FL FWRI Fisheries Independent Monitoring Program 2012 Annual Data Summary Report

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Florida Fish and Wildlife Conservation Commission

Fish & Wildlife Research Institute

Fisheries-Independent Monitoring Program 2012 Annual Data Summary Report

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Overview

This report provides a summary of the data collected in 2012 by the Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program. Monitoring was conducted monthly following a stratified-random sampling (SRS) design in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, and northeast Florida. Gears used for routine monitoring in the various areas included 21.3-m seines, 6.1-m otter trawls, and 183-m haul seines (Table OV12-01).

There were 1,502,523 animals collected in 6,308 samples from all study areas (Figure OV12-01). The most samples were collected with 21.3-m seines (n=3,104), followed by 6.1-m otter trawls (n=1,788), and 183-m haul seines (n=1,416). Total sampling effort in the study areas ranged from 144 hauls made in southern Indian River Lagoon to 1,356 hauls made in northeast Florida (Table OV12-02). The total number of animals collected ranged from 23,140 in southern Indian River Lagoon to 385,954 in Tampa Bay. The majority of animals were collected in 21.3-m seines (n=990,415; 65.9% of the total catch).

Samples were dominated by small fishes such as *Anchoa mitchilli*, *Lagodon rhomboides*, and *Eucinostomus* spp., and seasonal recruits such as *Leiostomus xanthurus*, *Mugil cephalus,* and *Micropogonias undulatus,* in all study areas. Recreationally and commercially important animals (i.e., Selected Taxa; see Table FIM12-02) accounted for 12.2% (n=183,140) of the overall catch in these areas and comprised between 4.3% (Tampa Bay) and 26.7% (northeast Florida) of the total SRS catches from each study area. Selected Taxa were among the 10 most abundant taxa in some areas: *M. cephalus* and *Mugil curema* in the northern and southern Indian River Lagoon; *Archosargus probatocephalus* in the southern Indian River Lagoon; *Litopenaeus setiferus, M. cephalus*, *L. xanthurus*, and *M. undulatus* in Apalachicola Bay and northeast Florida; *Cynoscion arenarius* in Apalachicola; *L. xanthurus* and *M. cephalus* in Cedar Key; and *C. arenarius* in Charlotte Harbor (Tables OV12-03 and –04).

A total of 862 fish and select invertebrates were culled for fish health analyses of gross external abnormalities (including external parasites). Numbers of reported abnormalities from each study area ranged from one (Cedar Key) to 633 (northern Indian River Lagoon; see Fish Health section).

Species profiles, including indices of young-of-the-year relative abundance, were generated for many species of commercial, recreational, or ecological importance: *Sciaenops ocellatus* (red drum), *Cynoscion nebulosus* (spotted seatrout), *A. probatocephalus* (sheepshead), *M. cephalus* (striped mullet), *L. rhomboides* (pinfish), *Centropomus undecimalis* (common snook), and *Callinectes sapidus* (blue crab; see Species Profile section).

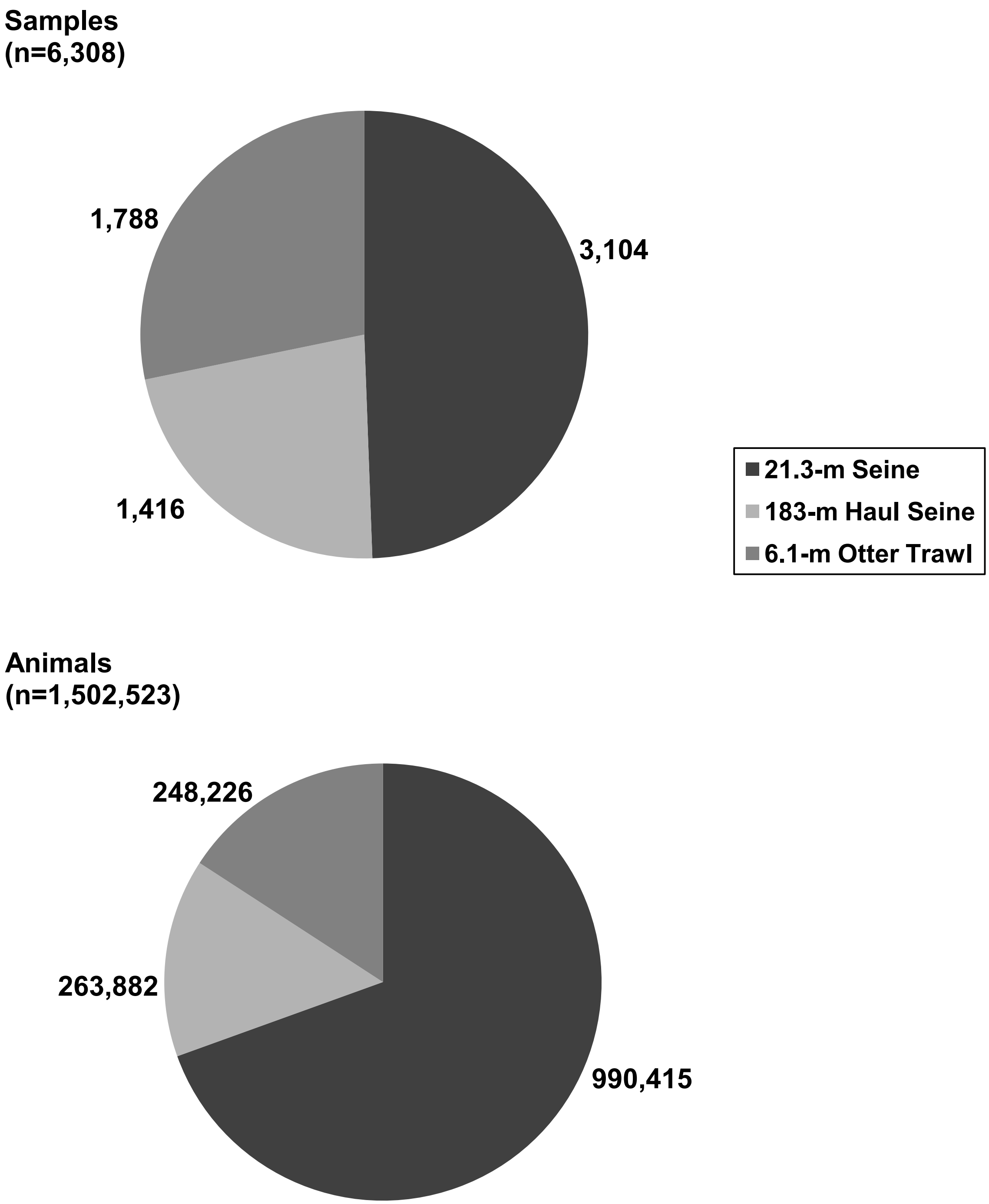

Figure OV12-01. Summary of 2012 FIM program catch and effort data. 'Samples' are the total number of deployments by gear, and 'Animals' are the total number of animals collected by each sampling method.

Table OV12-01. Gear usage by field laboratory for FIM program stratified-random sampling, 2012.

Field Lab	21.3-m Seines		183-m Haul Seines	6.1-m Otter Trawls
	Bay	River		
Tampa Bay	X	X	X	X
Charlotte Harbor	X	X	X	X
N. Indian River	X	X	X	X
Cedar Key	X	X	X	X
S. Indian River			X	
Apalachicola	X	X	X	X
Northeast Florida		X	X	X

Table OV12-02. Summary of catch and effort data by area for FIM program stratified-random sampling, 2012. 'Hauls' are the total number of net deployments by each gear, and 'Animals' are the total number of animals collected by each sampling method.

Gear	Tampa Bay		Charlotte Harbor	
	Hauls	**Animals**	**Hauls**	**Animals**
21.3-m seine	720	272,515	504	169,027
183-m haul seine	240	75,813	204	28,795
6.1-m otter trawl	336	37,626	360	27,467
Totals	**1,296**	**385,954**	**1,068**	**225,289**

Gear	N. Indian River Lagoon		Cedar Key	
	Hauls	**Animals**	**Hauls**	**Animals**
21.3-m seine	488	271,633	420	50,526
183-m haul seine	228	73,212	192	22,392
6.1-m otter trawl	96	3,263	180	13,911
Totals	**812**	**348,108**	**792**	**86,829**

Gear	Apalachicola Bay		S. Indian River Lagoon	
	Hauls	**Animals**	**Hauls**	**Animals**
21.3-m seine	396	49,464	.	.
183-m haul seine	216	23,414	144	23,140
6.1-m otter trawl	228	96,472	.	.
Totals	**840**	**169,350**	**144**	**23,140**

Gear	Northeast Florida	
	Hauls	**Animals**
21.3-m seine	576	177,250
183-m haul seine	192	17,116
6.1-m otter trawl	588	69,487
Totals	**1,356**	**263,853**

Table OV12-03. Top 10 numerically dominant taxa collected in FIM program stratified-random sample areas, 2012.

Tampa Bay		Charlotte Harbor	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	172,478	*Anchoa mitchilli*	92,769
Lagodon rhomboides	53,851	*Lagodon rhomboides*	43,075
Eucinostomus spp.	26,270	*Eucinostomus* spp.	20,746
Bairdiella chrysoura	18,400	*Lucania parva*	16,086
Menidia spp.	15,608	*Menidia* spp.	5,707
Harengula jaguana	15,590	*Eucinostomus gula*	4,571
Anchoa cubana	10,229	*Orthopristis chrysoptera*	4,346
Eucinostomus gula	7,692	*Bairdiella chrysoura*	3,447
Eucinostomus harengulus	6,775	*Harengula jaguana*	3,328
Anchoa hepsetus	6,761	*Cynoscion arenarius*	2,628
Σ =	**333,654**		**196,703**
Total (Selected Taxa)	**16,468**		**14,081**
Grand Total of Animals Collected	**385,954**		**225,289**

N. Indian River Lagoon		Cedar Key	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	208,076	*Anchoa mitchilli*	23,855
Lagodon rhomboides	31,091	*Lagodon rhomboides*	9,662
Eucinostomus spp.	13,243	*Leiostomus xanthurus*	7,587
Mugil curema	9,513	*Bairdiella chrysoura*	6,160
Eucinostomus harengulus	8,869	*Membras martinica*	4,456
Mugil cephalus	8,698	*Menidia* spp.	3,266
Menidia spp.	8,292	*Chloroscombrus chrysurus*	2,962
Diapterus auratus	7,916	*Anchoa hepsetus*	2,805
Harengula jaguana	7,732	*Mugil cephalus*	2,669
Brevoortia spp.	7,193	*Orthopristis chrysoptera*	2,084
Σ =	**310,623**		**65,506**
Total (Selected Taxa)	**27,228**		**16,516**
Grand Total of Animals Collected	**348,108**		**86,829**

Table OV12-03. (Continued)

Apalachicola Bay		S. Indian River Lagoon	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	80,426	*Lagodon rhomboides*	7,695
Lagodon rhomboides	14,082	*Diapterus auratus*	2,181
Micropogonias undulatus	8,967	*Mugil curema*	1,665
Litopenaeus setiferus	5,764	*Orthopristis chrysoptera*	1,241
Eucinostomus spp.	5,228	*Mugil cephalus*	1,229
Cynoscion arenarius	4,906	*Eucinostomus gula*	1,062
Bairdiella chrysoura	3,795	*Ariopsis felis*	945
Mugil cephalus	3,651	*Selene vomer*	923
Orthopristis chrysoptera	3,560	*Bairdiella chrysoura*	641
Leiostomus xanthurus	3,103	*Archosargus probatocephalus*	526
Σ =	**133,482**		**18,108**
Total (Selected Taxa)	**32,957**		**5,569**
Grand Total of Animals Collected	**169,350**		**23,140**

Northeast Florida	
Scientific Name	**Number**
Anchoa mitchilli	102,207
Micropogonias undulatus	22,316
Leiostomus xanthurus	17,944
Menidia menidia	16,300
Litopenaeus setiferus	12,452
Stellifer lanceolatus	11,281
Menidia spp.	10,594
Lucania parva	8,334
Mugil cephalus	6,189
Anchoa hepsetus	6,051
Σ =	**213,668**
Total (Selected Taxa)	**70,321**
Grand Total of Animals Collected	**263,853**

Table OV12-04. Number of recreational or commercially important species (Selected Taxa) collected in the FIM program stratified-random sample areas, 2012.

Tampa Bay		Charlotte Harbor	
Scientific Name	**Number**	**Scientific Name**	**Number**
Leiostomus xanthurus	2,280	*Cynoscion arenarius*	2,628
Cynoscion arenarius	1,985	*Farfantepenaeus duorarum*	2,538
Farfantepenaeus duorarum	1,980	*Mugil gyrans*	1,295
Mugil cephalus	1,733	*Elops saurus*	1,041
Elops saurus	1,430	*Menticirrhus americanus*	963
Centropomus undecimalis	1,179	*Callinectes sapidus*	689
Callinectes sapidus	1,117	*Menippe* spp.	635
Cynoscion nebulosus	868	*Lutjanus griseus*	623
Archosargus probatocephalus	839	*Centropomus undecimalis*	608
Sciaenops ocellatus	756	*Lutjanus synagris*	583
Mugil gyrans	447	*Cynoscion nebulosus*	498
Mugil curema	342	*Archosargus probatocephalus*	436
Menticirrhus americanus	311	*Mugil cephalus*	352
Paralichthys albigutta	297	*Sciaenops ocellatus*	328
Lutjanus griseus	231	*Leiostomus xanthurus*	305
Lutjanus synagris	224	*Paralichthys albigutta*	228
Menippe spp.	158	*Mugil curema*	126
Pogonias cromis	118	*Trachinotus falcatus*	47
Trachinotus falcatus	84	*Pogonias cromis*	44
Scomberomorus maculatus	38	*Micropogonias undulatus*	43
Menticirrhus saxatilis	18	*Mycteroperca microlepis*	23
Micropogonias undulatus	15	*Epinephelus itajara*	17
Trachinotus carolinus	7	*Menticirrhus saxatilis*	12
Rachycentron canadum	4	*Scomberomorus maculatus*	8
Menticirrhus littoralis	3	*Trachinotus carolinus*	7
Pomatomus saltatrix	2	*Menticirrhus littoralis*	3
Albula vulpes	1	*Epinephelus morio*	1
Megalops atlanticus	1		
Total	**16,468**	**Total**	**14,081**

Table OV12-04. (Continued)

N. Indian River Lagoon		Cedar Key	
Scientific Name	**Number**	**Scientific Name**	**Number**
Mugil curema	9,513	*Leiostomus xanthurus*	7,587
Mugil cephalus	8,698	*Mugil cephalus*	2,669
Archosargus probatocephalus	1,709	*Cynoscion arenarius*	1,126
Leiostomus xanthurus	1,183	*Callinectes sapidus*	1,080
Elops saurus	1,103	*Menticirrhus americanus*	941
Farfantepenaeus spp.	1,048	*Elops saurus*	453
Pogonias cromis	797	*Pogonias cromis*	417
Centropomus undecimalis	536	*Farfantepenaeus* spp.	394
Cynoscion nebulosus	525	*Mugil curema*	274
Sciaenops ocellatus	471	*Cynoscion nebulosus*	244
Callinectes sapidus	428	*Sciaenops ocellatus*	242
Menticirrhus americanus	282	*Paralichthys albigutta*	218
Micropogonias undulatus	270	*Menippe* spp.	195
Cynoscion complex	176	*Archosargus probatocephalus*	130
Trachinotus falcatus	163	*Lutjanus griseus*	111
Lutjanus griseus	66	*Trachinotus falcatus*	103
Albula vulpes	48	*Farfantepenaeus duorarum*	94
Farfantepenaeus duorarum	42	*Lutjanus synagris*	91
Litopenaeus setiferus	30	*Scomberomorus maculatus*	47
Menippe spp.	28	*Menticirrhus saxatilis*	45
Lutjanus synagris	20	*Mugil gyrans*	21
Trachinotus carolinus	18	*Centropomus undecimalis*	11
Lutjanus analis	17	*Micropogonias undulatus*	11
Paralichthys albigutta	17	*Paralichthys lethostigma*	5
Mugil sp. (redeye mullet)	13	*Trachinotus carolinus*	3
Pomatomus saltatrix	13	*Mycteroperca microlepis*	2
Paralichthys lethostigma	5	*Rachycentron canadum*	2
Scomberomorus maculatus	4		
Farfantepenaeus aztecus	2		
Lutjanus jocu	1		
Megalops atlanticus	1		
Menticirrhus littoralis	1		
Total	**27,228**	**Total**	**16,516**

Table OV12-04. (Continued)

Apalachicola Bay		S. Indian River Lagoon	
Scientific Name	**Number**	**Scientific Name**	**Number**
Micropogonias undulatus	8,967	*Mugil curema*	1,665
Litopenaeus setiferus	5,764	*Mugil cephalus*	1,229
Cynoscion arenarius	4,906	*Archosargus probatocephalus*	526
Mugil cephalus	3,651	*Leiostomus xanthurus*	488
Leiostomus xanthurus	3,103	*Elops saurus*	485
Farfantepenaeus spp.	1,417	*Centropomus undecimalis*	353
Callinectes sapidus	993	*Lutjanus griseus*	158
Mugil curema	651	*Lutjanus analis*	114
Sciaenops ocellatus	522	*Pogonias cromis*	106
Elops saurus	472	*Lutjanus synagris*	85
Cynoscion nebulosus	398	*Micropogonias undulatus*	80
Menticirrhus americanus	335	*Sciaenops ocellatus*	70
Pogonias cromis	327	*Callinectes sapidus*	61
Farfantepenaeus duorarum	269	*Trachinotus falcatus*	34
Archosargus probatocephalus	208	*Trachinotus carolinus*	32
Paralichthys albigutta	163	*Cynoscion nebulosus*	21
Paralichthys lethostigma	147	*Paralichthys albigutta*	20
Menippe spp.	141	*Pomatomus saltatrix*	13
Lutjanus synagris	131	*Scomberomorus regalis*	7
Trachinotus carolinus	117	*Lutjanus apodus*	4
Lutjanus griseus	101	*Mycteroperca microlepis*	4
Farfantepenaeus aztecus	54	*Cynoscion complex*	3
Trachinotus falcatus	44	*Menticirrhus americanus*	2
Mycteroperca microlepis	31	*Paralichthys lethostigma*	2
Menticirrhus saxatilis	20	*Scomberomorus maculatus*	2
Menticirrhus littoralis	11	*Albula vulpes*	1
Scomberomorus maculatus	7	*Epinephelus itajara*	1
Cynoscion nothus	5	*Epinephelus morio*	1
Mugil gyrans	1	*Panulirus argus*	1
Pomatomus saltatrix	1	*Scomberomorus cavalla*	1
Total	**32,957**	**Total**	**5,569**

Table OV12-04. (Continued)

Northeast Florida	
Scientific Name	**Number**
Micropogonias undulatus	22,316
Leiostomus xanthurus	17,944
Litopenaeus setiferus	12,452
Mugil cephalus	6,189
Mugil curema	4,770
Callinectes sapidus	2,300
Cynoscion complex	840
Farfantepenaeus spp.	525
Farfantepenaeus aztecus	425
Elops saurus	408
Menticirrhus americanus	377
Sciaenops ocellatus	377
Cynoscion nebulosus	366
Paralichthys lethostigma	317
Archosargus probatocephalus	128
Trachinotus falcatus	114
Trachinotus carolinus	109
Paralichthys albigutta	85
Lutjanus griseus	77
Pogonias cromis	47
Pomatomus saltatrix	37
Lutjanus synagris	30
Farfantepenaeus duorarum	20
Menticirrhus saxatilis	20
Scomberomorus maculatus	14
Cynoscion nothus	6
Paralichthys dentatus	6
Albula vulpes	5
Menippe spp.	3
Menticirrhus littoralis	3
Centropomus undecimalis	2
Epinephelus itajara	2
Lutjanus analis	2
Rachycentron canadum	2
Megalops atlanticus	1
Paralichthys squamilentus	1
Scomberomorus cavalla	1
Total	**70,321**

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Fisheries-Independent Monitoring

Introduction

The Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program is a long-term program designed to monitor the relative abundance of fishery resources in Florida's major estuarine, coastal, and reef systems. The program was developed to: 1) address the critical need for effective assessment techniques for an array of species and sizes of fishes and selected invertebrates; 2) provide timely information for use in management plans; and 3) monitor trends in the relative abundance of taxa in a variety of estuarine and marine systems throughout Florida.

Proper management of Florida's marine fisheries resources requires information from a number of sources. Traditional methods of monitoring changes in fish stocks have used catch-per-unit-effort (CPUE) data derived directly from commercial and recreational fisheries. Analysis of these fisheries-dependent data can provide some information on the status of fish stocks; however, there are inherent problems in using data from these sources. Changes in vessel types, fleet size, fishing gear, or methods of operation can make fisheries-dependent data difficult to interpret (Ultang 1977). Additionally, closed seasons, changes in size or bag limits, and fluctuations in market values can further bias catch data and subsequent analyses. Fisheries-independent sampling, which targets juvenile and sub-adult fishes that have not been subjected to fishing pressure, can provide less biased estimates of trends in fish stocks than fisheries-dependent sampling (Myers and Cadigan 1993). Changes in juvenile abundance within a season can be attributed to natural mortality, immigration, emigration, or recruitment. Shifts in juvenile abundance can also be used to forecast changes in the adult stock, allowing necessary modifications to harvest regulations to be implemented before the fish have fully recruited to the fishery (Goodyear 1985). The FIM program was established to provide this type of timely information for use in management plans.

The Fish and Wildlife Research Institute initiated the FIM program in 1985 with funding provided by a Federal Sport Fish Restoration (SFR) grant. In 1988, additional funding became available from special appropriations. The FIM program is now partially supported by funds from the sale of Florida saltwater fishing licenses as well as the SFR grant. Fisheries-Independent Monitoring program sampling began in Tampa Bay and Charlotte Harbor during 1989, in the northern Indian River Lagoon during 1990, in Cedar Key during 1996, in the southern Indian River Lagoon during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. Sampling has been ongoing in the Florida Keys National Marine Sanctuary since 1998, but 2012 results will not be summarized in this report. Sampling was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997 and in Florida Bay between 1993 and 1997 (Figure FIM12-01).

Florida's coastline extends from subtropical to temperate regions and includes habitats such as seagrass beds, salt marshes, and mangroves. These habitats provide critical nursery areas for many fish and invertebrate species. It is estimated that more than 70% of the recreationally-important species and more than 90% of the commercially-important species in the Gulf of Mexico are estuarine-dependent during at least one stage of their life histories (Lindall and Saloman 1997). The FIM program data are summarized and analyzed for all fish and selected invertebrate species collected, yielding information on the relative abundance, recruitment, habitat use, and distribution of hundreds of estuarine and marine species. This approach provides a unique source of information on economically valuable species as well as on many poorly understood non-game species that may influence fisheries or may be important ecological indicators. This type of multi-species, multi-habitat, long-term monitoring program is extremely valuable for documenting ecosystem changes, evaluating the effects of natural and anthropogenic disturbances, and making management decisions (Coull 1985; Wolfe et al. 1987).

Although the FIM program has always used a suite of gears (e.g., seines, trawls, trammel nets) capable of capturing a broad range of fish species and sizes from a variety of habitats, initial program efforts focused primarily on collecting young-of-the-year (YOY) fishes that could be used to develop recruitment indices. The program expanded its efforts to monitor larger-sized fishes in Tampa Bay by developing 183-m haul seines (fixed stations sampled between 1993 and 1995; year-round stratified-random sampling [SRS] implemented in 1996), 183-m purse seines (implemented in 1997; discontinued in 2004), and by developing a visual sampling program for reef fishes in the Florida Keys (implemented in 1998; 2012 results not summarized in this report). The 183-m haul seine gear was implemented as part of the SRS component of the program in Charlotte Harbor during 1996, in the northern and southern Indian River Lagoon and Cedar Key during 1997, in Apalachicola Bay during 1998, and in northeast Florida during 2001. The purse seine was implemented for SRS in Charlotte Harbor in 1998 and was used on a trial basis in Apalachicola Bay during 2000 and 2001, but was no longer used in any sampling area after 2004. Through the use of visual surveys in the Florida Keys, fisheries-independent information was obtained in this unique area of Florida for the first time in 1998, representing an important expansion of the FIM program. The FIM program also implemented a seasonal directed sampling program for striped mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor in 1993, utilizing a 366-m trammel net. The seasonal directed sampling program was discontinued in both areas after the 2008/2009 sampling season and has transitioned into a year-round monthly sampling survey completed every five years. The entire suite of gears and methods used by the FIM program captures fishes at various stages of development, from initial recruitment into the estuary through harvestable sizes, thereby providing a continuous gauge of a particular stock's relative abundance, age and size composition, and reproductive potential. This report summarizes FIM program SRS data collected during 2012. Results from the sampling efforts in each estuary are presented separately. This report also summarizes results from fish health monitoring of samples collected by the FIM program. Profiles of several species that are of particular interest because of their recreational or commercial value in Florida are also presented and provide critical information for these species while also describing some of the ways the FIM program data are used to assess the status of important Florida fisheries.

Methods

The FIM program uses a stratified-random sampling design in all study areas. Each study area was divided into sampling zones based upon geographic and logistical criteria, and each zone was further subdivided into 1-nm^2 grids that were randomly selected for sampling. Sampling grids were stratified by habitat and depth, thereby identifying the gear types that could be used in those areas. A single sample was collected at each randomly selected site. In most cases, the number of monthly samples collected in each zone with each gear was proportional to the number of grids in the zone that could be sampled with a particular gear.

