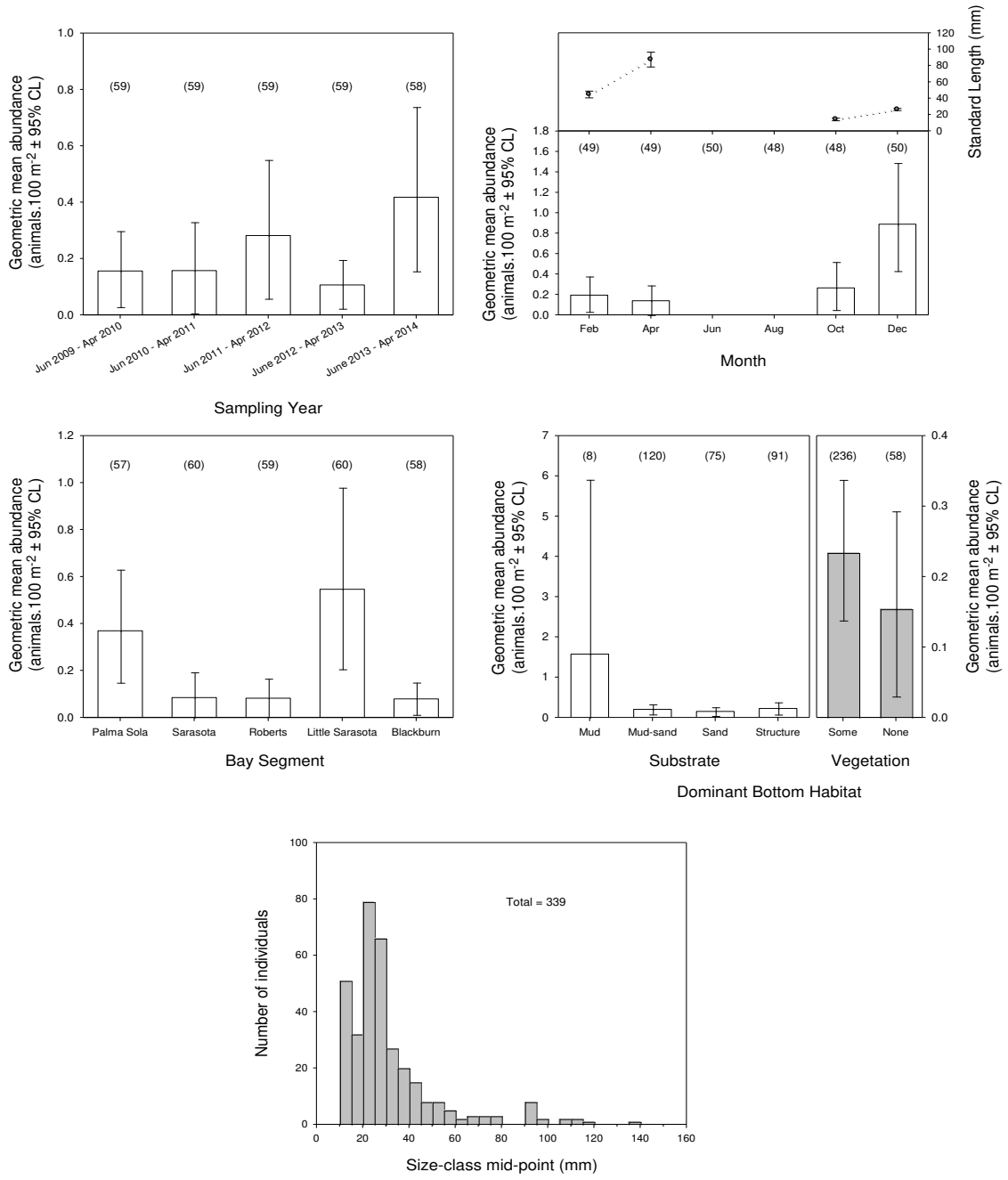

Fig. H17. Relative abundance and length-frequency distribution of Red Drum collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Mugil cephalus (Striped Mullet)

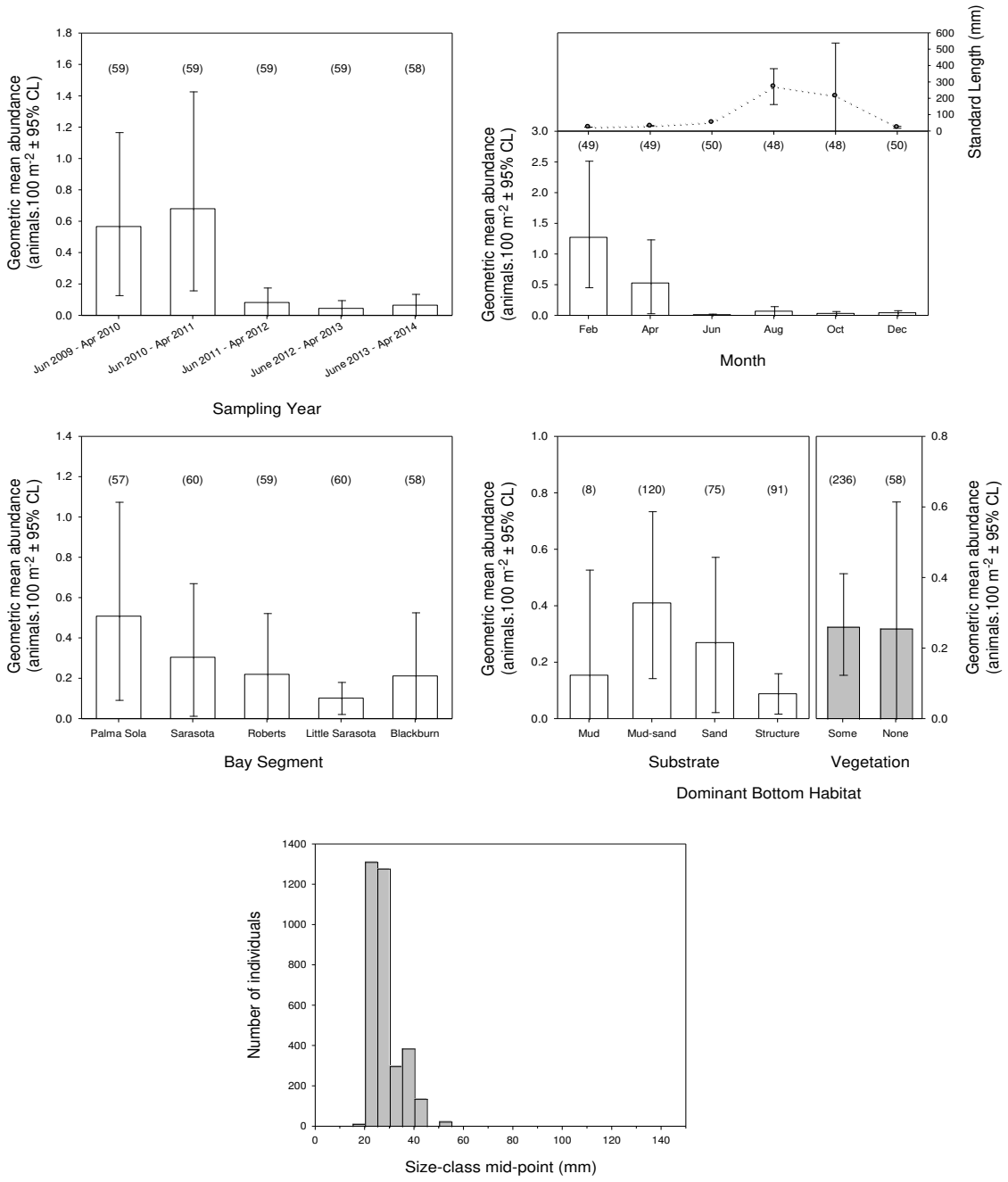

Fig. H18. Relative abundance and length-frequency distribution of Striped Mullet collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Gobiosoma robustum (Code Goby)

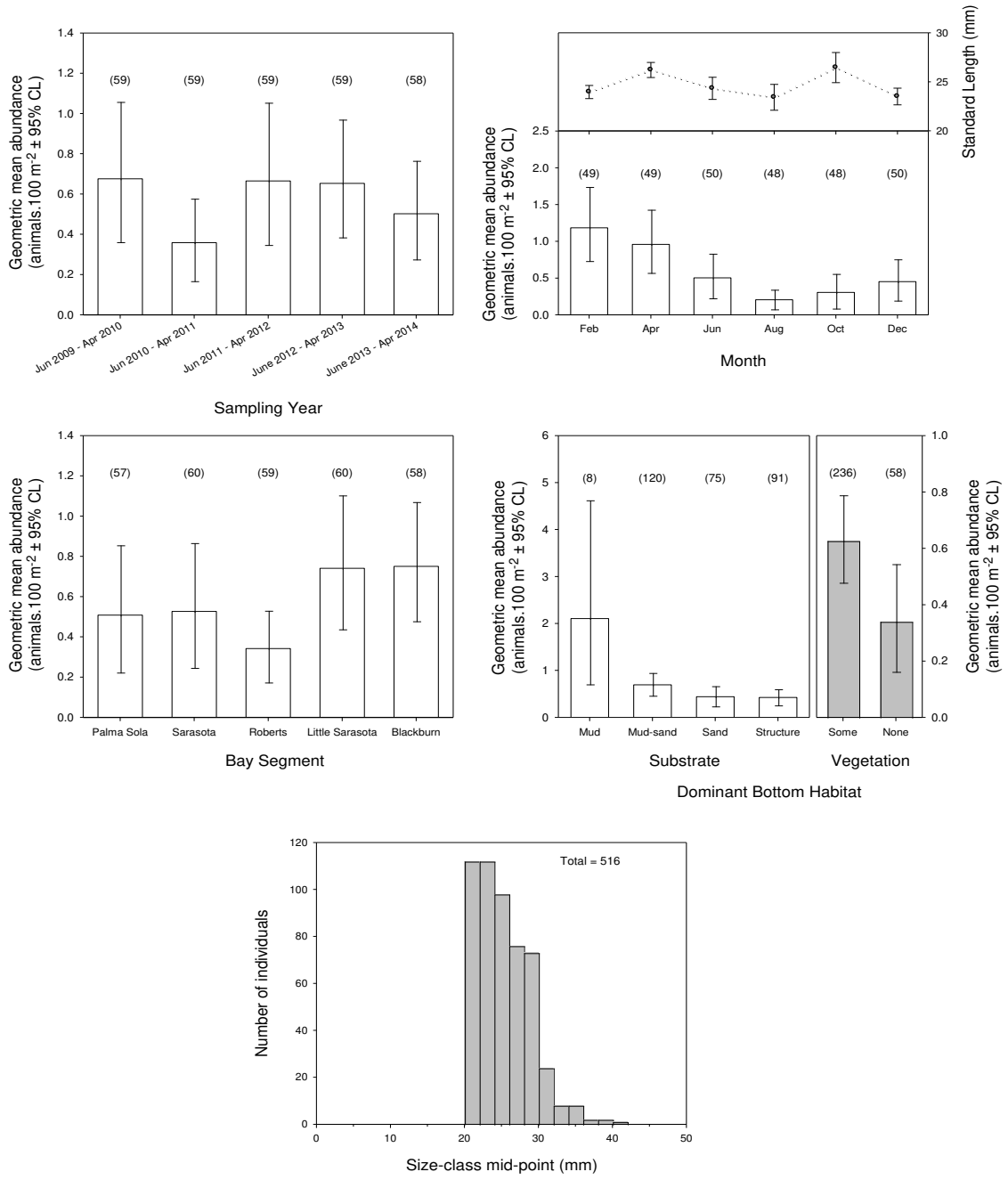

Fig. H19. Relative abundance and length-frequency distribution of Code Goby collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Microgobius gulosus (Clown Goby)

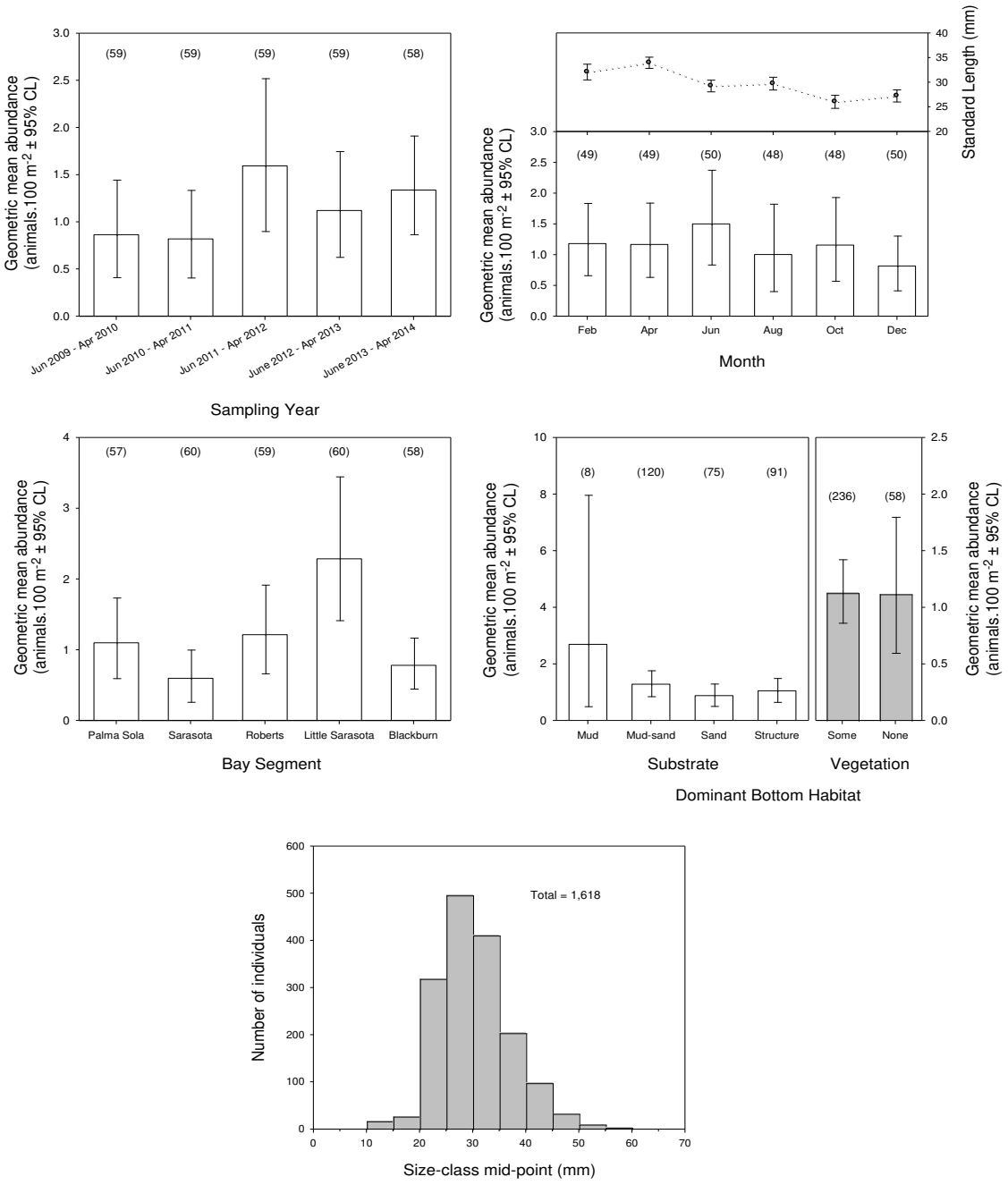

Fig. H20. Relative abundance and length-frequency distribution of Clown Goby collected with 21.3-m shoreline seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Appendix I. Species overview plots for dominant taxa (≥200 animals collected and ≥10 occurrence in a gear type) collected in 21.3-m offshore seines in Sarasota Bay, June 2009 to April 2014. Taxa are arranged phylogenetically.

Farfantepenaeus duorarum (Pink Shrimp)

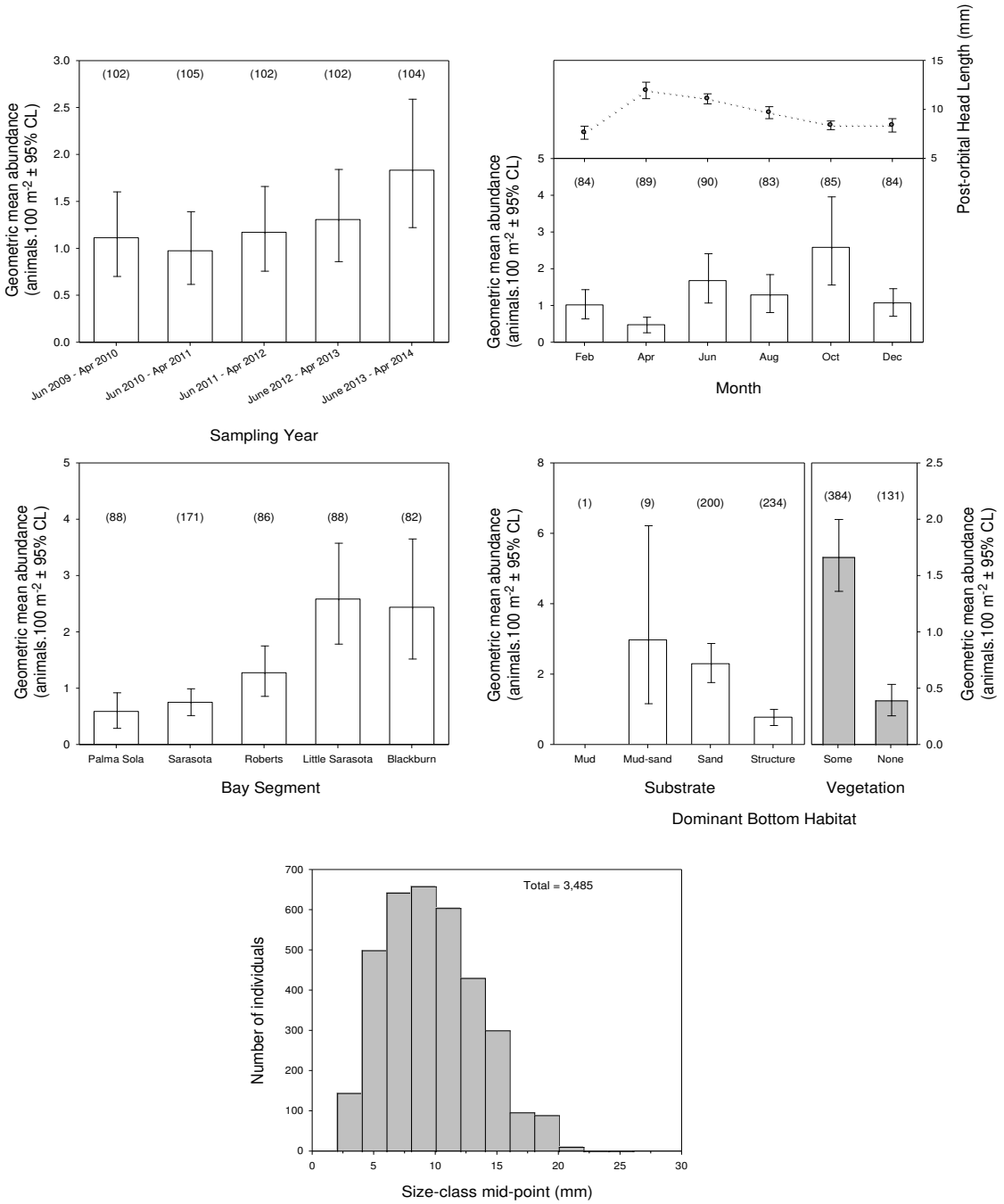

Fig. I1. Relative abundance and length-frequency distribution of Pink Shrimp collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Harengula jaguana (Scaled Sardine)

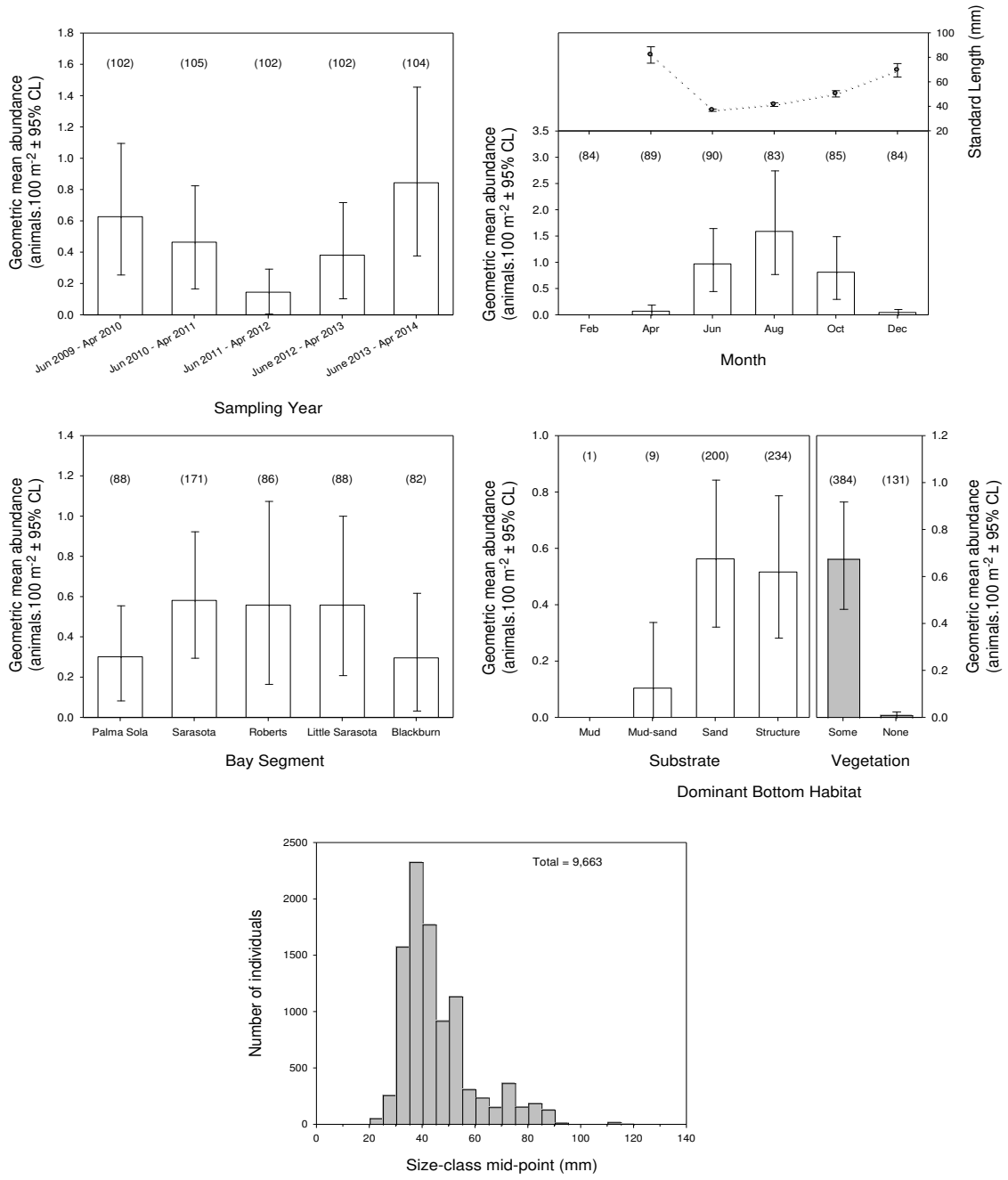

Fig. I2. Relative abundance and length-frequency distribution of Scaled Sardine collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Anchoa mitchilli (Bay Anchovy)