The FIM program uses a multi-gear approach to collect data on various life history stages of fishes and selected invertebrates from a wide variety of habitats (Table FIM12-01). A 21.3-m center bag seine targeted YOY and juvenile fishes in shallow water (≤1.8-m); a 6.1-m otter trawl targeted YOY, juvenile, and adult fish in deep water (1.0 – 7.6-m); a 183-m haul seine targeted sub-adult and adult fish along shorelines in water depths ≤2.5-m. Several different techniques were used, depending upon habitat, to stratify the samples collected with the various gears. The 21.3-m center bag seine was used in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Two deployment techniques were used. The bay seine technique was used in all estuaries except northeast Florida to sample shallow areas, and was pre-stratified by the presence or absence of bottom vegetation (except in the Cedar Key area) or the presence of a shoreline. The river seine technique was used in all estuaries to sample the shorelines of creeks and rivers. River seine deployments in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. River seine deployments in the northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida were not pre-stratified by habitat type. Samples collected with 183-m haul seines in Tampa Bay and Charlotte Harbor were pre-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with 183-m haul seines in the northern and southern Indian River Lagoon were post-stratified by the presence or absence of overhanging shoreline vegetation. Samples collected with this gear were not stratified by habitat type in Cedar Key, Apalachicola Bay, and northeast Florida. All sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset). Additional sampling details are described in the FIM program's Procedure Manual (FWC-FWRI 2012).

The sample work-up technique was similar for all samples, regardless of gear type or sampling regime. Environmental data consisting of water chemistry, habitat characteristics, and physical parameters such as current and tidal conditions were recorded for each sample. All fish and selected invertebrate species captured were identified to the lowest practical taxonomic level, counted, and a random sample of at least 10 individuals was measured (standard length for teleosts, precaudal length for sharks, disc width for rays, carapace width for crabs, and post-orbital head length for shrimp). A detailed explanation of the standard sample work-up and visual survey methodology for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2012).

Certain taxa were not identified to species because of the possibility of hybridization (e.g., *Brevoortia* spp., *Menidia* spp.; Dahlberg 1970, Middaugh et al. 1986) or because they were morphologically or meristically indistinguishable at small juvenile sizes (e.g., *Eucinostomus* spp. <40 mm SL; Matheson 1983). In northern and southern Indian River Lagoon and northeast Florida sections, species accounts of *Cynoscion regalis* (weakfish) and *Cynoscion arenarius* (sand seatrout) will be referred to collectively as *Cynoscion* complex. These two species mix and hybridize along the Atlantic coast of Florida and identification can only be determined with certainty by genetic testing (Tringali et al. 2004). Animals were released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Nelson et al. 2004). A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual (FWC-FWRI 2012).

The data for this report were summarized separately for each estuarine system and for each gear type. Data were also summarized separately for all taxa and for taxa of recreational or commercial importance ('Selected Taxa'; Table FIM12-02). Abundance estimates were calculated for 21.3-m seines and trawls as the number of individuals/100 m^2 of area sampled. Catch-per-unit-effort (CPUE) was calculated for 183-m haul seine samples as the number of animals/set. The appendices for each study area describe the catch by month, gear, stratum, and zone.

Study Areas

The FIM program conducted sampling in Tampa Bay, Charlotte Harbor, the northern Indian River Lagoon, Cedar Key, the southern Indian River Lagoon, Apalachicola Bay, northeast Florida, and the Florida Keys (Figure FIM12-01). Sampling was conducted over a wide range of habitats encompassing different bottom types, shoreline types, and offshore areas. In addition to sampling in major estuaries, tidally-influenced portions of rivers that flow into Tampa Bay (Alafia, Braden, Little Manatee, and Manatee rivers), Charlotte Harbor (Peace, Myakka, and Caloosahatchee rivers), the Indian River Lagoon (Turkey Creek, St. Sebastian, and St. Lucie rivers), the Cedar Key area (Suwannee River), Apalachicola Bay (Apalachicola River), and northeast Florida (St. Marys, Nassau, and St. Johns rivers) were sampled. The Tampa Bay, Charlotte Harbor, and northern Indian River Lagoon study areas were described in the FIM Program 1994 Annual Data Summary Report (FDEP-FMRI 1995). The Cedar Key study area was described in the FIM Program 1996 Annual Data Summary Report (FDEP-FMRI 1997); the southern Indian River Lagoon study area was described in the FIM Program 1997 Annual Data Summary Report (FDEP-FMRI 1998); the Apalachicola Bay study area and changes to the southern Indian River Lagoon study area were described in the FIM Program 1998 Annual Data Summary Report (FWC-FMRI 1999); and the northeast Florida study area was described in the FIM Program 2001 Annual Data Summary Report (FWC-FMRI 2002). Data collected in the Florida Keys during 2012 are not presented in this report.

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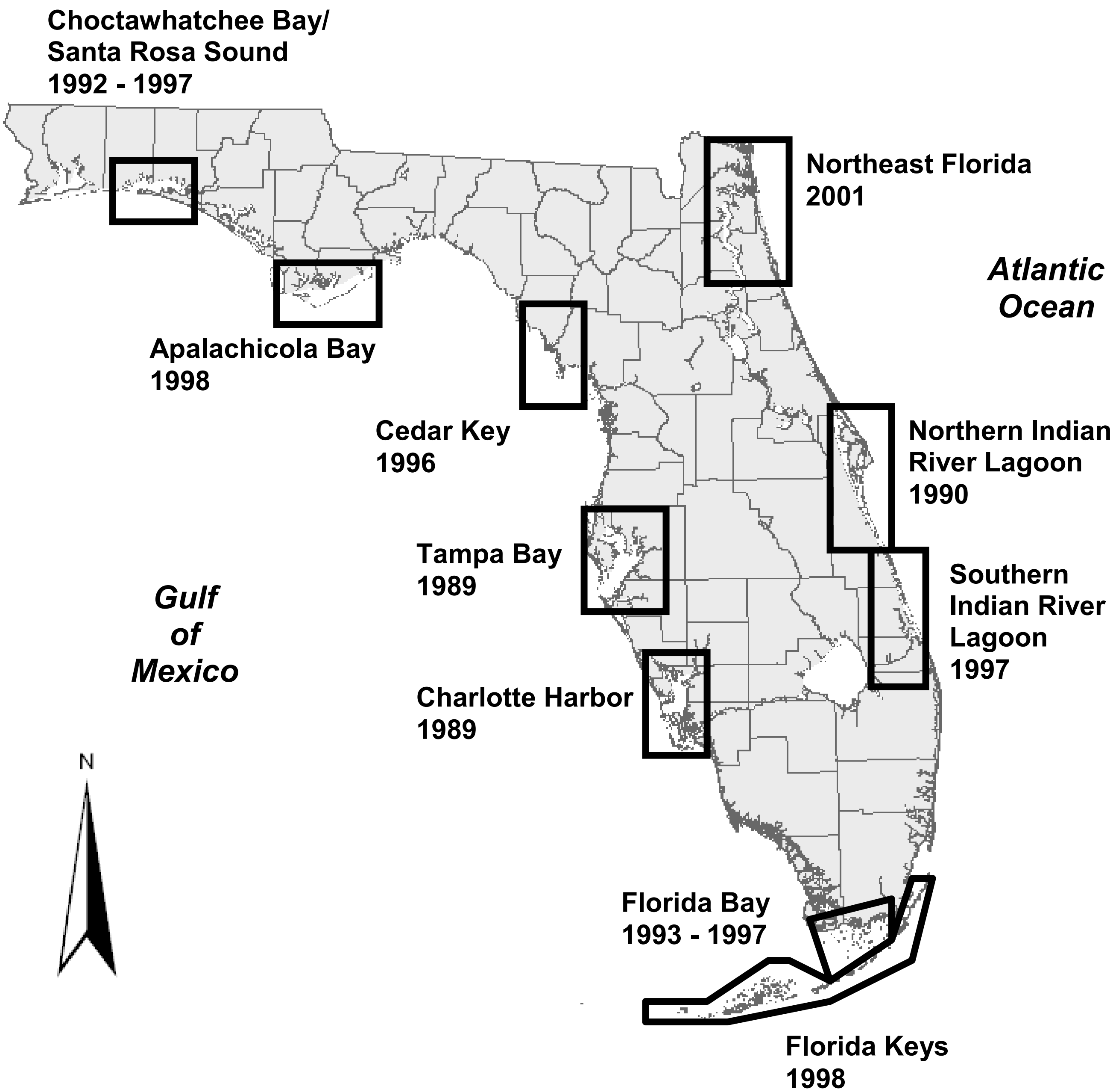

Figure FIM12-01. Locations of Fisheries-Independent Monitoring program field laboratories. Years indicate initiation of sampling. If sampling was discontinued at a field lab, the last year of sampling is also provided.

Table FIM12-01. Description of monthly monitoring sampling gears used in 2012. A more detailed description of each gear can be found in the FIM program's Procedure Manual.

Gear	Deployment	Mesh Size (mm)	Area Sampled	Description of use
21.3-m Seine (center bag)	Bay	3.2	140 m^2	• used in near-shore and shoreline areas ≤ 1.5 m
	River	3.2	68 m^2	• used along river shorelines ≤ 1.8 m
183-m Haul Seine (center bag)	Boat	38.1	4,120 m^2	• used along shorelines and exposed sandbars ≤ 2.5 m
6.1-m Otter Trawl	Straight Tow	38.1 (3.2-mm liner)	1,130 m^2-2,259 m^2	• used in areas from 1.8-m to 7.6-m deep
	Arc Tow	38.1 (3.2-mm liner)	1,130 m^2-2,259 m^2	• used in areas from 1.0-m to 1.7-m deep

Table FIM12-02. Animals designated as Selected Taxa because of their commercial or recreational importance.

Scientific Name	Common Name
Albula vulpes	Bonefish
Alphestes afer	Mutton hamlet
Archosargus probatocephalus	Sheepshead
Callinectes sapidus[2]	Blue crab
Centropomus undecimalis	Snook
Cephalopholis cruentata	Graysby
Cephalopholis fulva	Coney
Cynoscion arenarius	Sand seatrout
Cynoscion nebulosus	Spotted seatrout
Cynoscion nothus	Silver seatrout
Cynoscion regalis	Atlantic weakfish
Cynoscion complex	seatrout
Dermatolepis inermis	Marbled grouper
Elops saurus	Ladyfish
Epinephelus adscensionis	Rock hind
Epinephelus drummondhayi	Speckled hind
Epinephelus flavolimbatus	Yellowedge grouper
Epinephelus guttatus	Red hind
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 brasiliensis	
Farfantepenaeus duorarum	Pink 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

Table FIM12-02. (Continued)

Scientific Name	Common Name
Lutjanus synagris	Lane snapper
Lutjanus vivanus	Silk snapper
Megalops atlanticus	Tarpon
Menippe spp.	Stone Crab
Menticirrhus americanus	Southern kingfish
Menticirrhus littoralis	Gulf kingfish
Menticirrhus saxatilis	Northern kingfish
Micropogonias undulatus	Atlantic croaker
Mugil cephalus	Striped mullet
Mugil curema	White mullet
Mugil gyrans	Fantail mullet
Mugil liza	Liza
Mugil sp. *(redeye mullet)*	Redeye mullet
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	Florida pompano
Trachinotus falcatus	Permit
Trachinotus goodei	Palometa

Tampa Bay

Tampa Bay is a drowned river estuary located on the western central coast of Florida. The bay is connected to the Gulf of Mexico through two main channels located on either side of Egmont Key and several smaller passes and channels to the north of Mullet and Long Keys and to the south of Anna Maria Island. Freshwater inflow into the bay comes from over 100 tributaries, although more than 80% enters from four main rivers (Alafia, Hillsborough, Manatee, and Little Manatee; Schmidt and Luther 2002). 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 vegetative cover in Tampa Bay and are widely distributed throughout the bay (Haddad 1989).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Tampa Bay since 1989. The area sampled was divided into five geographically-defined bay zones (A-E) and four riverine zones (K-N; Figure TB12-01). The riverine zones were defined as the Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) rivers. Monthly stratified-random sampling (SRS) was conducted in Zones A-E using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones K-N with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in Tampa Bay.

Stratified-Random Sampling

A total of 385,954 animals, which included 139 taxa of fishes and nine taxa of selected invertebrates, were collected from 1,296 Tampa Bay SRS samples in 2012 (Table TB12-01, Appendices TB12-01, -02, and -03). *Anchoa mitchilli* (n=172,478) was the most numerous taxon collected, representing 44.7% of the total catch. *Lagodon rhomboides* (n=53,851) was the next most abundant taxon collected, accounting for an additional 14.0% of the total catch. Twenty-eight Selected Taxa (n=16,468 animals) composed 4.3% of the total catch. *Leiostomus xanthurus* (n=2,280) was the most abundant Selected Taxon, representing 0.6% of the total catch. *Cynoscion arenarius* (n=1,985) and *Farfantepenaeus duorarum* (n=1,980) were the next most abundant Selected Taxa, comprising an additional 1.0% of the total catch. Collections in 2012 included two species new to the Tampa Bay FIM collection: *Rhizoprionodon terraenovae* (Atlantic sharpnose shark) and *Kyphosus sectatrix* (Bermuda chub).

Bay Sampling

21.3-m Bay Seines. A total of 114,328 animals were collected in 408 21.3-m bay seines, representing 29.6% of the overall SRS catch (Table TB12-01). *Anchoa mitchilli* (n=39,570), *L. rhomboides* (n=15,954), *Harengula jaguana* (n=12,798), and *Eucinostomus* spp. (n=12,638) were the most abundant taxa, accounting for 70.8% of the 21.3-m bay seine catch (Table TB12-02). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (53.9% occurrence), *L. rhomboides* (47.5% occurrence), and *Eucinostomus gula* (42.4% occurrence).

A total of 3,805 animals from 23 Selected Taxa were collected, representing 3.3% of the entire 21.3-m bay seine catch (Table TB12-03). *Farfantepenaeus duorarum* (n=1,206) and *L. xanthurus* (n=858) were the most abundant Selected Taxa, accounting for 54.2% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *F. duorarum* (29.2% occurrence).

183-m Haul Seines. A total of 75,813 animals were collected in 240 183-m haul seines, representing 19.6% of the overall SRS catch (Table TB12-01). *Lagodon rhomboides* (n=34,472) was the most abundant taxon, accounting for 45.5% of the 183-m haul seine catch. *Bairdiella chrysoura* (n=12,962) was the next most abundant taxon collected, accounting for an additional 17.1% of the 183-m haul seine catch (Table TB12-04). The taxon most frequently caught in 183-m haul seines was *L. rhomboides* (78.3% occurrence).

A total of 6,859 animals from 27 Selected Taxa were collected, representing 9.0% of the entire 183-m haul seine catch (Table TB12-05). *Elops saurus* (n=1,383), *L. xanthurus* (n=1,059), and *Mugil cephalus* (n=1,020) were the most abundant Selected Taxa, accounting for 50.5% of the Selected Taxa collected by this gear. The Selected

Taxon most frequently caught in 183-m haul seines was *M. cephalus* (62.1% occurrence).

6.1-m Bay Otter Trawls. A total of 22,990 animals were collected in 180 6.1-m bay otter trawls, representing 6.0% of the overall SRS catch (Table TB12-01). *Anchoa mitchilli* (n=13,728) and *L. rhomboides* (n=2,480) were the most abundant taxa, accounting for 70.5% of the 6.1-m bay otter trawl catch (Table TB12-06). The taxa most frequently caught in 6.1-m bay otter trawls were *Prionotus scitulus* (54.4% occurrence) and *L. rhomboides* (46.1% occurrence).

A total of 1,930 animals from 14 Selected Taxa were collected, representing 8.4% of the entire 6.1-m bay otter trawl catch (Table TB12-07). *Cynoscion arenarius* (n=761) was the most abundant Selected Taxon, accounting for 39.4% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 6.1-m bay otter trawls were *Paralichthys albigutta* (33.9% occurrence), *F. duorarum* (27.8% occurrence), and *Callinectes sapidus* (25.0% occurrence).

River Sampling

21.3-m River Seines. A total of 158,187 animals were collected in 312 21.3-m river seines, representing 41.0% of the overall SRS catch (Table TB12-01). *Anchoa mitchilli* (n=109,209) was the most abundant species collected, accounting for 69.0% of the 21.3-m river seine catch (Table TB12-08). *Eucinostomus* spp. (n=12,205) and *Anchoa cubana* (n=9,467) were the next most abundant taxa, accounting for an additional 13.7% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *Eucinostomus* spp. (81.1% occurrence), *Menidia* spp. (69.9% occurrence), *Eucinostomus harengulus* (67.0% occurrence), and *A. mitchilli* (54.2% occurrence).

A total of 2,504 animals from 18 Selected Taxa were collected, representing 1.6% of the entire 21.3-m river seine catch (Table TB12-09). *Centropomus undecimalis* (n=410) was the most abundant Selected Taxon, accounting for 16.4% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m river seines were *F. duorarum* (34.3% occurrence) and *C. undecimalis* (30.1% occurrence).

6.1-m River Otter Trawls. A total of 14,636 animals were collected in 156 6.1-m river otter trawls, representing 3.8% of the overall SRS catch (Table TB12-01). *Anchoa mitchilli* (n=9,971) was the most abundant taxon collected, accounting for 68.1% of the 6.1-m river otter trawl catch (Table TB12-10). The taxon most frequently caught in 6.1-m river otter trawls was *C. sapidus (*46.2% occurrence).

A total of 1,370 animals from 15 Selected Taxa were collected, representing 9.4% of the entire 6.1-m river otter trawl catch (Table TB12-11). *Cynoscion arenarius* (n=744), *Farfantepenaeus* spp. (n=211), and *C. sapidus (*n=178) were the most abundant Selected Taxa, accounting for 82.7% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in the 6.1-m river otter trawls were *C. sapidus* (46.2% occurrence), *C. arenarius* (33.3% occurrence), and *F. duorarum* (32.1% occurrence).

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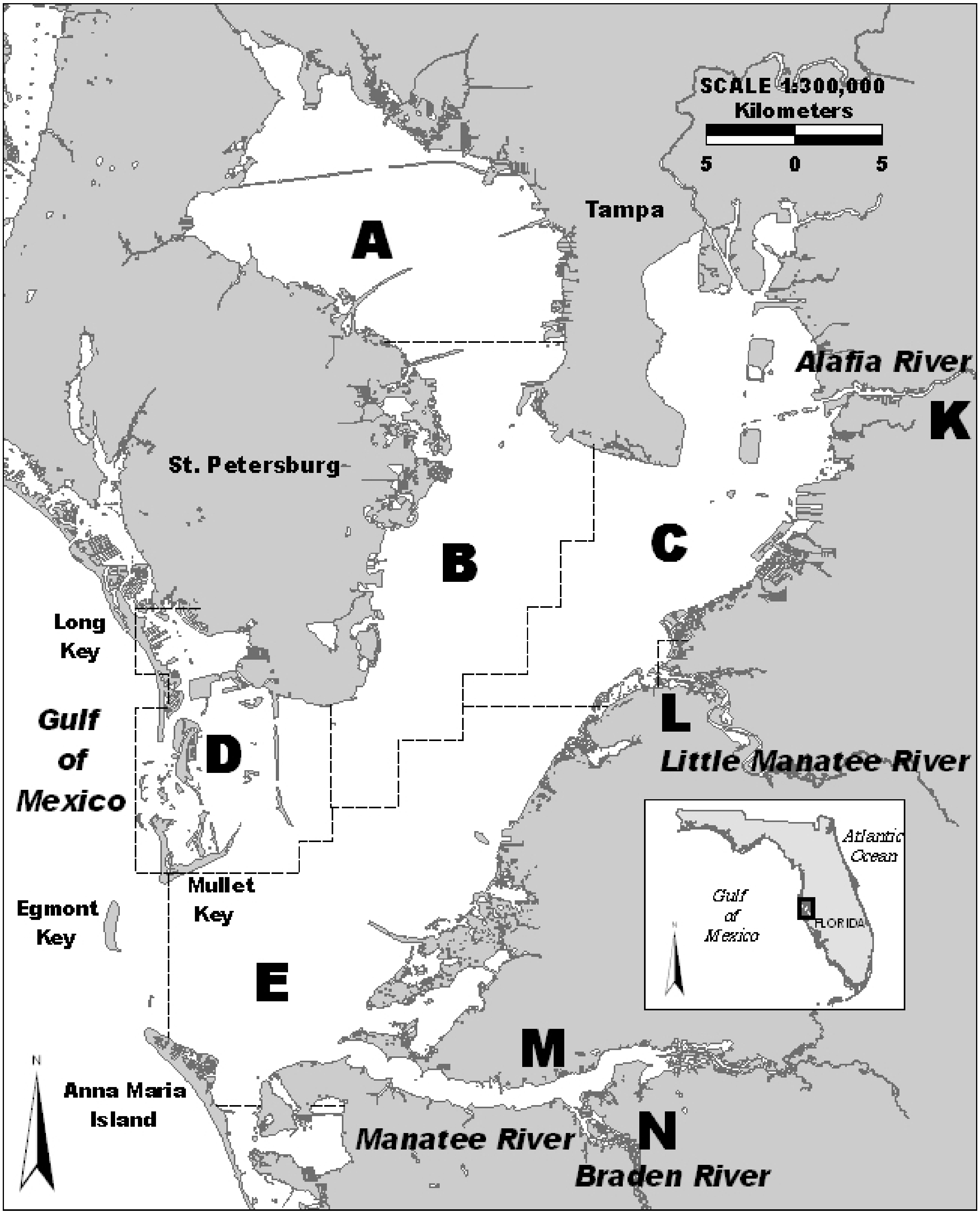

Figure TB12-01. Map of Tampa Bay sampling area. Zones are labeled A-E and K-N.

Table TB12-01. Summary of catch and effort data for Tampa Bay stratified-random sampling, 2012.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	29,469	84	.	.	6,281	48	5,843	36	41,593	168
B	12,173	72	.	.	15,424	48	3,670	36	31,267	156
C	31,935	108	.	.	17,444	48	8,510	48	57,889	204
D	27,333	60	.	.	15,096	36	1,887	24	44,316	120
E	13,418	84	.	.	21,568	60	3,080	36	38,066	180
K	.	.	17,049	72	.	.	1,394	24	18,443	96
L	.	.	42,459	108	.	.	4,019	72	46,478	180
M	.	.	59,019	72	.	.	1,146	36	60,165	108
N	.	.	39,660	60	.	.	8,077	24	47,737	84
Totals	**114,328**	**408**	**158,187**	**312**	**75,813**	**240**	**37,626**	**336**	**385,954**	**1,296**

Table TB12-02. Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	39,570	34.6	18.1	69.28	30.84	899.22	9,445.71	29	0.02	14	86
Lagodon rhomboides	15,954	14.0	47.5	27.93	5.68	410.84	1,337.14	32	0.13	11	159
Harengula jaguana	12,798	11.2	10.3	22.41	14.63	1,318.82	5,892.14	32	0.12	15	134
Eucinostomus spp.	12,638	11.1	53.9	22.13	2.79	254.58	488.57	26	0.06	7	41
Menidia spp.	8,443	7.4	19.6	14.78	5.48	748.82	1,907.86	45	0.14	11	89
Bairdiella chrysoura	4,287	3.7	18.4	7.51	2.67	718.90	985.00	41	0.30	9	153
Lucania parva	4,101	3.6	18.6	7.18	1.94	544.82	615.00	25	0.07	10	41
Eucinostomus gula	2,767	2.4	42.4	4.84	0.61	253.42	113.57	55	0.21	40	121
Opisthonema oglinum	1,627	1.4	6.6	2.85	1.51	1,067.97	451.43	50	0.41	15	147
Floridichthys carpio	1,341	1.2	12.0	2.35	0.77	660.21	217.14	36	0.30	7	61
Subtotal	103,526	90.6	.	.	.	.	.	.	.	7	159
Totals	**114,328**	**100.0**	**.**	**200.15**	**38.10**	**384.46**	**10,503.57**	**.**	**.**	**2**	**440**

Table TB12-03. Catch statistics for Selected Taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Farfantepenaeus duorarum	1,206	1.1	29.2	2.11	0.49	471.08	132.86	9	0.12	2	36
Leiostomus xanthurus	858	0.8	9.8	1.50	0.77	1,034.73	271.43	27	0.57	13	197
Cynoscion nebulosus	499	0.4	18.6	0.87	0.17	383.31	32.14	36	0.93	13	260
Mugil cephalus	342	0.3	2.9	0.60	0.46	1,549.80	182.14	28	0.67	14	169
Callinectes sapidus	185	0.2	13.2	0.32	0.08	474.89	22.14	27	2.06	4	152
Sciaenops ocellatus	182	0.2	9.6	0.32	0.09	573.62	20.71	36	2.87	9	336
Mugil gyrans	135	0.1	3.9	0.24	0.13	1,131.84	45.71	49	2.24	15	148
Lutjanus synagris	95	0.1	3.9	0.17	0.08	956.99	29.29	44	1.85	18	95
Paralichthys albigutta	69	0.1	9.3	0.12	0.03	419.99	5.71	66	8.75	10	340
Lutjanus griseus	61	0.1	7.6	0.11	0.03	526.17	7.86	69	6.01	15	209
Archosargus probatocephalus	58	0.1	6.4	0.10	0.03	514.54	5.71	47	6.27	13	205
Centropomus undecimalis	39	<0.1	2.7	0.07	0.03	878.91	9.29	83	15.79	26	433
Mugil curema	33	<0.1	0.7	0.06	0.04	1,450.68	15.00	34	2.06	22	63
Scomberomorus maculatus	10	<0.1	0.5	0.02	0.02	1,828.60	6.43	87	3.55	72	113
Menticirrhus saxatilis	8	<0.1	1.0	0.01	0.01	1,181.49	2.86	59	12.20	23	115
Menticirrhus americanus	8	<0.1	0.7	0.01	0.01	1,381.00	3.57	18	2.10	12	29
Pogonias cromis	4	<0.1	1.0	0.01	<0.01	1,006.22	0.71	287	50.20	188	420