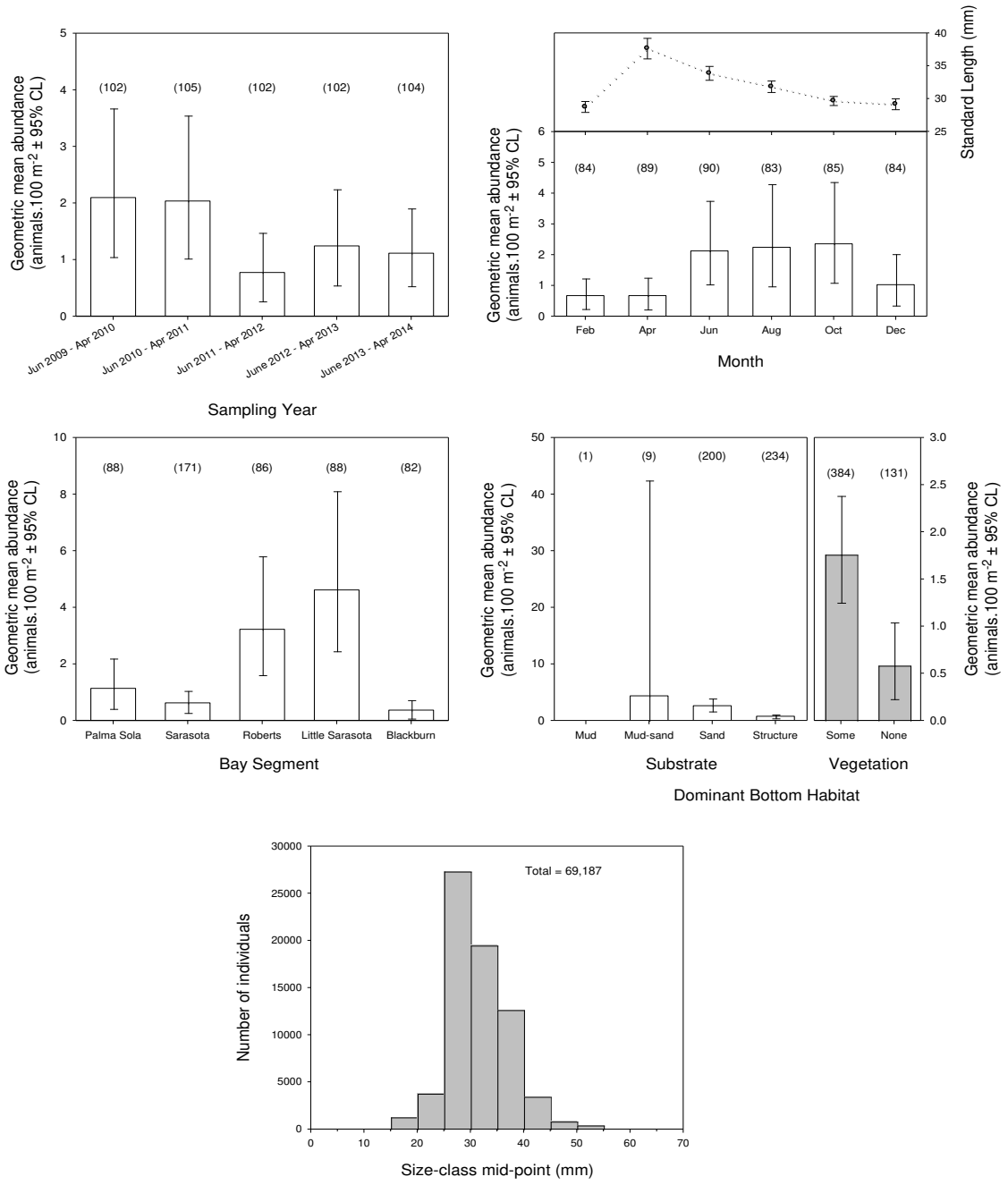

Fig. I3. Relative abundance and length-frequency distribution of Bay Anchovy collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Synodus foetens (Inshore Lizardfish)

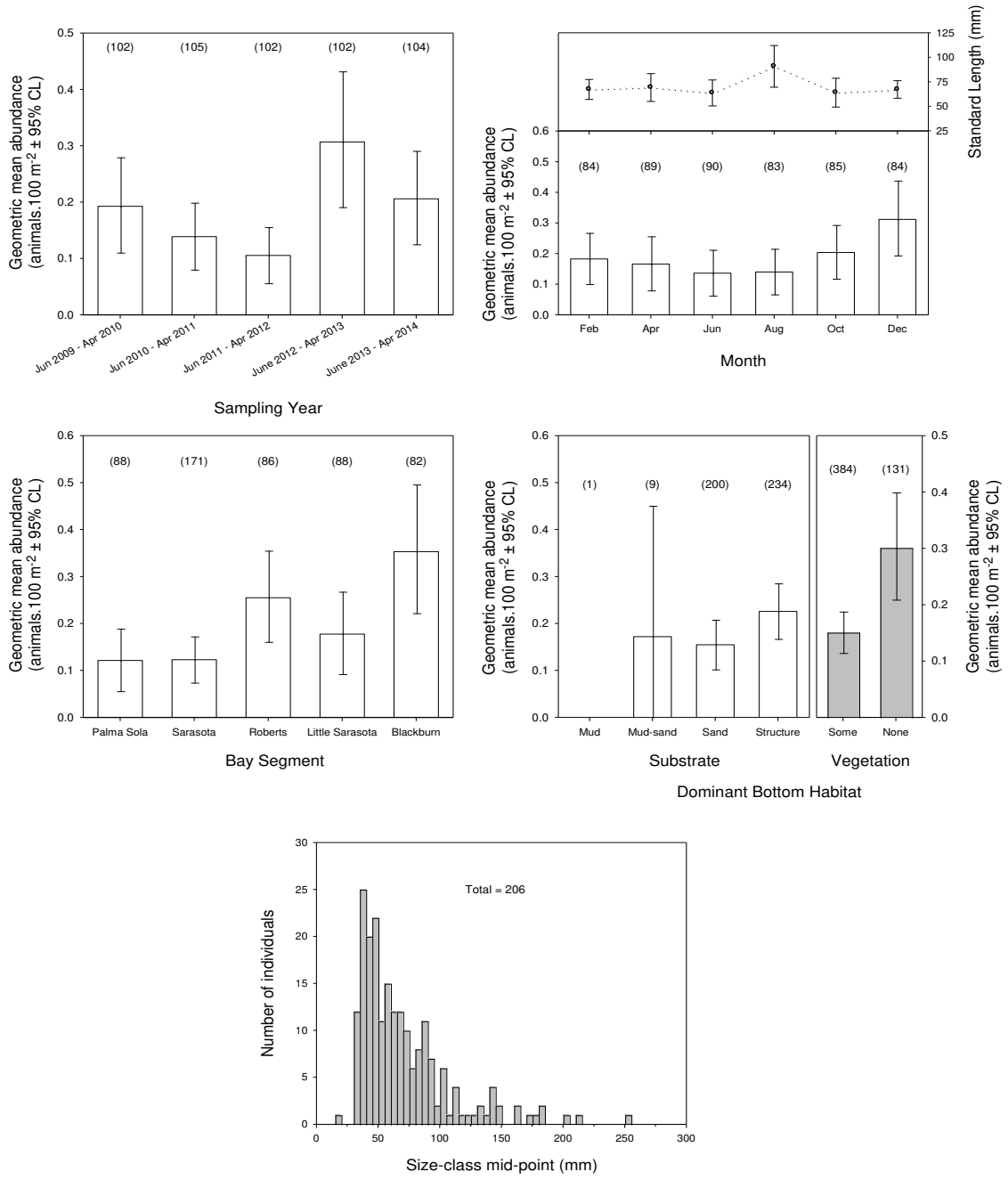

Fig. I4. Relative abundance and length-frequency distribution of Inshore Lizardfish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lucania parva (Rainwater Killifish)

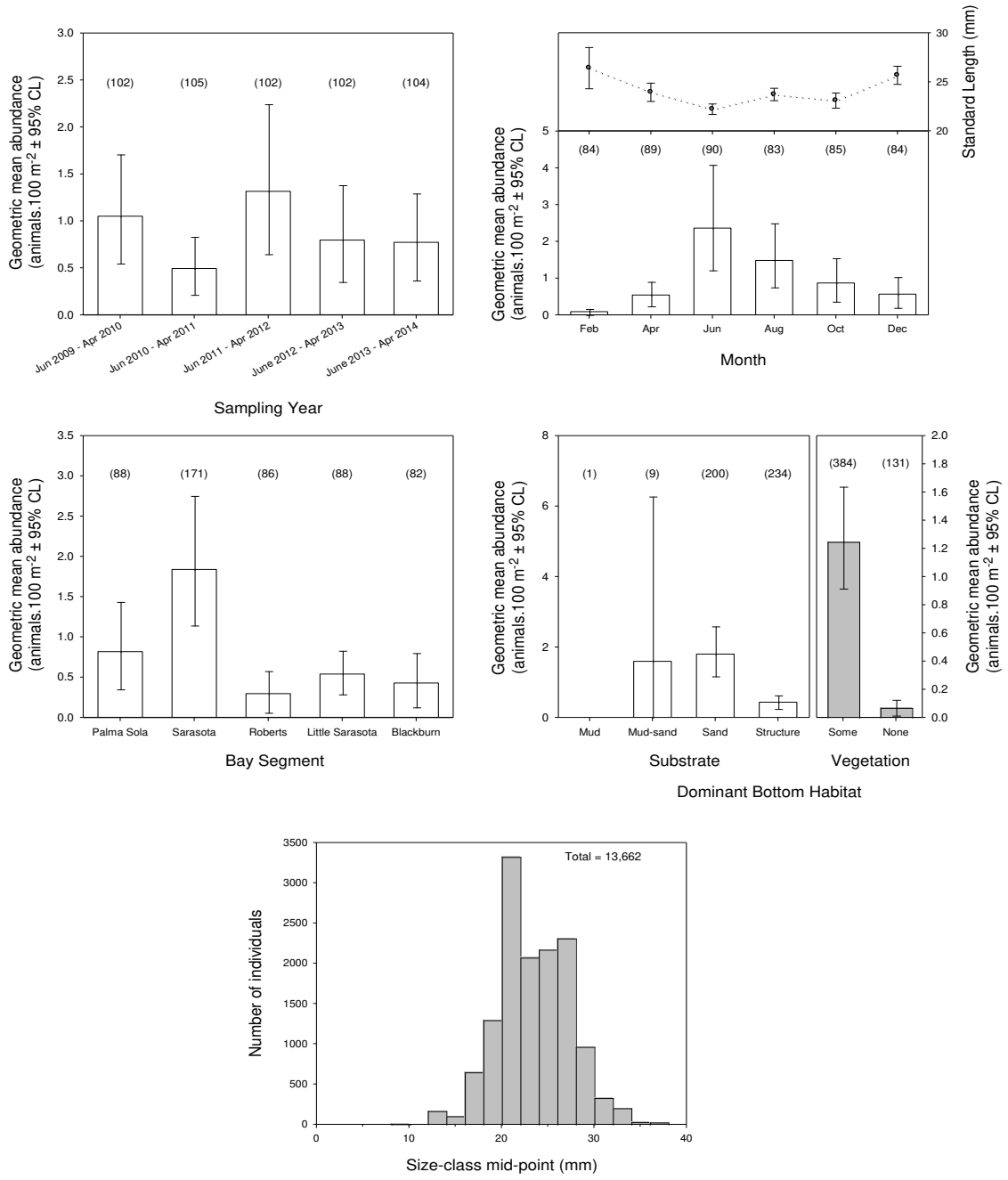

Fig. I5. Relative abundance and length-frequency distribution of Rainwater Killifish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Syngnathus scovelli (Gulf Pipefish)

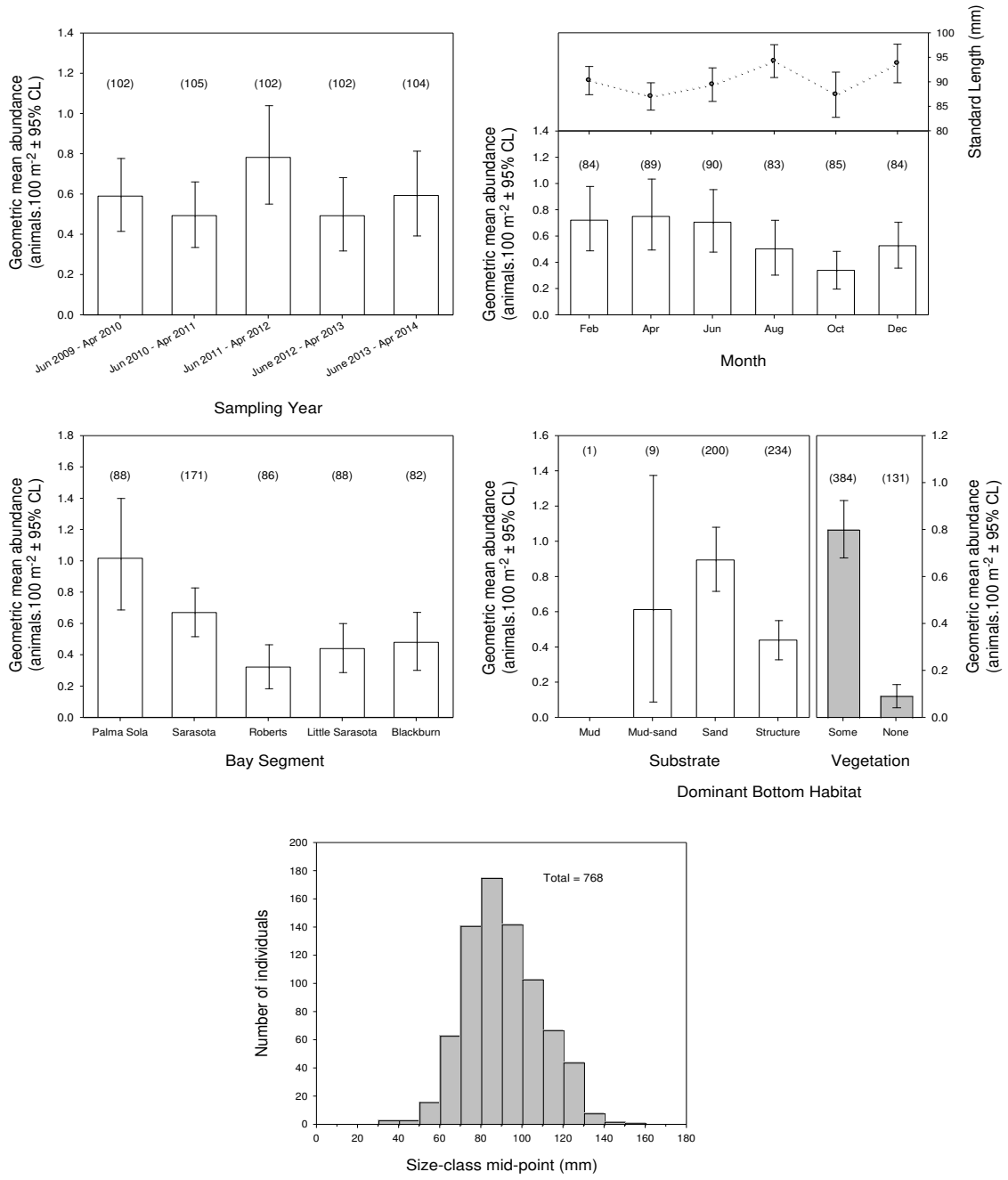

Fig. I6. Relative abundance and length-frequency distribution of Gulf Pipefish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lutjanus griseus (Gray Snapper)

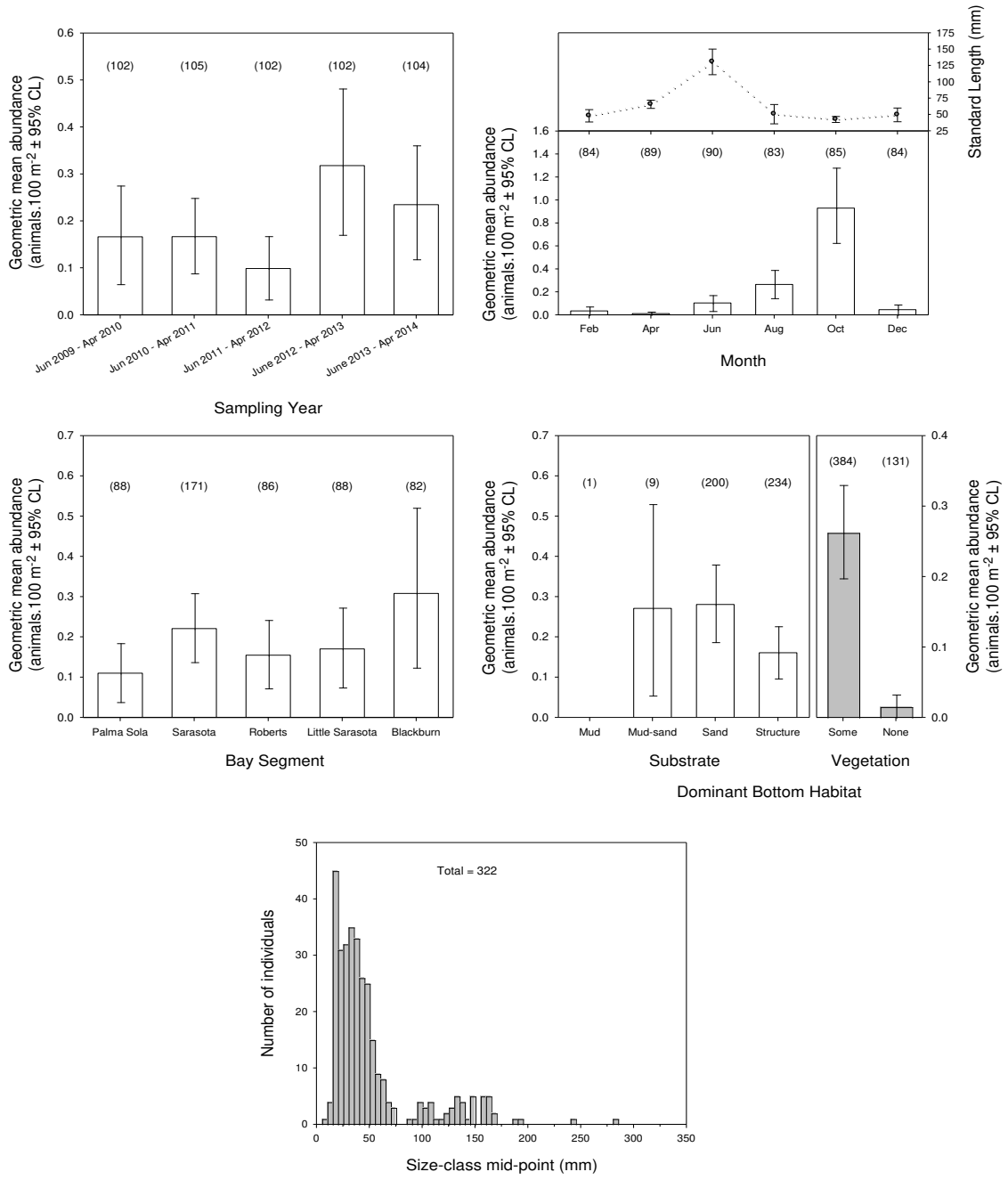

Fig. I7. Relative abundance and length-frequency distribution of Gray Snapper collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus gula (Silver Jenny)

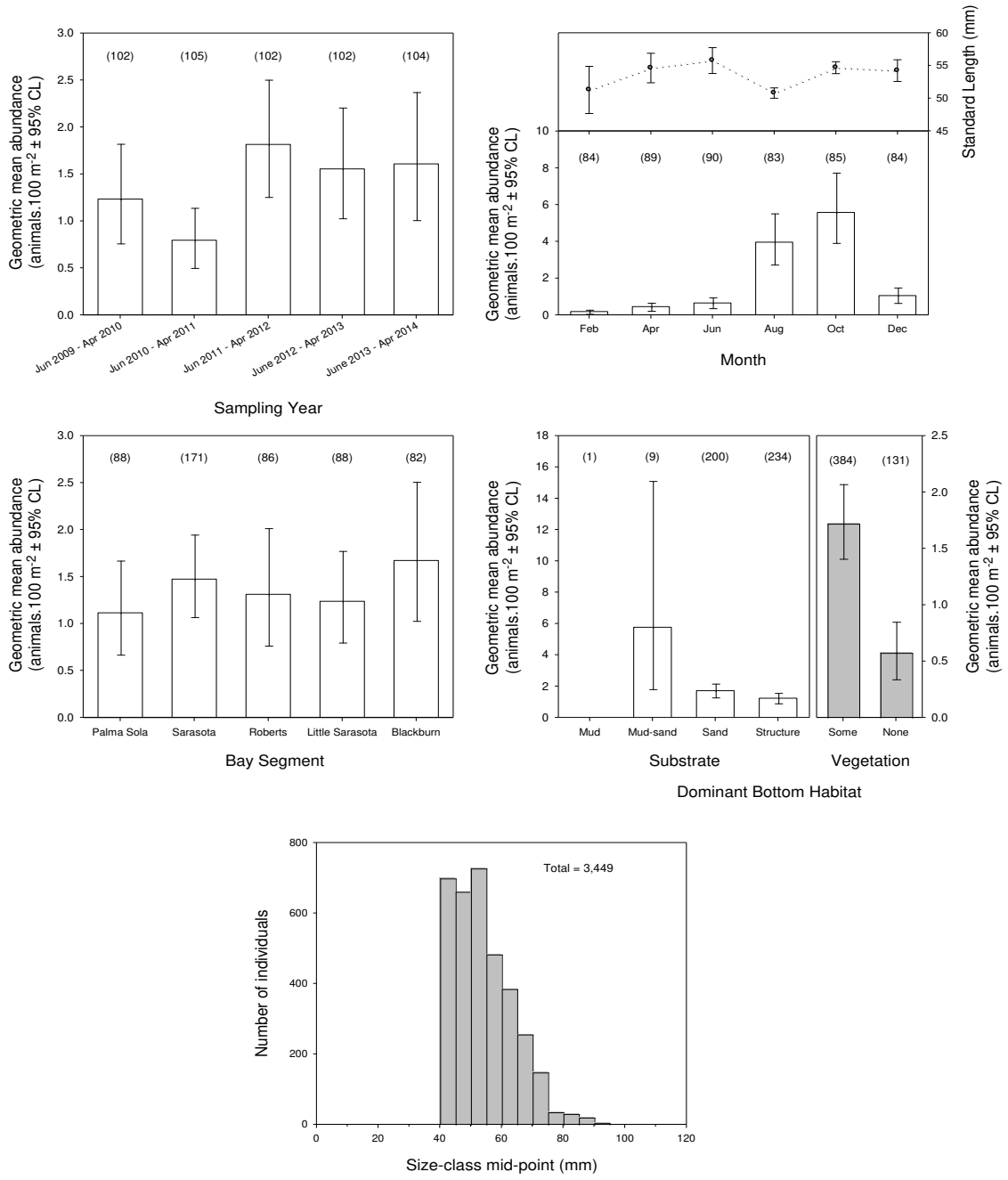

Fig. I8. Relative abundance and length-frequency distribution of Silver Jenny collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus harengulus (Tidewater Mojarra)