Table TB12-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion arenarius	4	<0.1	0.7	0.01	<0.01	1,234.40	1.43	26	3.71	15	32
Elops saurus	3	<0.1	0.7	0.01	<0.01	1,163.32	0.71	257	2.08	254	261
Trachinotus falcatus	3	<0.1	0.7	0.01	<0.01	1,163.32	0.71	38	10.60	25	59
Menippe sp.	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	8	.	8	8
Pomatomus saltatrix	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	53	.	53	53
Micropogonias undulatus	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	21	.	21	21
Totals	**3,805**	**3.3**	**63.7**	**6.66**	**1.09**	**330.08**	**275.00**	**.**	**.**	**2**	**433**

Table TB12-04. Catch statistics for 10 dominant taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	34,472	45.5	78.3	143.63	14.82	159.87	1,576	106	0.17	25	212
Bairdiella chrysoura	12,962	17.1	27.9	54.01	34.85	999.53	7,920	134	0.11	42	278
Opisthonema oglinum	4,854	6.4	15.8	20.23	10.93	837.16	2,037	127	0.26	58	178
Eucinostomus gula	3,612	4.8	61.3	15.05	3.14	323.38	639	84	0.23	41	154
Eucinostomus harengulus	3,206	4.2	45.0	13.36	3.94	457.04	703	94	0.19	44	157
Harengula jaguana	2,272	3.0	20.0	9.47	3.58	585.14	745	104	0.31	45	182
Orthopristis chrysoptera	2,013	2.7	39.2	8.39	1.99	367.76	433	128	0.84	39	210
Strongylura notata	1,476	1.9	61.7	6.15	1.40	352.14	279	344	1.03	115	700
Elops saurus	1,383	1.8	42.1	5.76	1.41	379.80	285	261	0.94	133	456
Leiostomus xanthurus	1,059	1.4	34.6	4.41	0.86	303.62	106	146	1.28	52	213
Subtotal	67,309	88.8	.	.	.	.	.	.	.	25	700
Totals	**75,813**	**100.0**	**.**	**315.89**	**44.58**	**218.62**	**8,560**	**.**	**.**	**12**	**1180**

Table TB12-05. Catch statistics for Selected Taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2012. 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**		**% Occur**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Elops saurus	1,383	1.8	42.1	5.76	1.41	379.80	285	261	0.94	133	456
Leiostomus xanthurus	1,059	1.4	34.6	4.41	0.86	303.62	106	146	1.28	52	213
Mugil cephalus	1,020	1.3	62.1	4.25	0.77	279.50	142	308	2.11	79	493
Centropomus undecimalis	718	0.9	39.6	2.99	0.73	379.16	128	434	4.94	148	847
Archosargus probatocephalus	581	0.8	47.5	2.42	0.37	238.67	48	184	3.52	29	398
Mugil curema	288	0.4	27.9	1.20	0.28	361.45	50	204	3.23	81	406
Sciaenops ocellatus	284	0.4	27.5	1.18	0.52	684.14	123	411	9.25	70	756
Cynoscion nebulosus	269	0.4	22.1	1.12	0.33	457.18	65	206	4.59	38	415
Callinectes sapidus	263	0.3	25.0	1.10	0.30	422.81	52	106	2.31	30	191
Mugil gyrans	259	0.3	20.0	1.08	0.32	453.39	49	155	2.41	55	270
Lutjanus griseus	142	0.2	18.3	0.59	0.12	314.20	14	150	3.66	74	368
Cynoscion arenarius	139	0.2	2.5	0.58	0.47	1,260.44	111	190	1.78	110	243
Pogonias cromis	104	0.1	10.0	0.43	0.18	644.28	36	235	7.16	150	532
Paralichthys albigutta	88	0.1	23.3	0.37	0.06	240.42	7	179	8.11	61	382
Lutjanus synagris	84	0.1	7.9	0.35	0.21	918.24	49	83	1.49	34	140
Trachinotus falcatus	81	0.1	6.3	0.34	0.12	541.30	17	115	5.42	48	214
Farfantepenaeus duorarum	30	<0.1	7.5	0.13	0.03	421.20	4	22	1.01	12	32

Table TB12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Scomberomorus maculatus	28	<0.1	6.3	0.12	0.04	491.96	6	250	13.82	119	448
Micropogonias undulatus	11	<0.1	2.1	0.05	0.02	828.90	5	217	7.43	162	258
Menticirrhus americanus	10	<0.1	2.5	0.04	0.02	844.38	5	221	6.50	185	255
Trachinotus carolinus	7	<0.1	2.5	0.03	0.01	657.74	2	264	25.84	128	344
Rachycentron canadum	4	<0.1	1.7	0.02	0.01	769.72	1	349	120.34	175	690
Menticirrhus littoralis	3	<0.1	0.8	0.01	0.01	1,152.77	2	191	42.17	148	275
Menippe sp.	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	72	.	72	72
Albula vulpes	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	175	.	175	175
Pomatomus saltatrix	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	440	.	440	440
Menticirrhus saxatilis	1	<0.1	0.4	<0.01	<0.01	1,549.19	1	112	.	112	112
Totals	**6,859**	**9.1**	**97.5**	**28.58**	**2.75**	**148.80**	**298**	**.**	**.**	**12**	**847**

Table TB12-06. Catch statistics for 10 dominant taxa collected in 180 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	13,728	59.7	14.4	5.15	2.14	556.96	218.77	31	0.04	11	47
Lagodon rhomboides	2,480	10.8	46.1	0.93	0.44	636.00	76.23	63	0.79	14	162
Cynoscion arenarius	761	3.3	15.0	0.28	0.12	566.83	14.46	27	1.09	9	212
Orthopristis chrysoptera	703	3.1	32.2	0.26	0.07	361.05	9.92	95	1.57	14	198
Anchoa cubana	694	3.0	0.6	0.26	0.26	1,341.64	46.82	29	0.07	27	34
Anchoa hepsetus	486	2.1	3.9	0.21	0.19	1,198.94	33.65	23	0.23	19	95
Eucinostomus gula	507	2.2	32.2	0.19	0.05	338.67	5.40	84	0.67	41	124
Eucinostomus spp.	372	1.6	12.2	0.14	0.08	759.20	12.53	23	0.34	9	39
Callinectes sapidus	344	1.5	25.0	0.13	0.04	460.04	6.54	69	2.25	9	174
Prionotus scitulus	317	1.4	54.4	0.12	0.02	199.63	2.25	99	2.23	19	163
Subtotal	20,392	88.7	.	.	.	.	.	.	.	9	212
Totals	**22,990**	**100.0**	**.**	**8.65**	**2.26**	**350.70**	**225.18**	**.**	**.**	**2**	**530**

Table TB12-07. Catch statistics for Selected Taxa collected in 180 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m²)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Cynoscion arenarius	761	3.3	15.0	0.28	0.12	566.83	14.46	27	1.09	9	212
Callinectes sapidus	344	1.5	25.0	0.13	0.04	460.04	6.54	69	2.25	9	174
Farfantepenaeus duorarum	240	1.0	27.8	0.09	0.02	288.96	1.93	17	0.41	3	30
Menticirrhus americanus	218	0.9	20.0	0.08	0.03	553.64	5.33	46	4.05	9	256
Menippe spp.	156	0.7	21.7	0.06	0.01	338.94	1.96	25	1.17	3	68
Paralichthys albigutta	103	0.4	33.9	0.04	0.01	187.76	0.40	171	6.42	50	451
Lutjanus synagris	45	0.2	13.3	0.02	<0.01	343.93	0.43	89	4.34	15	165
Archosargus probatocephalus	19	0.1	3.3	0.01	<0.01	701.84	0.52	131	14.46	16	230
Leiostomus xanthurus	16	0.1	2.8	0.01	<0.01	711.41	0.50	151	5.41	98	175
Sciaenops ocellatus	12	0.1	0.6	<0.01	<0.01	1,341.64	0.85	15	0.57	11	18
Lutjanus griseus	7	<0.1	1.7	<0.01	<0.01	993.64	0.34	122	17.33	50	206
Cynoscion nebulosus	7	<0.1	3.9	<0.01	<0.01	499.22	0.07	92	28.47	14	201
Menticirrhus saxatilis	1	<0.1	0.6	<0.01	<0.01	1,341.64	0.07	232	.	232	232
Micropogonias undulatus	1	<0.1	0.6	<0.01	<0.01	1,341.64	0.06	34	.	34	34
Totals	**1,930**	**8.4**	**77.2**	**0.73**	**0.16**	**296.18**	**16.58**	**.**	**.**	**3**	**451**

Table TB12-08. Catch statistics for 10 dominant taxa collected in 312 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	109,209	69.0	54.2	514.75	116.66	400.32	21,972.06	27	0.02	11	60
Eucinostomus spp.	12,205	7.7	81.1	57.53	6.42	197.06	1,101.47	27	0.06	10	40
Anchoa cubana	9,467	6.0	2.6	44.62	35.33	1,398.51	10,938.24	26	0.03	20	65
Menidia spp.	7,162	4.5	69.9	33.76	3.90	203.82	722.06	39	0.12	12	79
Anchoa hepsetus	5,760	3.6	9.6	27.15	17.88	1,163.18	5,482.35	33	0.10	15	93
Eucinostomus harengulus	2,558	1.6	67.0	12.06	1.24	182.28	239.71	54	0.22	40	116
Eugerres plumieri	1,464	0.9	30.8	6.90	1.42	364.23	295.59	32	0.58	10	234
Microgobius gulosus	1,327	0.8	44.9	6.25	1.23	348.29	250.00	24	0.17	7	47
Lagodon rhomboides	901	0.6	43.9	4.25	0.61	255.12	95.59	40	0.75	9	163
Eucinostomus gula	726	0.5	28.8	3.42	0.84	435.45	222.06	53	0.40	40	96
Subtotal	150,779	95.2	.	.	.	.	.	.	.	7	234
Totals	**158,187**	**100.0**	**.**	**745.60**	**142.41**	**337.38**	**33,173.53**	**.**	**.**	**2**	**825**

Table TB12-09. Catch statistics for Selected Taxa collected in 312 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Centropomus undecimalis	410	0.3	30.1	1.93	0.30	272.20	45.59	74	3.66	12	407
Mugil cephalus	371	0.2	11.5	1.75	0.82	826.68	210.29	32	1.82	15	350
Cynoscion arenarius	337	0.2	9.3	1.59	0.86	952.82	216.18	42	0.56	13	74
Leiostomus xanthurus	331	0.2	16.7	1.56	0.31	356.23	50.00	34	1.30	10	120
Farfantepenaeus duorarum	293	0.2	34.3	1.38	0.17	213.64	27.94	7	0.21	2	21
Sciaenops ocellatus	267	0.2	15.1	1.26	0.66	932.77	202.94	43	3.94	14	553
Callinectes sapidus	147	0.1	20.8	0.69	0.12	317.45	29.41	21	2.04	4	177
Archosargus probatocephalus	103	0.1	20.5	0.49	0.07	256.50	11.76	77	6.62	10	405
Cynoscion nebulosus	84	0.1	12.5	0.40	0.08	343.11	11.76	43	3.11	14	126
Mugil gyrans	53	<0.1	2.9	0.25	0.10	712.82	20.59	59	5.36	10	140
Elops saurus	30	<0.1	2.9	0.14	0.08	1,046.86	25.00	88	14.19	27	242
Menticirrhus americanus	22	<0.1	2.2	0.10	0.05	852.76	11.76	38	3.53	16	96
Mugil curema	21	<0.1	2.6	0.10	0.05	815.01	11.76	79	7.39	33	147
Lutjanus griseus	13	<0.1	3.2	0.06	0.02	584.69	2.94	113	18.71	28	217
Paralichthys albigutta	8	<0.1	1.9	0.04	0.02	821.38	4.41	71	24.54	25	226
Menticirrhus saxatilis	7	<0.1	1.3	0.03	0.02	973.73	4.41	48	6.91	26	72
Pogonias cromis	6	<0.1	1.3	0.03	0.01	927.05	2.94	57	20.59	12	136
Megalops atlanticus	1	<0.1	0.3	<0.01	<0.01	1,766.35	1.47	206	.	206	206
Totals	**2,504**	**1.6**	**81.1**	**11.80**	**1.47**	**220.03**	**219.12**	**.**	**.**	**2**	**553**

Table TB12-10. Catch statistics for 10 dominant taxa collected in 156 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	9,971	68.1	29.5	9.05	3.05	421.05	320.43	23	0.05	16	50
Eucinostomus spp.	1,043	7.1	23.7	0.96	0.23	303.79	17.54	25	0.20	9	39
Cynoscion arenarius	744	5.1	33.3	0.68	0.23	416.14	31.78	31	0.81	8	207
Trinectes maculatus	747	5.1	26.9	0.67	0.28	515.37	38.72	27	0.61	9	68
Eugerres plumieri	304	2.1	11.5	0.28	0.16	710.94	24.28	44	1.06	13	90
Bairdiella chrysoura	275	1.9	16.0	0.25	0.14	684.46	18.48	81	1.78	11	167
Farfantepenaeus duorarum	211	1.4	32.1	0.19	0.03	221.87	2.16	10	0.36	3	36
Microgobius gulosus	190	1.3	20.5	0.17	0.05	377.06	6.61	23	0.51	12	55
Eucinostomus harengulus	184	1.3	21.8	0.17	0.04	321.50	4.50	56	1.01	40	103
Callinectes sapidus	178	1.2	46.2	0.16	0.02	186.34	2.43	96	3.74	6	191
Subtotal	13,847	94.6	.	.	.	.	.	.	.	3	207
Totals	**14,636**	**100.0**	**.**	**13.28**	**3.35**	**315.43**	**339.18**	**.**	**.**	**3**	**1180**

Table TB12-11. Catch statistics for Selected Taxa collected in 156 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion arenarius	744	5.1	33.3	0.68	0.23	416.14	31.78	31	0.81	8	207
Farfantepenaeus duorarum	211	1.4	32.1	0.19	0.03	221.87	2.16	10	0.36	3	36
Callinectes sapidus	178	1.2	46.2	0.16	0.02	186.34	2.43	96	3.74	6	191
Archosargus probatocephalus	78	0.5	21.2	0.07	0.02	274.47	1.48	115	5.38	17	256
Menticirrhus americanus	53	0.4	14.1	0.05	0.02	491.00	2.70	52	8.84	8	312
Paralichthys albigutta	29	0.2	13.5	0.03	0.01	295.54	0.45	172	9.23	74	274
Leiostomus xanthurus	16	0.1	6.4	0.01	<0.01	454.73	0.54	131	14.65	16	186
Elops saurus	14	0.1	3.8	0.01	0.01	817.57	1.21	107	29.32	35	307
Centropomus undecimalis	12	0.1	0.6	0.01	0.01	1,249.00	1.80	21	0.72	17	24
Sciaenops ocellatus	11	0.1	5.1	0.01	<0.01	488.37	0.40	49	19.88	12	185
Cynoscion nebulosus	9	0.1	5.1	0.01	<0.01	443.09	0.25	164	24.24	17	292
Lutjanus griseus	8	0.1	3.2	0.01	<0.01	614.30	0.40	178	6.52	148	207
Pogonias cromis	4	<0.1	1.9	<0.01	<0.01	748.12	0.27	252	33.16	156	304
Micropogonias undulatus	2	<0.1	1.3	<0.01	<0.01	880.32	0.13	53	4.50	48	57
Menticirrhus saxatilis	1	<0.1	0.6	<0.01	<0.01	1,249.00	0.15	36	.	36	36
Totals	**1,370**	**9.4**	**82.1**	**1.24**	**0.25**	**253.97**	**34.03**	**.**	**.**	**3**	**312**

Appendix TB12-01. Monthly summary of species collected during Tampa Bay stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Acanthostracion quadricornis	15	7	12	52	14	5	9	28	12	6	29	5	194
Achirus lineatus	5	3	.	6	4	6	11	8	22	10	18	9	102
Adinia xenica	.	2	.	.	.	.	.	.	11	.	1	1	15
Albula vulpes	1	.	.	.	.	.	.	.	.	.	.	.	1
Aluterus schoepfii	2	.	1	.	2	1	1	.	.	.	.	.	7
Ameiurus catus	.	.	.	.	.	.	.	.	4	3	.	.	7
Anchoa cubana	.	5	2	.	9,438	76	.	.	.	699	.	9	10,229
Anchoa hepsetus	.	1	.	896	1,011	4,119	264	6	425	39	.	.	6,761
Anchoa mitchilli	3,455	2,900	1,681	3,847	24,423	23,128	19,343	10,269	12,289	37,107	9,932	24,104	172,478
Anchoa spp.	.	.	.	1	8	.	.	.	2	.	.	.	11
Ancylopsetta quadrocellata	2	.	.	1	2	.	.	.	.	.	.	.	5
Archosargus probatocephalus	38	65	51	84	70	87	55	102	49	89	48	101	839
Argopecten spp.	.	1	.	.	.	.	1	.	.	.	.	.	2
Ariopsis felis	41	32	110	44	219	49	189	130	46	100	37	86	1,083
Astroscopus y-graecum	.	.	.	.	.	.	.	1	.	.	.	.	1
Atherinidae sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Bagre marinus	.	1	5	6	18	9	3	15	7	8	.	.	72
Bairdiella chrysoura	10,908	364	164	427	637	1,179	1,900	1,329	349	229	81	833	18,400
Bathygobius soporator	2	.	1	1	.	.	.	.	.	1	8	9	22
Belonesox belizanus	1	.	.	.	.	.	2	2	.	2	.	4	11
Brevoortia spp.	7	110	24	585	53	17	1	18	1	2	98	9	925
Calamus arctifrons	.	.	.	.	.	1	2	4	.	2	.	.	9
Calamus spp.	3	1	.	.	.	.	.	.	.	.	2	1	7
Callinectes ornatus	.	.	.	.	2	.	.	2	.	.	.	.	4

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Callinectes sapidus	102	85	179	160	59	38	80	39	35	41	79	220	1,117
Callinectes sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
Caranx crysos	.	.	.	2	3	.	.	.	.	.	.	.	5
Caranx hippos	45	7	7	11	19	7	11	5	6	27	1	.	146
Caranx latus	.	.	.	.	.	.	.	.	.	3	.	.	3
Caranx sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Carcharhinus leucas	.	1	.	.	.	.	1	.	.	.	.	.	2
Carcharhinus limbatus	.	.	.	.	1	.	.	.	.	.	.	.	1
Centropomus undecimalis	5	32	108	92	57	20	66	230	162	194	113	100	1,179
Centropristis striata	1	2	4	.	2	1	8	.	.	2	.	1	21
Chaetodipterus faber	.	2	7	25	28	4	19	92	9	23	1	100	310
Chasmodes saburrae	7	4	2	2	4	16	7	4	4	17	8	10	85
Chilomycterus schoepfii	45	22	41	12	5	18	18	34	11	20	15	10	251
Chloroscombrus chrysurus	.	.	.	.	1	10	24	25	41	2	.	.	103
Citharichthys macrops	1	6	3	4	2	.	.	1	3	.	2	1	23
Clupeidae spp.	.	.	.	.	.	.	2	.	.	.	.	.	2
Ctenogobius boleosoma	.	.	1	.	.	.	.	.	.	.	.	.	1
Cynoscion arenarius	111	13	3	32	6	3	592	632	325	172	57	39	1,985
Cynoscion nebulosus	100	34	6	33	24	103	117	279	55	37	34	46	868
Cyprinodon variegatus	7	5	3	6	342	.	3	.	2	44	119	10	541
Dasyatis americana	.	.	1	1	2	1	1	1	1	3	1	.	12
Dasyatis sabina	33	37	50	41	64	33	54	53	24	31	21	95	536
Dasyatis say	.	2	.	7	3	6	6	6	1	2	1	1	35
Dasyatis spp.	.	.	.	.	.	1	1	.	.	.	.	.	2
Diplectrum formosum	1	.	1	2	1	2	.	.	.	1	1	.	9
Diplodus holbrookii	4	5	23	42	133	21	42	74	6	10	15	13	388

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Dorosoma petenense	.	.	.	.	.	51	3	118	1	.	.	.	173
Echeneis naucrates	.	1	.	.	.	.	.	.	.	1	.	.	2
Echeneis neucratoides	.	1	.	1	1	1	.	.	.	.	.	1	5
Elops saurus	65	42	112	439	210	51	65	102	25	34	70	215	1,430
Etropus crossotus	2	6	5	2	.	1	.	5	10	10	7	6	54
Eucinostomus argenteus	.	.	.	.	.	.	.	1	.	.	.	.	1
Eucinostomus gula	278	245	372	383	495	766	453	814	696	1,060	956	1,174	7,692
Eucinostomus harengulus	109	767	438	553	624	651	1,178	368	402	503	501	681	6,775
Eucinostomus spp.	1,731	1,730	1,446	271	85	1,907	2,229	2,290	2,151	4,986	5,015	2,429	26,270
Eugerres plumieri	3	29	3	4	13	492	462	429	177	117	51	85	1,865
Farfantepenaeus duorarum	77	21	35	35	47	43	214	153	456	455	195	249	1,980
Floridichthys carpio	24	64	67	20	380	369	83	84	63	161	137	167	1,619
Fundulus confluentus	.	4	.	.	.	.	.	.	.	.	.	.	4
Fundulus grandis	15	56	44	53	6	10	24	2	11	2	80	46	349
Fundulus seminolis	14	4	.	.	1	.	.	4	4	7	1	.	35
Fundulus similis	19	9	98	96	39	7	24	17	26	3	38	3	379
Gambusia holbrooki	8	9	6	.	15	.	.	.	1	5	.	9	53
Gobiesox strumosus	1	.	1	.	.	.	.	1	.	1	.	1	5
Gobiosoma bosc	37	16	27	5	16	3	27	5	12	3	6	50	207
Gobiosoma longipala	.	2	.	.	.	1	.	.	.	.	.	.	3
Gobiosoma robustum	39	13	6	4	15	17	5	7	7	10	10	23	156
Gobiosoma spp.	19	4	5	7	77	35	35	31	24	26	65	39	367
Gymnura micrura	.	.	3	2	2	1	.	1	1	4	.	10	24
Haemulon plumierii	6	.	.	.	.	1	5	2	8	91	6	3	122
Haemulon spp.	.	.	.	.	.	.	.	.	2	.	.	.	2
Halichoeres bivittatus	.	.	.	.	.	.	.	.	2	4	.	.	6

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Harengula jaguana	355	788	46	194	9,288	169	560	1,126	1,574	1,275	106	109	15,590
Hemiramphus sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Hippocampus erectus	2	4	2	3	2	1	.	1	.	.	1	1	17
Hippocampus zosterae	10	2	3	1	.	1	.	1	.	1	7	2	28
Hypleurochilus caudovittatus	2	4	.	.	.	.	.	.	.	.	.	.	6
Hyporhamphus meeki	2	2	.	16	7	.	3	8	20	48	6	11	123
Hyporhamphus spp.	.	.	.	6	1	.	.	.	1	.	.	.	8
Hypsoblennius hentz	.	.	.	.	.	1	1	1	.	.	.	.	3
Kyphosus sectatrix	.	.	.	1	.	.	.	.	.	.	.	.	1
Labidesthes sicculus	.	.	.	.	.	1	.	.	.	.	.	.	1
Lagodon rhomboides	5,383	4,304	5,359	6,198	4,425	4,927	4,728	5,725	3,017	4,769	3,963	1,053	53,851
Leiostomus xanthurus	664	461	191	220	276	77	109	145	45	90	1	1	2,280
Lepisosteus osseus	2	.	1	.	.	2	6	2	4	1	.	.	18
Lepomis macrochirus	.	.	.	.	.	.	4	1	1	1	1	5	13
Lepomis spp.	.	.	.	.	.	.	.	.	3	.	.	.	3
Limulus polyphemus	1	1	1	2	2	4	1	.	5	1	.	.	18
Lucania parva	94	244	240	392	357	1,367	69	32	364	370	482	536	4,547
Lutjanus griseus	2	1	.	2	5	18	25	53	30	74	15	6	231
Lutjanus synagris	4	3	.	3	8	2	1	25	31	122	21	4	224
Megalops atlanticus	.	.	.	.	.	.	.	.	.	1	.	.	1
Membras martinica	.	.	.	40	131	8	62	.	4	.	.	.	245
Menidia spp.	1,071	616	3,054	569	1,696	1,336	1,915	2,029	1,339	1,053	501	429	15,608
Menippe spp.	13	34	8	15	11	7	8	12	2	15	21	12	158
Menticirrhus americanus	2	2	7	18	8	5	54	121	26	20	12	36	311
Menticirrhus littoralis	.	.	.	.	.	.	.	2	1	.	.	.	3
Menticirrhus saxatilis	.	3	2	4	5	1	2	.	1	.	.	.	18