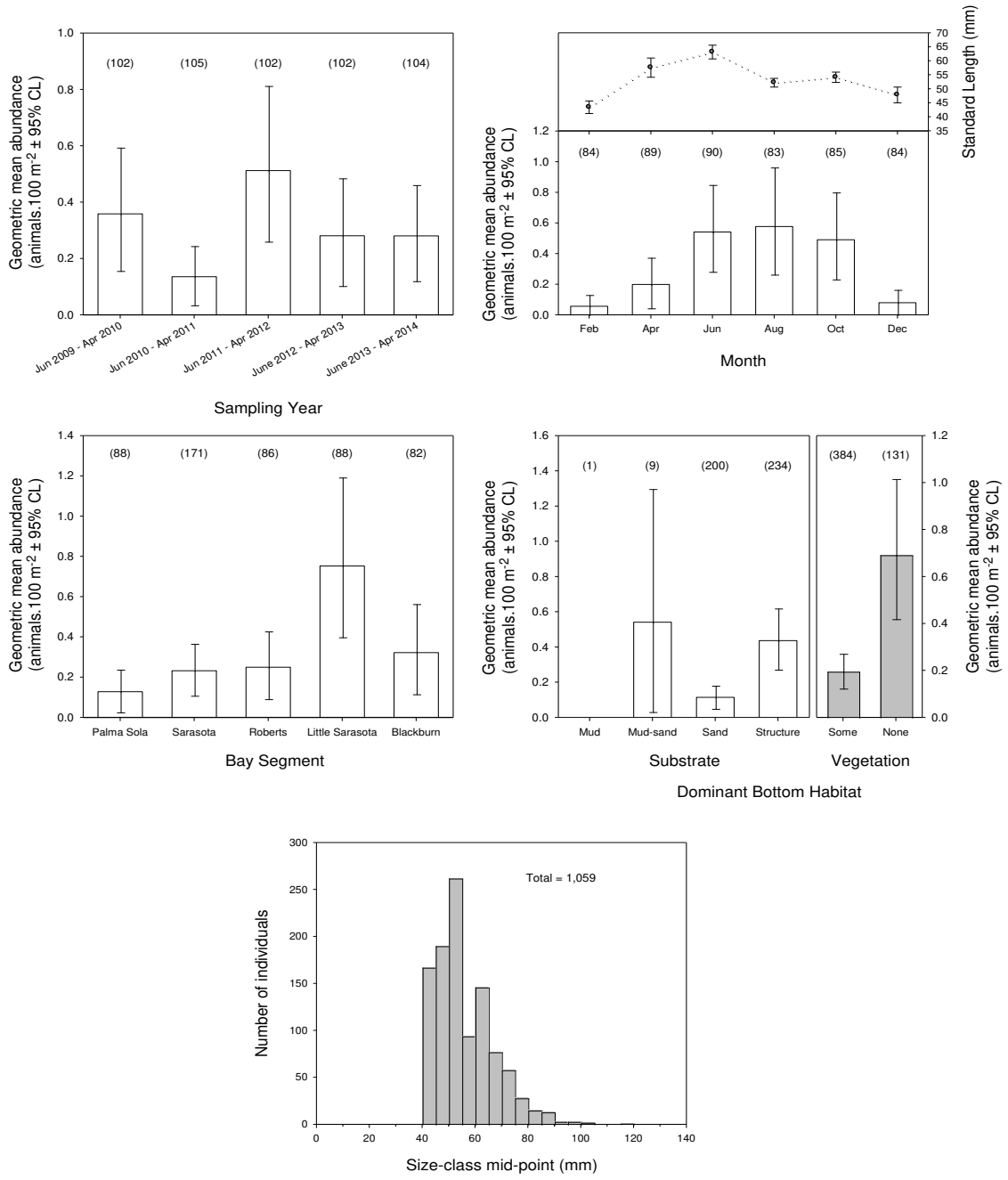

Fig. I9. Relative abundance and length-frequency distribution of Tidewater Mojarra collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Orthopristis chrysoptera (Pigfish)

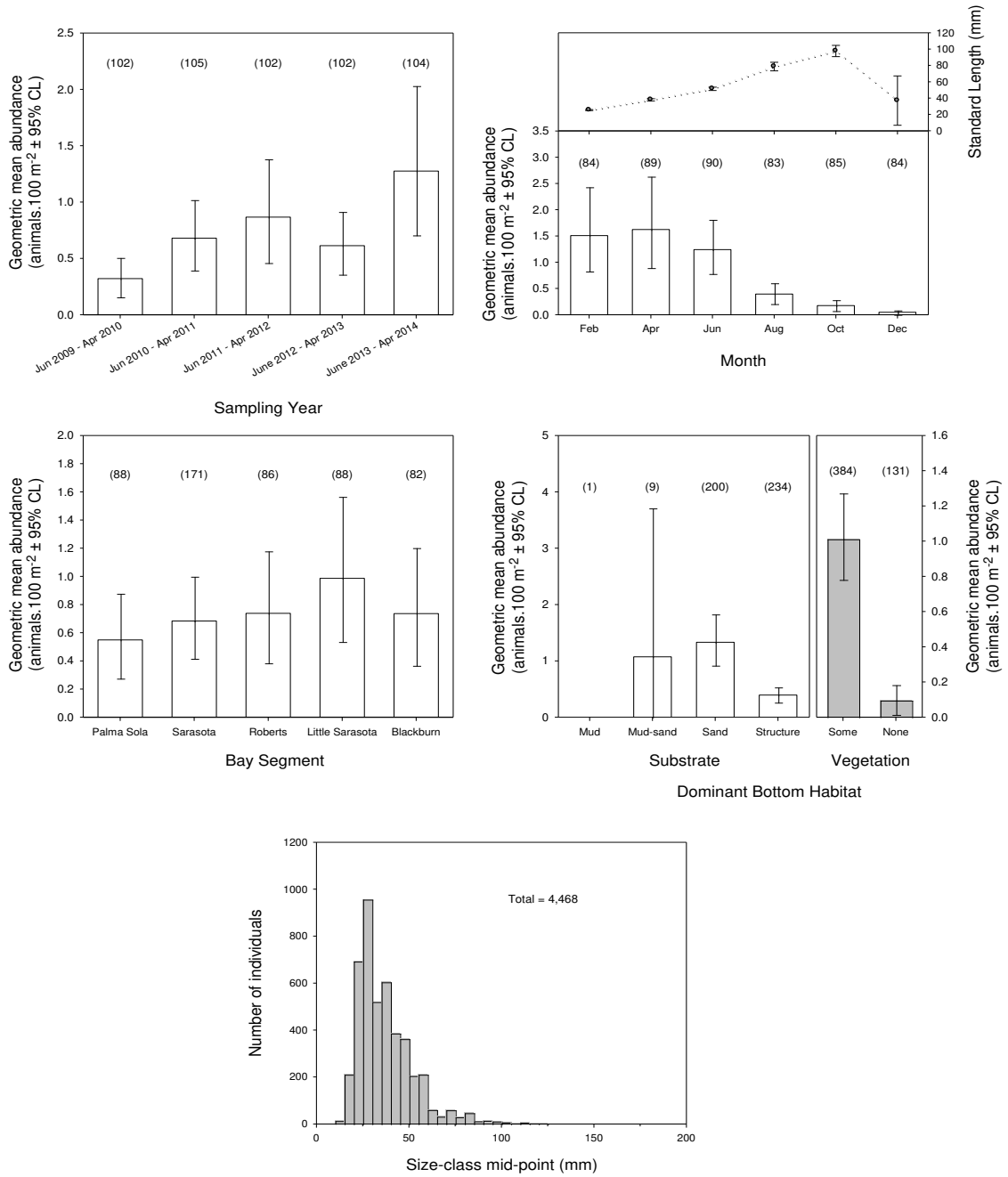

Fig. I10. Relative abundance and length-frequency distribution of Pigfish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

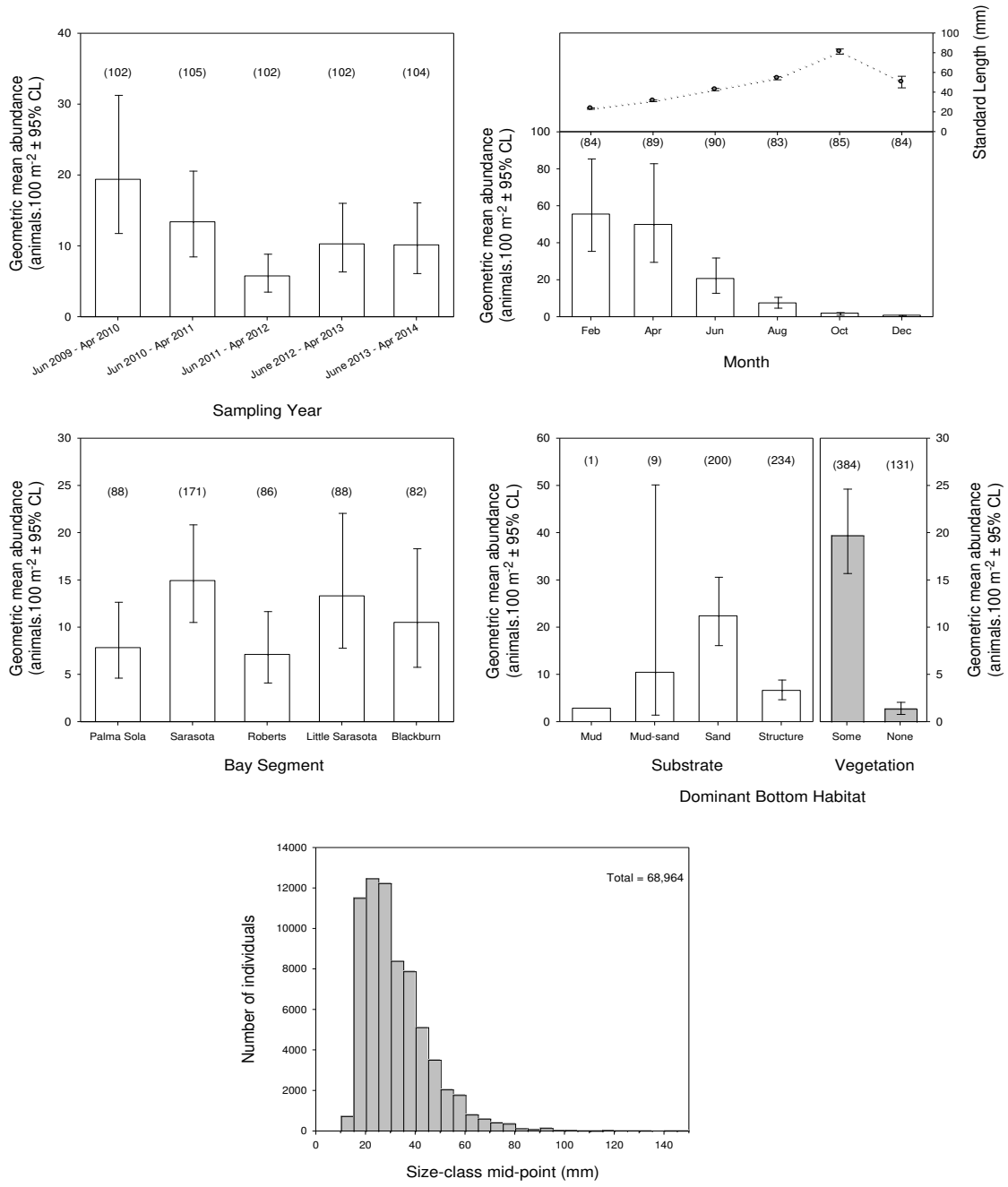

Fig. I11. Relative abundance and length-frequency distribution of Pinfish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Cynoscion nebulosus (Spotted Seatrout)

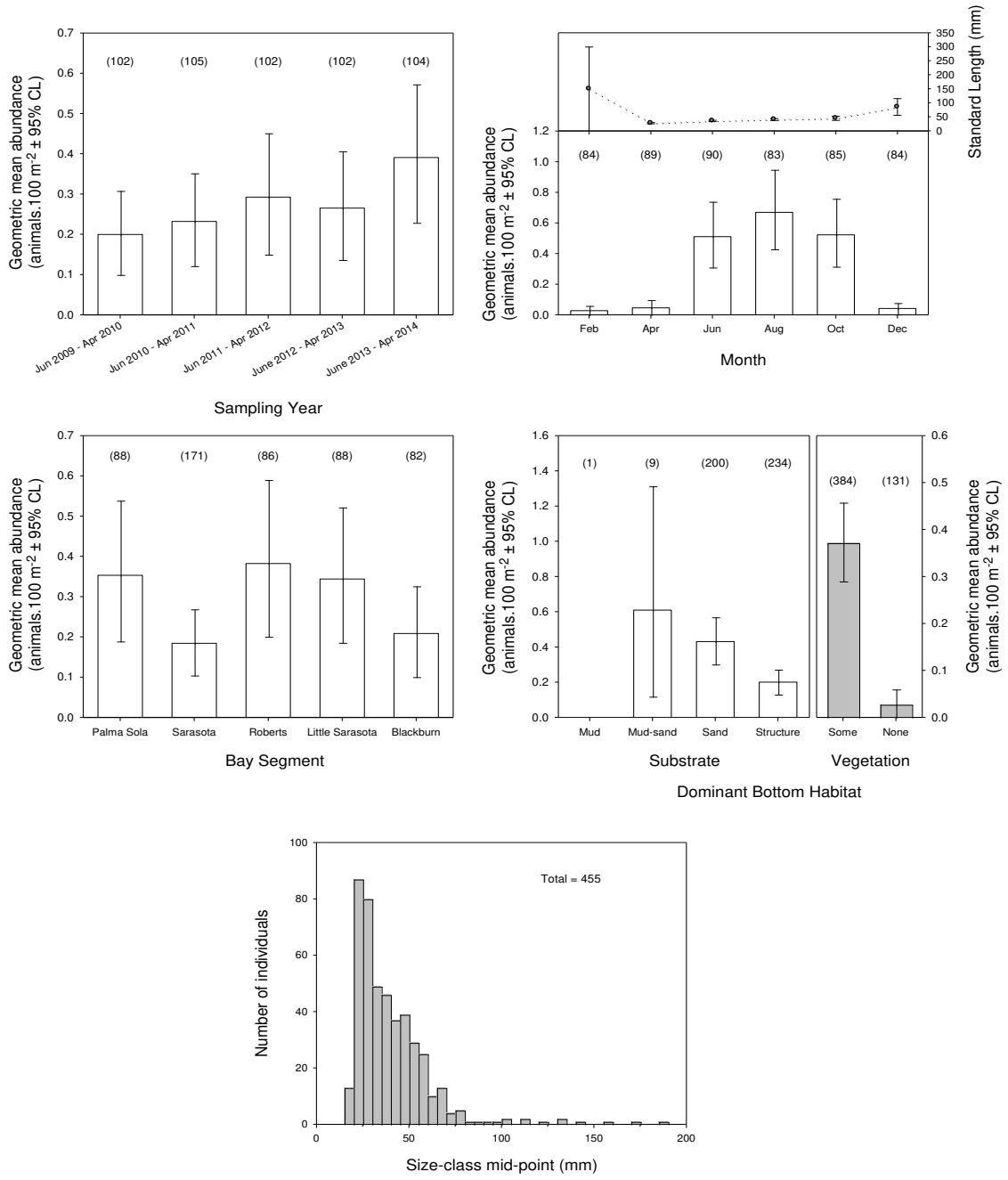

Fig. I12. Relative abundance and length-frequency distribution of Spotted Seatrout collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Bairdiella chrysoura (Silver Perch)

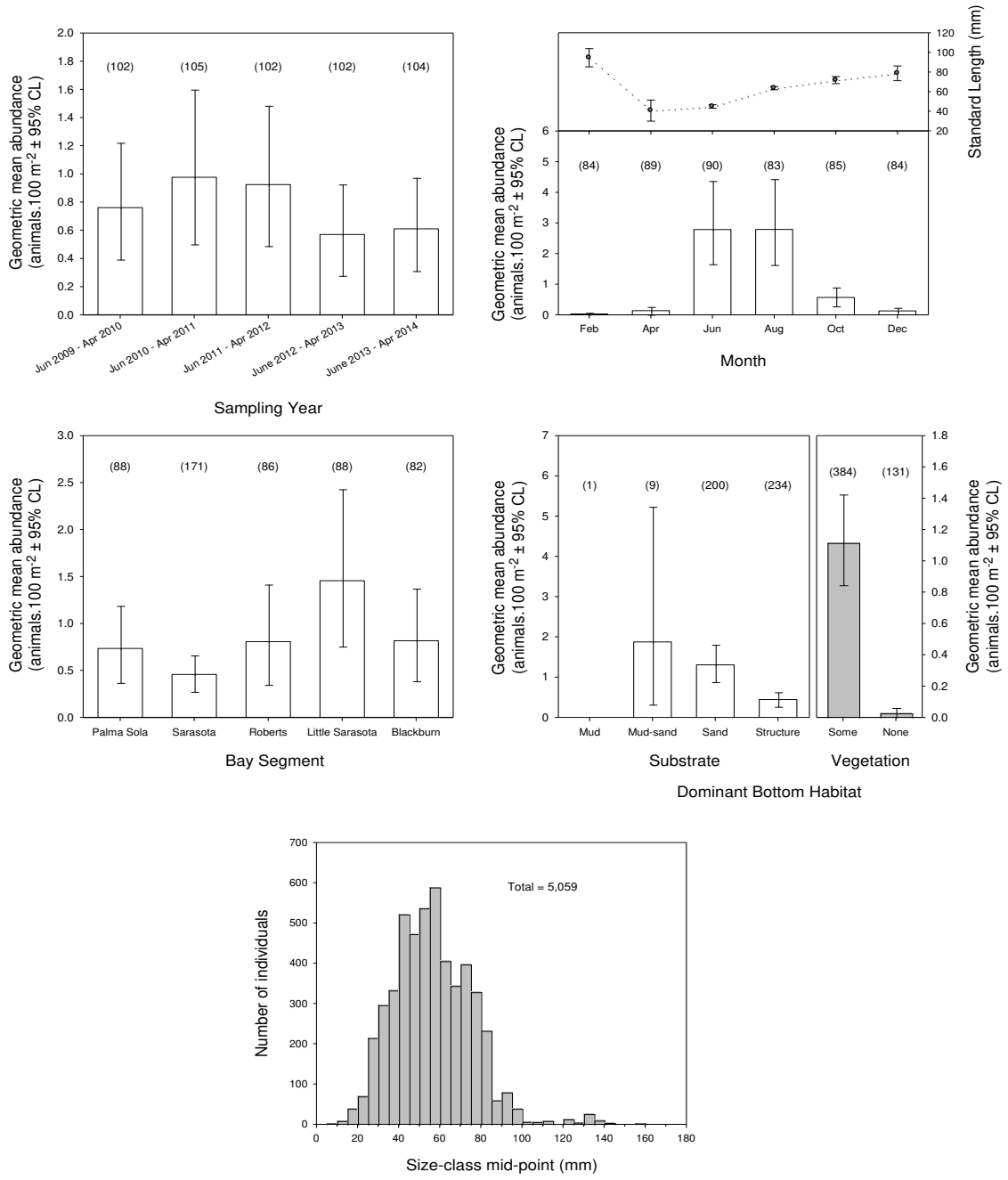

Fig. I13. Relative abundance and length-frequency distribution of Silver Perch collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Leiostomus xanthurus (Spot)

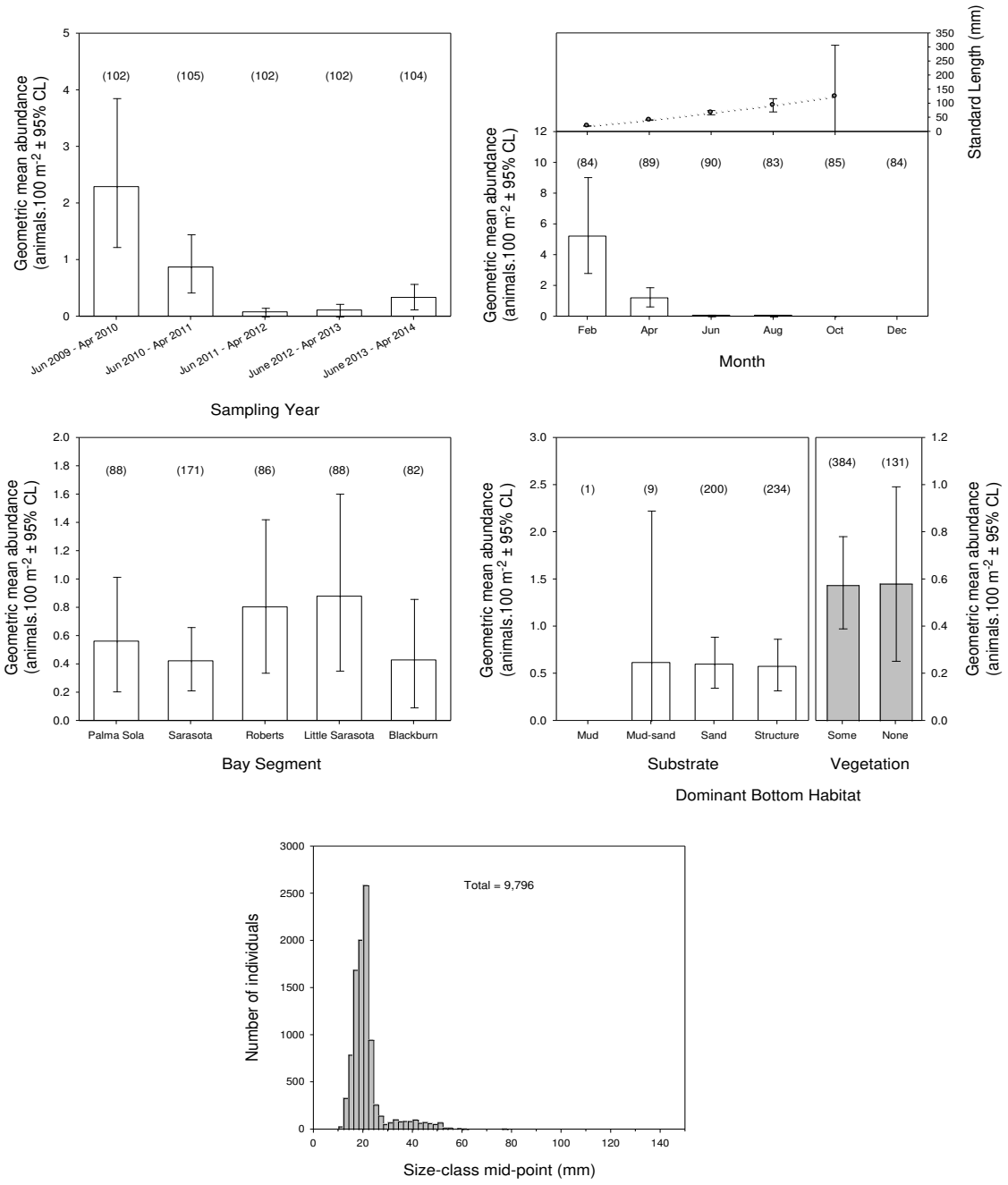

Fig. I14. Relative abundance and length-frequency distribution of Spot collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Gobiosoma robustum (Code Goby)

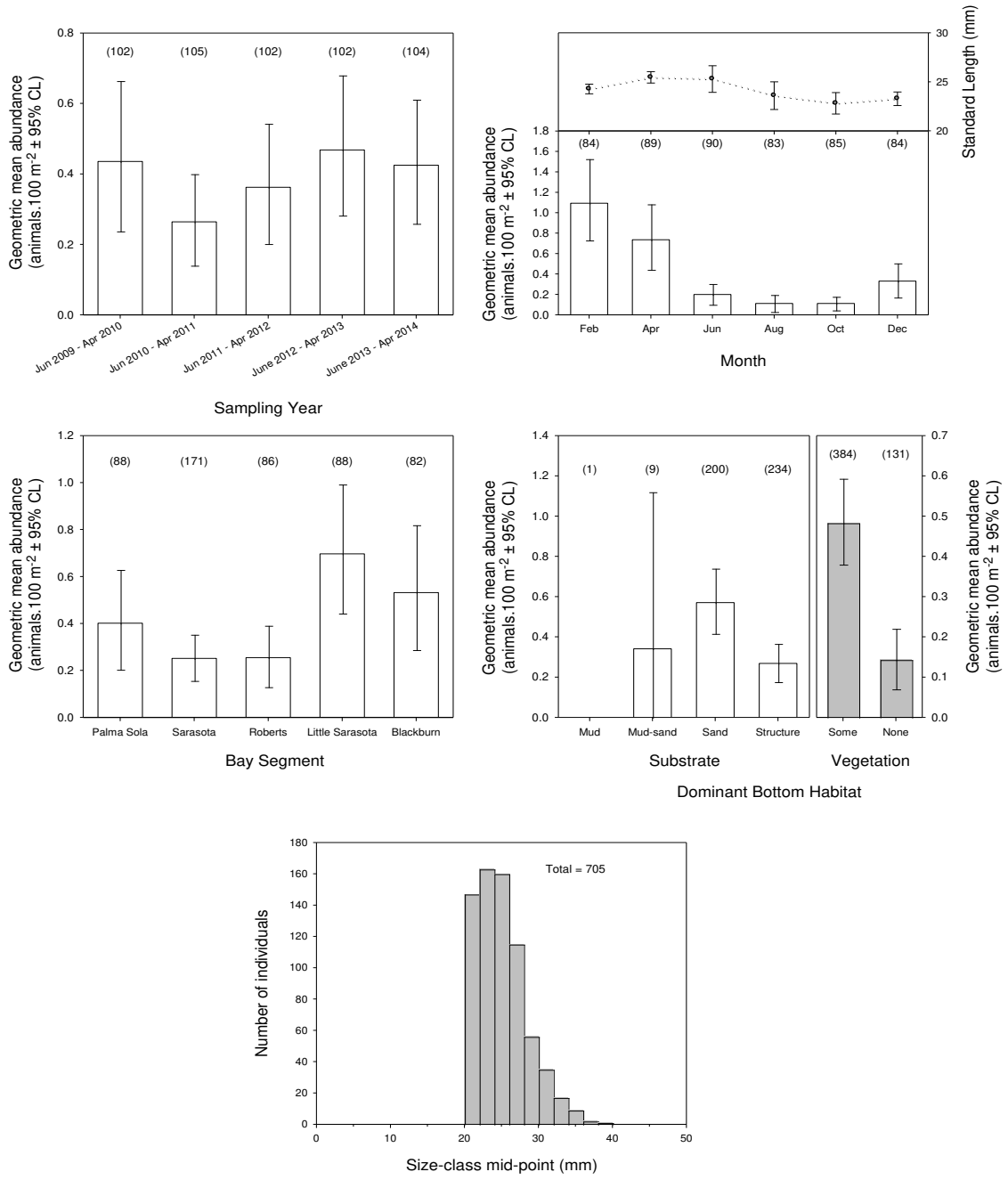

Fig. I15. Relative abundance and length-frequency distribution of Code Goby collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Microgobius gulosus (Clown Goby)

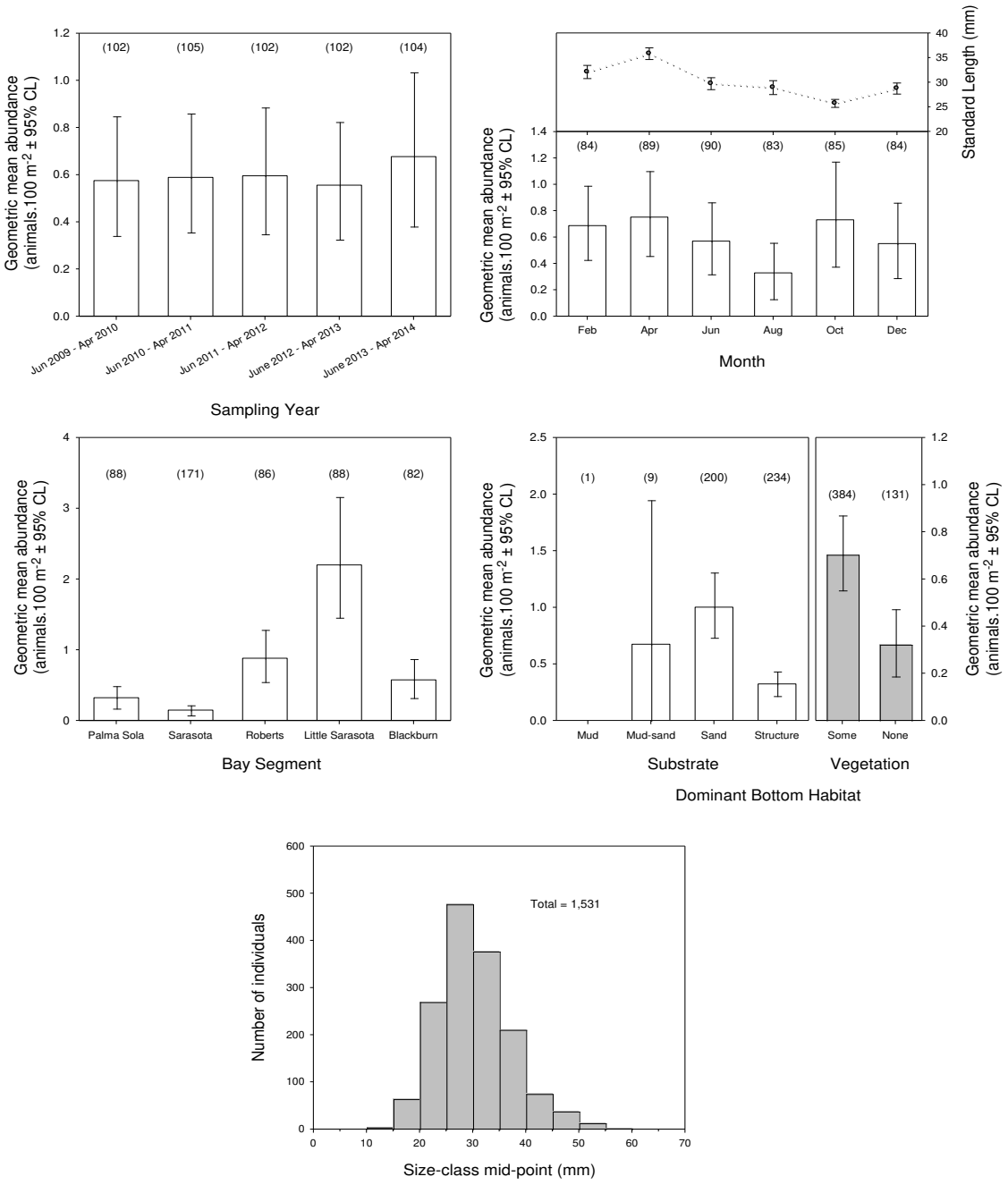

Fig. I16. Relative abundance and length-frequency distribution of Clown Goby collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Stephanolepis hispidus (Planehead Filefish)

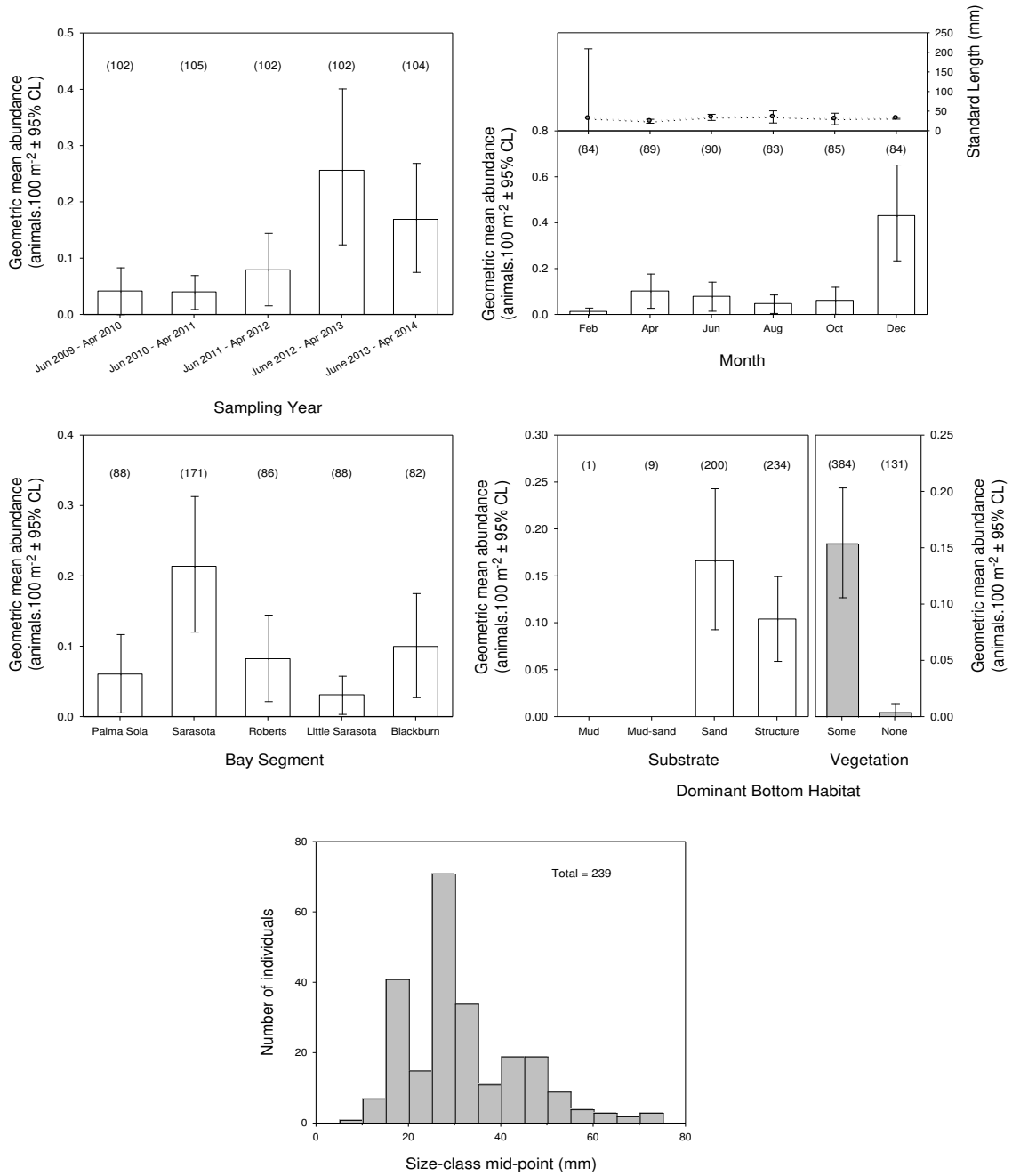

Fig. I17. Relative abundance and length-frequency distribution of Planehead Filefish collected with 21.3-m offshore seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Appendix J. Species overview plots for dominant taxa (≥200 animals collected and ≥10 occurrence in a gear type) collected in 183-m haul seines in Sarasota Bay, June 2009 to April 2014. Taxa are arranged phylogenetically.

Elops saurus (Ladyfish)

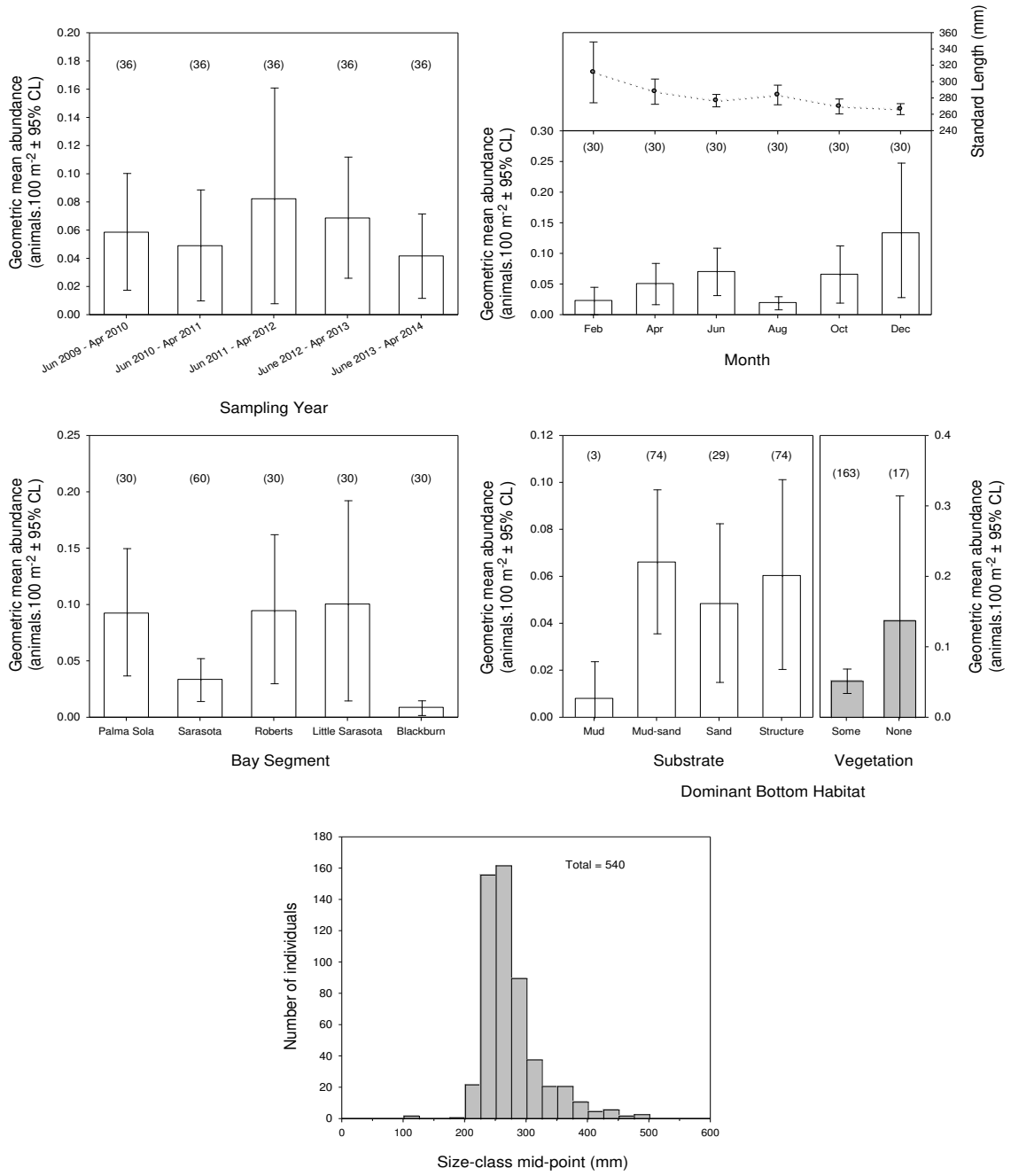

Fig. J3. Relative abundance and length-frequency distribution of Ladyfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Harengula jaguana (Scaled Sardine)

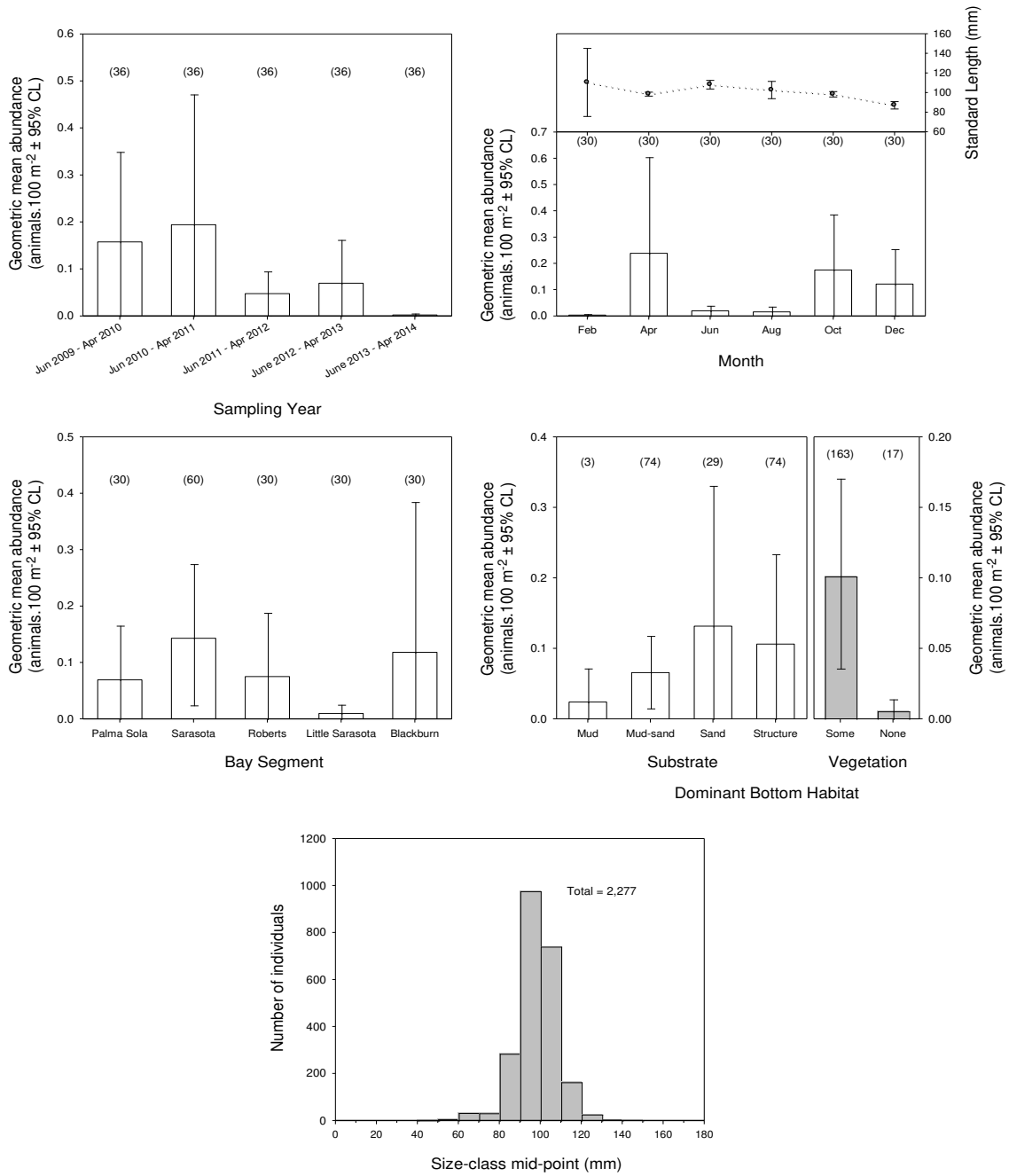

Fig. J4. Relative abundance and length-frequency distribution of Scaled Sardine collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Ariopsis felis (Hardhead Catfish)

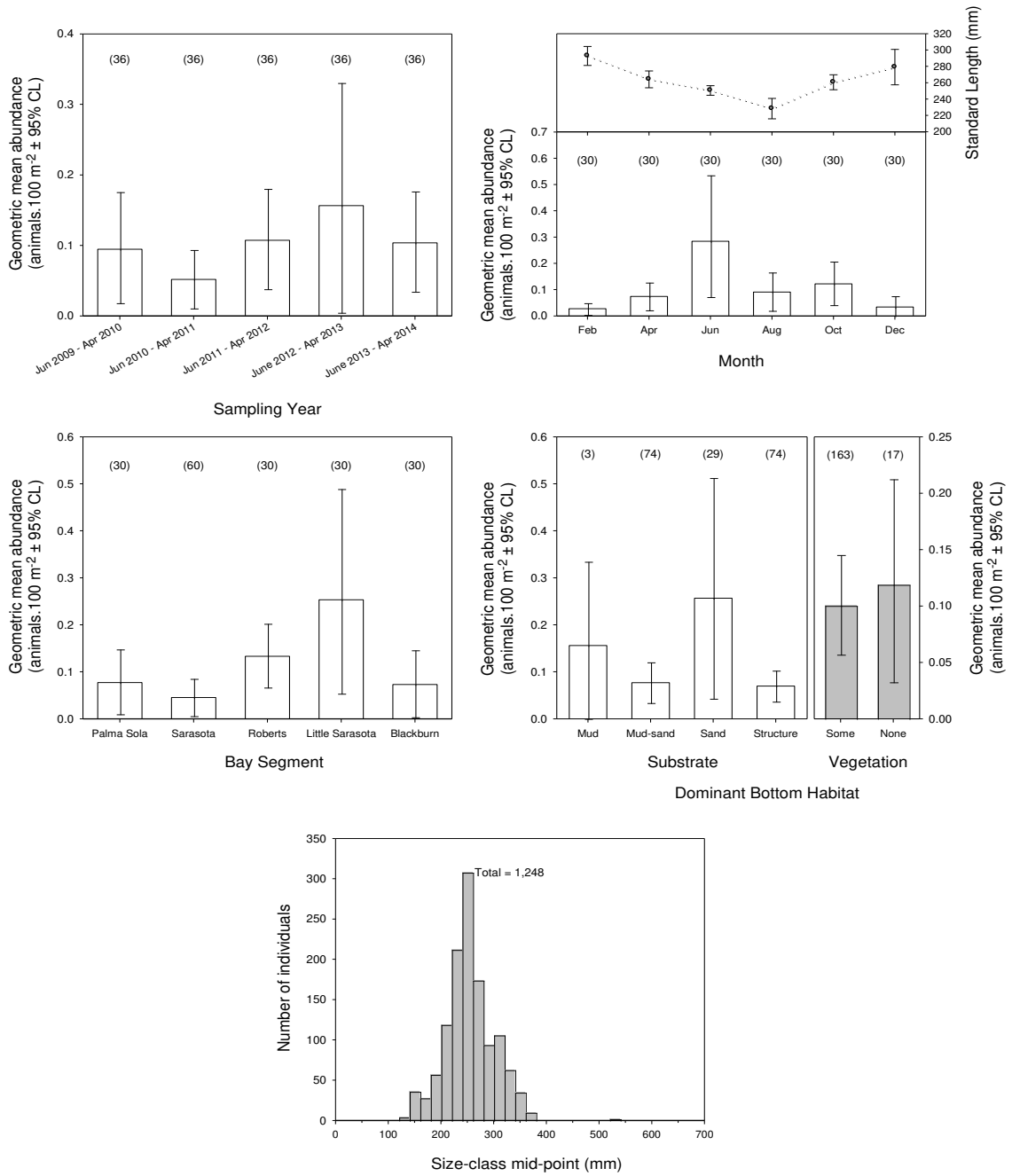

Fig. J5. Relative abundance and length-frequency distribution of Hardhead Catfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Strongylura notata (Redfin Needlefish)

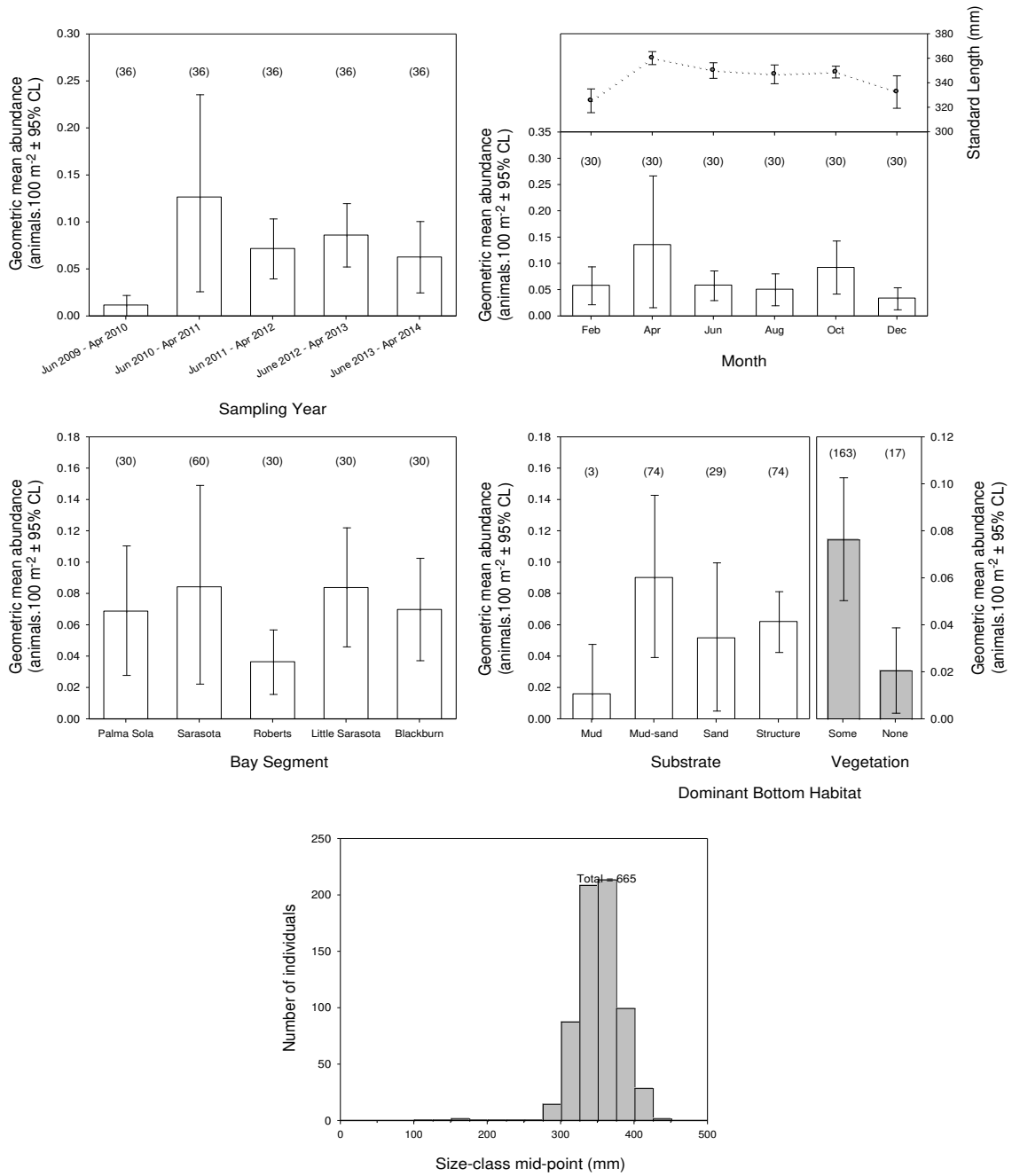

Fig. J6. Relative abundance and length-frequency distribution of Redfin Needlefish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Centropomus undecimalis (Common Snook)