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Microgobius gulosus	81	43	37	57	324	493	489	383	223	231	133	83	2,577
Microgobius thalassinus	.	.	1	.	4	1	5	.	.	4	.	4	19
Micropogonias undulatus	3	1	.	.	10	.	1	.	.	.	.	.	15
Micropterus salmoides	.	.	.	.	.	.	1	.	.	.	.	.	1
Monacanthus ciliatus	.	.	1	.	.	.	.	.	.	.	.	.	1
Mugil cephalus	338	770	112	152	59	43	29	32	24	52	32	90	1,733
Mugil curema	24	36	85	8	28	20	28	6	18	16	50	23	342
Mugil gyrans	42	21	136	11	23	89	9	45	10	6	16	39	447
Mugil spp.	.	.	.	.	8	.	.	.	.	.	.	.	8
Myrophis punctatus	.	.	1	.	.	.	1	.	.	.	.	.	2
Nicholsina usta	1	4	57	4	21	5	.	3	4	5	9	.	113
Notemigonus crysoleucas	.	.	.	.	.	.	.	.	.	2	.	.	2
Notropis maculatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Ogcocephalus cubifrons	1	6	2	.	.	1	1	1	.	1	.	2	15
Oligoplites saurus	.	.	2	12	25	88	91	92	92	42	8	.	452
Opisthonema oglinum	.	1	222	1,973	2,442	79	72	673	683	228	189	1	6,563
Opsanus beta	16	7	1	9	16	11	15	22	4	13	2	3	119
Oreochromis aureus	.	.	.	.	.	.	1	.	.	1	.	.	2
Oreochromis/Sarotherodon spp.	.	.	.	.	.	5	.	2	.	.	.	.	7
Orthopristis chrysoptera	395	120	583	366	403	478	435	370	139	116	579	104	4,088
Paralichthys albigutta	38	35	20	23	33	15	25	33	25	18	20	12	297
Peprilus paru	.	.	.	.	1	.	.	.	.	.	.	.	1
Poecilia latipinna	13	79	151	7	25	.	3	1	2	3	2	34	320
Pogonias cromis	3	19	1	18	1	1	3	7	10	37	3	15	118
Pomatomus saltatrix	.	.	.	.	.	.	.	1	.	.	.	1	2
Portunus spp.	11	1	2	4	23	16	8	11	8	1	3	13	101

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Prionotus scitulus	27	21	22	18	20	36	45	19	61	35	28	51	383
Prionotus tribulus	17	7	8	6	2	.	1	1	.	11	19	26	98
Pterygoplichthys sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
Rachycentron canadum	.	.	.	.	1	1	1	1	.	.	.	.	4
Rhinoptera bonasus	4	7	11	23	39	34	19	11	13	7	2	5	175
Rhizoprionodon terraenovae	.	.	.	1	.	.	.	.	.	.	.	.	1
Rimapenaeus constrictus	.	.	.	.	.	.	.	.	.	2	.	1	3
Sardinella aurita	.	.	.	.	.	.	.	1	.	.	.	.	1
Sarotherodon melanotheron	.	.	6	.	.	.	.	.	.	1	.	.	7
Sciaenops ocellatus	32	176	43	10	12	8	22	12	20	30	291	100	756
Scomberomorus maculatus	2	1	4	3	11	1	1	2	11	1	1	.	38
Scorpaena brasiliensis	.	.	.	.	.	2	.	.	.	.	.	.	2
Selene vomer	5	.	2	2	5	8	7	10	1	.	.	.	40
Serraniculus pumilio	.	.	2	.	.	.	.	.	.	.	.	.	2
Sicyonia sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
Sphoeroides nephelus	41	17	19	41	40	14	40	70	23	28	81	40	454
Sphoeroides spengleri	.	.	.	.	.	1	1	.	.	1	1	.	4
Sphyraena barracuda	.	.	1	.	.	.	.	2	1	9	16	9	38
Sphyraena borealis	.	.	.	1	.	.	.	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	1	4	1	4	3	2	9	.	.	24
Stephanolepis hispidus	6	3	6	4	107	11	41	42	7	9	55	22	313
Strongylura marina	5	43	27	16	9	15	4	4	8	16	23	9	179
Strongylura notata	205	63	39	43	51	126	94	71	138	196	526	175	1,727
Strongylura spp.	2	.	.	9	10	2	3	.	.	.	1	.	27
Strongylura timucu	1	3	.	1	.	.	.	.	.	1	.	.	6
Symphurus plagiusa	11	8	12	21	11	.	9	15	8	13	8	28	144

Appendix TB12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=108	E=1,296
Syngnathus floridae	4	3	11	.	7	.	22	11	12	10	11	9	100
Syngnathus louisianae	3	2	3	3	9	10	9	17	4	7	6	19	92
Syngnathus scovelli	40	33	41	29	44	39	37	54	11	19	15	45	407
Synodus foetens	25	24	13	59	35	6	36	41	38	46	41	38	402
Trachinotus carolinus	.	.	.	1	.	.	.	1	2	.	.	3	7
Trachinotus falcatus	6	2	17	11	.	1	10	.	3	15	4	15	84
Trinectes maculatus	49	101	20	57	27	15	41	101	490	283	70	128	1,382
Tylosurus crocodilus	.	.	.	.	.	.	.	.	.	.	1	.	1
Urophycis floridana	5	1	.	.	.	.	.	.	.	.	.	.	6
Totals	**26,452**	**14,901**	**15,794**	**18,985**	**58,795**	**42,971**	**36,852**	**29,280**	**26,544**	**55,776**	**25,244**	**34,360**	**385,954**

Appendix TB12-02. Summary by gear, stratum, and zone of species collected during Tampa Bay stratified-random sampling, 2012. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Acanthostracion quadricornis	7	1	3	.	.	36	61	86	194
Achirus lineatus	7	5	25	18	19	1	.	27	102
Adinia xenica	.	.	1	11	3	.	.	.	15
Albula vulpes	.	.	.	.	.	.	1	.	1
Aluterus schoepfii	.	.	.	.	.	.	1	6	7
Ameiurus catus	.	.	.	.	.	.	.	7	7
Anchoa cubana	57	.	9	9,397	70	.	.	696	10,229
Anchoa hepsetus	159	30	311	4,640	1,120	1	.	500	6,761
Anchoa mitchilli	3,448	4,030	32,092	68,323	40,886	.	.	23,699	172,478
Anchoa spp.	.	2	.	9	.	.	.	.	11
Ancylopsetta quadrocellata	.	.	.	.	.	1	.	4	5
Archosargus probatocephalus	26	3	29	36	67	418	163	97	839
Argopecten spp.	.	.	.	.	.	.	.	2	2
Ariopsis felis	34	5	4	7	8	608	193	224	1,083
Astroscopus y-graecum	.	.	.	.	.	.	1	.	1
Atherinidae sp.	.	.	1	.	.	.	.	.	1
Bagre marinus	1	.	.	1	.	45	5	20	72
Bairdiella chrysoura	1,726	81	2,480	444	241	9,196	3,766	466	18,400
Bathygobius soporator	.	.	1	8	12	.	1	.	22
Belonesox belizanus	.	.	.	2	9	.	.	.	11
Brevoortia spp.	2	5	10	46	149	149	563	1	925
Calamus arctifrons	.	.	.	.	.	6	2	1	9
Calamus spp.	4	.	2	.	.	.	.	1	7
Callinectes ornatus	.	.	2	.	.	2	.	.	4
Callinectes sapidus	28	61	96	61	86	164	99	522	1,117
Callinectes sp.	.	.	.	.	1	.	.	.	1

Appendix TB12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Caranx crysos	.	.	.	.	.	2	3	.	5
Caranx hippos	.	.	.	.	1	103	42	.	146
Caranx latus	.	.	.	.	.	3	.	.	3
Caranx sp.	.	.	.	.	.	1	.	.	1
Carcharhinus leucas	.	.	.	.	.	2	.	.	2
Carcharhinus limbatus	.	.	.	.	.	.	1	.	1
Centropomus undecimalis	7	2	30	188	222	625	93	12	1,179
Centropristis striata	4	.	.	.	.	1	.	16	21
Chaetodipterus faber	1	.	6	.	.	227	33	43	310
Chasmodes saburrae	39	1	34	1	1	4	2	3	85
Chilomycterus schoepfii	11	3	2	2	.	49	41	143	251
Chloroscombrus chrysurus	15	.	22	.	.	8	7	51	103
Citharichthys macrops	.	.	.	.	.	2	4	17	23
Clupeidae spp.	.	.	2	.	.	.	.	.	2
Ctenogobius boleosoma	1	.	.	.	.	.	.	.	1
Cynoscion arenarius	.	1	3	313	24	134	5	1,505	1,985
Cynoscion nebulosus	259	22	218	50	34	203	66	16	868
Cyprinodon variegatus	8	.	508	1	22	2	.	.	541
Dasyatis americana	.	.	.	.	.	7	4	1	12
Dasyatis sabina	6	3	3	8	1	173	123	219	536
Dasyatis say	.	.	.	.	.	21	4	10	35
Dasyatis spp.	.	.	.	.	.	1	1	.	2
Diplectrum formosum	1	.	.	.	.	1	.	7	9
Diplodus holbrookii	189	.	4	.	.	185	9	1	388
Dorosoma petenense	.	.	.	1	169	.	1	2	173
Echeneis naucrates	.	.	.	.	.	2	.	.	2
Echeneis neucratoides	.	.	.	.	.	4	.	1	5
Elops saurus	.	1	2	5	25	748	635	14	1,430
Etropus crossotus	.	.	1	.	.	.	5	48	54
Eucinostomus argenteus	.	.	.	.	.	.	.	1	1
Eucinostomus gula	724	92	1,951	369	357	2,940	672	587	7,692
Eucinostomus harengulus	29	89	700	1,508	1,050	2,975	231	193	6,775

Appendix TB12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Eucinostomus spp.	3,950	397	8,291	8,113	4,092	12	.	1,415	26,270
Eugerres plumieri	11	12	21	660	804	50	2	305	1,865
Farfantepenaeus duorarum	325	71	810	161	132	24	6	451	1,980
Floridichthys carpio	24	1	1,316	50	224	2	2	.	1,619
Fundulus confluentus	.	.	.	.	4	.	.	.	4
Fundulus grandis	.	.	84	75	165	24	1	.	349
Fundulus seminolis	.	.	.	16	19	.	.	.	35
Fundulus similis	.	.	182	24	137	28	8	.	379
Gambusia holbrooki	.	.	.	16	37	.	.	.	53
Gobiesox strumosus	.	.	.	3	1	.	.	1	5
Gobiosoma bosc	.	.	4	107	88	.	.	8	207
Gobiosoma longipala	.	.	.	.	.	.	.	3	3
Gobiosoma robustum	66	11	50	7	1	.	.	21	156
Gobiosoma spp.	57	18	19	180	68	.	.	25	367
Gymnura micrura	.	.	1	.	.	6	11	6	24
Haemulon plumierii	105	.	1	.	.	15	1	.	122
Haemulon spp.	2	.	.	.	.	.	.	.	2
Halichoeres bivittatus	6	.	.	.	.	.	.	.	6
Harengula jaguana	2,787	40	9,971	476	3	657	1,615	41	15,590
Hemiramphus sp.	.	.	1	.	.	.	.	.	1
Hippocampus erectus	.	.	2	1	.	.	2	12	17
Hippocampus zosterae	26	.	2	.	.	.	.	.	28
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	6	6
Hyporhamphus meeki	.	5	.	.	.	51	67	.	123
Hyporhamphus spp.	.	.	7	.	.	1	.	.	8
Hypsoblennius hentz	1	.	.	.	.	.	.	2	3
Kyphosus sectatrix	.	.	.	.	.	1	.	.	1
Labidesthes sicculus	.	.	.	1	.	.	.	.	1
Lagodon rhomboides	12,471	135	3,348	577	324	26,126	8,346	2,524	53,851
Leiostomus xanthurus	23	86	749	158	173	699	360	32	2,280
Lepisosteus osseus	.	1	.	1	.	9	.	7	18
Lepomis macrochirus	.	.	.	6	7	.	.	.	13

Appendix TB12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Lepomis spp.	.	.	.	1	.	.	.	2	3
Limulus polyphemus	.	1	1	.	.	11	3	2	18
Lucania parva	1,382	27	2,692	160	284	.	.	2	4,547
Lutjanus griseus	23	2	36	10	3	108	34	15	231
Lutjanus synagris	82	7	6	.	.	75	9	45	224
Megalops atlanticus	.	.	.	.	1	.	.	.	1
Membras martinica	.	18	67	69	91	.	.	.	245
Menidia spp.	196	117	8,130	3,971	3,191	1	.	2	15,608
Menippe spp.	.	.	1	.	.	1	.	156	158
Menticirrhus americanus	.	8	.	19	3	1	9	271	311
Menticirrhus littoralis	.	.	.	.	.	.	3	.	3
Menticirrhus saxatilis	.	1	7	6	1	1	.	2	18
Microgobius gulosus	371	227	443	707	620	.	.	209	2,577
Microgobius thalassinus	.	2	1	1	.	.	.	15	19
Micropogonias undulatus	.	.	1	.	.	4	7	3	15
Micropterus salmoides	.	.	.	.	1	.	.	.	1
Monacanthus ciliatus	.	.	.	.	.	.	.	1	1
Mugil cephalus	1	1	340	119	252	828	192	.	1,733
Mugil curema	.	.	33	5	16	236	52	.	342
Mugil gyrans	.	.	135	22	31	154	105	.	447
Mugil spp.	.	.	.	.	8	.	.	.	8
Myrophis punctatus	1	.	1	.	.	.	.	.	2
Nicholsina usta	9	.	2	.	.	32	8	62	113
Notemigonus crysoleucas	.	.	.	2	.	.	.	.	2
Notropis maculatus	.	.	.	.	.	.	.	1	1
Ogcocephalus cubifrons	.	.	.	.	.	.	.	15	15
Oligoplites saurus	34	24	186	74	36	80	18	.	452
Opisthonema oglinum	833	4	790	29	1	758	4,096	52	6,563
Opsanus beta	1	.	10	1	3	54	18	32	119
Oreochromis aureus	.	.	.	.	1	1	.	.	2
Oreochromis/Sarotherodon spp.	.	.	1	3	2	.	.	1	7
Orthopristis chrysoptera	1,057	18	203	83	5	1,418	595	709	4,088

Appendix TB12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Paralichthys albigutta	8	32	29	6	2	51	37	132	297
Peprilus paru	.	.	.	.	.	1	.	.	1
Poecilia latipinna	.	.	2	28	290	.	.	.	320
Pogonias cromis	1	1	2	.	6	56	48	4	118
Pomatomus saltatrix	1	.	.	.	.	1	.	.	2
Portunus spp.	2	5	2	.	.	1	.	91	101
Prionotus scitulus	1	9	3	4	3	6	15	342	383
Prionotus tribulus	1	7	2	2	3	1	3	79	98
Pterygoplichthys sp.	.	.	.	.	1	.	.	.	1
Rachycentron canadum	.	.	.	.	.	3	1	.	4
Rhinoptera bonasus	.	.	.	.	.	105	70	.	175
Rhizoprionodon terraenovae	.	.	.	.	.	.	.	1	1
Rimapenaeus constrictus	1	.	.	.	.	.	.	2	3
Sardinella aurita	.	.	.	.	.	1	.	.	1
Sarotherodon melanotheron	.	.	.	.	7	.	.	.	7
Sciaenops ocellatus	55	41	86	220	47	261	23	23	756
Scomberomorus maculatus	10	.	.	.	.	18	10	.	38
Scorpaena brasiliensis	.	.	.	.	.	.	.	2	2
Selene vomer	.	.	1	1	.	24	13	1	40
Serraniculus pumilio	.	.	.	.	.	.	.	2	2
Sicyonia sp.	.	.	.	.	.	.	.	1	1
Sphoeroides nephelus	61	17	77	20	8	186	56	29	454
Sphoeroides spengleri	3	.	1	.	.	.	.	.	4
Sphyraena barracuda	2	.	1	1	.	24	10	.	38
Sphyraena borealis	1	.	.	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	.	.	17	5	2	24
Stephanolepis hispidus	127	3	36	1	.	59	5	82	313
Strongylura marina	2	2	9	13	24	84	45	.	179
Strongylura notata	19	9	169	30	24	901	575	.	1,727
Strongylura spp.	.	2	8	11	6	.	.	.	27
Strongylura timucu	.	.	1	2	.	3	.	.	6
Symphurus plagiusa	4	7	8	5	1	.	3	116	144

Appendix TB12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=119	E=121	E=168	E=176	E=136	E=177	E=63	E=336	E=1,296
Syngnathus floridae	51	1	20	.	.	.	.	28	100
Syngnathus louisianae	26	5	23	2	3	.	.	33	92
Syngnathus scovelli	188	24	123	8	7	.	.	57	407
Synodus foetens	34	43	97	17	15	36	33	127	402
Trachinotus carolinus	.	.	.	.	.	2	5	.	7
Trachinotus falcatus	.	.	3	.	.	26	55	.	84
Trinectes maculatus	.	2	11	220	380	2	5	762	1,382
Tylosurus crocodilus	.	.	.	.	.	1	.	.	1
Urophycis floridana	1	.	.	.	.	.	.	5	6
Totals	**31,236**	**5,881**	**77,211**	**101,954**	**56,233**	**52,388**	**23,425**	**37,626**	**385,954**

Appendix TB12-03. Summary by zone of species collected during Tampa Bay stratified-random sampling, 2012. Zones A-E were located in Tampa Bay, while Zones K (Alafia River), L (Little Manatee River), M (Manatee River), and N (Braden River) represent tributaries of Tampa Bay. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=96	E=180	E=108	E=84	E=1,296
Acanthostracion quadricornis	8	72	34	37	43	.	.	.	.	194
Achirus lineatus	14	1	23	6	11	21	9	9	8	102
Adinia xenica	.	.	1	.	.	1	2	11	.	15
Albula vulpes	.	.	.	1	.	.	.	.	.	1
Aluterus schoepfii	.	.	1	2	4	.	.	.	.	7
Ameiurus catus	.	.	.	.	.	.	7	.	.	7
Anchoa cubana	12	706	40	.	2	.	29	8,317	1,123	10,229
Anchoa hepsetus	68	66	187	199	467	579	657	4,521	17	6,761
Anchoa mitchilli	22,764	4,012	24,498	1,495	529	6,837	32,284	40,146	39,913	172,478
Anchoa spp.	.	.	2	.	.	1	8	.	.	11
Ancylopsetta quadrocellata	.	.	.	1	2	.	.	2	.	5
Archosargus probatocephalus	180	105	170	78	125	68	80	14	19	839
Argopecten spp.	.	.	.	1	1	.	.	.	.	2
Ariopsis felis	206	100	309	110	185	46	24	71	32	1,083
Astroscopus y-graecum	.	.	.	1	.	.	.	.	.	1
Atherinidae sp.	1	.	.	.	.	.	.	.	.	1
Bagre marinus	20	7	14	4	20	4	.	2	1	72
Bairdiella chrysoura	1,282	1,056	10,734	3,650	718	420	50	317	173	18,400
Bathygobius soporator	.	.	.	1	1	14	4	2	.	22
Belonesox belizanus	.	.	.	.	.	8	3	.	.	11
Brevoortia spp.	3	167	1	120	438	50	46	12	88	925
Calamus arctifrons	.	.	.	9	.	.	.	.	.	9
Calamus spp.	.	.	.	3	4	.	.	.	.	7
Callinectes ornatus	.	.	.	.	4	.	.	.	.	4
Callinectes sapidus	470	73	121	50	78	163	72	44	46	1,117
Callinectes sp.	.	.	.	.	.	.	.	1	.	1
Caranx crysos	.	5	.	.	.	.	.	.	.	5
Caranx hippos	10	14	52	39	30	.	.	1	.	146
Caranx latus	.	.	.	.	3	.	.	.	.	3
Caranx sp.	.	.	.	.	1	.	.	.	.	1

Appendix TB12-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=96	E=180	E=108	E=84	E=1,296
Carcharhinus leucas	.	.	2	.	.	.	.	.	.	2
Carcharhinus limbatus	.	1	.	.	.	.	.	.	.	1
Centropomus undecimalis	31	115	89	99	423	184	191	10	37	1,179
Centropristis striata	.	.	2	7	12	.	.	.	.	21
Chaetodipterus faber	64	11	158	25	46	2	1	3	.	310
Chasmodes saburrae	21	21	17	14	10	.	.	2	.	85
Chilomycterus schoepfii	27	33	22	53	108	1	1	5	1	251
Chloroscombrus chrysurus	6	21	50	21	4	.	.	1	.	103
Citharichthys macrops	.	1	.	12	10	.	.	.	.	23
Clupeidae spp.	.	.	.	2	.	.	.	.	.	2
Ctenogobius boleosoma	.	.	.	.	1	.	.	.	.	1
Cynoscion arenarius	287	12	589	9	7	381	125	483	92	1,985
Cynoscion nebulosus	271	134	240	56	74	29	22	18	24	868
Cyprinodon variegatus	25	158	102	230	3	19	3	1	.	541
Dasyatis americana	.	2	1	6	3	.	.	.	.	12
Dasyatis sabina	150	70	141	57	65	7	11	25	10	536
Dasyatis say	7	6	6	8	6	.	2	.	.	35
Dasyatis spp.	.	.	1	.	1	.	.	.	.	2
Diplectrum formosum	.	.	1	1	7	.	.	.	.	9
Diplodus holbrookii	20	23	11	217	117	.	.	.	.	388
Dorosoma petenense	.	1	1	.	.	.	.	52	119	173
Echeneis naucrates	.	.	1	.	1	.	.	.	.	2
Echeneis neucratoides	.	1	2	.	2	.	.	.	.	5
Elops saurus	155	251	701	101	178	28	8	6	2	1,430
Etropus crossotus	.	10	3	16	25	.	.	.	.	54
Eucinostomus argenteus	.	.	.	.	1	.	.	.	.	1
Eucinostomus gula	1,219	2,078	1,031	1,275	1,283	176	167	442	21	7,692
Eucinostomus harengulus	1,337	1,221	754	279	442	728	1,051	383	580	6,775
Eucinostomus spp.	2,206	2,126	1,766	3,315	3,609	3,148	4,974	2,723	2,403	26,270
Eugerres plumieri	52	3	35	.	7	357	656	194	561	1,865
Farfantepenaeus duorarum	283	77	408	195	513	95	114	147	148	1,980
Floridichthys carpio	142	151	609	415	28	175	99	.	.	1,619
Fundulus confluentus	.	.	.	.	.	.	4	.	.	4

Appendix TB12-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=96	E=180	E=108	E=84	E=1,296
Fundulus grandis	8	1	62	29	9	158	50	13	19	349
Fundulus seminolis	.	.	.	.	.	11	24	.	.	35
Fundulus similis	56	48	27	77	10	110	16	29	6	379
Gambusia holbrooki	.	.	.	.	.	.	47	2	4	53
Gobiesox strumosus	1	.	.	.	.	1	1	2	.	5
Gobiosoma bosc	1	.	.	.	3	52	69	16	66	207
Gobiosoma longipala	2	.	1	.	.	.	.	.	.	3
Gobiosoma robustum	38	9	33	42	25	6	2	1	.	156
Gobiosoma spp.	82	4	11	4	6	33	93	74	60	367
Gymnura micrura	3	1	9	6	4	.	.	1	.	24
Haemulon plumierii	.	.	.	35	87	.	.	.	.	122
Haemulon spp.	.	.	.	2	.	.	.	.	.	2
Halichoeres bivittatus	.	.	.	6	.	.	.	.	.	6
Harengula jaguana	736	1,919	1,106	10,794	549	229	240	14	3	15,590
Hemiramphus sp.	.	.	.	.	1	.	.	.	.	1
Hippocampus erectus	.	3	1	7	5	.	1	.	.	17
Hippocampus zosterae	7	1	3	10	7	.	.	.	.	28
Hypleurochilus caudovittatus	.	.	.	6	.	.	.	.	.	6
Hyporhamphus meeki	39	21	2	25	36	.	.	.	.	123
Hyporhamphus spp.	.	.	6	1	1	.	.	.	.	8
Hypsoblennius hentz	1	1	.	1	.	.	.	.	.	3
Kyphosus sectatrix	.	.	.	1	.	.	.	.	.	1
Labidesthes sicculus	.	.	.	.	.	.	.	1	.	1
Lagodon rhomboides	4,113	9,576	6,065	14,872	18,280	202	349	183	211	53,851
Leiostomus xanthurus	188	239	566	423	517	36	256	31	24	2,280
Lepisosteus osseus	4	.	4	.	2	1	7	.	.	18
Lepomis macrochirus	.	.	.	.	.	9	3	.	1	13
Lepomis spp.	.	.	.	.	.	.	3	.	.	3
Limulus polyphemus	1	3	4	3	6	1	.	.	.	18
Lucania parva	208	329	607	2,062	896	142	290	.	13	4,547
Lutjanus griseus	5	29	7	76	93	1	8	6	6	231
Lutjanus synagris	1	18	15	102	88	.	.	.	.	224
Megalops atlanticus	.	.	.	.	.	.	.	.	1	1
Membras martinica	14	.	27	44	.	60	54	46	.	245

Appendix TB12-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=96	E=180	E=108	E=84	E=1,296
Menidia spp.	1,083	2,413	3,628	380	940	2,543	2,186	1,253	1,182	15,608
Menippe spp.	27	9	30	66	26	.	.	.	.	158
Menticirrhus americanus	90	5	129	7	5	21	25	25	4	311
Menticirrhus littoralis	.	.	.	3	.	.	.	.	.	3
Menticirrhus saxatilis	2	1	1	4	2	3	1	4	.	18
Microgobius gulosus	652	23	286	8	91	140	708	140	529	2,577
Microgobius thalassinus	10	.	1	1	2	.	.	2	3	19
Micropogonias undulatus	2	5	1	.	5	1	1	.	.	15
Micropterus salmoides	.	.	.	.	.	1	.	.	.	1
Monacanthus ciliatus	.	.	.	.	1	.	.	.	.	1
Mugil cephalus	537	204	175	195	251	264	23	80	4	1,733
Mugil curema	8	62	32	76	143	3	13	3	2	342
Mugil gyrans	65	65	104	10	150	19	14	16	4	447
Mugil spp.	.	.	.	.	.	.	.	6	2	8
Myrophis punctatus	.	.	.	1	1	.	.	.	.	2
Nicholsina usta	.	.	2	52	59	.	.	.	.	113
Notemigonus crysoleucas	.	.	.	.	.	2	.	.	.	2
Notropis maculatus	.	.	.	.	.	1	.	.	.	1
Ogcocephalus cubifrons	.	.	.	10	5	.	.	.	.	15
Oligoplites saurus	89	49	87	41	76	39	27	27	17	452
Opisthonema oglinum	730	970	302	843	3,686	.	4	28	.	6,563
Opsanus beta	14	10	16	42	28	.	7	1	1	119
Oreochromis aureus	.	.	.	.	1	1	.	.	.	2
Oreochromis/Sarotherodon spp.	.	.	.	.	1	1	2	.	3	7
Orthopristis chrysoptera	362	1,277	473	931	951	14	48	31	1	4,088
Paralichthys albigutta	44	49	49	48	70	9	13	14	1	297
Peprilus paru	.	.	.	1	.	.	.	.	.	1
Poecilia latipinna	.	.	.	2	.	43	260	4	11	320
Pogonias cromis	3	4	34	47	20	7	2	.	1	118
Pomatomus saltatrix	.	1	.	.	1	.	.	.	.	2
Portunus spp.	3	13	26	29	25	3	.	2	.	101
Prionotus scitulus	38	98	93	43	79	18	3	9	2	383
Prionotus tribulus	35	11	20	2	8	4	7	9	2	98

Appendix TB12-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=96	E=180	E=108	E=84	E=1,296
Pterygoplichthys sp.	.	.	.	.	.	1	.	.	.	1
Rachycentron canadum	1	2	.	1	.	.	.	.	.	4
Rhinoptera bonasus	27	35	56	7	50	.	.	.	.	175
Rhizoprionodon terraenovae	.	.	.	.	1	.	.	.	.	1
Rimapenaeus constrictus	.	2	.	.	1	.	.	.	.	3
Sardinella aurita	.	.	.	1	.	.	.	.	.	1
Sarotherodon melanotheron	.	.	.	.	.	.	6	.	1	7
Sciaenops ocellatus	122	147	169	4	36	182	35	26	35	756
Scomberomorus maculatus	.	9	3	22	4	.	.	.	.	38
Scorpaena brasiliensis	.	.	.	2	.	.	.	.	.	2
Selene vomer	2	16	6	6	9	1	.	.	.	40
Serraniculus pumilio	.	.	.	.	2	.	.	.	.	2
Sicyonia sp.	.	.	.	1	.	.	.	.	.	1
Sphoeroides nephelus	146	99	66	26	84	7	14	8	4	454
Sphoeroides spengleri	.	2	.	2	.	.	.	.	.	4
Sphyraena barracuda	.	2	1	11	23	.	.	1	.	38
Sphyraena borealis	.	.	.	.	1	.	.	.	.	1
Sphyrna tiburo	4	6	7	1	6	.	.	.	.	24
Stephanolepis hispidus	.	16	15	191	90	.	1	.	.	313
Strongylura marina	77	12	25	21	7	11	4	21	1	179
Strongylura notata	302	345	276	117	633	17	17	18	2	1,727
Strongylura spp.	2	.	6	.	2	3	10	1	3	27
Strongylura timucu	.	.	4	.	.	.	2	.	.	6
Symphurus plagiusa	40	13	41	16	5	8	8	9	4	144
Syngnathus floridae	8	29	1	31	31	.	.	.	.	100
Syngnathus louisianae	13	15	35	10	8	2	4	4	1	92
Syngnathus scovelli	94	71	80	70	65	8	17	1	1	407
Synodus foetens	96	56	74	54	77	10	10	21	4	402
Trachinotus carolinus	1	1	3	1	1	.	.	.	.	7
Trachinotus falcatus	1	3	34	26	20	.	.	.	.	84
Trinectes maculatus	14	4	12	3	2	462	789	16	80	1,382
Tylosurus crocodilus	.	.	.	.	1	.	.	.	.	1
Urophycis floridana	.	.	.	2	3	.	.	1	.	6
Totals	**41,593**	**31,267**	**57,889**	**44,316**	**38,066**	**18,443**	**46,478**	**60,165**	**47,737**	**385,954**

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Charlotte Harbor

Charlotte Harbor is a drowned river estuary located on the southwestern coast of Florida (Charlotte Harbor National Estuary Program 2000). The bay is connected to the Gulf of Mexico by passes at Boca Grande, San Carlos, and several smaller inlets. Freshwater inflow principally comes from the Peace, Caloosahatchee, and Myakka rivers. Shoreline vegetation consists largely of fringing mangroves, and seagrasses are the dominant bottom vegetation in shallow waters.

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Charlotte Harbor since 1989. The area sampled was divided into four geographically-defined bay zones (A-D) and two riverine zones (M and P; Figure CH12-01). Monthly stratified-random sampling (SRS) was conducted in Zones A – D using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zones M and P with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in Charlotte Harbor.

Stratified-Random Sampling

A total of 225,289 animals, which included 131 taxa of fishes and nine taxa of selected invertebrates, were collected from 1,068 Charlotte Harbor SRS samples in 2012 (Table CH12-01, Appendices CH12-01, -02, and -03). *Anchoa mitchilli* (n=92,769), *Lagodon rhomboides* (n=43,075), and *Eucinostomus* spp. (n=20,746) were the most numerous species collected, representing 69.5% of the total catch. *Lucania parva* (n=16,086), *Menidia* spp. (n=5,707), and *Eucinostomus gula* (n=4,571) were the next most abundant taxa collected, accounting for an additional 11.7% of the total catch. Twenty-seven Selected Taxa (n=14,081 animals) composed 6.3% of the total catch. *Cynoscion arenarius* (n=2,628) and *Farfantepenaeus duorarum* (n=2,538) were the most abundant Selected Taxa, representing 2.3% of the total catch. *Mugil gyrans* (n=1,295), *Elops saurus* (n=1,041), and *Menticirrhus americanus* (n=963) were the next most abundant Selected Taxa, comprising an additional 1.5% of the total catch.

Collections in 2012 included no species new to the Charlotte Harbor FIM collection.

Bay Sampling

21.3-m Bay Seines. A total of 136,162 animals were collected in 408 21.3-m bay seines, representing 60.4% of the overall SRS catch (Table CH12-01). *Anchoa mitchilli* (n=59,560), *Eucinostomus* spp. (n=19,641), *L. parva* (n=16,063), and *L. rhomboides* (n=14,692) were the most abundant taxa, accounting for 80.8% of the 21.3-m bay seine catch (Table CH12-02). The taxa most frequently caught in 21.3-m bay seines were *Eucinostomus* spp. (74.3% occurrence) and *L. rhomboides* (60.0% occurrence).

A total of 4,514 animals from 21 Selected Taxa were collected, representing 3.3% of the entire 21.3-m bay seine catch (Table CH12-03). *Farfantepenaeus duorarum* (n=1,705) and *M. gyrans* (n=1,150) were the most abundant Selected Taxa, accounting for 63.2% of the Selected Taxa collected with this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *F. duorarum* (46.1% occurrence).

183-m Haul Seines. A total of 28,795 animals were collected in 204 183-m haul seines, representing 12.8% of the total SRS catch (Table CH12-01). *Lagodon rhomboides* (n=20,877) was the most abundant species, accounting for 72.5% of the 183-m haul seine catch (Table CH12-04). The taxon most frequently caught in 183-m haul seines was *L. rhomboides* (83.3% occurrence).

A total of 3,317 animals from 24 Selected Taxa were collected, representing 11.5% of the entire 183-m haul seine catch (Table CH12-05). *Elops saurus* (n=1,036) was the most abundant Selected Taxon, accounting for 31.2% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in 183-m haul seines were *Centropomus undecimalis* (45.1% occurrence), *Archosargus probatocephalus* (43.6% occurrence), and *Mugil cephalus* (41.2% occurrence).

6.1-m Bay Otter Trawls. A total of 19,973 animals were collected in 288 6.1-m bay otter trawls, representing 8.9% of the overall SRS catch (Table CH12-01). *Lagodon rhomboides* (n=7,424) and *Orthopristis chrysoptera* (n=2,279) were the most abundant taxa collected, accounting for 48.6% of the 6.1-m bay otter trawl catch (Table CH12-06). The taxa most frequently caught in 6.1-m bay otter trawls were *L. rhomboides* (56.3% occurrence) and *Prionotus scitulus* (54.2% occurrence).

A total of 3,077 animals from 14 Selected Taxa were collected, representing 15.4% of the entire 6.1-m bay otter trawl catch (Table CH12-07). *Cynoscion arenarius* (n=942), *Menippe* spp. (n=632), *F. duorarum* (n=505), and *Lutjanus synagris* (n=419) were the most abundant Selected Taxa, accounting for 81.2% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in 6.1-m bay otter trawls were *Menippe* spp. (34.4% occurrence), *L. synagris* (30.6% occurrence), and *Paralichthys albigutta* (29.5% occurrence).

River Sampling

21.3-m River Seines. A total of 32,865 animals were collected in 96 21.3-m river seines, representing 14.6% of the overall SRS catch (Table CH12-01). *Anchoa mitchilli* (n=28,487) was the most abundant taxon collected, accounting for 86.7% of the 21.3-m river seine catch (Table CH12-08). The taxa most frequently caught in 21.3-m river seines were *Menidia* spp. (60.4% occurrence), *Eucinostomus harengulus* (56.3% occurrence), and *Eucinostomus* spp. (55.2% occurrence).

A total of 1,176 animals from 16 Selected Taxa were collected, representing 3.6% of the entire 21.3-m river seine catch (Table CH12-09). *Menticirrhus americanus* (n=591) and *C. arenarius* (n=342) were the most abundant Selected Taxa, accounting for 79.3% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in 21.3-m river seines were *Callinectes sapidus* (17.7% occurrence) and *F. duorarum* (15.6% occurrence).

6.1-m River Otter Trawls. A total of 7,494 animals were collected in 72 6.1-m river otter trawls, representing 3.3% of the overall SRS catch (Table CH12-01). *Anchoa mitchilli* (n=3,899) was the most abundant taxon collected, accounting for 52.0% of the 6.1-m river otter trawl catch (Table CH12-10). The taxa most frequently caught in 6.1-m river otter trawls were *C. sapidus* (62.5% occurrence) and *F. duorarum* (55.6% occurrence).

A total of 1,997 animals from 11 Selected Taxa were collected, representing 26.6% of the entire 6.1-m river otter trawl catch (Table CH12-11). *Cynoscion arenarius* (n=1,336), *F. duorarum* (n=301), *C. sapidus* (n=163), and *M. americanus* (n=141) were the most abundant Selected Taxa, accounting for 97.2% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in the 6.1-m river otter trawls were *C. sapidus* (62.5% occurrence) and *F. duorarum* (55.6% occurrence).

References

Charlotte Harbor National Estuary Program. 2000. Comprehensive Conservation and Management Plan, Volume 1. 250 pp.

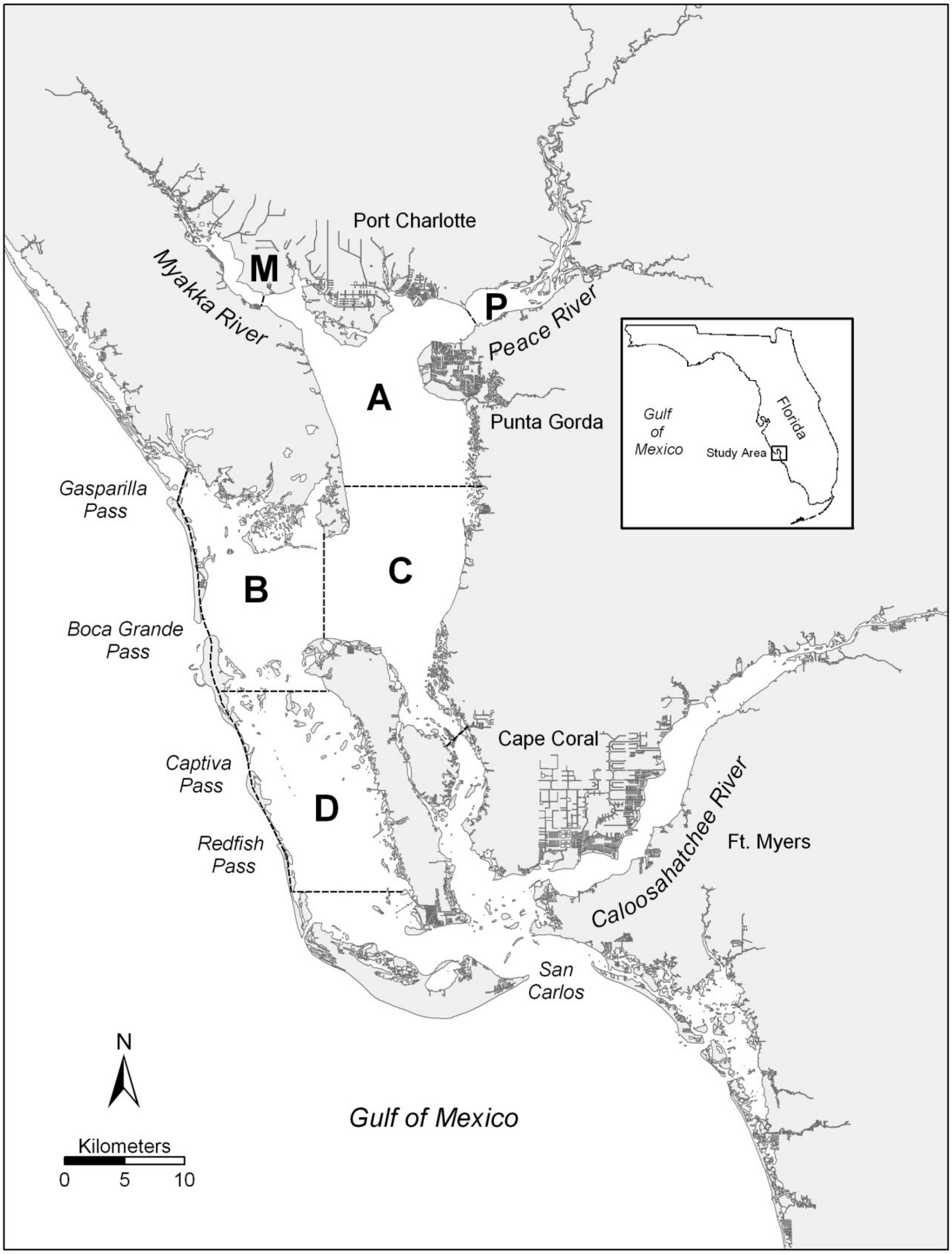

Figure CH12-01. Map of Charlotte Harbor sampling area. Zones are labeled A - D, M, and P.

Table CH12-01. Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2012.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	**Hauls**	**Animals**	**Hauls**	**Animals**		**Animals**	**Hauls**	**Animals**	**Hauls**
A	17,234	120	.	.	1,702	60	3,832	84	22,768	264
B	29,852	96	.	.	8,507	48	5,406	72	43,765	216
C	63,417	96	.	.	7,998	48	2,696	72	74,111	216
D	25,659	96	.	.	10,588	48	8,039	60	44,286	204
M	.	.	8,334	48	.	.	3,960	36	12,294	84
P	.	.	24,531	48	.	.	3,534	36	28,065	84
Totals	136,162	408	32,865	96	28,795	204	27,467	360	225,289	1,068

Table CH12-02. Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	59,560	43.7	22.8	104.27	36.70	710.93	11,566.43	30	0.03	16	60
Eucinostomus spp.	19,641	14.4	74.3	34.39	3.18	186.74	527.14	27	0.05	9	39
Lucania parva	16,063	11.8	36.3	28.12	5.47	393.08	1,022.86	24	0.04	14	48
Lagodon rhomboides	14,692	10.8	60.0	25.72	3.31	259.59	531.43	39	0.15	9	168
Menidia spp.	4,860	3.6	21.1	8.51	2.83	671.92	1,034.29	42	0.14	16	88
Eucinostomus gula	3,089	2.3	57.1	5.41	0.54	201.94	89.29	51	0.15	40	95
Harengula jaguana	2,538	1.9	9.8	4.44	1.99	903.02	661.43	38	0.26	18	116
Bairdiella chrysoura	2,499	1.8	24.3	4.38	0.87	401.60	165.00	50	0.45	8	153
Farfantepenaeus duorarum	1,705	1.3	46.1	2.98	0.47	317.52	129.29	10	0.10	3	35
Orthopristis chrysoptera	1,381	1.0	20.6	2.42	0.54	448.85	100.71	35	0.41	12	163
Subtotal	126,028	92.6	.	.	.	.	.	.	.	3	168
Totals	**136,162**	**100.0**	**.**	**238.38**	**38.48**	**326.10**	**11,893.57**	**.**	**.**	**3**	**461**

Table CH12-03. Catch statistics for Selected Taxa collected in 408 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Farfantepenaeus duorarum	1,705	1.3	46.1	2.98	0.47	317.52	129.29	10	0.10	3	35
Mugil gyrans	1,150	0.8	2.7	2.01	1.99	1,995.27	811.43	18	0.15	14	158
Cynoscion nebulosus	407	0.3	25.5	0.71	0.15	420.55	51.43	46	1.12	15	248
Lutjanus griseus	316	0.2	16.4	0.55	0.11	396.65	24.29	35	1.21	9	182
Callinectes sapidus	312	0.2	11.0	0.55	0.35	1,288.98	141.43	22	1.06	6	164
Leiostomus xanthurus	154	0.1	3.4	0.27	0.14	1,083.23	48.57	33	1.15	5	108
Sciaenops ocellatus	131	0.1	9.6	0.23	0.06	559.81	17.86	52	6.89	8	461
Lutjanus synagris	106	0.1	6.4	0.19	0.07	740.03	24.29	36	1.09	16	86
Archosargus probatocephalus	87	0.1	8.3	0.15	0.04	580.89	13.57	37	2.35	10	156
Mugil cephalus	32	<0.1	2.2	0.06	0.02	772.71	5.00	27	2.12	20	60
Menticirrhus americanus	29	<0.1	1.2	0.05	0.04	1,444.32	14.29	72	4.81	24	97
Trachinotus falcatus	27	<0.1	1.0	0.05	0.04	1,544.55	14.29	40	3.25	22	93
Paralichthys albigutta	21	<0.1	4.2	0.04	0.01	526.77	2.14	117	20.22	23	314
Menticirrhus saxatilis	8	<0.1	1.0	0.01	0.01	1,181.49	2.86	51	11.02	27	125
Centropomus undecimalis	7	<0.1	1.7	0.01	<0.01	757.80	0.71	225	53.02	24	380
Cynoscion arenarius	7	<0.1	1.0	0.01	0.01	1,114.46	2.14	29	5.22	15	45
Trachinotus carolinus	5	<0.1	0.2	0.01	0.01	2,019.90	3.57	61	2.87	51	67

Table CH12-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Elops saurus	4	<0.1	0.5	0.01	0.01	1,595.69	2.14	248	4.25	235	254
Menippe spp.	3	<0.1	0.2	0.01	0.01	2,019.90	2.14	11	6.33	5	24
Menticirrhus littoralis	2	<0.1	0.2	<0.01	<0.01	2,019.90	1.43	49	4.50	44	53
Mugil curema	1	<0.1	0.2	<0.01	<0.01	2,019.90	0.71	24	.	24	24
Totals	**4,514**	**3.3**	**71.3**	**7.90**	**2.10**	**535.73**	**811.43**	**.**	**.**	**3**	**461**

Table CH12-04. Catch statistics for 10 dominant taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2012. 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**		**% Occur**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	20,877	72.5	83.3	102.34	11.95	166.84	1,230	105	0.18	40	252
Elops saurus	1,036	3.6	30.9	5.08	2.52	708.07	476	262	0.93	200	429
Harengula jaguana	783	2.7	11.8	3.84	1.78	663.95	231	109	0.43	65	195
Orthopristis chrysoptera	683	2.4	29.4	3.35	0.91	389.15	142	127	1.24	46	210
Centropomus undecimalis	596	2.1	45.1	2.92	0.44	215.42	41	445	5.06	115	875
Eucinostomus gula	563	2.0	33.8	2.76	0.73	377.94	102	85	0.52	46	123
Archosargus probatocephalus	327	1.1	43.6	1.60	0.23	204.01	25	199	4.49	28	432
Mugil cephalus	306	1.1	41.2	1.50	0.27	254.53	33	316	3.44	104	435
Chilomycterus schoepfii	302	1.0	35.3	1.48	0.23	222.93	20	131	2.31	40	250
Lutjanus griseus	248	0.9	23.5	1.22	0.27	311.90	25	143	2.07	81	244
Subtotal	25,721	89.4	.	.	.	.	.	.	.	28	875
Totals	**28,795**	**100.0**	**.**	**141.15**	**14.45**	**146.19**	**1,341**	**.**	**.**	**20**	**875**

Table CH12-05. Catch statistics for Selected Taxa collected in 204 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Elops saurus	1,036	3.6	30.9	5.08	2.52	708.07	476	262	0.93	200	429
Centropomus undecimalis	596	2.1	45.1	2.92	0.44	215.42	41	445	5.06	115	875
Archosargus probatocephalus	327	1.1	43.6	1.60	0.23	204.01	25	199	4.49	28	432
Mugil cephalus	306	1.1	41.2	1.50	0.27	254.53	33	316	3.44	104	435
Lutjanus griseus	248	0.9	23.5	1.22	0.27	311.90	25	143	2.07	81	244
Leiostomus xanthurus	131	0.5	11.8	0.64	0.21	475.77	34	170	2.94	82	240
Mugil curema	125	0.4	8.8	0.61	0.33	779.44	64	231	3.03	139	310
Sciaenops ocellatus	124	0.4	25.5	0.61	0.10	241.28	11	389	10.43	125	641
Mugil gyrans	116	0.4	18.6	0.57	0.13	329.36	16	169	4.21	104	278
Lutjanus synagris	58	0.2	7.8	0.28	0.09	448.11	12	100	2.93	56	195
Paralichthys albigutta	56	0.2	20.6	0.27	0.04	226.72	4	247	7.09	86	378
Pogonias cromis	44	0.2	7.8	0.22	0.10	633.09	17	287	13.84	164	501
Cynoscion nebulosus	41	0.1	13.7	0.20	0.04	293.76	4	257	13.75	126	440
Callinectes sapidus	28	0.1	10.3	0.14	0.03	324.04	3	126	8.48	48	205
Mycteroperca microlepis	22	0.1	5.4	0.11	0.04	565.98	7	214	10.68	112	390
Trachinotus falcatus	19	0.1	3.4	0.09	0.05	758.20	9	161	16.34	80	289
Epinephelus itajara	17	0.1	4.4	0.08	0.04	722.48	8	147	13.80	78	255

Table CH12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Scomberomorus maculatus	8	<0.1	2.5	0.04	0.02	708.85	3	314	41.99	122	503
Micropogonias undulatus	6	<0.1	2.0	0.03	0.02	747.94	2	178	17.63	141	250
Farfantepenaeus duorarum	4	<0.1	1.5	0.02	0.01	871.04	2	27	3.30	20	35
Trachinotus carolinus	2	<0.1	0.5	0.01	0.01	1,428.29	2	247	8.00	239	255
Epinephelus morio	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	117	.	117	117
Cynoscion arenarius	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	274	.	274	274
Menticirrhus saxatilis	1	<0.1	0.5	<0.01	<0.01	1,428.29	1	121	.	121	121
Totals	**3,317**	**11.5**	**90.2**	**16.26**	**3.03**	**266.39**	**566**	**.**	**.**	**20**	**875**

Table CH12-06. Catch statistics for 10 dominant taxa collected in 288 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	7,424	37.2	56.3	1.75	0.23	222.60	30.42	94	0.19	13	196
Orthopristis chrysoptera	2,279	11.4	41.3	0.54	0.09	290.05	10.79	108	0.55	14	188
Cynoscion arenarius	942	4.7	11.8	0.22	0.09	662.60	15.72	27	1.07	8	214
Eucinostomus gula	875	4.4	42.4	0.21	0.02	201.52	2.56	75	0.55	40	118
Anchoa mitchilli	823	4.1	10.4	0.20	0.09	814.26	21.05	43	0.30	19	60
Prionotus scitulus	830	4.2	54.2	0.20	0.02	199.89	3.78	109	1.09	18	193
Menippe spp.	632	3.2	34.4	0.15	0.03	316.10	4.99	19	0.51	2	87
Portunus spp.	537	2.7	30.9	0.13	0.03	390.33	4.52	41	0.50	6	78
Farfantepenaeus duorarum	505	2.5	28.1	0.12	0.02	279.45	3.00	21	0.43	4	50
Chilomycterus schoepfii	485	2.4	40.3	0.12	0.02	247.46	2.36	126	1.52	21	221
Subtotal	15,332	76.8	.	.	.	.	.	.	.	2	221
Totals	**19,973**	**100.0**	**.**	**4.71**	**0.37**	**132.40**	**37.64**	**.**	**.**	**2**	**820**