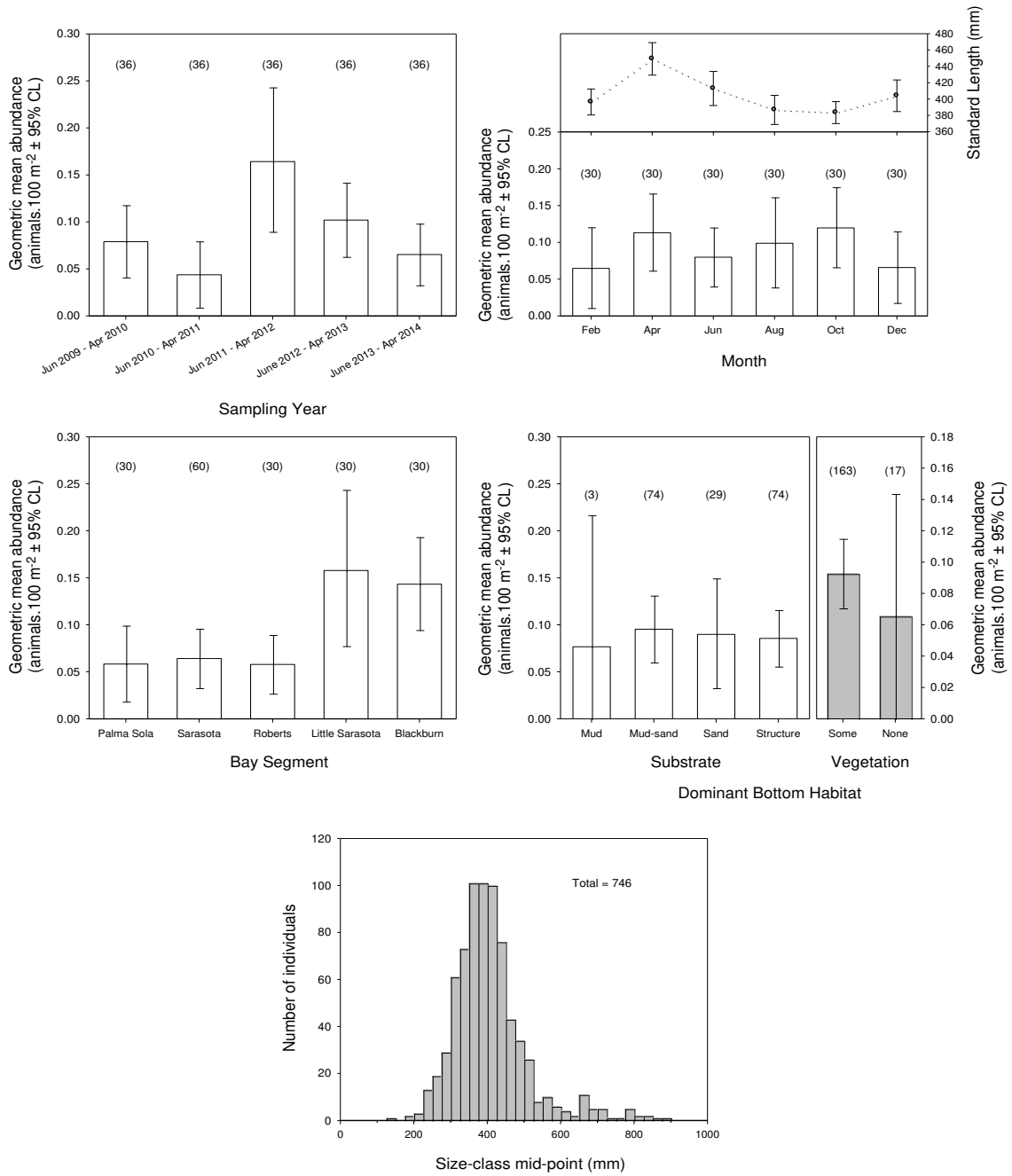

Fig. J7. Relative abundance and length-frequency distribution of Common Snook collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lutjanus griseus (Gray Snapper)

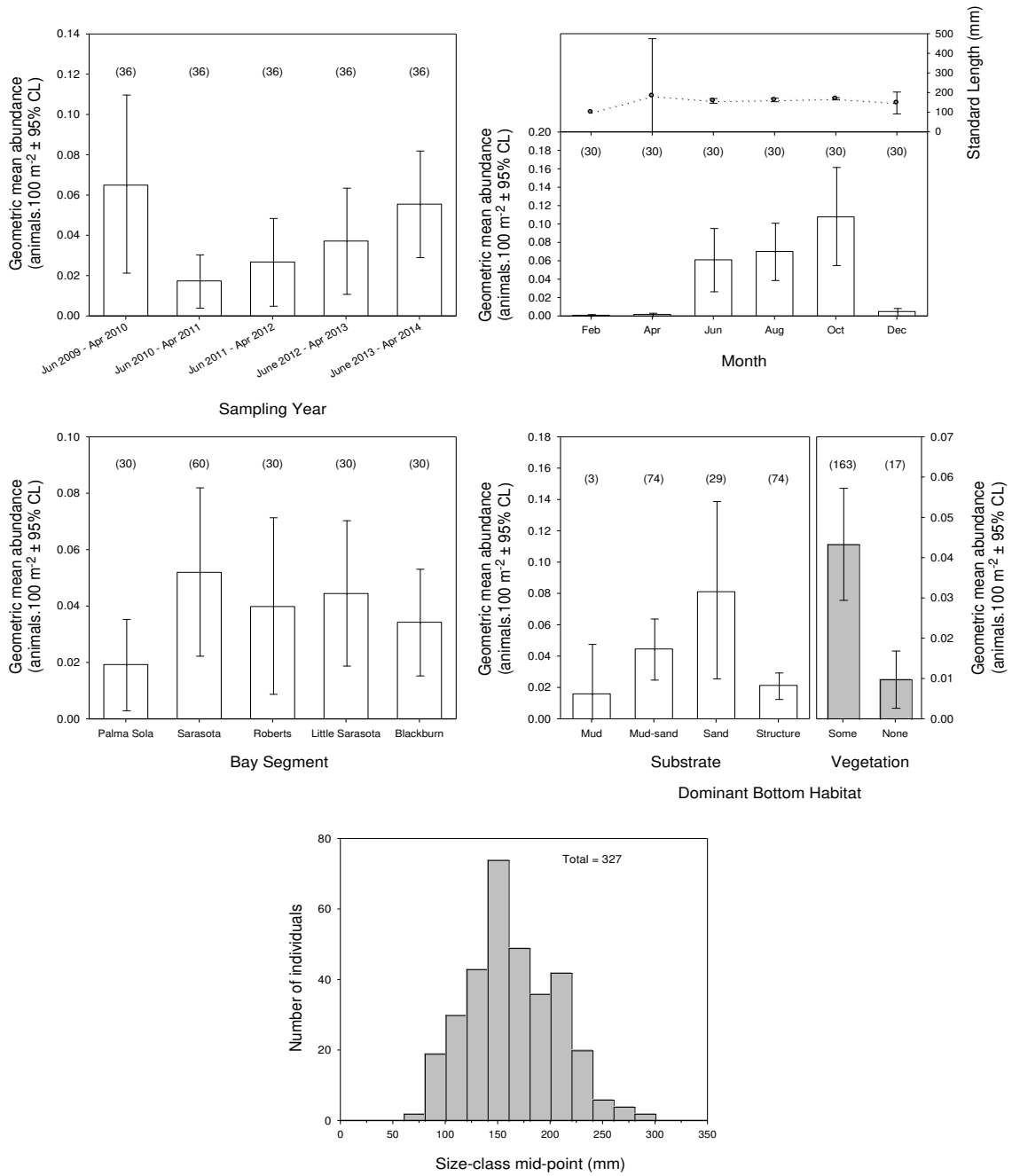

Fig. J8. Relative abundance and length-frequency distribution of Gray Snapper collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus gula (Silver Jenny)

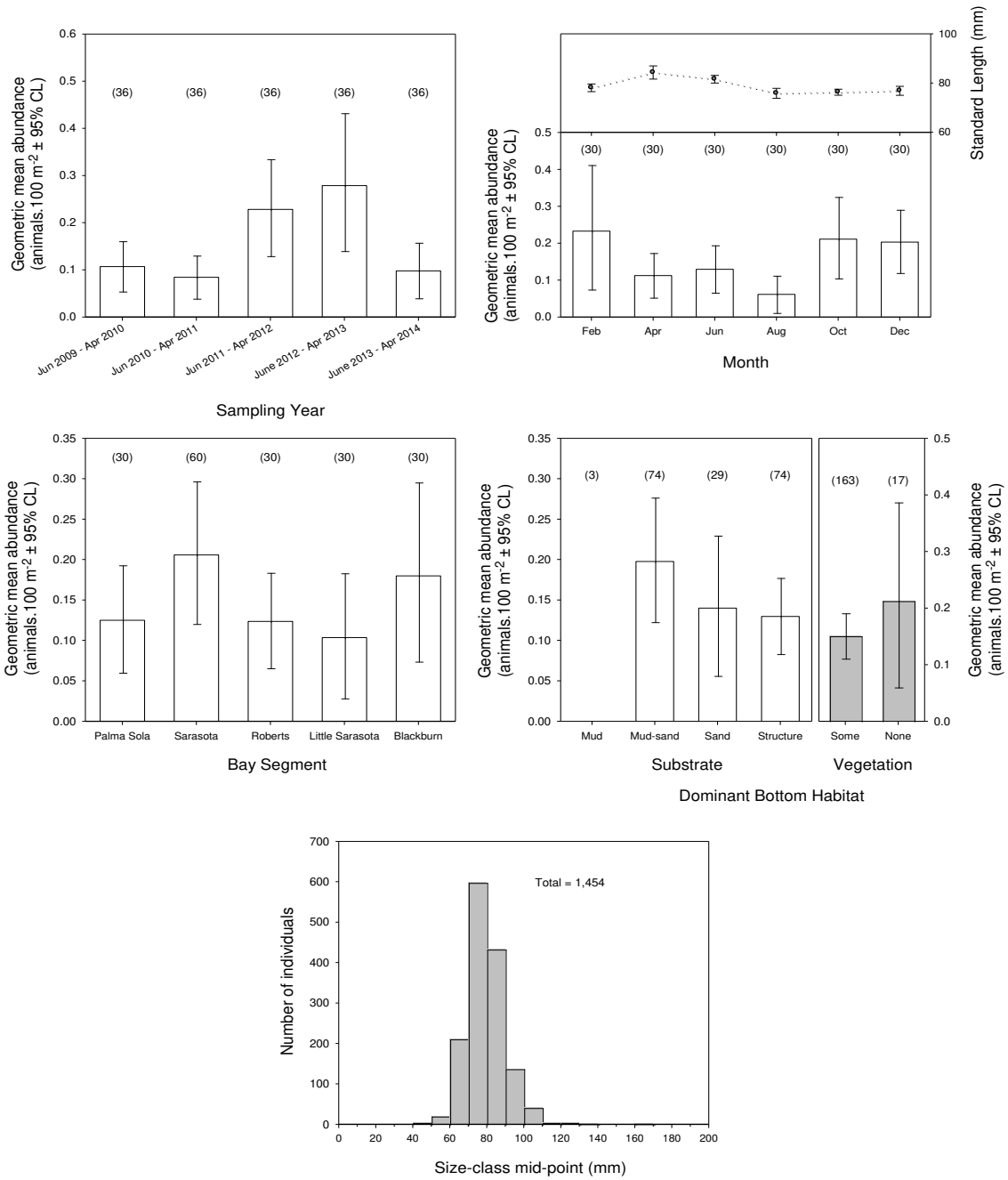

Fig. J9. Relative abundance and length-frequency distribution of Silver Jenny collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Orthopristis chrysoptera (Pigfish)

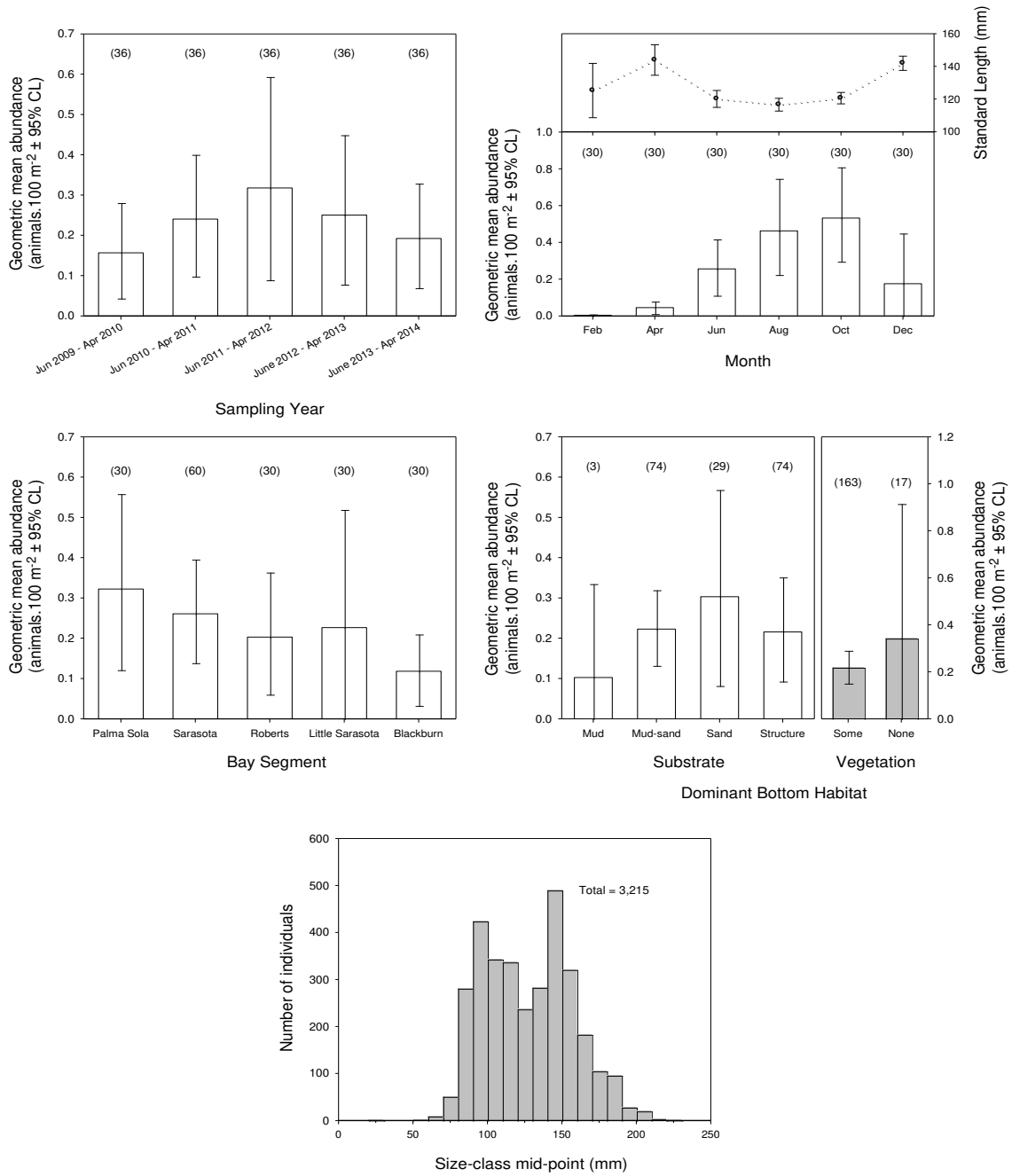

Fig. J10. Relative abundance and length-frequency distribution of Pigfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

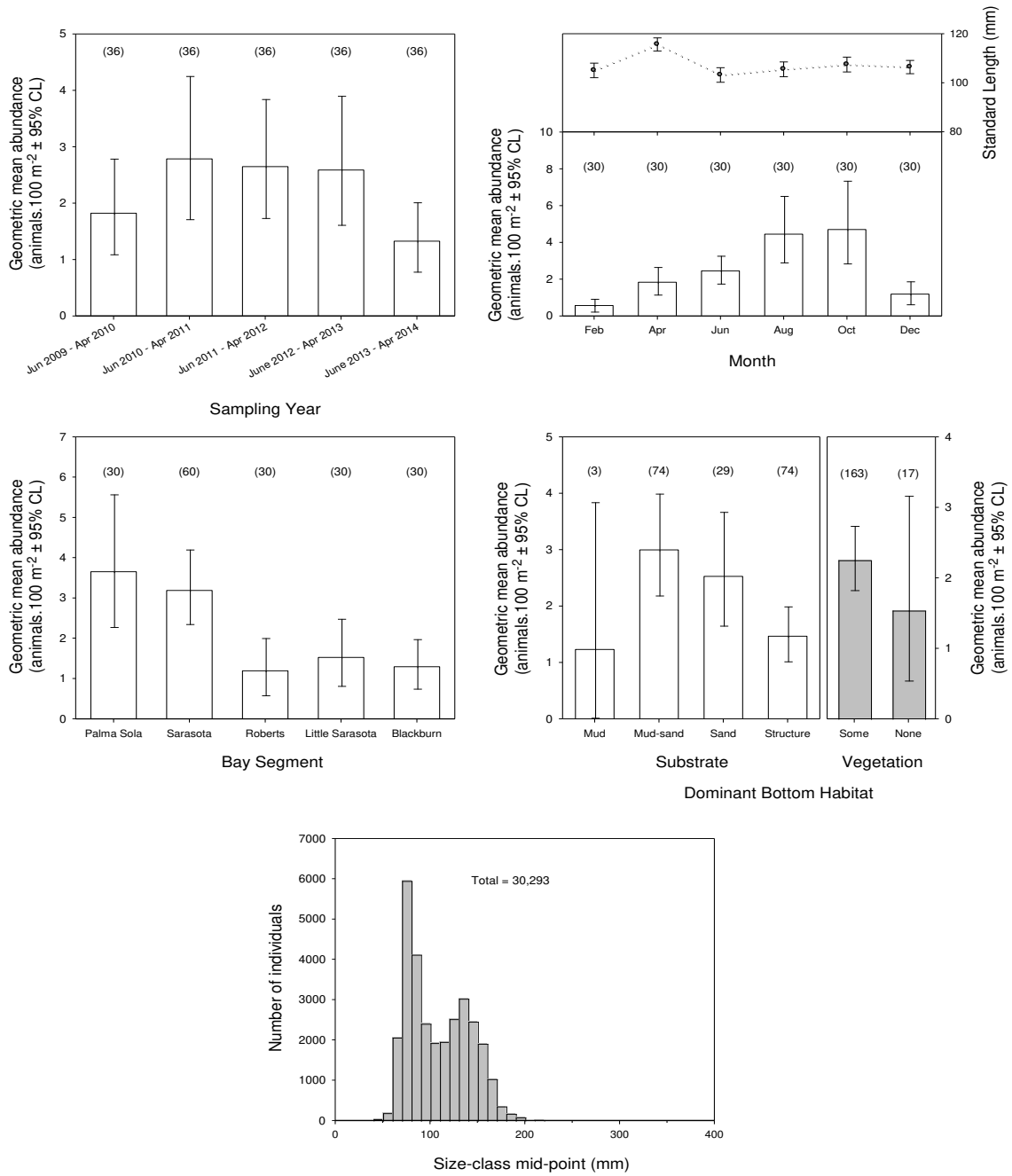

Fig. J11. Relative abundance and length-frequency distribution of Pinfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Archosargus probatocephalus (Sheepshead)

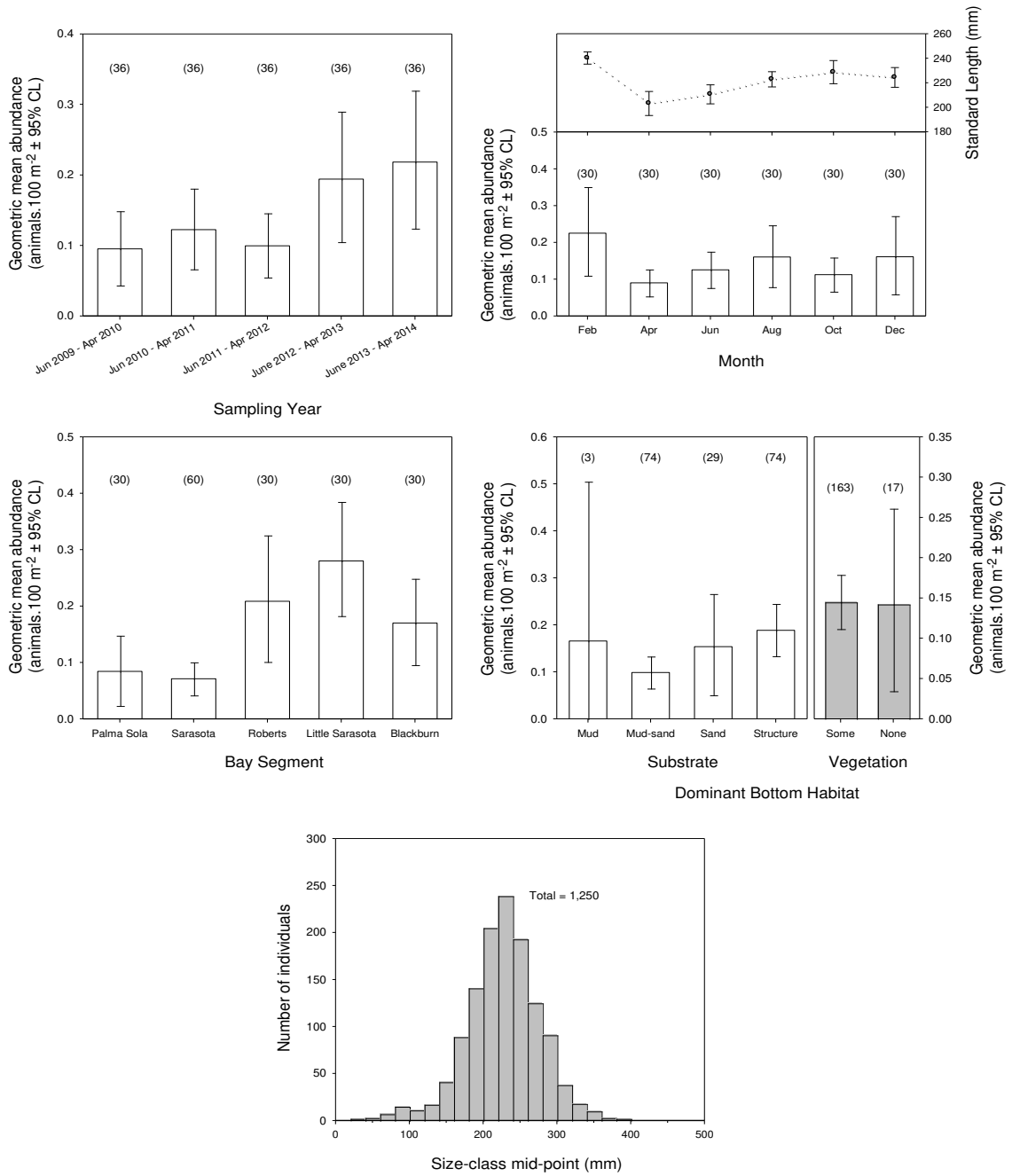

Fig. J12. Relative abundance and length-frequency distribution of Sheepshead collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Bairdiella chrysoura (Silver Perch)

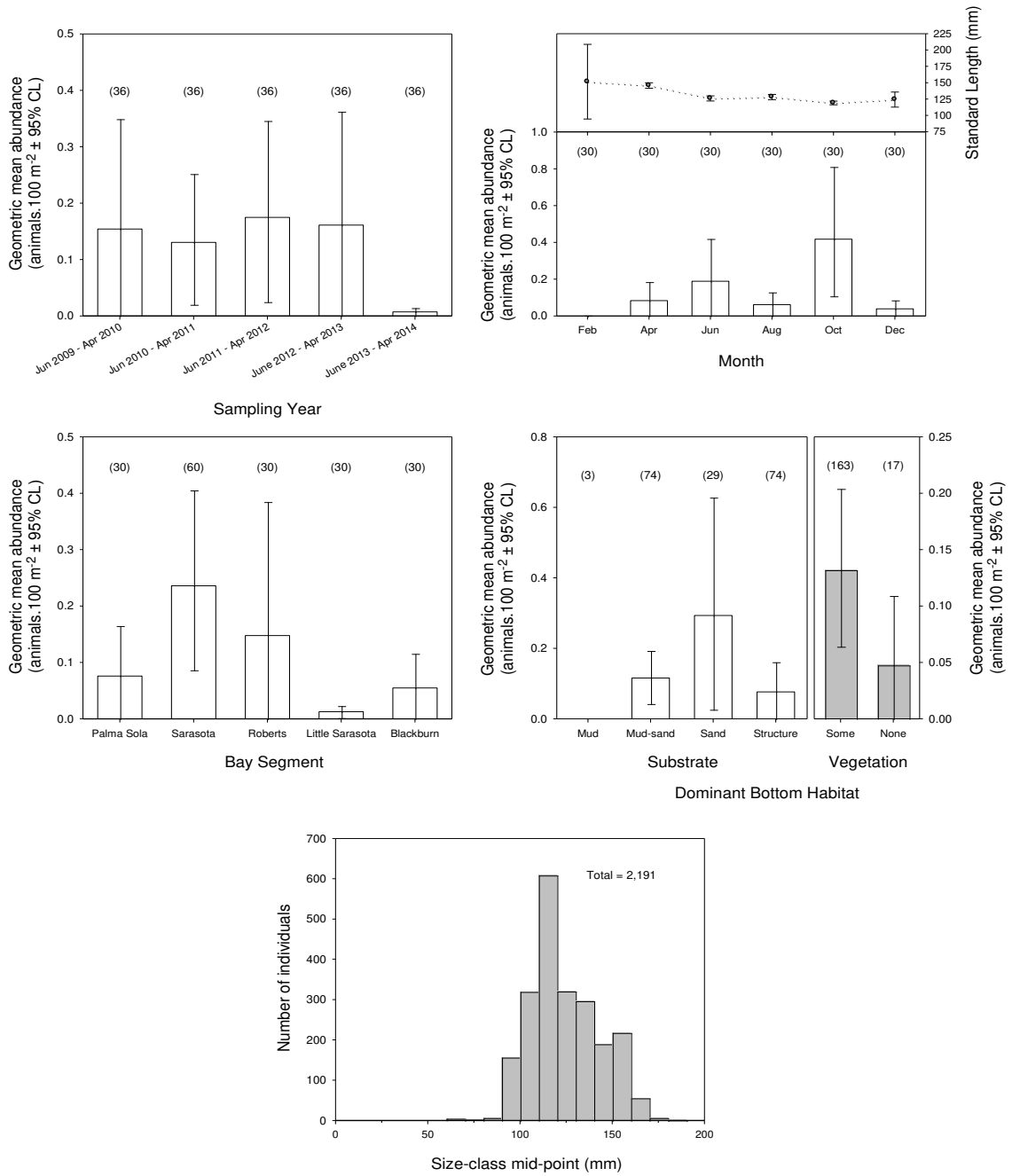

Fig. J13. Relative abundance and length-frequency distribution of Silver Perch collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Leiostomus xanthurus (Spot)

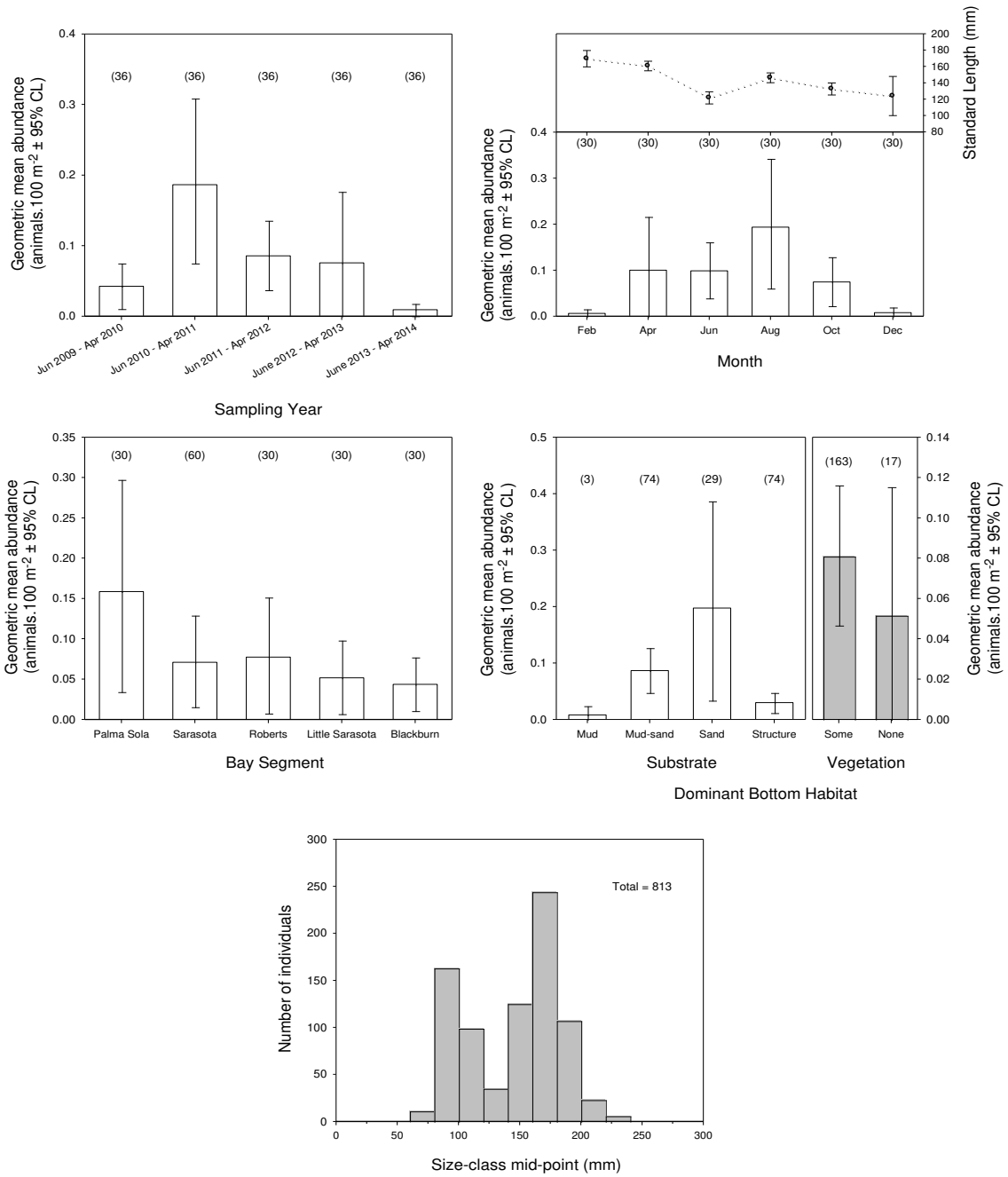

Fig. J14. Relative abundance and length-frequency distribution of Spot collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Mugil cephalus (Striped Mullet)

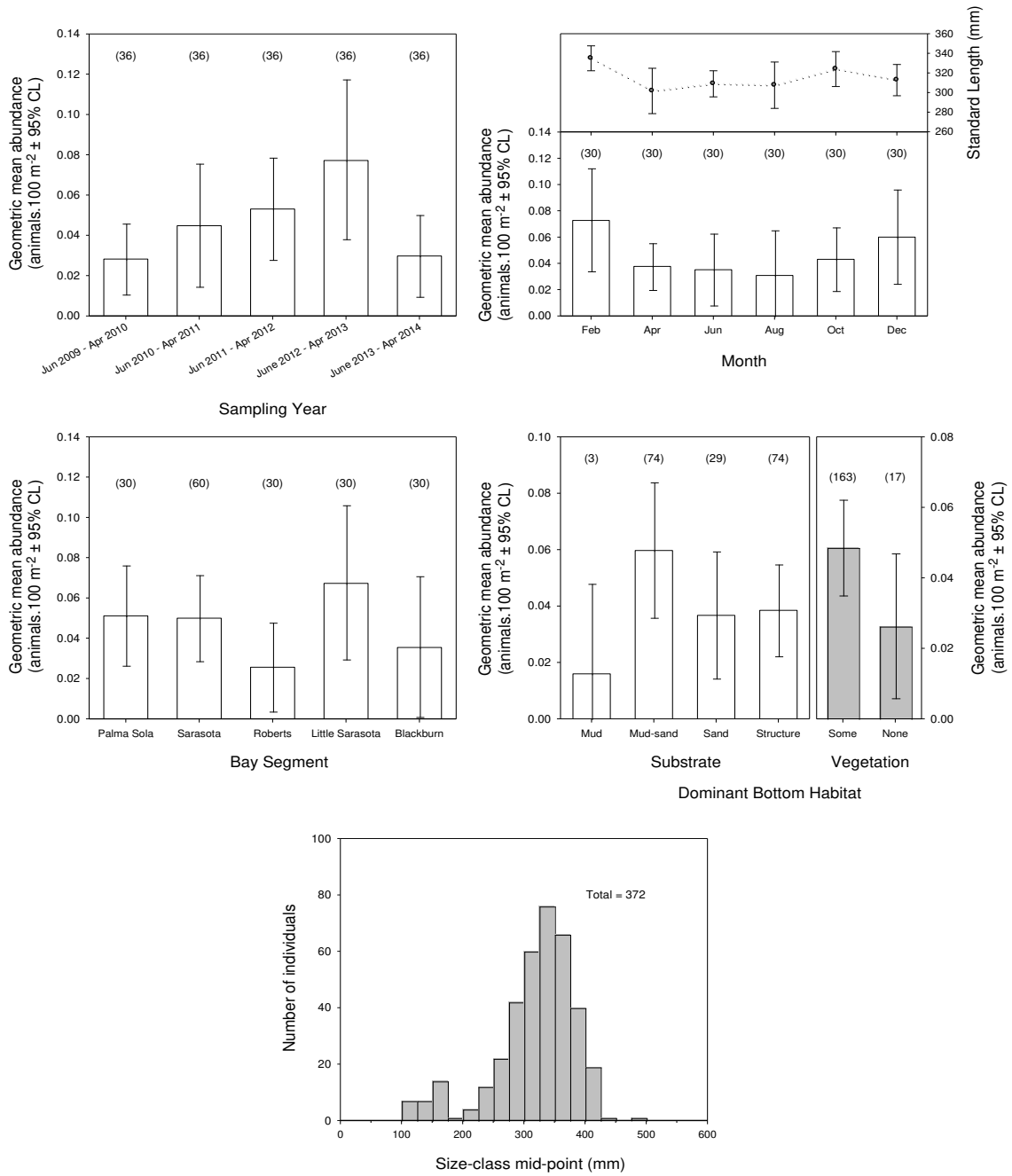

Fig. J15. Relative abundance and length-frequency distribution of Striped Mullet collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Mugil curema (White Mullet)

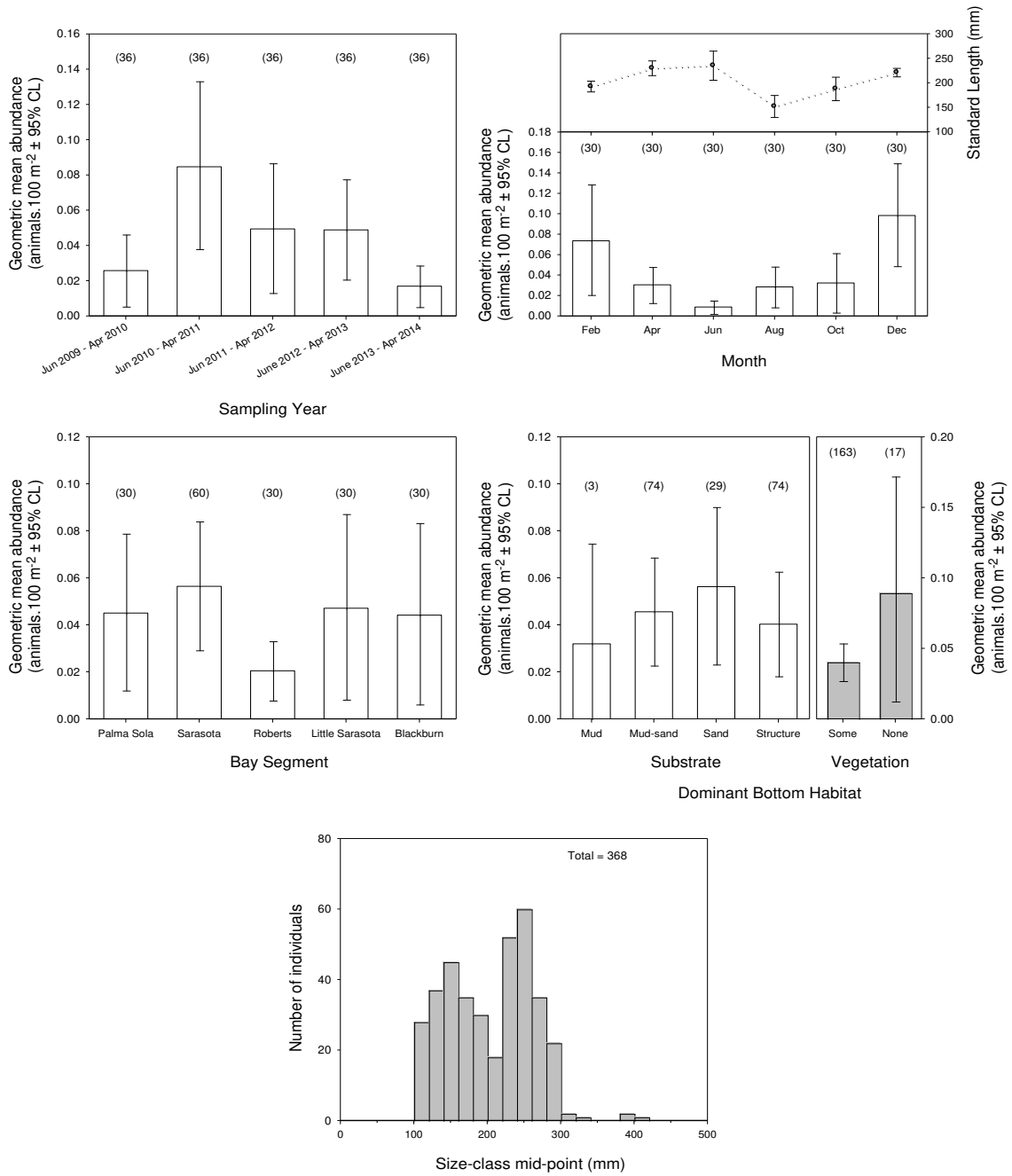

Fig. J16. Relative abundance and length-frequency distribution of White Mullet collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Mugil trichodon (Fantail Mullet)

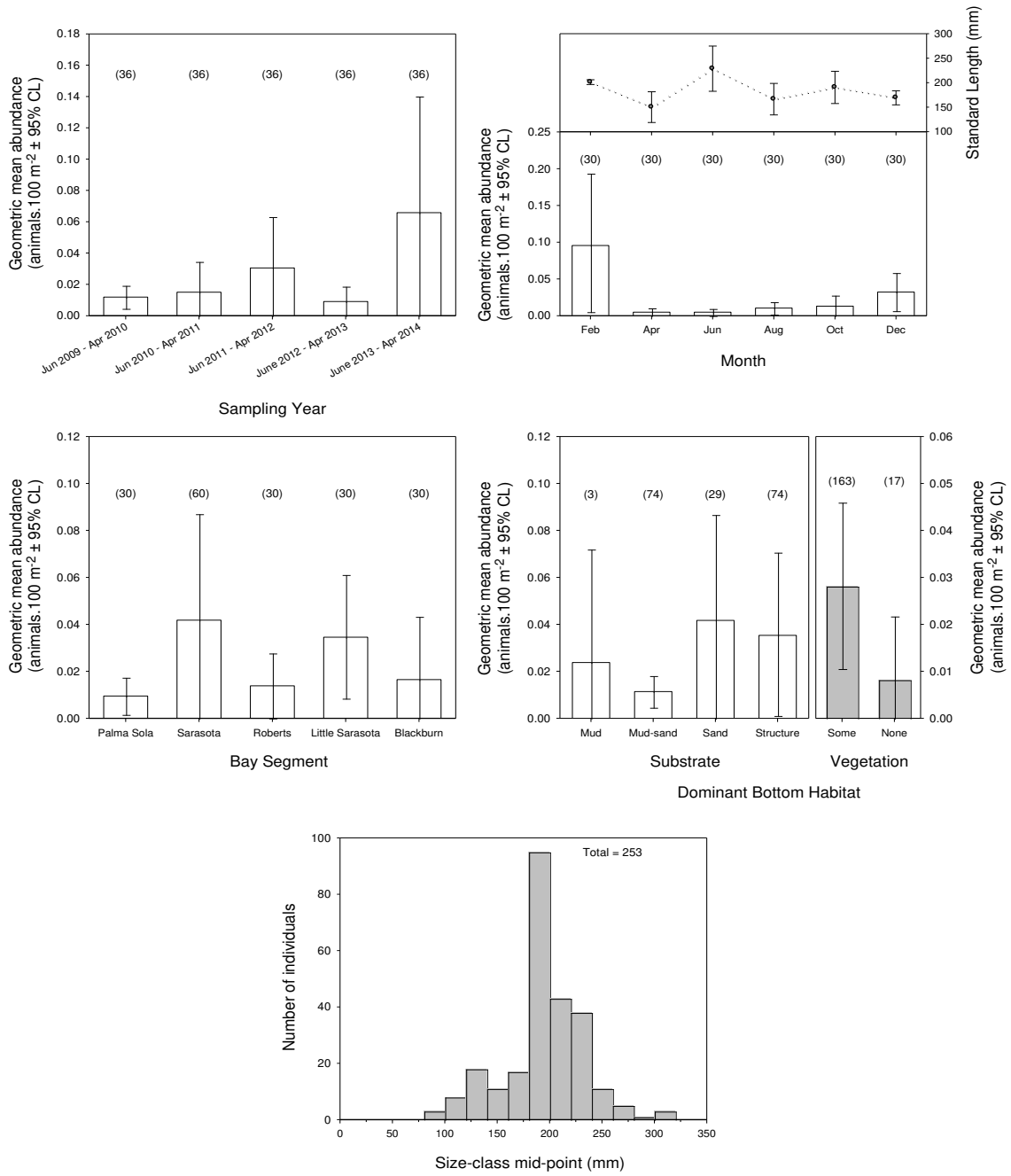

Fig. J17. Relative abundance and length-frequency distribution of Fantail Mullet collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Nicholsina usta (Emerald Parrotfish)

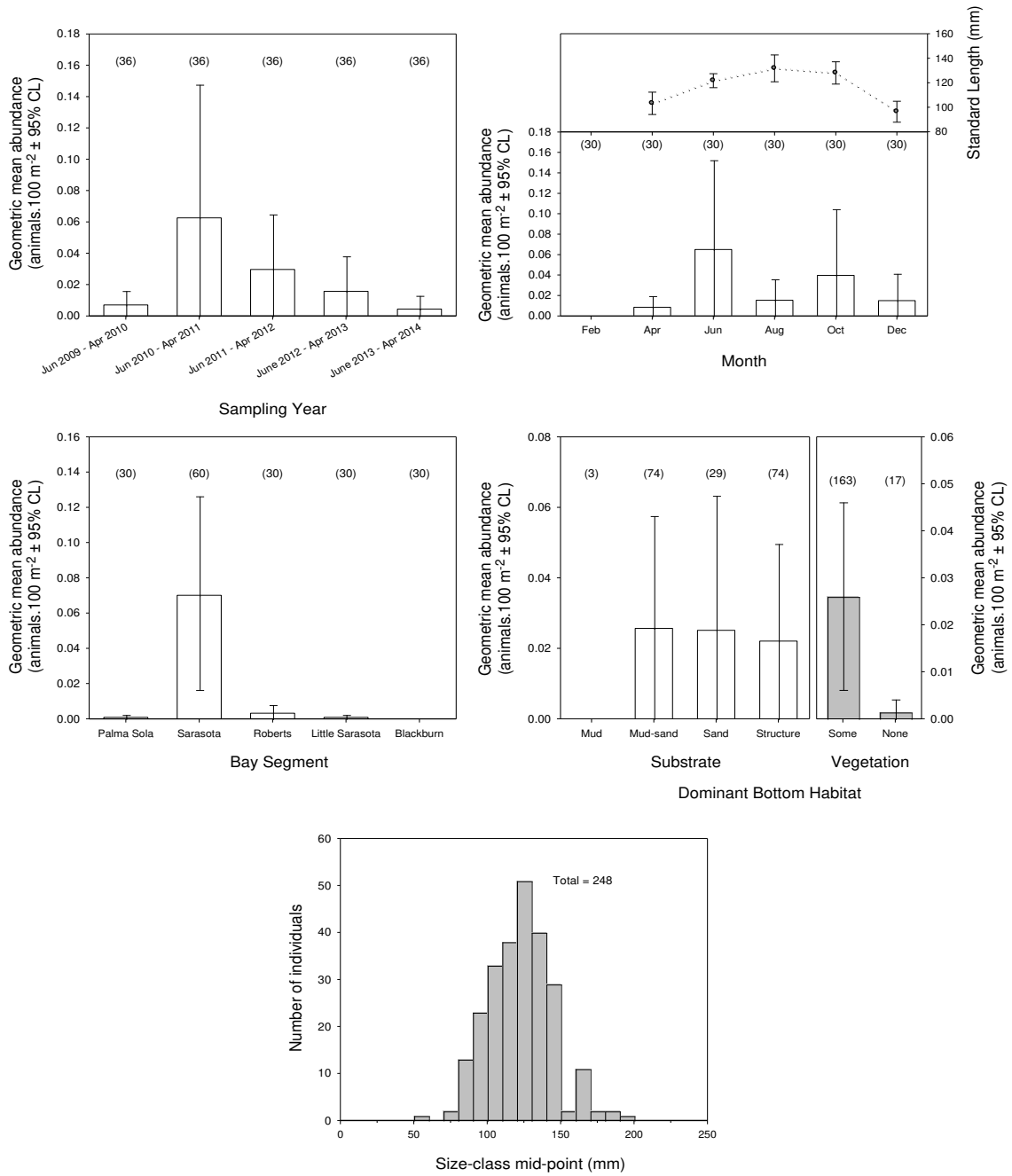

Fig. J18. Relative abundance and length-frequency distribution of Emerald Parrotfish collected with 183-m haul seines in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Appendix K. Species overview plots for dominant taxa (≥200 animals collected and ≥10 occurrence in a gear type) collected in 6.1-m otter trawls in Sarasota Bay, June 2009 to April 2014. Taxa are arranged phylogenetically.