Table CH12-07. Catch statistics for Selected Taxa collected in 288 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion arenarius	942	4.7	11.8	0.22	0.09	662.60	15.72	27	1.07	8	214
Menippe spp.	632	3.2	34.4	0.15	0.03	316.10	4.99	19	0.51	2	87
Farfantepenaeus duorarum	505	2.5	28.1	0.12	0.02	279.45	3.00	21	0.43	4	50
Lutjanus synagris	419	2.1	30.6	0.10	0.02	271.96	1.75	67	1.54	14	140
Menticirrhus americanus	202	1.0	10.4	0.05	0.01	490.40	2.41	58	3.51	10	273
Callinectes sapidus	145	0.7	11.1	0.03	0.01	593.08	2.13	66	2.97	9	191
Paralichthys albigutta	146	0.7	29.5	0.03	<0.01	208.99	0.47	208	5.39	45	386
Lutjanus griseus	43	0.2	6.3	0.01	<0.01	523.19	0.61	104	7.18	8	190
Leiostomus xanthurus	18	0.1	3.1	<0.01	<0.01	766.78	0.47	162	2.45	130	179
Cynoscion nebulosus	11	0.1	2.8	<0.01	<0.01	666.00	0.20	82	22.85	24	233
Archosargus probatocephalus	9	<0.1	2.1	<0.01	<0.01	772.34	0.20	93	31.32	16	315
Micropogonias undulatus	3	<0.1	1.0	<0.01	<0.01	976.67	0.07	84	15.68	59	113
Mycteroperca microlepis	1	<0.1	0.3	<0.01	<0.01	1,697.06	0.07	124	.	124	124
Menticirrhus littoralis	1	<0.1	0.3	<0.01	<0.01	1,697.06	0.07	189	.	189	189
Totals	**3,077**	**15.4**	**80.6**	**0.73**	**0.11**	**247.17**	**17.00**	**.**	**.**	**2**	**386**

Table CH12-08. Catch statistics for 10 dominant taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	28,487	86.7	39.6	436.38	258.38	580.13	23,976.47	40	0.04	17	64
Menidia spp.	847	2.6	60.4	12.97	2.33	175.63	127.94	37	0.31	16	81
Eucinostomus spp.	776	2.4	55.2	11.89	2.16	178.38	108.82	30	0.21	14	39
Menticirrhus americanus	591	1.8	7.3	9.05	8.41	910.41	807.35	40	0.68	14	92
Eucinostomus harengulus	403	1.2	56.3	6.17	1.00	158.90	50.00	57	0.69	40	97
Cynoscion arenarius	342	1.0	8.3	5.24	5.01	936.61	480.88	51	0.89	17	79
Brevoortia spp.	180	0.5	2.1	2.76	2.68	952.68	257.35	55	0.53	25	65
Membras martinica	134	0.4	6.3	2.05	1.87	892.05	179.41	40	1.03	16	75
Fundulus grandis	134	0.4	16.7	2.05	0.72	345.93	39.71	47	0.95	23	72
Anchoa hepsetus	108	0.3	3.1	1.65	1.56	925.94	150.00	41	0.48	30	48
Subtotal	32,002	97.3	.	.	.	.	.	.	.	14	97
Totals	**32,865**	**100.0**	**.**	**503.45**	**275.55**	**536.28**	**25,730.88**	**.**	**.**	**4**	**750**

Table CH12-09. Catch statistics for Selected Taxa collected in 96 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Menticirrhus americanus	591	1.8	7.3	9.05	8.41	910.41	807.35	40	0.68	14	92
Cynoscion arenarius	342	1.0	8.3	5.24	5.01	936.61	480.88	51	0.89	17	79
Sciaenops ocellatus	69	0.2	13.5	1.06	0.73	672.18	69.12	47	5.80	20	319
Callinectes sapidus	41	0.1	17.7	0.63	0.24	368.65	20.59	25	3.75	7	131
Mugil gyrans	29	0.1	8.3	0.44	0.19	427.24	13.24	46	3.92	16	86
Cynoscion nebulosus	26	0.1	11.5	0.40	0.15	376.84	11.76	39	3.12	17	78
Farfantepenaeus duorarum	23	0.1	15.6	0.35	0.11	295.11	7.35	9	0.81	4	19
Lutjanus griseus	14	<0.1	8.3	0.21	0.08	371.99	4.41	110	16.41	44	192
Mugil cephalus	14	<0.1	7.3	0.21	0.10	466.45	7.35	49	9.45	20	142
Archosargus probatocephalus	10	<0.1	5.2	0.15	0.07	471.93	4.41	154	29.60	49	299
Micropogonias undulatus	6	<0.1	2.1	0.09	0.07	727.22	5.88	62	4.08	48	75
Centropomus undecimalis	5	<0.1	5.2	0.08	0.03	428.85	1.47	365	28.09	268	441
Leiostomus xanthurus	2	<0.1	2.1	0.03	0.02	689.16	1.47	51	25.00	26	76
Paralichthys albigutta	2	<0.1	2.1	0.03	0.02	689.16	1.47	292	16.00	276	308
Elops saurus	1	<0.1	1.0	0.02	0.02	979.80	1.47	133	.	133	133
Trachinotus falcatus	1	<0.1	1.0	0.02	0.02	979.80	1.47	32	.	32	32
Totals	**1,176**	**3.6**	**68.8**	**18.01**	**13.42**	**729.68**	**1,289.71**	**.**	**.**	**4**	**441**

Table CH12-10. Catch statistics for 10 dominant taxa collected in 72 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	3,899	52.0	37.5	7.30	2.65	308.04	123.04	33	0.16	19	65
Cynoscion arenarius	1,336	17.8	48.6	2.48	0.65	222.98	27.25	33	0.48	10	226
Trinectes maculatus	572	7.6	44.4	1.06	0.34	275.18	16.46	45	0.44	20	97
Bairdiella chrysoura	357	4.8	29.2	0.67	0.27	338.09	12.68	65	1.41	13	153
Farfantepenaeus duorarum	301	4.0	55.6	0.56	0.12	185.54	4.86	14	0.42	3	39
Ariopsis felis	246	3.3	37.5	0.46	0.26	470.88	17.94	94	4.51	43	315
Callinectes sapidus	163	2.2	62.5	0.31	0.05	140.37	2.02	105	3.79	7	235
Menticirrhus americanus	141	1.9	47.2	0.26	0.07	237.42	4.18	54	3.88	16	287
Bagre marinus	139	1.9	25.0	0.26	0.13	412.74	7.02	112	7.03	48	465
Symphurus plagiusa	104	1.4	31.9	0.19	0.06	263.67	3.24	63	3.36	7	149
Subtotal	7,258	96.9	.	.	.	.	.	.	.	3	465
Totals	**7,494**	**100.0**	**.**	**14.00**	**2.75**	**166.57**	**123.85**	**.**	**.**	**3**	**785**

Table CH12-11. Catch statistics for Selected Taxa collected in 72 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion arenarius	1,336	17.8	48.6	2.48	0.65	222.98	27.25	33	0.48	10	226
Farfantepenaeus duorarum	301	4.0	55.6	0.56	0.12	185.54	4.86	14	0.42	3	39
Callinectes sapidus	163	2.2	62.5	0.31	0.05	140.37	2.02	105	3.79	7	235
Menticirrhus americanus	141	1.9	47.2	0.26	0.07	237.42	4.18	54	3.88	16	287
Micropogonias undulatus	28	0.4	11.1	0.05	0.02	384.94	1.48	77	4.96	27	139
Cynoscion nebulosus	13	0.2	8.3	0.02	0.01	397.94	0.67	79	17.01	20	178
Sciaenops ocellatus	4	0.1	4.2	0.01	<0.01	513.48	0.27	57	41.25	15	181
Archosargus probatocephalus	3	<0.1	4.2	0.01	<0.01	482.95	0.13	45	20.70	22	86
Menticirrhus saxatilis	3	<0.1	4.2	0.01	<0.01	482.95	0.13	16	0.58	15	17
Paralichthys albigutta	3	<0.1	4.2	0.01	<0.01	482.95	0.13	241	27.85	185	270
Lutjanus griseus	2	<0.1	2.8	<0.01	<0.01	595.76	0.13	84	26.00	58	110
Totals	**1,997**	**26.6**	**91.7**	**3.71**	**0.75**	**170.78**	**28.33**	**.**	**.**	**3**	**287**

Appendix CH12-01. Monthly summary of species collected during Charlotte Harbor stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Acanthostracion quadricornis	39	25	21	19	21	15	11	8	22	21	26	34	262
Achirus lineatus	1	7	3	9	12	5	12	7	9	4	4	5	78
Adinia xenica	7	.	3	.	.	.	.	6	1	1	.	.	18
Aluterus schoepfii	.	.	.	.	1	6	2	4	1	.	2	.	16
Anarchopterus criniger	.	.	.	.	.	8	.	2	.	.	.	.	10
Anchoa hepsetus	.	.	.	1	131	267	5	36	4	52	.	8	504
Anchoa mitchilli	304	5,261	1,332	3,669	20	16,652	13,522	9,217	17,133	18,111	4,838	2,710	92,769
Ancylopsetta quadrocellata	6	4	4	6	4	2	.	4	2	1	1	.	34
Archosargus probatocephalus	31	40	35	21	34	66	25	11	56	49	16	52	436
Argopecten gibbus	.	.	1	.	2	.	1	.	.	.	.	.	4
Argopecten irradians	.	.	.	6	.	.	.	.	1	.	.	.	7
Ariopsis felis	1	22	65	18	27	68	174	185	42	30	15	9	656
Astroscopus y-graecum	1	.	.	.	.	.	.	.	.	.	.	.	1
Bagre marinus	.	1	3	1	1	2	4	50	18	17	56	.	153
Bairdiella chrysoura	10	27	23	301	498	375	565	627	488	399	132	2	3,447
Bathygobius soporator	1	.	.	.	.	.	.	.	.	.	1	3	5
Brevoortia spp.	.	7	2	6	.	177	1	.	25	.	.	.	218
Calamus arctifrons	1	.	.	.	.	.	.	.	.	.	.	.	1
Calamus penna	.	1	.	.	9	.	.	.	.	.	.	1	11
Calamus spp.	1	1	1	.	1	.	.	.	.	1	.	3	8
Callinectes ornatus	.	.	.	.	3	2	.	.	1	.	.	1	7
Callinectes sapidus	51	57	97	27	17	13	30	23	20	20	243	91	689
Caranx hippos	2	2	6	4	14	4	1	3	.	.	4	5	45

Appendix CH12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Caranx latus	.	.	3	.	.	.	.	.	1	.	1	.	5
Centropomus undecimalis	14	27	33	10	54	35	49	88	112	110	22	54	608
Centropristis striata	.	1	.	4	3	1	.	.	6	3	4	3	25
Chaetodipterus faber	34	3	24	41	3	19	36	14	17	29	32	12	264
Chasmodes saburrae	1	8	5	6	1	16	6	10	5	12	11	15	96
Chilomycterus schoepfii	110	78	60	41	39	100	49	28	91	69	105	49	819
Chloroscombrus chrysurus	.	2	1	.	.	2	41	11	34	8	2	2	103
Cichlasoma urophthalmus	.	.	.	.	.	.	.	.	2	.	.	.	2
Citharichthys macrops	4	4	3	2	6	2	6	8	1	1	3	4	44
Ctenogobius boleosoma	.	.	.	.	.	.	.	.	.	1	.	.	1
Cynoscion arenarius	.	7	19	9	11	434	220	1,167	683	49	21	8	2,628
Cynoscion nebulosus	6	6	2	10	28	47	102	73	146	51	16	11	498
Cyprinodon variegatus	30	.	.	5	.	367	15	.	.	6	3	4	430
Dasyatis americana	1	3	.	6	3	2	.	.	1	3	1	1	21
Dasyatis sabina	8	11	14	10	8	7	18	8	2	8	4	5	103
Dasyatis say	.	.	1	3	7	5	7	.	2	.	5	1	31
Dasyatis sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
Diapterus auratus	.	.	.	.	.	.	7	.	.	.	.	.	7
Diplectrum formosum	3	12	4	4	.	5	7	5	3	1	4	7	55
Diplodus holbrookii	4	1	.	4	.	3	.	.	.	.	.	18	30
Dorosoma petenense	.	.	5	.	.	.	.	2	.	.	.	.	7
Elops saurus	487	82	143	63	154	39	15	12	13	11	.	22	1,041
Epinephelus itajara	.	.	.	9	1	2	.	2	2	.	.	1	17
Epinephelus morio	.	.	.	.	.	.	.	.	1	.	.	.	1

Appendix CH12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Etropus crossotus	31	14	11	5	1	1	8	7	33	23	45	39	218
Eucinostomus gula	509	226	330	313	186	190	448	392	481	676	358	462	4,571
Eucinostomus harengulus	37	102	58	174	187	193	221	91	108	77	129	202	1,579
Eucinostomus spp.	781	370	399	135	971	2,266	1,177	1,656	4,408	3,999	2,660	1,924	20,746
Eugerres plumieri	.	.	.	3	11	18	28	35	29	20	5	1	150
Farfantepenaeus duorarum	151	112	173	38	38	79	327	184	694	371	157	214	2,538
Floridichthys carpio	424	60	67	28	49	125	3	4	61	43	32	104	1,000
Fundulus confluentus	2	.	.	.	.	.	.	.	.	.	.	.	2
Fundulus grandis	57	16	1	.	1	1	2	7	28	47	30	2	192
Fundulus similis	23	3	4	.	5	51	1	.	2	5	20	26	140
Gambusia holbrooki	1	.	.	.	.	.	.	2	5	17	50	.	75
Ginglymostoma cirratum	.	.	1	.	.	.	.	.	.	.	.	.	1
Gobiesox strumosus	2	1	3	4	.	1	.	.	.	.	.	.	11
Gobiosoma bosc	1	6	.	1	1	.	.	2	.	1	1	.	13
Gobiosoma longipala	3	4	3	.	.	1	1	.	2	.	.	4	18
Gobiosoma robustum	91	114	73	37	7	33	26	3	12	21	30	129	576
Gobiosoma spp.	25	6	2	.	4	12	42	14	24	9	12	44	194
Gymnura micrura	.	3	.	.	1	.	.	.	.	2	1	.	7
Haemulon aurolineatum	.	.	.	.	.	.	.	.	.	2	.	.	2
Haemulon plumierii	3	.	.	33	40	30	1	1	9	12	3	23	155
Halichoeres bivittatus	.	.	.	.	.	.	1	7	.	.	.	2	10
Harengula jaguana	3	28	9	398	287	69	1,354	90	929	152	9	.	3,328
Hemichromis letourneuxi	.	.	.	.	.	.	.	.	.	1	.	.	1
Hippocampus erectus	2	5	2	4	13	3	1	.	4	2	3	7	46
Hippocampus zosterae	8	5	9	5	1	2	2	2	3	.	.	13	50

Appendix CH12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Hypleurochilus caudovittatus	1	.	.	.	.	.	.	.	.	.	.	.	1
Hypoatherina harringtonensis	2	.	.	.	.	.	.	.	.	.	.	3	5
Hyporhamphus meeki	.	.	.	1	3	.	.	.	6	9	.	.	19
Hyporhamphus spp.	.	.	.	.	.	1	2	.	.	.	1	.	4
Hypsoblennius hentz	2	.	1	1	.	2	1	.	.	.	.	2	9
Lachnolaimus maximus	.	.	.	.	.	.	.	.	.	.	.	2	2
Lagodon rhomboides	2,416	3,805	5,863	5,206	3,849	3,579	3,097	2,016	6,324	3,613	2,148	1,159	43,075
Leiostomus xanthurus	75	25	65	29	19	43	22	1	23	2	.	1	305
Lepisosteus osseus	.	.	.	.	.	.	.	1	1	2	1	.	5
Limulus polyphemus	2	2	3	2	3	5	4	1	.	.	4	6	32
Lophogobius cyprinoides	1	.	.	.	.	.	.	.	1	.	.	.	2
Lucania parva	568	506	219	168	3,067	2,087	2,499	817	2,292	571	1,521	1,771	16,086
Lupinoblennius nicholsi	.	1	.	.	.	.	.	.	.	.	.	.	1
Lutjanus griseus	7	2	1	4	8	68	43	76	220	150	34	10	623
Lutjanus synagris	26	15	2	28	18	11	38	64	132	115	80	54	583
Membras martinica	.	.	.	4	9	129	46	.	.	.	.	.	188
Menidia spp.	228	387	578	191	419	315	611	732	1,776	182	184	104	5,707
Menippe spp.	26	63	22	40	17	4	45	9	130	93	82	104	635
Menticirrhus americanus	1	2	27	6	46	584	42	32	111	26	71	15	963
Menticirrhus littoralis	2	.	.	.	.	.	.	.	.	.	.	1	3
Menticirrhus saxatilis	1	.	.	5	2	.	.	.	.	.	4	.	12
Microgobius gulosus	44	40	84	72	60	150	144	104	41	81	51	95	966
Microgobius thalassinus	.	10	1	1	.	1	6	.	1	2	2	3	27

Appendix CH12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Micropogonias undulatus	5	6	22	4	2	.	3	1	.	.	.	.	43
Monacanthus ciliatus	2	6	1	.	.	.	.	.	.	3	.	6	18
Mugil cephalus	76	30	65	9	52	11	27	16	8	14	21	23	352
Mugil curema	85	3	14	3	14	.	1	.	1	5	.	.	126
Mugil gyrans	38	17	2	8	1,152	6	2	20	10	10	1	29	1,295
Mycteroperca microlepis	7	.	.	1	.	2	1	2	4	3	1	2	23
Nicholsina usta	3	13	4	134	43	29	4	23	3	8	4	47	315
Ocyurus chrysurus	.	.	.	.	.	.	.	.	.	2	.	.	2
Ogcocephalus cubifrons	14	9	11	2	1	6	13	3	1	1	5	10	76
Oligoplites saurus	.	1	6	4	15	34	53	30	52	10	1	7	213
Opisthonema oglinum	.	.	5	47	12	4	244	8	9	22	.	.	351
Opistognathus robinsi	.	.	.	.	.	.	1	.	.	.	.	.	1
Opsanus beta	6	2	3	8	13	21	37	4	16	13	11	4	138
Orthopristis chrysoptera	245	436	309	336	376	820	577	187	660	285	47	68	4,346
Paraclinus marmoratus	1	.	.	.	1	1	1	.	.	.	.	.	4
Paralichthys albigutta	19	19	19	9	23	34	14	10	28	28	16	9	228
Poecilia latipinna	111	6	.	1	1	.	239	.	1	4	32	.	395
Pogonias cromis	1	.	12	.	.	3	2	1	4	1	1	19	44
Portunus spp.	10	7	8	16	33	11	56	5	19	13	115	248	541
Prionotus rubio	.	.	.	.	.	.	.	.	.	.	.	1	1
Prionotus scitulus	72	52	51	90	50	22	88	49	141	45	102	90	852
Prionotus tribulus	17	26	22	5	6	1	.	2	7	34	54	15	189
Pristis pectinata	.	.	1	.	.	.	.	.	.	.	.	.	1
Rhinoptera bonasus	1	30	6	.	2	1	1	.	.	.	.	.	41
Rimapenaeus constrictus	5	1	.	.	1	1	1	.	.	1	3	3	16
Sardinella aurita	.	.	.	1	.	.	.	.	.	.	.	.	1

Appendix CH12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=89	E=1,068
Sciaenops ocellatus	53	18	10	16	14	14	9	7	8	44	77	58	328
Scomberomorus maculatus	.	1	3	1	.	.	.	.	1	2	.	.	8
Scorpaena brasiliensis	1	1	1	1	.	1	1	.	1	1	2	.	10
Selene vomer	21	15	14	12	.	.	1	.	.	.	.	.	63
Serraniculus pumilio	.	1	.	.	.	.	.	.	.	.	1	.	2
Serranus subligarius	2	2	1	.	.	.	.	.	2	3	13	5	28
Sphoeroides nephelus	31	29	19	46	59	17	22	11	40	20	39	65	398
Sphoeroides spengleri	1	.	.	.	.	.	1	.	3	1	.	1	7
Sphyraena barracuda	6	1	.	1	.	.	2	.	5	8	7	7	37
Sphyraena guachancho	.	.	.	.	.	.	.	1	.	.	.	.	1
Sphyrna tiburo	2	1	2	5	3	5	1	2	1	.	1	1	24
Stephanolepis hispidus	30	33	16	25	31	255	14	59	49	27	34	33	606
Strongylura marina	6	23	.	1	.	.	.	.	9	5	12	4	60
Strongylura notata	2	52	24	36	48	43	76	29	39	43	39	28	459
Strongylura spp.	1	.	.	.	5	2	.	.	.	.	.	.	8
Strongylura timucu	.	.	.	2	2	1	1	.	1	3	.	.	10
Symphurus plagiusa	8	41	29	6	10	6	68	13	13	23	12	13	242
Syngnathus floridae	15	10	5	2	12	13	11	15	8	10	4	.	105
Syngnathus louisianae	4	.	.	2	8	8	10	17	9	12	10	14	94
Syngnathus scovelli	57	90	80	63	97	132	62	26	36	12	19	61	735
Synodus foetens	27	21	13	24	31	18	25	17	72	42	72	37	399
Trachinotus carolinus	.	.	.	.	5	.	.	.	.	.	.	2	7
Trachinotus falcatus	5	.	.	.	2	3	24	9	3	.	1	.	47
Trinectes maculatus	.	17	33	30	31	30	193	277	144	119	19	8	901
Urophycis floridana	3	3	.	.	.	.	.	.	.	.	.	.	6
Totals	**7,707**	**12,657**	**10,735**	**12,202**	**12,591**	**30,357**	**27,060**	**18,805**	**38,243**	**30,271**	**14,076**	**10,585**	**225,289**

Appendix CH12-02. Summary by gear and stratum of species collected during Charlotte Harbor stratified-random sampling, 2012. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=137	E=67	E=204	E=47	E=49	E=156	E=48	E=360	E=1,068
Acanthostracion quadricornis	7	3	.	.	.	14	30	208	262
Achirus lineatus	4	1	5	1	4	.	.	63	78
Adinia xenica	.	.	7	.	11	.	.	.	18
Aluterus schoepfii	.	1	.	.	.	.	3	12	16
Anarchopterus criniger	1	.	.	.	.	.	.	9	10
Anchoa hepsetus	198	.	73	103	5	.	.	125	504
Anchoa mitchilli	8,539	383	50,638	20,467	8,020	.	.	4,722	92,769
Ancylopsetta quadrocellata	.	.	.	.	.	1	1	32	34
Archosargus probatocephalus	29	2	56	.	10	233	94	12	436
Argopecten gibbus	.	.	.	.	.	.	.	4	4
Argopecten irradians	.	.	.	.	.	.	.	7	7
Ariopsis felis	20	35	9	2	1	156	65	368	656
Astroscopus y-graecum	.	.	.	.	.	1	.	.	1
Bagre marinus	.	.	.	.	.	7	3	143	153
Bairdiella chrysoura	1,448	202	849	66	20	101	130	631	3,447
Bathygobius soporator	1	.	.	.	4	.	.	.	5
Brevoortia spp.	.	.	4	175	5	27	7	.	218
Calamus arctifrons	.	.	.	.	.	.	.	1	1
Calamus penna	.	.	.	.	.	3	8	.	11
Calamus spp.	2	.	4	.	.	.	.	2	8
Callinectes ornatus	.	1	2	.	.	.	.	4	7
Callinectes sapidus	22	217	73	27	14	23	5	308	689
Caranx hippos	.	.	.	.	.	32	13	.	45
Caranx latus	.	.	.	.	.	5	.	.	5
Centropomus undecimalis	1	.	6	5	.	449	147	.	608
Centropristis striata	1	.	.	.	.	.	11	13	25

Appendix CH12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=137	E=67	E=204	E=47	E=49	E=156	E=48	E=360	E=1,068
Chaetodipterus faber	2	.	2	1	5	150	45	59	264
Chasmodes saburrae	48	1	45	.	1	1	.	.	96
Chilomycterus schoepfii	19	2	8	1	.	142	160	487	819
Chloroscombrus chrysurus	4	.	33	1	1	1	.	63	103
Cichlasoma urophthalmus	.	.	.	.	2	.	.	.	2
Citharichthys macrops	.	.	1	.	.	.	.	43	44
Ctenogobius boleosoma	.	.	1	.	.	.	.	.	1
Cynoscion arenarius	.	.	7	329	13	.	1	2,278	2,628
Cynoscion nebulosus	208	15	184	19	7	23	18	24	498
Cyprinodon variegatus	5	.	408	17	.	.	.	.	430
Dasyatis americana	.	.	.	.	.	6	8	7	21
Dasyatis sabina	1	1	8	.	1	39	6	47	103
Dasyatis say	.	2	.	.	.	7	5	17	31
Dasyatis sp.	.	.	.	.	.	1	.	.	1
Diapterus auratus	.	.	.	.	.	.	7	.	7
Diplectrum formosum	2	.	4	.	.	.	.	49	55
Diplodus holbrookii	.	.	.	.	.	3	27	.	30
Dorosoma petenense	.	.	.	2	.	.	5	.	7
Elops saurus	1	.	3	.	1	338	698	.	1,041
Epinephelus itajara	.	.	.	.	.	15	2	.	17
Epinephelus morio	.	.	.	.	.	1	.	.	1
Etropus crossotus	.	.	.	.	.	1	.	217	218
Eucinostomus gula	817	98	2,174	15	26	412	151	878	4,571
Eucinostomus harengulus	24	55	924	238	165	43	56	74	1,579
Eucinostomus spp.	6,275	821	12,545	403	373	.	.	329	20,746
Eugerres plumieri	.	.	22	25	28	61	7	7	150
Farfantepenaeus duorarum	572	83	1,050	13	10	4	.	806	2,538
Floridichthys carpio	32	.	967	.	.	1	.	.	1,000
Fundulus confluentus	.	.	2	.	.	.	.	.	2
Fundulus grandis	3	.	54	55	79	1	.	.	192
Fundulus similis	.	.	99	16	25	.	.	.	140