Farfantepenaeus duorarum (Pink Shrimp)

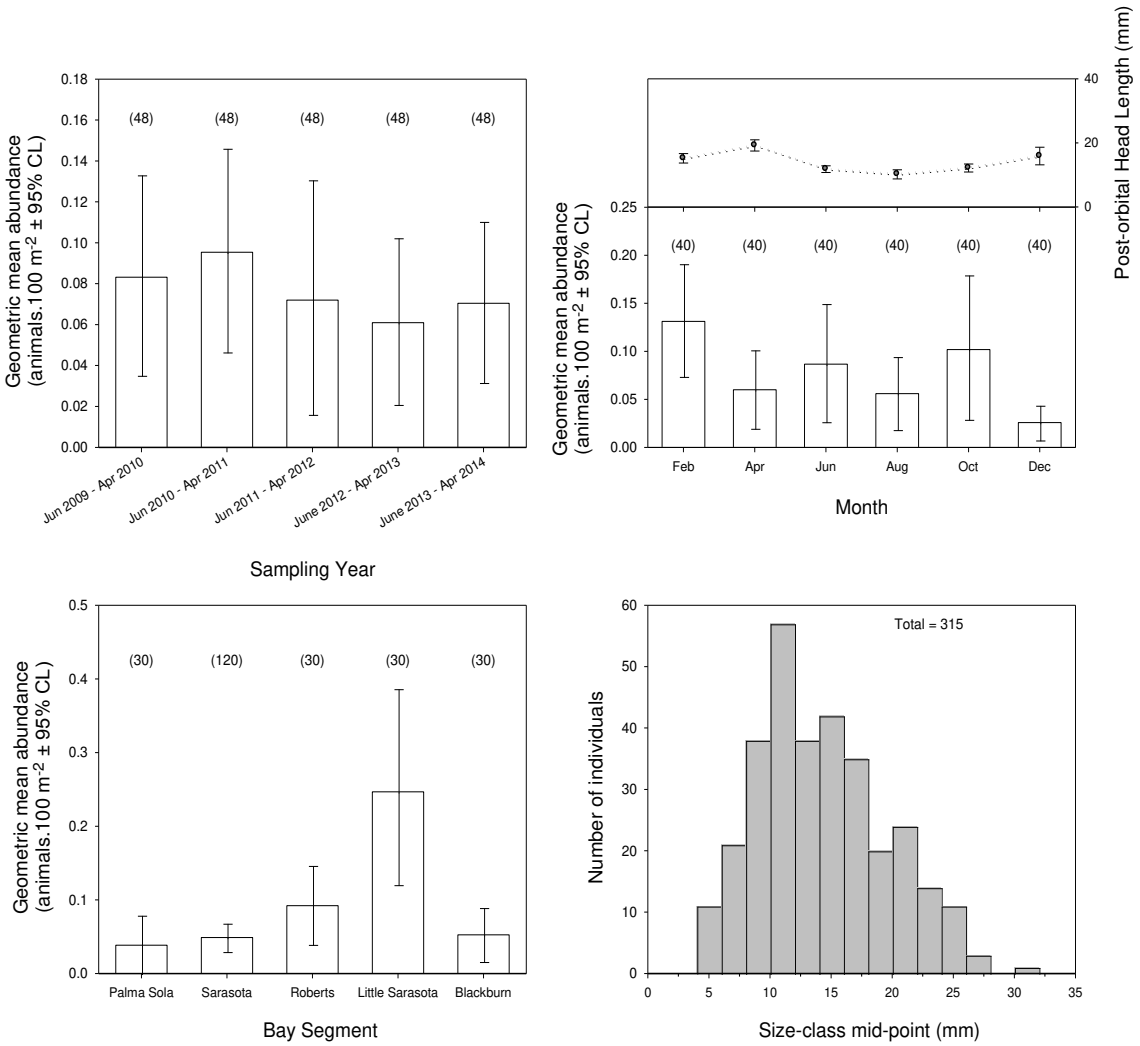

Fig. K3. Relative abundance and length-frequency distribution of Pink Shrimp collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Callinectes sapidus (Blue Crab)

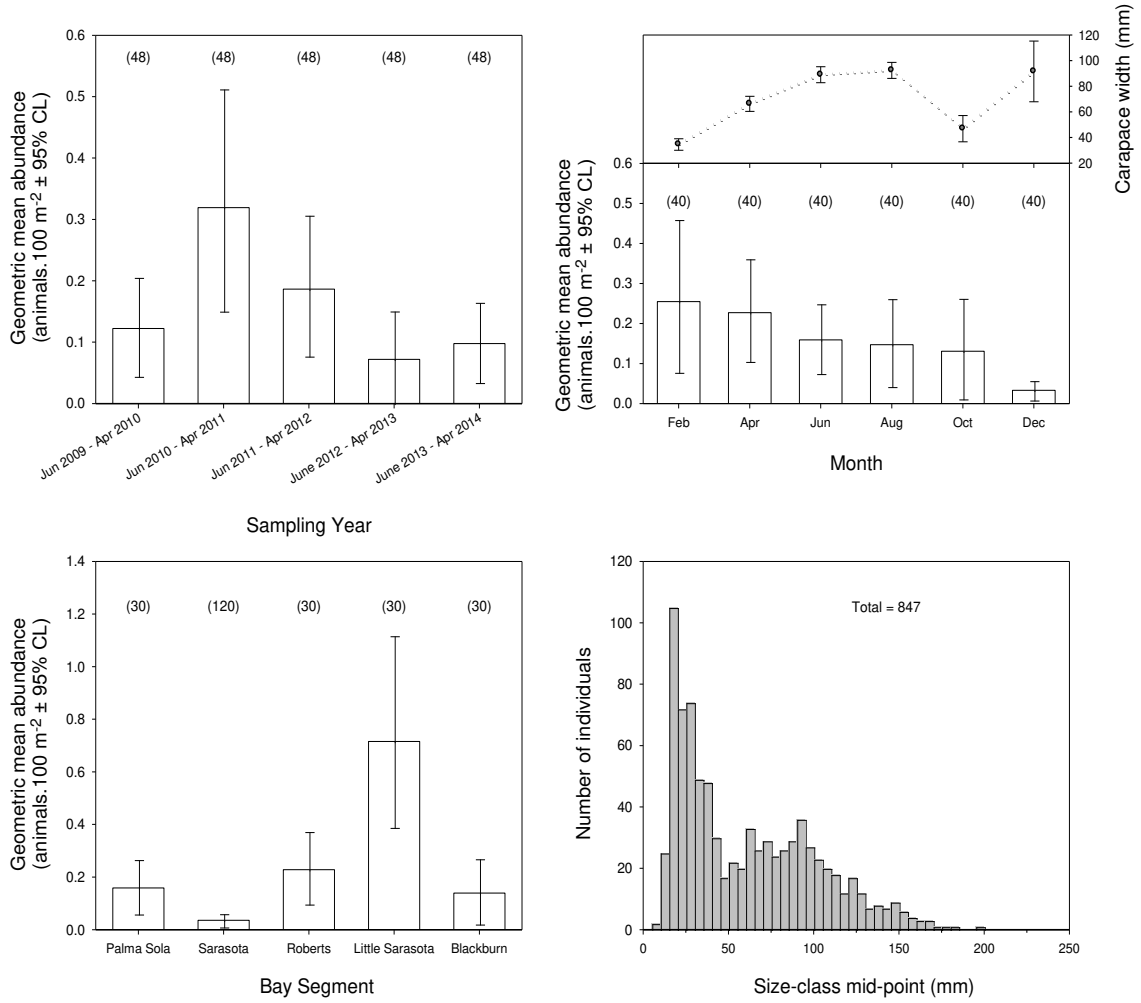

Fig. K4. Relative abundance and length-frequency distribution of Blue Crab collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Portunus spp (Portunus Crabs)

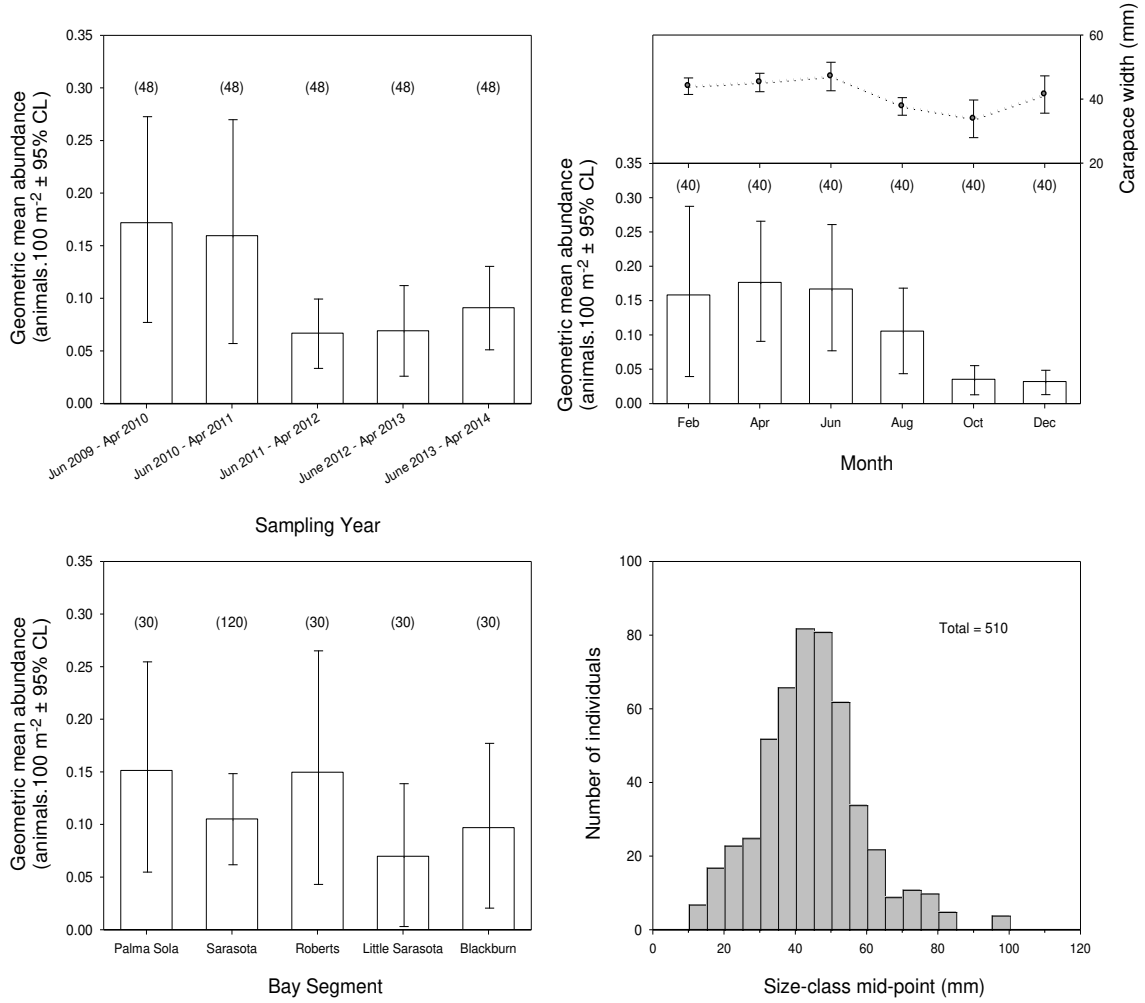

Fig. K5. Relative abundance and length-frequency distribution of Portunus Crabs collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Menippe spp (Stone Crab)

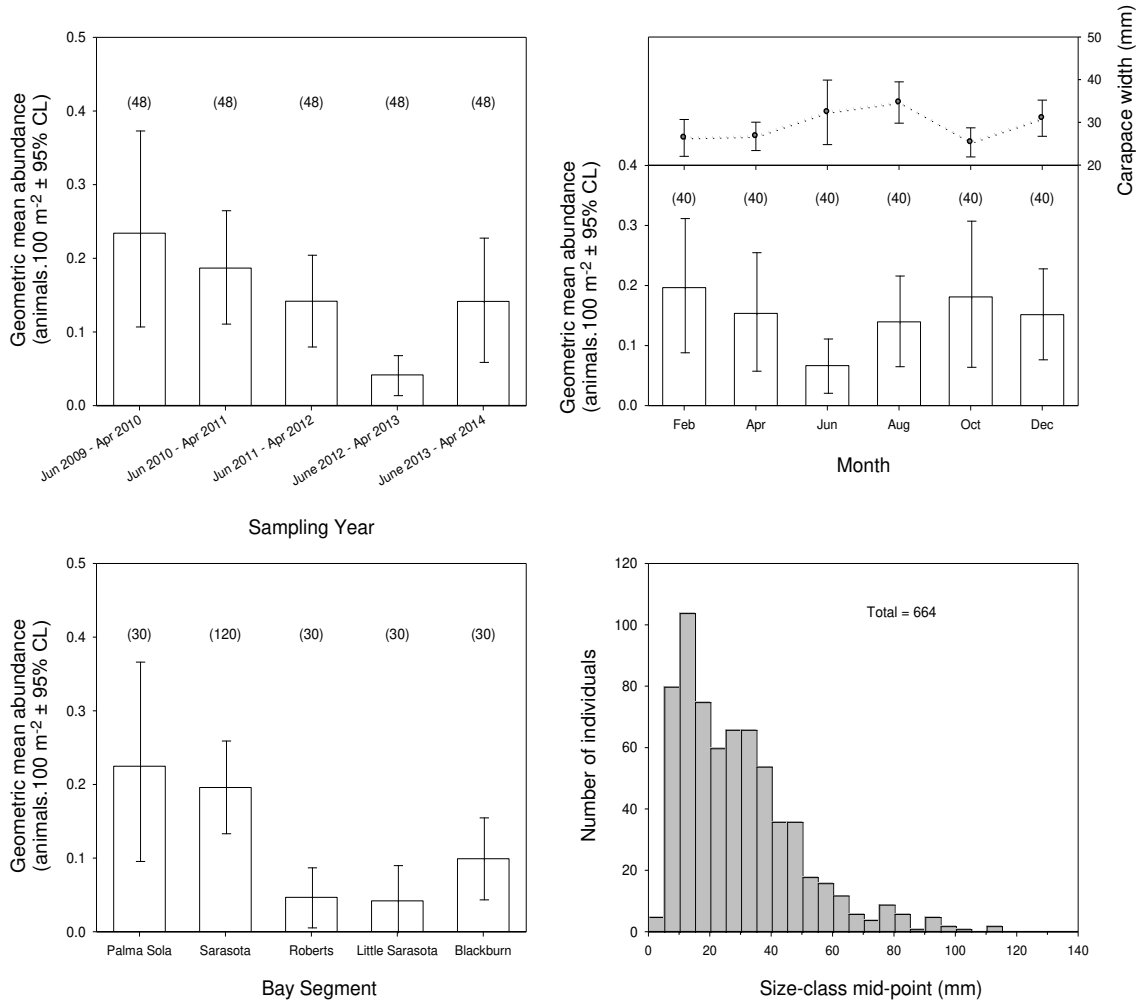

Fig. K6. Relative abundance and length-frequency distribution of Stone Crab collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Synodus foetens (Inshore Lizardfish)

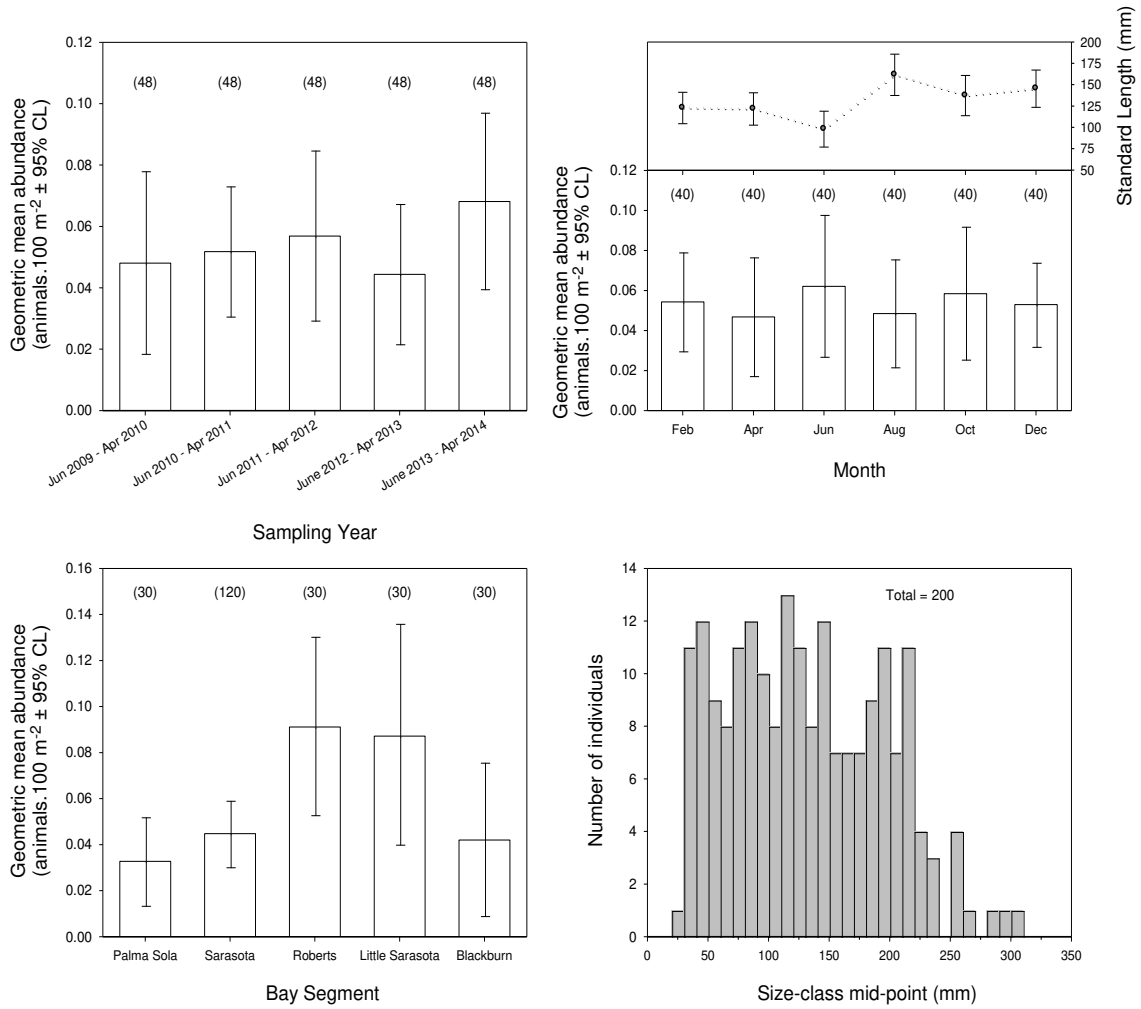

Fig. K7. Relative abundance and length-frequency distribution of Inshore Lizardfish collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Prionotus scitulus (Leopard Searobin)

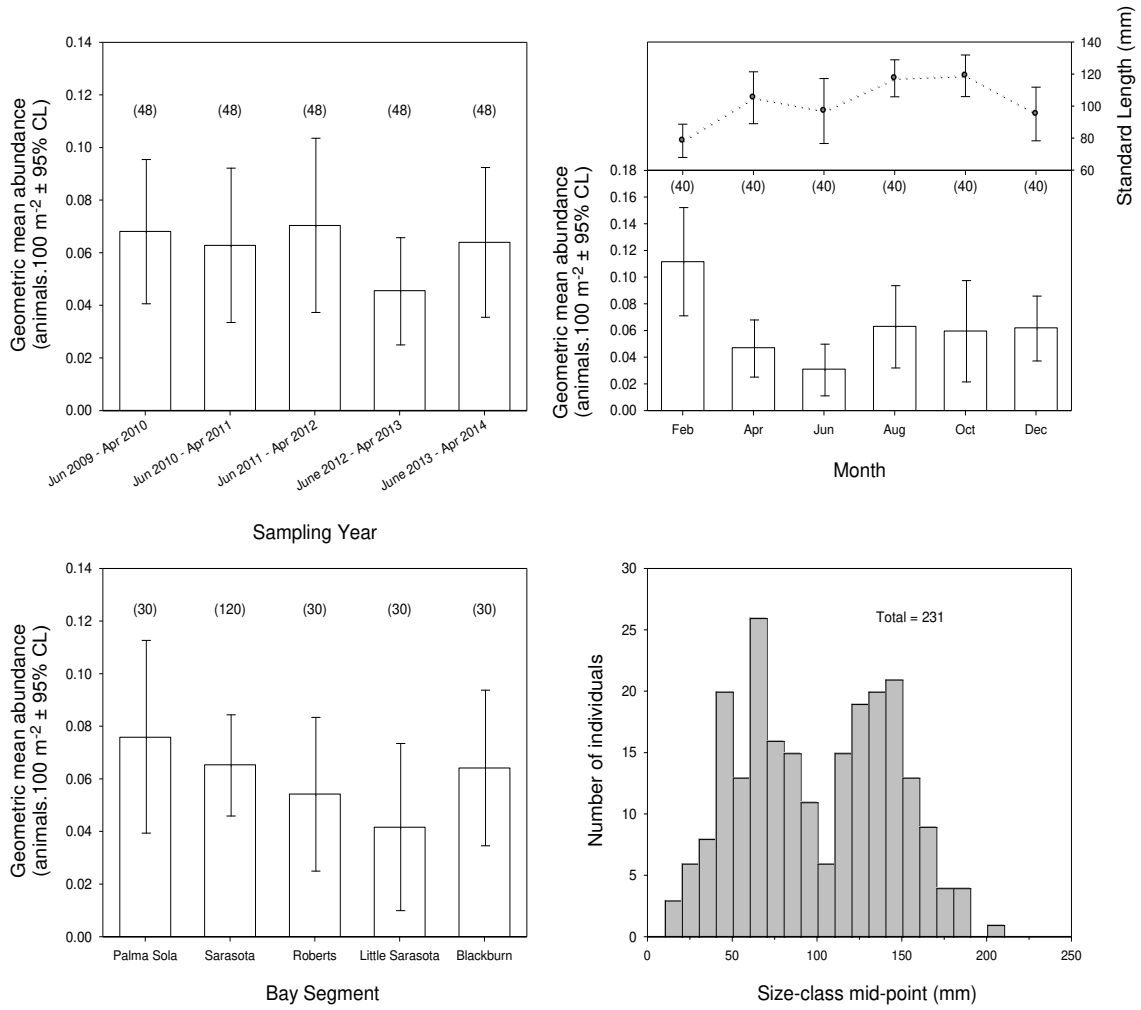

Fig. K8. Relative abundance and length-frequency distribution of Leopard Searobin collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Eucinostomus gula (Silver Jenny)

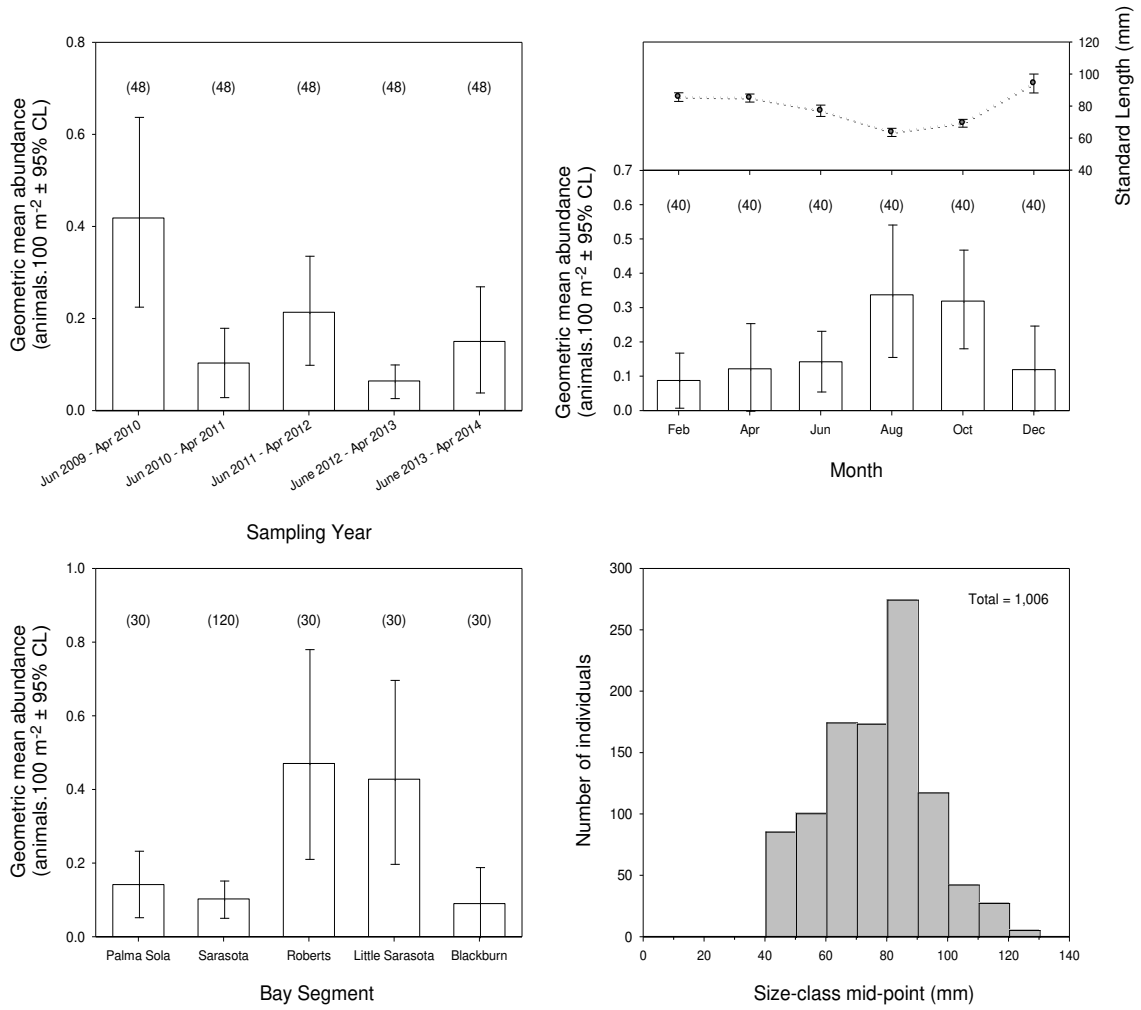

Fig. K9. Relative abundance and length-frequency distribution of Silver Jenny collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Orthopristis chrysoptera (Pigfish)