Appendix CH12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=137	E=67	E=204	E=47	E=49	E=156	E=48	E=360	E=1,068
Gambusia holbrooki	.	.	1	51	23	.	.	.	75
Ginglymostoma cirratum	.	.	.	.	.	.	.	1	1
Gobiesox strumosus	.	.	6	4	.	.	.	1	11
Gobiosoma bosc	.	.	4	7	2	.	.	.	13
Gobiosoma longipala	.	.	.	.	.	.	.	18	18
Gobiosoma robustum	170	39	334	3	3	.	.	27	576
Gobiosoma spp.	61	16	82	1	7	.	.	27	194
Gymnura micrura	.	.	.	.	.	.	.	7	7
Haemulon aurolineatum	2	.	.	.	.	.	.	.	2
Haemulon plumierii	10	.	5	.	.	15	109	16	155
Halichoeres bivittatus	2	.	6	.	.	.	2	.	10
Harengula jaguana	501	7	2,030	2	.	95	688	5	3,328
Hemichromis letourneuxi	.	.	.	.	1	.	.	.	1
Hippocampus erectus	3	.	4	.	3	.	.	36	46
Hippocampus zosterae	23	1	24	.	.	.	.	2	50
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	1	1
Hypoatherina harringtonensis	.	.	5	.	.	.	.	.	5
Hyporhamphus meeki	6	.	1	.	.	1	11	.	19
Hyporhamphus spp.	.	2	1	.	1	.	.	.	4
Hypsoblennius hentz	3	.	3	.	.	.	.	3	9
Lachnolaimus maximus	.	.	.	.	.	.	2	.	2
Lagodon rhomboides	8,070	72	6,550	51	21	13,421	7,456	7,434	43,075
Leiostomus xanthurus	4	.	150	2	.	108	23	18	305
Lepisosteus osseus	.	.	.	.	.	.	.	5	5
Limulus polyphemus	1	.	7	.	.	12	.	12	32
Lophogobius cyprinoides	1	.	.	.	1	.	.	.	2
Lucania parva	6,333	175	9,555	7	16	.	.	.	16,086
Lupinoblennius nicholsi	.	.	.	.	1	.	.	.	1
Lutjanus griseus	161	2	153	6	8	112	136	45	623
Lutjanus synagris	86	.	20	.	.	25	33	419	583

Appendix CH12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=137	E=67	E=204	E=47	E=49	E=156	E=48	E=360	E=1,068
Membras martinica	6	.	48	124	10	.	.	.	188
Menidia spp.	1,550	7	3,303	320	527	.	.	.	5,707
Menippe spp.	.	3	.	.	.	.	.	632	635
Menticirrhus americanus	.	1	28	550	41	.	.	343	963
Menticirrhus littoralis	.	.	2	.	.	.	.	1	3
Menticirrhus saxatilis	.	.	8	.	.	1	.	3	12
Microgobius gulosus	298	102	525	14	17	.	.	10	966
Microgobius thalassinus	1	.	.	.	.	.	.	26	27
Micropogonias undulatus	.	.	.	6	.	6	.	31	43
Monacanthus ciliatus	2	.	.	.	.	1	1	14	18
Mugil cephalus	1	.	31	7	7	246	60	.	352
Mugil curema	.	.	1	.	.	33	92	.	126
Mugil gyrans	2	1	1,147	4	25	69	47	.	1,295
Mycteroperca microlepis	.	.	.	.	.	16	6	1	23
Nicholsina usta	54	.	1	.	.	20	170	70	315
Ocyurus chrysurus	.	.	.	.	.	.	2	.	2
Ogcocephalus cubifrons	.	1	1	.	.	6	.	68	76
Oligoplites saurus	14	10	131	15	13	18	12	.	213
Opisthonema oglinum	19	1	237	.	.	30	54	10	351
Opistognathus robinsi	.	.	.	.	.	.	.	1	1
Opsanus beta	5	.	13	1	1	34	23	61	138
Orthopristis chrysoptera	1,127	3	251	.	1	311	372	2,281	4,346
Paraclinus marmoratus	2	1	.	.	.	.	.	1	4
Paralichthys albigutta	3	7	11	1	1	42	14	149	228
Poecilia latipinna	2	.	380	8	5	.	.	.	395
Pogonias cromis	.	.	.	.	.	34	10	.	44
Portunus spp.	1	1	1	.	.	.	.	538	541
Prionotus rubio	.	.	.	.	.	.	.	1	1
Prionotus scitulus	4	5	8	.	1	.	.	834	852
Prionotus tribulus	1	3	7	.	.	1	.	177	189
Pristis pectinata	.	.	.	.	.	1	.	.	1
Rhinoptera bonasus	.	.	.	.	1	33	5	2	41

Appendix CH12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=137	E=67	E=204	E=47	E=49	E=156	E=48	E=360	E=1,068
Rimapenaeus constrictus	.	.	2	.	.	.	.	14	16
Sardinella aurita	.	.	.	.	.	.	1	.	1
Sciaenops ocellatus	19	21	91	56	13	105	19	4	328
Scomberomorus maculatus	.	.	.	.	.	5	3	.	8
Scorpaena brasiliensis	.	.	.	.	.	1	1	8	10
Selene vomer	.	.	.	.	.	51	12	.	63
Serraniculus pumilio	.	.	.	.	.	.	.	2	2
Serranus subligarius	2	.	.	.	.	1	.	25	28
Sphoeroides nephelus	68	20	114	.	2	54	56	84	398
Sphoeroides spengleri	1	.	.	.	.	2	1	3	7
Sphyraena barracuda	.	.	1	.	.	33	3	.	37
Sphyraena guachancho	.	.	1	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	.	.	18	4	2	24
Stephanolepis hispidus	50	5	20	.	.	32	33	466	606
Strongylura marina	.	.	.	.	.	22	38	.	60
Strongylura notata	23	6	198	6	9	185	32	.	459
Strongylura spp.	.	.	4	3	1	.	.	.	8
Strongylura timucu	1	.	5	2	.	1	1	.	10
Symphurus plagiusa	3	8	7	1	.	.	.	223	242
Syngnathus floridae	41	.	8	.	.	.	.	56	105
Syngnathus louisianae	7	3	12	1	.	.	.	71	94
Syngnathus scovelli	372	14	292	4	3	.	.	50	735
Synodus foetens	35	51	83	2	2	19	4	203	399
Trachinotus carolinus	.	.	5	.	.	.	2	.	7
Trachinotus falcatus	.	.	27	.	1	3	16	.	47
Trinectes maculatus	.	.	2	17	9	.	1	872	901
Urophycis floridana	.	.	.	.	.	2	.	4	6
Totals	**37,437**	**2,511**	**96,214**	**23,257**	**9,608**	**17,527**	**11,268**	**27,467**	**225,289**

Appendix CH12-03. Summary by zone of species collected during Charlotte Harbor stratified-random sampling, 2012. Zones A-D were located in Charlotte Harbor, while Zones M (Myakka River) and P (Peace River) represent tributaries of Charlotte Harbor. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Zone						Totals
	A	B	C	D	M	P	
	E=264	E=216	E=216	E=204	E=84	E=84	E=1,068
Acanthostracion quadricornis	7	94	38	123	.	.	262
Achirus lineatus	8	21	10	33	5	1	78
Adinia xenica	.	7	.	.	9	2	18
Aluterus schoepfii	.	10	1	5	.	.	16
Anarchopterus criniger	.	.	1	9	.	.	10
Anchoa hepsetus	11	151	165	69	.	108	504
Anchoa mitchilli	7,176	4,360	44,633	4,214	9,390	22,996	92,769
Ancylopsetta quadrocellata	2	10	15	7	.	.	34
Archosargus probatocephalus	70	160	58	135	12	1	436
Argopecten gibbus	1	3	.	.	.	.	4
Argopecten irradians	.	6	.	1	.	.	7
Ariopsis felis	133	42	151	81	184	65	656
Astroscopus y-graecum	.	.	.	1	.	.	1
Bagre marinus	8	.	3	3	124	15	153
Bairdiella chrysoura	582	1,053	791	578	255	188	3,447
Bathygobius soporator	.	.	1	.	.	4	5
Brevoortia spp.	1	7	1	29	5	175	218
Calamus arctifrons	.	.	.	1	.	.	1
Calamus penna	.	.	9	2	.	.	11
Calamus spp.	1	1	3	3	.	.	8
Callinectes ornatus	1	3	.	3	.	.	7
Callinectes sapidus	413	19	37	16	113	91	689
Caranx hippos	17	11	8	9	.	.	45
Caranx latus	.	.	.	5	.	.	5
Centropomus undecimalis	42	233	228	100	2	3	608
Centropristis striata	1	3	.	21	.	.	25
Chaetodipterus faber	31	87	72	63	2	9	264
Chasmodes saburrae	13	20	45	17	.	1	96
Chilomycterus schoepfii	38	238	116	424	1	2	819

Appendix CH12-03. (Continued)

Species	Zone						Totals
	A	B	C	D	M	P	
	E=264	E=216	E=216	E=204	E=84	E=84	E=1,068
Chloroscombrus chrysurus	41	9	43	7	2	1	103
Cichlasoma urophthalmus	.	.	.	.	2	.	2
Citharichthys macrops	.	28	7	9	.	.	44
Ctenogobius boleosoma	1	.	.	.	.	.	1
Cynoscion arenarius	736	7	206	1	330	1,348	2,628
Cynoscion nebulosus	71	110	217	61	24	15	498
Cyprinodon variegatus	1	26	12	374	17	.	430
Dasyatis americana	4	7	3	7	.	.	21
Dasyatis sabina	44	9	20	7	10	13	103
Dasyatis say	7	3	12	9	.	.	31
Dasyatis sp.	.	.	1	.	.	.	1
Diapterus auratus	.	7	.	.	.	.	7
Diplectrum formosum	.	23	18	14	.	.	55
Diplodus holbrookii	.	8	.	22	.	.	30
Dorosoma petenense	5	.	.	.	2	.	7
Elops saurus	329	599	31	81	1	.	1,041
Epinephelus itajara	.	2	4	11	.	.	17
Epinephelus morio	.	1	.	.	.	.	1
Etropus crossotus	44	62	76	36	.	.	218
Eucinostomus gula	695	1,155	1,114	1,563	39	5	4,571
Eucinostomus harengulus	443	206	337	179	245	169	1,579
Eucinostomus spp.	2,843	4,736	5,753	6,606	322	486	20,746
Eugerres plumieri	65	6	18	1	12	48	150
Farfantepenaeus duorarum	675	610	669	260	121	203	2,538
Floridichthys carpio	102	130	533	235	.	.	1,000
Fundulus confluentus	.	2	.	.	.	.	2
Fundulus grandis	4	26	25	3	42	92	192
Fundulus similis	27	6	19	47	26	15	140
Gambusia holbrooki	1	.	.	.	58	16	75
Ginglymostoma cirratum	.	.	.	1	.	.	1
Gobiesox strumosus	6	.	.	1	2	2	11
Gobiosoma bosc	4	.	.	.	3	6	13
Gobiosoma longipala	3	5	8	2	.	.	18

Appendix CH12-03. (Continued)

Species	Zone						Totals
	A	B	C	D	M	P	
	E=264	E=216	E=216	E=204	E=84	E=84	E=1,068
Gobiosoma robustum	70	136	227	136	6	1	576
Gobiosoma spp.	33	25	89	34	8	5	194
Gymnura micrura	1	4	1	1	.	.	7
Haemulon aurolineatum	.	.	.	2	.	.	2
Haemulon plumierii	.	54	.	101	.	.	155
Halichoeres bivittatus	.	1	1	8	.	.	10
Harengula jaguana	291	1,219	1,035	781	.	2	3,328
Hemichromis letourneuxi	.	.	.	.	.	1	1
Hippocampus erectus	6	19	5	11	5	.	46
Hippocampus zosterae	6	13	15	16	.	.	50
Hypleurochilus caudovittatus	.	1	.	.	.	.	1
Hypoatherina harringtonensis	.	3	2	.	.	.	5
Hyporhamphus meeki	.	1	3	15	.	.	19
Hyporhamphus spp.	.	2	.	1	1	.	4
Hypsoblennius hentz	1	2	5	1	.	.	9
Lachnolaimus maximus	.	.	.	2	.	.	2
Lagodon rhomboides	1,877	13,950	10,637	16,529	60	22	43,075
Leiostomus xanthurus	13	92	147	51	1	1	305
Lepisosteus osseus	3	.	1	.	1	.	5
Limulus polyphemus	10	2	11	6	.	3	32
Lophogobius cyprinoides	.	.	1	.	.	1	2
Lucania parva	2,235	5,100	2,827	5,901	20	3	16,086
Lupinoblennius nicholsi	.	.	.	.	.	1	1
Lutjanus griseus	11	196	177	223	4	12	623
Lutjanus synagris	38	172	132	241	.	.	583
Membras martinica	1	46	.	7	8	126	188
Menidia spp.	958	2,760	466	676	443	404	5,707
Menippe spp.	10	264	161	200	.	.	635
Menticirrhus americanus	219	2	5	5	56	676	963
Menticirrhus littoralis	.	1	2	.	.	.	3
Menticirrhus saxatilis	1	2	5	1	2	1	12

Appendix CH12-03. (Continued)

Species	Zone						Totals
	A	B	C	D	M	P	
	E=264	E=216	E=216	E=204	E=84	E=84	E=1,068
Microgobius gulosus	224	189	391	121	38	3	966
Microgobius thalassinus	13	.	2	.	.	12	27
Micropogonias undulatus	9	.	.	.	12	22	43
Monacanthus ciliatus	.	1	2	15	.	.	18
Mugil cephalus	70	76	98	94	6	8	352
Mugil curema	5	103	13	5	.	.	126
Mugil gyrans	14	1,182	35	35	17	12	1,295
Mycteroperca microlepis	.	17	.	6	.	.	23
Nicholsina usta	1	93	3	218	.	.	315
Ocyurus chrysurus	.	.	.	2	.	.	2
Ogcocephalus cubifrons	3	39	6	28	.	.	76
Oligoplites saurus	47	52	62	24	4	24	213
Opisthonema oglinum	51	47	239	13	1	.	351
Opistognathus robinsi	.	.	1	.	.	.	1
Opsanus beta	14	36	25	60	1	2	138
Orthopristis chrysoptera	310	1,495	560	1,978	2	1	4,346
Paraclinus marmoratus	.	1	.	3	.	.	4
Paralichthys albigutta	26	60	46	91	2	3	228
Poecilia latipinna	224	122	34	2	9	4	395
Pogonias cromis	1	29	2	12	.	.	44
Portunus spp.	59	341	96	44	.	1	541
Prionotus rubio	.	1	.	.	.	.	1
Prionotus scitulus	143	418	175	111	1	4	852
Prionotus tribulus	152	9	7	2	8	11	189
Pristis pectinata	1	.	.	.	.	.	1
Rhinoptera bonasus	8	1	29	.	1	2	41
Rimapenaeus constrictus	10	2	3	.	.	1	16
Sardinella aurita	1	.	.	.	.	.	1
Sciaenops ocellatus	110	51	79	15	59	14	328
Scomberomorus maculatus	.	4	.	4	.	.	8
Scorpaena brasiliensis	.	5	.	5	.	.	10
Selene vomer	.	33	.	30	.	.	63
Serraniculus pumilio	.	1	1	.	.	.	2

Appendix CH12-03. (Continued)

Species	Zone						Totals
	A	B	C	D	M	P	
	E=264	E=216	E=216	E=204	E=84	E=84	E=1,068
Serranus subligarius	.	6	6	16	.	.	28
Sphoeroides nephelus	91	88	96	118	2	3	398
Sphoeroides spengleri	.	2	1	4	.	.	7
Sphyraena barracuda	1	22	3	11	.	.	37
Sphyraena guachancho	.	1	.	.	.	.	1
Sphyrna tiburo	4	3	11	6	.	.	24
Stephanolepis hispidus	9	236	42	319	.	.	606
Strongylura marina	.	25	14	21	.	.	60
Strongylura notata	92	150	93	109	11	4	459
Strongylura spp.	.	.	2	2	.	4	8
Strongylura timucu	2	3	1	2	2	.	10
Symphurus plagiusa	106	3	27	1	2	103	242
Syngnathus floridae	1	24	16	64	.	.	105
Syngnathus louisianae	18	38	21	12	3	2	94
Syngnathus scovelli	119	220	216	161	12	7	735
Synodus foetens	145	92	80	76	3	3	399
Trachinotus carolinus	2	.	.	5	.	.	7
Trachinotus falcatus	.	38	6	2	.	1	47
Trinectes maculatus	190	15	97	1	123	475	901
Urophycis floridana	1	2	3	.	.	.	6
Totals	**22,768**	**43,765**	**74,111**	**44,286**	**12,294**	**28,065**	**225,289**

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Northern Indian River Lagoon

The sampling area identified as the northern Indian River Lagoon (IRL) system is a narrow estuary located along the eastern central coast of Florida which extends from the northern terminus of the Indian River Lagoon proper south to Vero Beach. The northern IRL is connected to the Atlantic Ocean by one permanent inlet (Sebastian Inlet) and one intermittently open conduit via the Canaveral Locks that links the Banana River to the Atlantic Ocean just south of Cape Canaveral. Freshwater inflow primarily comes from the St. Sebastian River and from numerous creeks located mainly along the western shoreline (Paperno and Brodie 2004). Shoreline vegetation consists largely of fringing mangroves, Brazilian pepper, and marsh grasses. Bottom substrates are typically characterized as sand and/or mud mixed with shell hash and occasional oysters. Seagrasses, primarily *Halodule wrightii*, are the dominant vegetative cover in the northern IRL (Steward et al. 2006).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the northern IRL since 1990. The area sampled was divided into six geographically-defined bay zones (A-E, and H) and two riverine zones (F and O; Figure IR12-01). Monthly stratified-random sampling (SRS) was conducted in Zones C, D, and H using 21.3-m bay and 183-m haul seines. Zone H was also sampled monthly with 6.1-m bay otter trawls. Monthly SRS was conducted in Zone E with only 183-m haul seines. Zones F and O were sampled monthly with 21.3-m river seines. Zones A, B, and E were sampled seasonally (October and November) with 21.3-m bay seines. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in the northern IRL.

Stratified-Random Sampling

A total of 348,108 animals, which included 146 taxa of fishes and 10 taxa of selected invertebrates, were collected from 812 northern IRL samples in 2012 (Table IR12-01; Appendices IR12-01, -02, and -03). *Anchoa mitchilli* (n=208,076) was the most numerous species collected, representing 59.8% of the total catch. The four next most abundant taxa, *Lagodon rhomboides* (n=31,091), *Eucinostomus* spp. (n=13,243), *Mugil curema* (n=9,513), and *Eucinostomus harengulus* (n=8,869) accounted for an additional 18.0% of the total catch. Thirty-one Selected Taxa (n=27,228 animals) composed 7.8% of the total catch. *Mugil curema* (n=9,513) and *Mugil cephalus* (n=8,698) were the most abundant Selected Taxa, representing 5.2% of the total catch. *Archosargus probatocephalus* (n=1,709), *Leiostomus xanthurus* (n=1,183), and *Elops saurus* (n=1,103) were the next most abundant Selected Taxa, accounting for an additional 1.1% of the total catch. Collections in 2012 included two species new to the northern IRL FIM collection: *Menticirrhus littoralis* (Gulf kingfish) and *Hypleurochilus geminatus* (crested blenny).

Bay Sampling

21.3-m Bay Seines. A total of 197,768 animals were collected in 380 21.3-m bay seines, representing 56.8% of the overall SRS catch (Table IR12-01). *Anchoa mitchilli* (n=162,251) was the most abundant species, accounting for 82.0% of the animals collected in 21.3-m bay seine catch (Table IR12-02). The taxa most frequently caught in the 21.3-m bay seines were *A. mitchilli* (35.5% occurrence), *Menidia* spp. (34.2% occurrence), and *Eucinostomus* spp. (33.9% occurrence).

A total of 5,616 animals from 27 Selected Taxa were collected, representing 2.8% of the entire 21.3-m bay seine catch (Table IR12-03). *Mugil cephalus* (n=2,989) was the most abundant Selected Taxon, accounting for 53.2% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Farfantepenaeus* spp. (21.1% occurrence) and *M. curema* (20.0% occurrence).

183-m Haul Seines. A total of 73,212 animals were collected in 228 183-m haul seines, representing 21.0% of the overall SRS catch (Table IR12-01). *Lagodon rhomboides* (n=30,297) and *M. curema* (n=9,000) were the most abundant species, accounting for 53.7% of the 183-m haul seine catch (Table IR12-04). The taxa most frequently caught in the 183-m haul seines were *M. curema* (90.8% occurrence), *M. cephalus* (87.7% occurrence), and *L. rhomboides* (72.8% occurrence).

A total of 19,679 animals from 26 Selected Taxa were collected, representing 26.9% of the entire 183-m haul seine catch (Table IR12-05). *Mugil curema* (n=9,000) and *M. cephalus* (n=5,603) were the most abundant Selected Taxa, accounting for 74.2% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught in the 183-m haul seines were *M. curema* (90.8% occurrence), *M. cephalus* (87.7% occurrence), and *A. probatocephalus* (64.5% occurrence).

6.1-m Bay Otter Trawls. A total of 3,263 animals were collected in 96 6.1-m bay otter trawls, representing 0.9% of the overall SRS catch (Table IR12-01). *Eucinostomus* spp. (n=1,374) was the most abundant species, accounting for 42.1% of the 6.1-m bay otter trawl catch (Table IR12-06). The taxon most frequently caught in 6.1-m bay otter trawls was *Eucinostomus* spp. (43.8% occurrence).

A total of 352 animals from 18 Selected Taxa were collected, representing 10.8% of the entire 6.1-m bay otter trawl catch (Table IR12-07). *Farfantepenaeus* spp. (n=163) was the most abundant Selected Taxon, accounting for 46.3% of the Selected Taxa collected in this gear. The Selected Taxa most frequently caught in the 6.1-m bay otter trawl were *Callinectes sapidus* (31.3% occurrence) and *Farfantepenaeus* spp. (30.2% occurrence).

River Sampling

21.3-m River Seines. A total of 73,865 animals were collected in 108 21.3-m river seines, representing 21.2% of the overall SRS collections (Table IR12-01). *Anchoa mitchilli* (n=45,693) was the most abundant species collected, accounting for 61.9% of the 21.3-m river seine catch (Table IR12-08). The taxa most frequently caught in 21.3-m river seines were *Eucinostomus* spp. (75.9% occurrence), *Eucinostomus harengulus* (69.4% occurrence), and *Diapterus auratus* (66.7% occurrence).

A total of 1,581 animals from 18 Selected Taxa were collected, representing 2.1% of the entire 21.3-m river seine catch (Table IR12-09). *Centropomus undecimalis* (n=433) and *Farfantepenaeus* spp. (n=352) were the most abundant Selected Taxa, accounting for 49.7% of the Selected Taxa collected in this gear. The Selected Taxa most frequently caught in 21.3-m river seines were *Farfantepenaeus* spp. (50.9% occurrence), *C. undecimalis* (38.9% occurrence), and *C. sapidus* (38.0% occurrence)

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Figure IR12-01. Map of the northern Indian River Lagoon sampling area. Zones are labeled A – F, H and O.

Table IR12-01. Summary of catch and effort data for northern Indian River Lagoon stratified-random sampling, 2012.