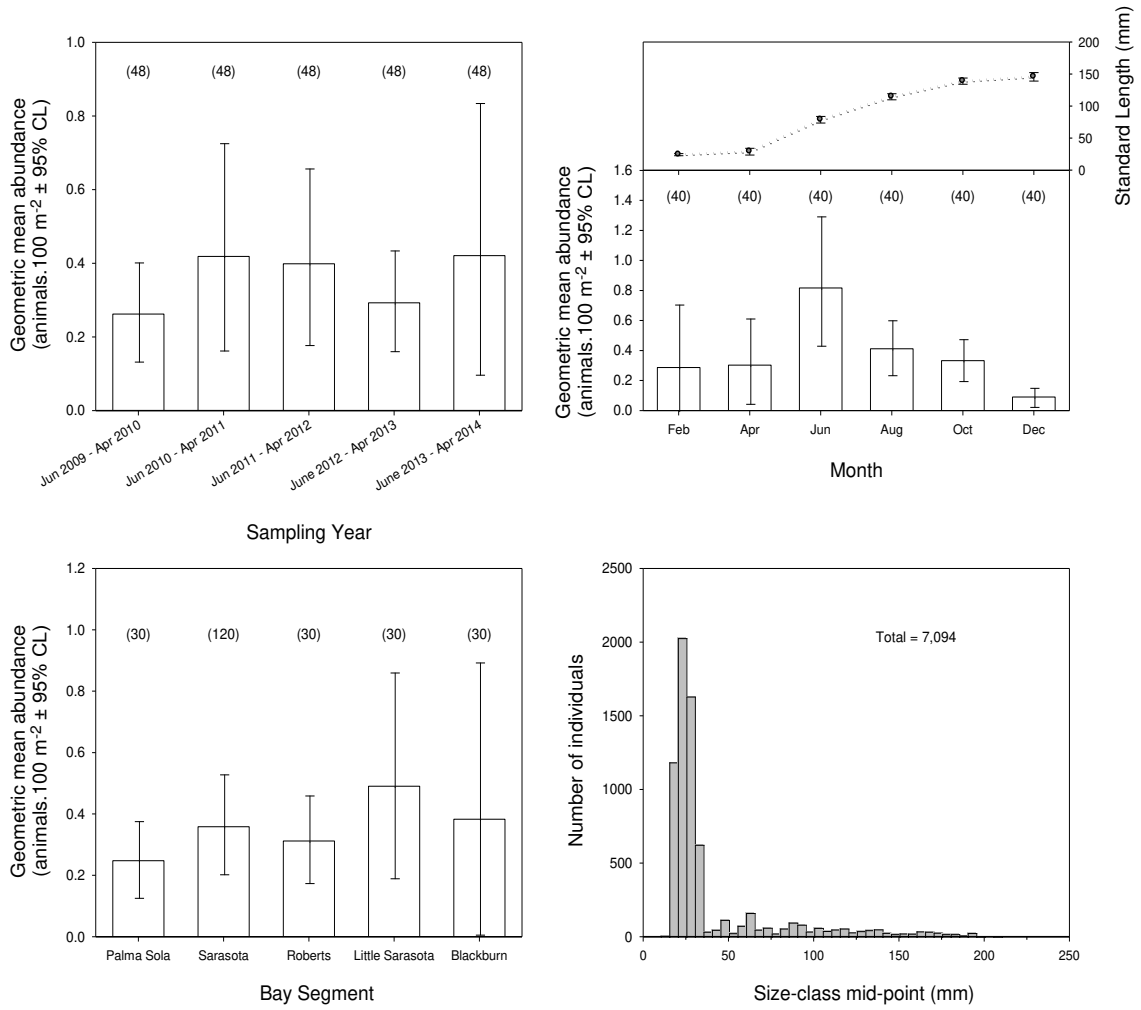

Fig. K10. Relative abundance and length-frequency distribution of Pigfish collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Lagodon rhomboides (Pinfish)

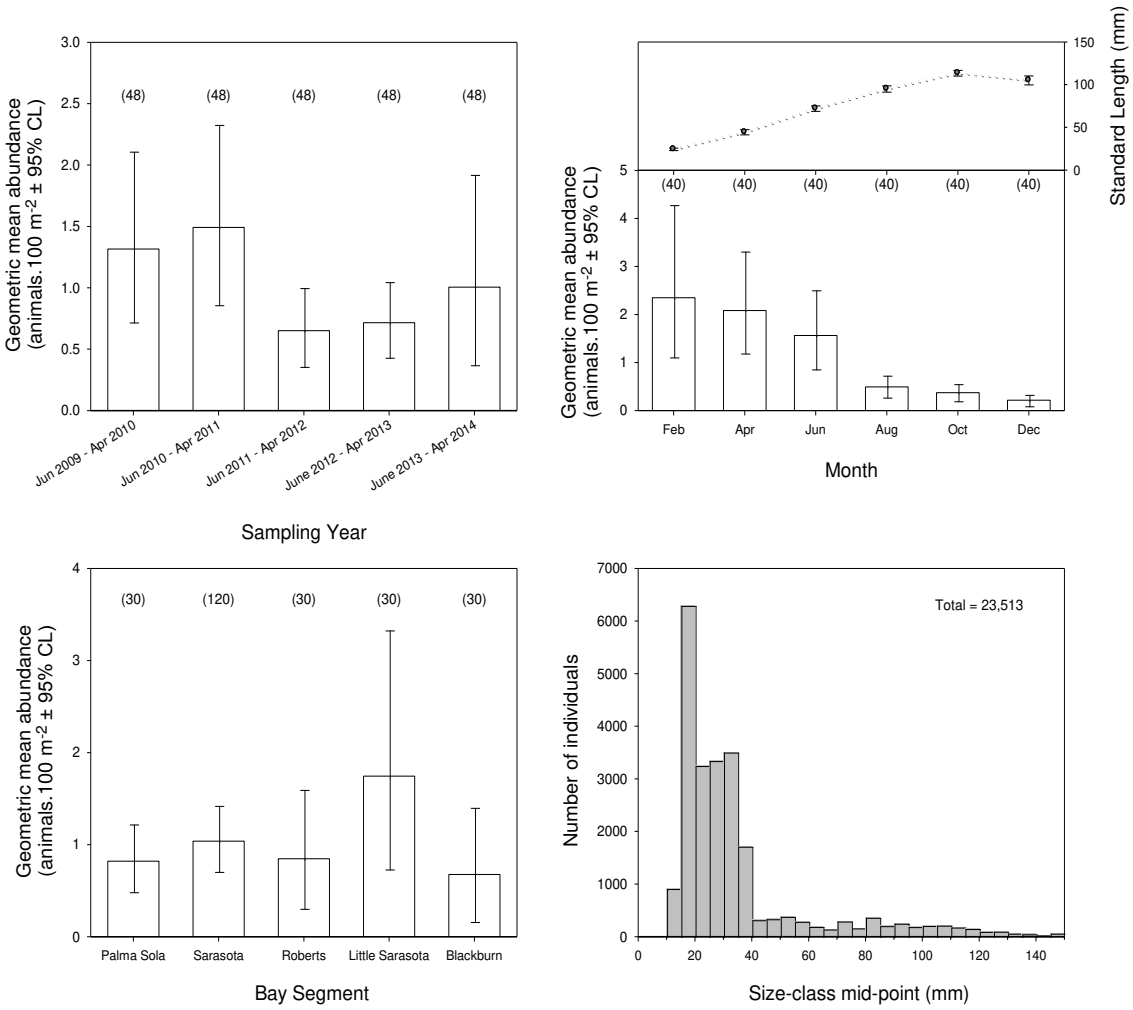

Fig. K11. Relative abundance and length-frequency distribution of Pinfish collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Archosargus probatocephalus (Sheepshead)

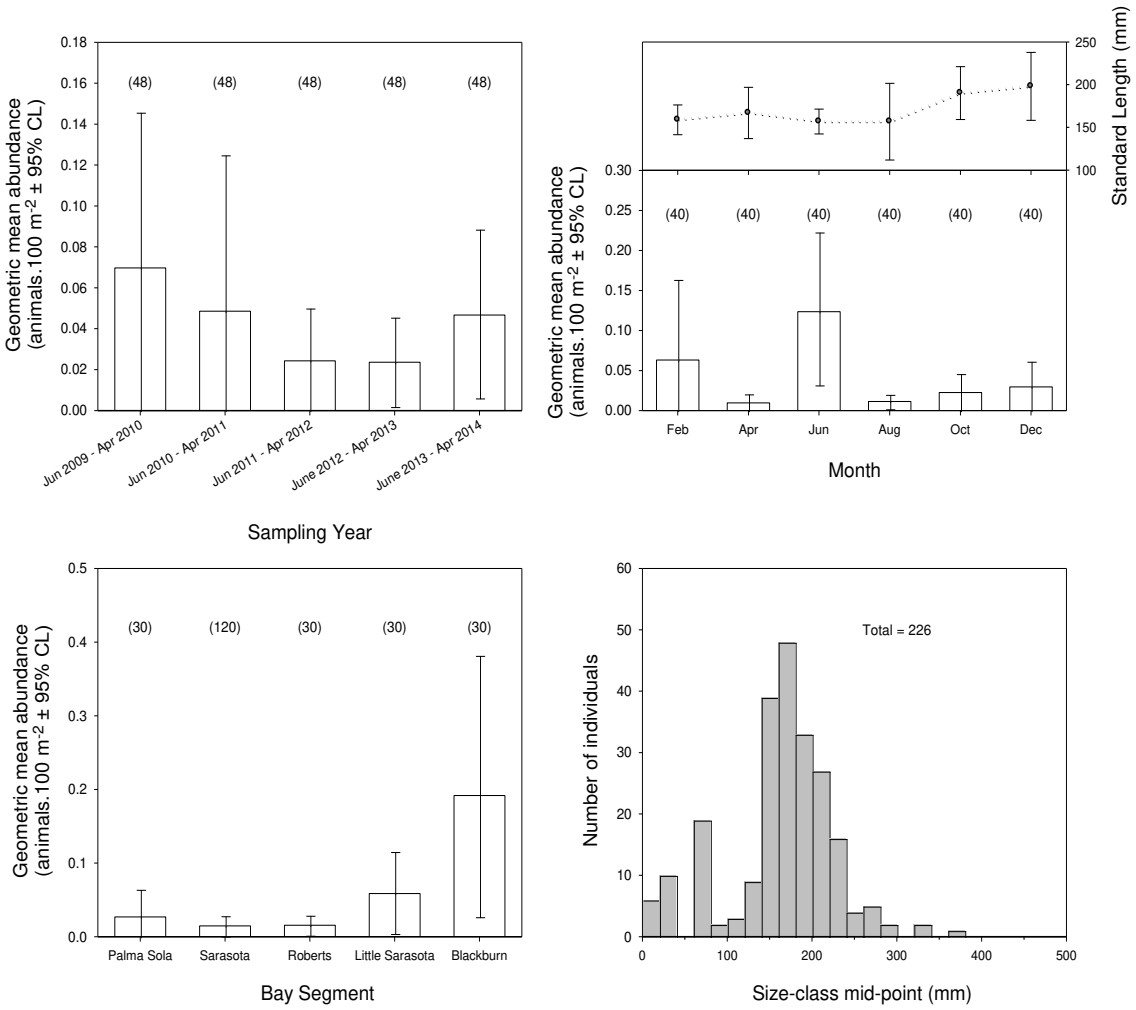

Fig. K12. Relative abundance and length-frequency distribution of Sheepshead collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Leiostomus xanthurus (Spot)

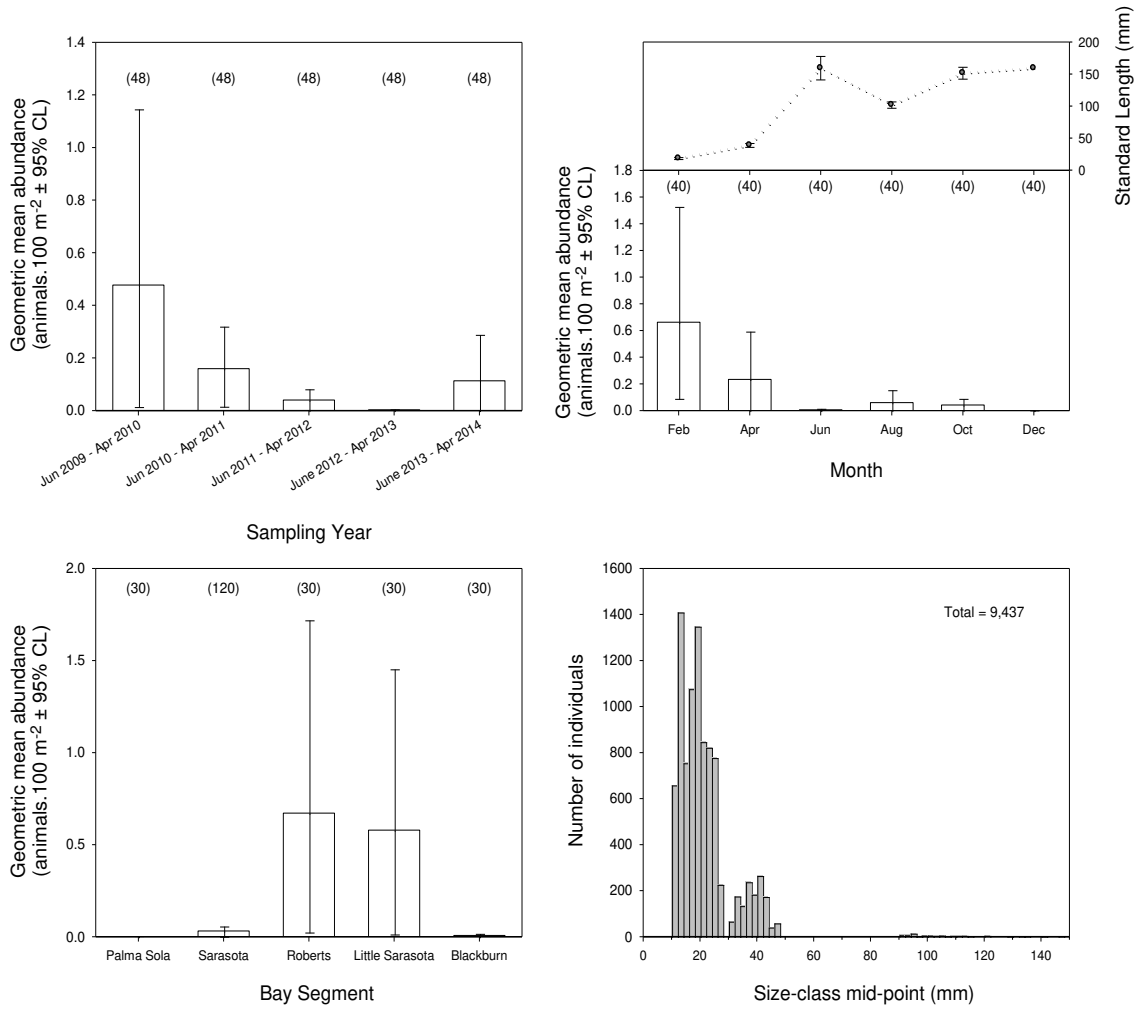

Fig. K13. Relative abundance and length-frequency distribution of Spot collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Gobiosoma robustum (Code Goby)

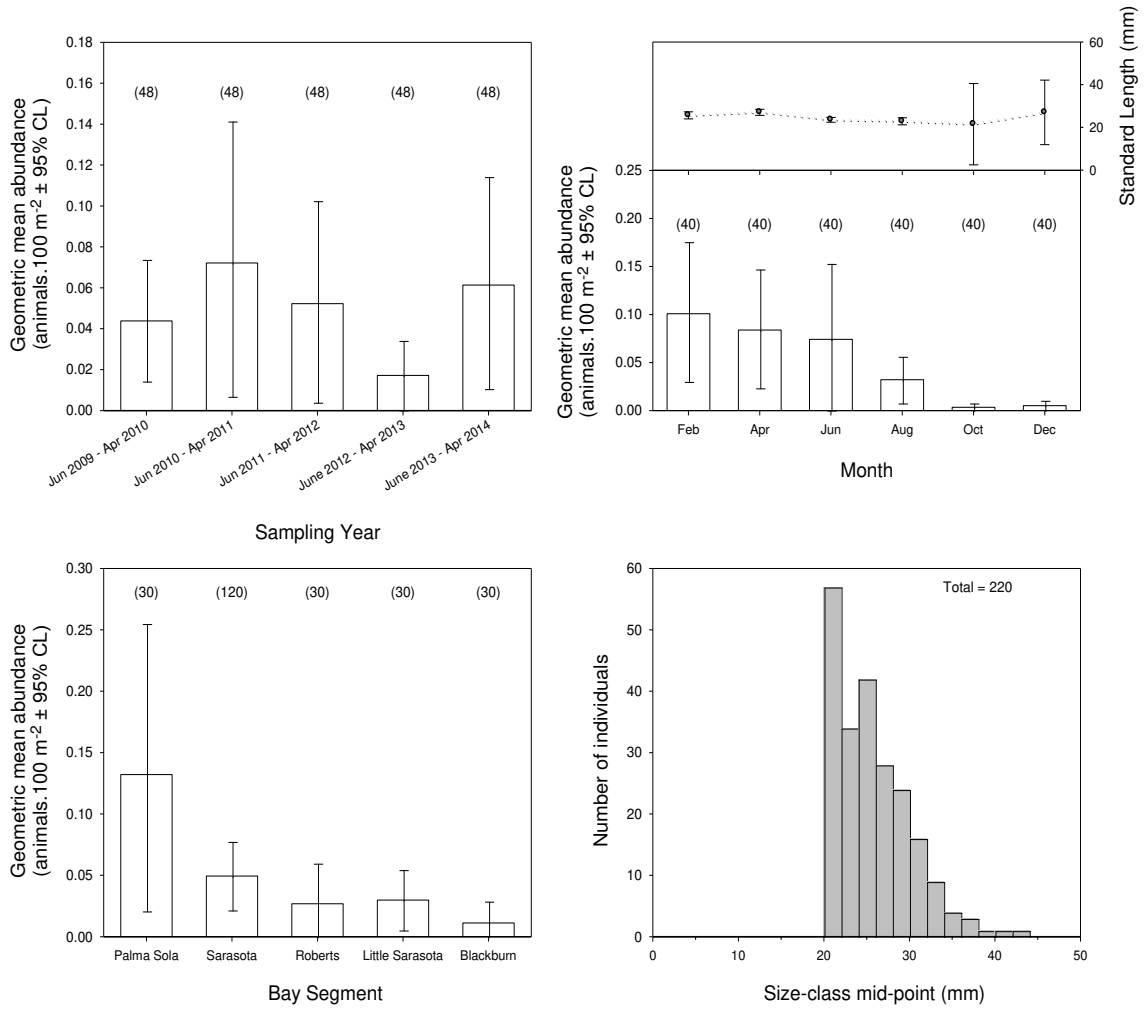

Fig. K14. Relative abundance and length-frequency distribution of Code Goby collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.

Stephanolepis hispidus (Planehead Filefish)

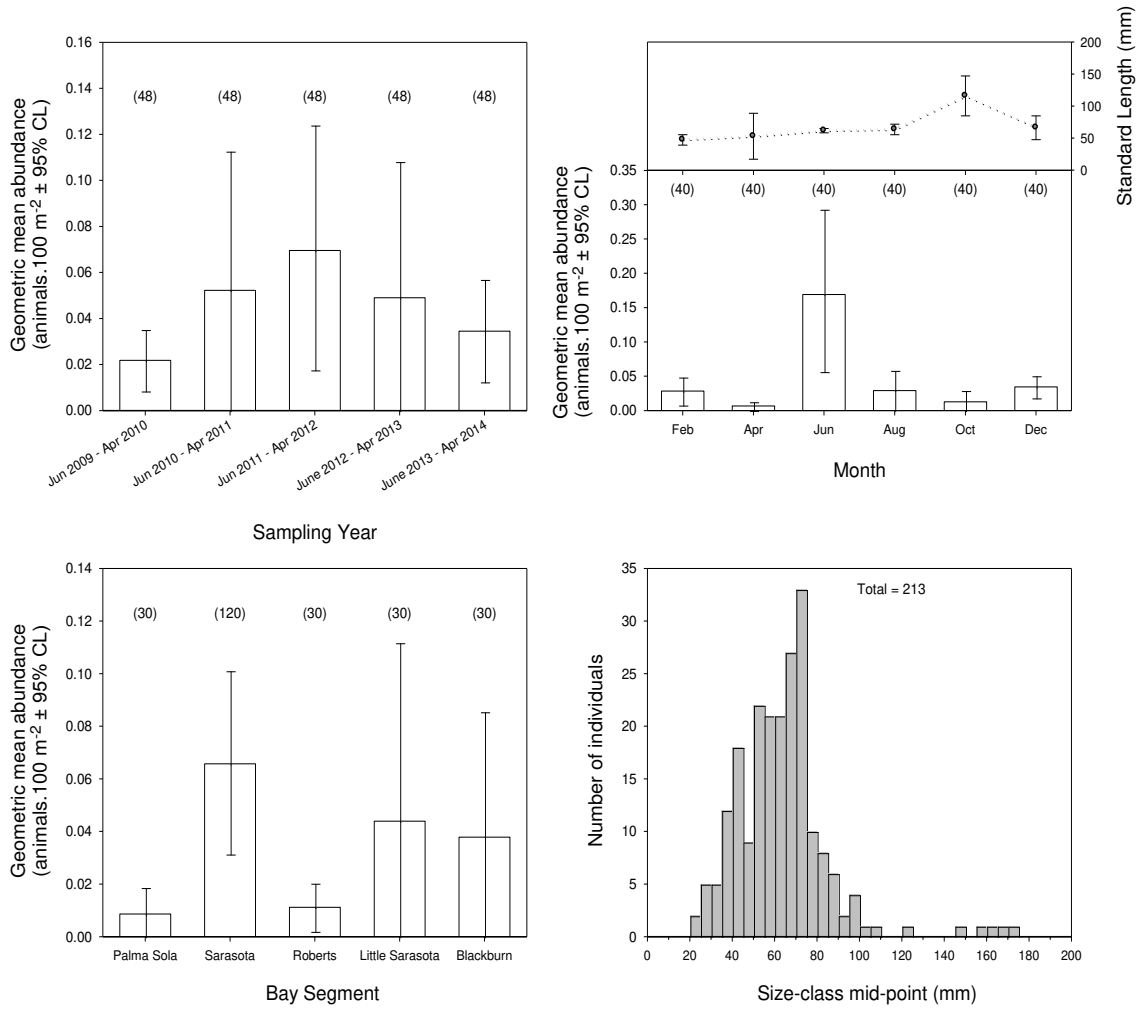

Fig. K15. Relative abundance and length-frequency distribution of Planehead Filefish collected with 6.1-m otter trawls in the Sarasota Bay estuary, June 2009 to April 2014. Numbers in parenthesis along the top of each abundance graph represent the number of samples collected within each category. Error bars represent 95% confidence intervals.