Zone	**21.3-m bay seine**		**21.3-m river seine**		**183-m haul seine**		**6.1-m otter trawl**		**Totals**	
	Animals	**Hauls**	**Animals**	**Hauls**	**Animals**		**Animals**	**Hauls**	**Animals**	**Hauls**
A	2,366	16	.	.	.	.	.	.	2,366	16
B	2,023	14	.	.	.	.	.	.	2,023	14
C	139,307	120	.	.	13,010	48	.	.	152,317	168
D	28,605	96	.	.	26,255	72	.	.	54,860	168
E	1,356	14	.	.	15,970	48	.	.	17,326	62
F	.	.	63,558	84	.	.	.	.	63,558	84
H	24,111	120	.	.	17,977	60	3,263	96	45,351	276
O	.	.	10,307	24	.	.	.	.	10,307	24
Totals	**197,768**	**380**	**73,865**	**108**	**73,212**	**228**	**3,263**	**96**	**348,108**	**812**

Table IR12-02. Catch statistics for 10 dominant taxa collected in 380 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	162,251	82.0	35.5	304.98	122.91	785.59	37,124.29	35	0.02	17	71
Menidia spp.	6,594	3.3	34.2	12.39	1.96	308.02	362.14	41	0.13	15	85
Eucinostomus spp.	5,200	2.6	33.9	9.77	1.92	381.92	457.86	28	0.09	9	41
Mugil cephalus	2,989	1.5	15.0	5.62	2.52	874.23	713.57	31	0.41	18	325
Lucania parva	2,908	1.5	13.4	5.47	2.02	721.91	589.29	27	0.09	14	38
Brevoortia spp.	2,415	1.2	6.6	4.54	2.19	942.30	584.29	29	0.24	17	221
Diapterus auratus	1,735	0.9	16.8	3.26	1.06	631.37	315.71	34	0.40	10	124
Eucinostomus harengulus	1,488	0.8	25.0	2.80	0.55	383.64	116.43	57	0.32	40	125
Bairdiella chrysoura	1,313	0.7	12.1	2.47	1.02	808.35	337.14	49	0.55	10	158
Harengula jaguana	1,139	0.6	6.1	2.14	0.99	901.17	262.86	58	0.37	26	106
Subtotal	188,032	95.1	.	.	.	.	.	.	.	9	325
Totals	**197,768**	**100.0**	**.**	**371.74**	**123.47**	**647.46**	**37,270.00**	**.**	**.**	**2**	**854**

Table IR12-03. Catch statistics for Selected Taxa collected in 380 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil cephalus	2,989	1.5	15.0	5.62	2.52	874.23	713.57	31	0.41	18	325
Farfantepenaeus spp.	533	0.3	21.1	1.00	0.32	615.48	109.29	8	0.13	2	14
Mugil curema	412	0.2	20.0	0.77	0.23	584.32	77.14	55	1.66	16	167
Cynoscion nebulosus	276	0.1	14.2	0.52	0.12	469.63	32.86	36	1.02	14	129
Leiostomus xanthurus	245	0.1	4.5	0.46	0.20	827.85	46.43	34	1.46	13	218
Menticirrhus americanus	187	0.1	8.9	0.35	0.12	652.11	36.43	46	1.41	15	111
Micropogonias undulatus	159	0.1	3.4	0.30	0.12	771.21	30.71	30	1.13	13	115
Cynoscion complex	159	0.1	2.4	0.30	0.26	1,719.49	100.00	29	0.54	18	61
Sciaenops ocellatus	151	0.1	7.9	0.28	0.09	615.75	20.00	30	1.39	13	162
Archosargus probatocephalus	114	0.1	11.6	0.21	0.04	396.33	9.29	107	6.76	12	304
Callinectes sapidus	98	<0.1	9.2	0.18	0.06	676.83	18.57	38	4.44	7	163
Pogonias cromis	65	<0.1	4.7	0.12	0.05	791.03	13.57	83	8.50	16	252
Trachinotus falcatus	56	<0.1	3.9	0.11	0.03	595.36	7.86	43	2.70	18	96
Albula vulpes	40	<0.1	1.6	0.08	0.05	1,172.98	15.00	52	2.19	32	105
Elops saurus	33	<0.1	3.4	0.06	0.02	729.56	6.43	84	7.05	28	194
Farfantepenaeus duorarum	30	<0.1	2.9	0.06	0.02	735.06	5.71	19	0.60	15	25
Litopenaeus setiferus	20	<0.1	1.6	0.04	0.02	1,166.87	7.86	10	1.26	3	25

Table IR12-03. (Continued)

Species	Number No.	Number %	% Occur	Density Estimate (animals/100m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Centropomus undecimalis	9	<0.1	1.8	0.02	0.01	775.54	1.43	142	34.78	29	306
Lutjanus griseus	9	<0.1	1.8	0.02	0.01	775.54	1.43	133	15.75	29	202
Trachinotus carolinus	9	<0.1	1.1	0.02	0.01	1,203.38	3.57	30	3.87	17	58
Lutjanus synagris	6	<0.1	0.3	0.01	0.01	1,949.36	4.29	28	1.69	23	34
Mugil sp. (redeye mullet)	5	<0.1	1.1	0.01	<0.01	1,028.00	1.43	81	9.35	53	100
Paralichthys albigutta	4	<0.1	0.8	0.01	<0.01	1,191.11	1.43	50	28.37	16	134
Lutjanus analis	2	<0.1	0.5	<0.01	<0.01	1,376.59	0.71	52	22.50	29	74
Pomatomus saltatrix	2	<0.1	0.3	<0.01	<0.01	1,949.36	1.43	69	2.00	67	71
Lutjanus jocu	1	<0.1	0.3	<0.01	<0.01	1,949.36	0.71	104	.	104	104
Menticirrhus littoralis	1	<0.1	0.3	<0.01	<0.01	1,949.36	0.71	62	.	62	62
Paralichthys lethostigma	1	<0.1	0.3	<0.01	<0.01	1,949.36	0.71	568	.	568	568
Totals	**5,616**	**2.8**	**61.3**	**10.56**	**2.63**	**486.04**	**714.29**	**.**	**.**	**2**	**568**

Table IR12-04. Catch statistics for 10 dominant taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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**		**% Occur**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	30,297	41.4	72.8	132.88	21.35	242.55	3,309	139	0.09	48	205
Mugil curema	9,000	12.3	90.8	39.47	6.70	256.21	1,004	145	0.27	95	269
Mugil cephalus	5,603	7.7	87.7	24.57	4.54	279.14	828	220	0.61	94	415
Eucinostomus harengulus	5,587	7.6	43.4	24.50	9.96	613.81	2,195	107	0.15	62	185
Harengula jaguana	5,255	7.2	7.0	23.05	14.77	967.61	3,113	110	0.13	71	143
Eucinostomus gula	4,092	5.6	32.0	17.95	10.18	856.12	2,240	99	0.22	49	129
Brevoortia spp.	2,925	4.0	32.5	12.83	4.00	471.20	626	125	0.70	62	273
Diapterus auratus	2,152	2.9	35.5	9.44	2.06	329.63	318	111	0.54	59	208
Archosargus probatocephalus	1,463	2.0	64.5	6.42	0.81	191.78	78	189	2.03	55	429
Elops saurus	1,061	1.4	48.2	4.65	1.32	428.29	253	272	1.53	152	512
Subtotal	67,435	92.1	.	.	.	.	.	.	.	48	512
Totals	**73,212**	**100.0**	**.**	**321.11**	**35.30**	**165.98**	**4,870**	**.**	**.**	**17**	**975**

Table IR12-05. Catch statistics for Selected Taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil curema	9,000	12.3	90.8	39.47	6.70	256.21	1,004	145	0.27	95	269
Mugil cephalus	5,603	7.7	87.7	24.57	4.54	279.14	828	220	0.61	94	415
Archosargus probatocephalus	1,463	2.0	64.5	6.42	0.81	191.78	78	189	2.03	55	429
Elops saurus	1,061	1.4	48.2	4.65	1.32	428.29	253	272	1.53	152	512
Leiostomus xanthurus	841	1.1	28.1	3.69	0.84	342.56	110	176	0.87	63	284
Pogonias cromis	732	1.0	25.4	3.21	1.01	473.66	153	182	3.08	78	727
Sciaenops ocellatus	311	0.4	37.7	1.36	0.25	278.88	46	385	8.06	110	975
Cynoscion nebulosus	221	0.3	22.8	0.97	0.35	543.02	75	223	7.28	112	594
Centropomus undecimalis	94	0.1	14.0	0.41	0.12	426.31	20	417	22.37	145	902
Menticirrhus americanus	91	0.1	10.5	0.40	0.11	402.11	15	188	4.00	113	295
Trachinotus falcatus	68	0.1	8.3	0.30	0.09	479.23	15	98	4.00	53	266
Micropogonias undulatus	68	0.1	7.0	0.30	0.13	637.93	22	170	5.14	109	313
Callinectes sapidus	39	0.1	13.6	0.17	0.03	275.27	3	130	5.16	66	186
Lutjanus griseus	15	<0.1	4.4	0.07	0.02	533.96	3	162	11.88	34	242
Pomatomus saltatrix	11	<0.1	2.2	0.05	0.03	896.53	6	182	24.17	105	355
Trachinotus carolinus	9	<0.1	2.6	0.04	0.02	763.98	4	243	31.49	98	342
Lutjanus analis	9	<0.1	2.2	0.04	0.02	899.92	5	122	12.16	91	194

Table IR12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil sp. (redeye mullet)	8	<0.1	2.6	0.04	0.02	647.56	2	121	4.93	109	151
Cynoscion complex	8	<0.1	2.2	0.04	0.02	840.00	4	224	5.99	192	253
Albula vulpes	6	<0.1	2.2	0.03	0.01	706.30	2	160	14.94	97	197
Paralichthys albigutta	5	<0.1	2.2	0.02	0.01	669.30	1	142	10.26	116	166
Farfantepenaeus duorarum	4	<0.1	1.3	0.02	0.01	921.26	2	23	2.16	17	27
Lutjanus synagris	4	<0.1	1.3	0.02	0.01	921.26	2	100	2.78	95	106
Scomberomorus maculatus	4	<0.1	1.3	0.02	0.01	921.26	2	250	52.43	155	365
Menippe spp.	3	<0.1	1.3	0.01	0.01	867.93	1	58	22.55	33	103
Paralichthys lethostigma	1	<0.1	0.4	<0.01	<0.01	1,509.97	1	194	.	194	194
Totals	**19,679**	**26.9**	**99.6**	**86.31**	**8.49**	**148.45**	**1,036**	**.**	**.**	**17**	**975**

Table IR12-06. Catch statistics for 10 dominant taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Eucinostomus spp.	1,374	42.1	43.8	2.85	0.95	326.86	68.04	24	0.15	10	39
Diapterus auratus	198	6.1	13.5	0.40	0.24	582.24	20.82	31	0.81	10	60
Farfantepenaeus spp.	163	5.0	30.2	0.34	0.13	381.93	11.18	10	0.21	4	14
Ariopsis felis	147	4.5	20.8	0.29	0.16	546.80	15.42	108	5.98	43	326
Gobiosoma spp.	129	4.0	21.9	0.28	0.10	355.27	8.09	16	0.20	9	19
Anchoa mitchilli	132	4.0	11.5	0.24	0.12	498.05	10.19	32	0.36	21	47
Callinectes ornatus	115	3.5	28.1	0.23	0.08	320.31	6.36	36	1.61	9	89
Eucinostomus gula	112	3.4	27.1	0.22	0.06	277.19	3.85	77	1.98	40	113
Lagodon rhomboides	104	3.2	27.1	0.20	0.05	247.00	3.47	97	3.82	9	154
Gobiosoma robustum	88	2.7	15.6	0.20	0.06	325.46	4.05	23	0.26	20	32
Subtotal	2,562	78.5	.	.	.	.	.	.	.	4	326
Totals	**3,263**	**100.0**	**.**	**6.73**	**1.15**	**166.85**	**71.12**	**.**	**.**	**1**	**619**

Table IR12-07. Catch statistics for Selected Taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Farfantepenaeus spp.	163	5.0	30.2	0.34	0.13	381.93	11.18	10	0.21	4	14
Callinectes sapidus	73	2.2	31.3	0.16	0.04	223.65	2.25	83	5.63	10	171
Menippe spp.	25	0.8	9.4	0.05	0.02	438.82	1.57	15	3.17	4	68
Archosargus probatocephalus	14	0.4	3.1	0.03	0.03	860.35	2.70	205	4.75	183	245
Leiostomus xanthurus	11	0.3	7.3	0.02	0.01	385.68	0.45	157	4.68	124	168
Lutjanus synagris	10	0.3	6.3	0.02	0.01	477.07	0.77	33	4.47	19	59
Cynoscion complex	9	0.3	6.3	0.02	0.01	443.06	0.58	108	31.80	22	226
Paralichthys albigutta	8	0.2	8.3	0.02	0.01	347.33	0.34	205	18.08	119	285
Lutjanus griseus	7	0.2	7.3	0.01	0.01	358.44	0.19	57	21.93	12	159
Cynoscion nebulosus	6	0.2	4.2	0.01	0.01	510.85	0.45	28	1.19	25	33
Farfantepenaeus duorarum	6	0.2	5.2	0.01	0.01	453.29	0.39	17	0.34	16	18
Lutjanus analis	6	0.2	3.1	0.01	0.01	689.16	0.77	32	3.84	18	47
Menticirrhus americanus	4	0.1	4.2	0.01	<0.01	487.26	0.27	79	48.11	25	223
Micropogonias undulatus	3	0.1	3.1	<0.01	<0.01	562.64	0.17	119	23.02	89	164
Paralichthys lethostigma	2	0.1	2.1	<0.01	<0.01	689.16	0.19	387	118.00	269	505
Sciaenops ocellatus	2	0.1	1.0	<0.01	<0.01	979.80	0.39	18	0.50	17	18
Farfantepenaeus aztecus	1	<0.1	1.0	<0.01	<0.01	979.80	0.22	16	.	16	16
Litopenaeus setiferus	1	<0.1	1.0	<0.01	<0.01	979.80	0.19	9	.	9	9
Mugil cephalus	1	<0.1	1.0	<0.01	<0.01	979.80	0.17	227	.	227	227
Totals	**352**	**10.8**	**65.6**	**0.74**	**0.17**	**221.87**	**13.49**	**.**	**.**	**4**	**505**

Table IR12-08. Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	45,693	61.9	55.6	622.18	151.26	252.65	9,807.35	28	0.02	16	51
Eucinostomus spp.	6,669	9.0	75.9	90.81	13.73	157.15	830.88	25	0.09	11	39
Diapterus auratus	3,831	5.2	66.7	52.17	9.03	179.87	416.18	32	0.24	12	166
Anchoa hepsetus	2,673	3.6	7.4	36.40	32.69	933.36	3,513.24	43	0.12	26	53
Eugerres plumieri	2,494	3.4	42.6	33.96	13.74	420.59	1,351.47	24	0.30	11	211
Brevoortia spp.	1,853	2.5	15.7	25.23	18.41	758.36	1,961.76	28	0.12	18	58
Eucinostomus harengulus	1,777	2.4	69.4	24.20	5.32	228.44	383.82	55	0.31	40	117
Menidia spp.	1,698	2.3	54.6	23.12	7.25	325.85	664.71	38	0.27	13	75
Harengula jaguana	1,338	1.8	4.6	18.22	16.99	968.85	1,830.88	32	0.10	25	68
Gambusia holbrooki	1,258	1.7	38.0	17.13	4.60	278.95	261.76	24	0.17	7	43
Subtotal	69,284	93.8	.	.	.	.	.	.	.	7	211
Totals	**73,865**	**100.0**	**.**	**1,005.79**	**169.44**	**175.07**	**10,125.00**	**.**	**.**	**3**	**480**

Table IR12-09. Catch statistics for Selected Taxa collected in 108 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Centropomus undecimalis	433	0.6	38.9	5.90	1.97	347.97	151.47	49	2.42	12	392
Farfantepenaeus spp.	352	0.5	50.9	4.79	0.98	212.17	80.88	7	0.14	3	16
Callinectes sapidus	218	0.3	38.0	2.97	1.27	443.89	132.35	19	1.75	5	218
Archosargus probatocephalus	118	0.2	27.8	1.61	0.48	309.69	32.35	40	4.81	10	288
Mugil cephalus	105	0.1	27.8	1.43	0.63	459.87	63.24	94	11.03	18	391
Mugil curema	101	0.1	25.9	1.38	0.34	253.33	22.06	64	4.56	16	225
Leiostomus xanthurus	86	0.1	6.5	1.17	0.74	659.56	69.12	34	1.62	11	83
Micropogonias undulatus	40	0.1	8.3	0.54	0.27	522.81	26.47	22	1.33	13	47
Trachinotus falcatus	39	0.1	2.8	0.53	0.48	935.43	51.47	20	0.95	13	51
Lutjanus griseus	35	<0.1	22.2	0.48	0.10	210.21	4.41	89	9.03	28	216
Cynoscion nebulosus	22	<0.1	3.7	0.30	0.19	666.98	14.71	27	1.50	18	42
Litopenaeus setiferus	9	<0.1	4.6	0.12	0.06	547.21	5.88	7	0.96	3	13
Elops saurus	9	<0.1	2.8	0.12	0.10	822.35	10.29	36	2.77	30	51
Sciaenops ocellatus	7	<0.1	5.6	0.10	0.04	436.04	2.94	26	3.79	14	39
Farfantepenaeus duorarum	2	<0.1	1.9	0.03	0.02	731.40	1.47	15	0.00	15	15
Albula vulpes	2	<0.1	1.9	0.03	0.02	731.40	1.47	45	4.50	40	49
Farfantepenaeus aztecus	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	15	.	15	15
Megalops atlanticus	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	304	.	304	304
Paralichthys lethostigma	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	378	.	378	378
Totals	**1,581**	**2.1**	**86.1**	**21.53**	**3.30**	**159.47**	**182.35**	**.**	**.**	**3**	**392**

Appendix IR12-01. Monthly summary of species collected during northern Indian River Lagoon stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Acanthostracion quadricornis	.	.	.	.	.	1	.	.	.	.	.	.	1
Achirus lineatus	4	4	4	3	4	4	15	9	4	27	17	13	108
Aetobatus narinari	.	.	.	.	.	.	1	.	.	.	.	.	1
Agonostomus monticola	.	.	.	1	.	.	.	.	.	.	.	.	1
Albula vulpes	.	.	.	.	1	24	.	13	4	3	.	3	48
Aluterus schoepfii	.	.	.	.	.	.	.	.	.	.	.	1	1
Anchoa cubana	.	.	.	.	.	.	.	.	.	.	84	.	84
Anchoa hepsetus	.	1	30	2,536	552	35	3	.	4	1	6	.	3,168
Anchoa lyolepis	.	.	.	3	4	.	1	.	6	.	.	3	17
Anchoa mitchilli	9,735	6,467	1,191	1,109	19,991	45,622	7,059	10,481	70,292	31,104	3,160	1,865	208,076
Anchoa spp.	.	.	.	1	.	.	.	.	.	.	1	.	2
Archosargus probatocephalus	33	94	74	106	110	155	190	196	258	269	153	71	1,709
Archosargus rhomboidalis	.	.	.	.	.	2	.	.	.	.	7	.	9
Archosargus spp.	.	2	.	.	.	1	.	.	1	2	.	.	6
Ariopsis felis	6	9	18	49	102	79	128	189	53	137	78	28	876
Bagre marinus	.	.	.	.	.	.	2	3	1	3	.	.	9
Bairdiella chrysoura	164	7	255	309	72	287	243	658	66	28	95	10	2,194
Bairdiella sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Bathygobius soporator	.	.	.	1	1	.	.	.	.	.	1	.	3
Brevoortia spp.	51	99	2,818	1,476	521	149	628	619	666	27	116	23	7,193
Callinectes ornatus	8	35	44	9	26	11	17	59	7	5	18	2	241
Callinectes sapidus	153	27	51	15	23	21	25	29	15	26	30	13	428
Callinectes similis	.	7	4	9	44	12	6	13	1	3	4	1	104
Callinectes spp.	.	5	.	.	.	.	.	.	.	.	10	.	15

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Caranx hippos	.	28	8	8	17	25	28	10	12	75	42	21	274
Caranx latus	.	1	.	11	.	1	3	3	1	1	.	2	23
Carcharhinus leucas	.	.	.	.	.	.	1	.	1	1	.	.	3
Centropomus ensiferus	.	.	.	.	.	3	.	.	.	.	.	.	3
Centropomus parallelus	5	1	.	.	1	.	.	.	.	.	.	.	7
Centropomus pectinatus	.	2	.	1	.	.	.	.	.	.	.	.	3
Centropomus undecimalis	24	1	13	18	7	6	38	133	62	175	11	48	536
Chaetodipterus faber	.	.	.	.	7	2	.	66	62	2	.	.	139
Charybdis hellerii	.	.	.	.	.	.	.	.	6	.	.	.	6
Chasmodes saburrae	1	.	.	.	.	4	8	3	3	3	4	4	30
Chilomycterus schoepfii	6	5	20	15	19	7	11	4	13	5	2	2	109
Chloroscombrus chrysurus	2	3	.	6	.	1	8	1	.	1	2	.	24
Cichlasoma urophthalmus	.	.	.	.	.	.	.	.	.	.	.	1	1
Citharichthys macrops	.	.	.	.	.	.	1	.	.	.	.	.	1
Citharichthys spilopterus	2	.	29	3	14	4	5	7	9	3	1	1	78
Clupeidae sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Coryphaena hippurus	.	.	.	.	1	.	.	.	.	.	.	.	1
Ctenogobius boleosoma	7	7	9	.	1	3	.	.	.	.	.	.	27
Ctenogobius pseudofasciatus	.	.	.	2	.	11	.	.	.	7	.	1	21
Ctenogobius shufeldti	.	.	.	.	.	.	.	.	.	1	.	.	1
Ctenogobius smaragdus	.	.	.	.	.	2	.	.	.	.	.	.	2
Cynoscion complex	.	.	2	1	3	150	8	6	1	.	4	1	176
Cynoscion nebulosus	23	9	89	49	5	40	34	39	52	76	98	11	525
Cyprinodon variegatus	14	48	61	1	10	1	.	.	.	16	.	3	154

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Dasyatis sabina	44	21	50	44	46	72	36	12	64	26	19	49	483
Dasyatis say	4	1	4	6	10	20	2	2	6	3	8	17	83
Diapterus auratus	292	168	55	99	294	472	921	1,424	2,211	1,210	308	462	7,916
Diplodus holbrookii	.	.	1	.	.	.	.	.	.	3	.	.	4
Dormitator maculatus	7	1	.	.	8	.	.	.	.	.	.	.	16
Dorosoma cepedianum	.	.	.	.	.	.	.	.	.	.	1	.	1
Echeneis neucratoides	.	1	.	.	.	.	.	.	.	.	.	.	1
Elops saurus	9	24	36	39	41	41	58	316	146	68	127	198	1,103
Elops smithi	.	.	2	.	.	.	.	.	1	.	.	.	3
Enneacanthus gloriosus	1	.	.	.	.	.	.	.	.	.	.	.	1
Etropus crossotus	1	.	.	.	.	.	1	1	1	.	1	.	5
Eucinostomus argenteus	.	.	.	.	7	.	7	25	4	.	.	.	43
Eucinostomus gula	278	37	84	160	64	113	250	2,614	803	705	122	44	5,274
Eucinostomus harengulus	86	36	276	1,011	406	1,045	1,031	2,967	927	645	308	131	8,869
Eucinostomus jonesii	.	.	.	10	.	11	.	11	15	32	1	.	80
Eucinostomus lefroyi	.	.	.	.	.	2	.	.	.	.	.	.	2
Eucinostomus spp.	449	366	944	408	406	2,057	1,417	1,268	1,695	1,722	1,133	1,378	13,243
Eugerres plumieri	1	38	.	1,505	449	355	50	55	18	14	7	9	2,501
Evorthodus lyricus	2	.	1	.	.	2	.	.	.	.	.	.	5
Farfantepenaeus aztecus	.	.	.	.	1	.	.	.	.	.	.	1	2
Farfantepenaeus duorarum	3	2	.	1	1	20	1	2	.	1	11	.	42
Farfantepenaeus spp.	94	51	116	87	86	29	65	282	26	41	126	45	1,048
Floridichthys carpio	1	5	6	5	34	3	30	33	1	190	19	21	348
Fundulus chrysotus	.	.	.	.	.	.	.	.	.	.	1	.	1
Fundulus grandis	.	3	13	2	3	.	.	.	.	3	1	.	25
Fundulus majalis	1	.	2	.	.	.	.	.	.	.	.	.	3

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Fundulus seminolis	1	.	.	.	.	1	.	.	7	.	.	.	9
Gambusia holbrooki	321	85	259	150	5	98	6	18	4	5	4	304	1,259
Gerres cinereus	.	.	.	.	2	7	6	20	1	.	2	1	39
Gobiesox strumosus	.	1	1	.	3	1	1	.	.	.	.	.	7
Gobiomorus dormitor	.	.	.	9	.	.	.	.	.	1	3	.	13
Gobionellus oceanicus	1	.	.	.	.	.	.	1	.	1	2	.	5
Gobiosoma bosc	16	9	14	7	12	19	6	6	3	.	22	1	115
Gobiosoma ginsburgi	.	.	.	.	.	1	.	.	.	.	.	.	1
Gobiosoma robustum	2	4	1	1	3	1	39	22	20	8	61	29	191
Gobiosoma spp.	20	7	4	25	53	4	32	22	106	68	126	52	519
Gymnura micrura	.	9	1	.	.	4	3	11	14	4	7	.	53
Haemulon parra	.	.	.	.	.	2	.	20	.	.	.	.	22
Harengula jaguana	1	.	.	1,254	91	1	100	418	319	4,345	976	227	7,732
Heterandria formosa	3	2	1	.	.	.	.	.	.	.	.	2	8
Hippocampus erectus	.	.	.	.	.	1	1	.	.	3	.	1	6
Hypleurochilus geminatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Hyporhamphus meeki	.	.	.	.	.	.	.	1	.	3	.	34	38
Hyporhamphus spp.	.	.	.	.	4	.	.	.	.	.	.	1	5
Labidesthes sicculus	7	.	.	1	71	9	5	3	2	119	26	.	243
Labrisomus nuchipinnis	.	.	.	.	1	1	.	.	.	.	1	.	3
Lactophrys trigonus	.	.	.	.	.	.	.	1	.	1	1	.	3
Lagodon rhomboides	333	628	1,165	1,623	2,187	2,859	7,114	4,819	4,263	4,942	751	407	31,091
Leiostomus xanthurus	19	109	91	185	19	82	46	333	139	142	18	.	1,183
Lepisosteus platyrhincus	.	.	.	2	.	.	.	1	.	.	.	.	3
Lepomis auritus	.	1	.	.	.	.	.	.	1	.	.	.	2
Lepomis gulosus	.	.	.	.	.	.	.	.	.	.	.	2	2

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Lepomis macrochirus	.	.	19	1	.	.	.	.	1	6	2	.	29
Lepomis microlophus	1	.	10	.	.	.	1	.	3	14	3	.	32
Lepomis punctatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Lepomis spp.	.	.	.	.	1	.	.	.	1	13	1	1	17
Limulus polyphemus	4	1	5	.	1	.	1	.	1	1	.	.	14
Litopenaeus setiferus	1	.	2	.	.	1	.	1	.	6	12	7	30
Lobotes surinamensis	.	.	.	.	.	.	.	1	.	1	.	.	2
Lophogobius cyprinoides	1	.	.	12	30	.	13	31	5	1	2	7	102
Lucania goodei	1	4	5	.	19	.	.	.	.	2	.	.	31
Lucania parva	229	676	845	167	308	1	11	28	8	402	437	.	3,112
Lutjanus analis	.	.	.	.	.	1	.	2	7	1	6	.	17
Lutjanus griseus	3	2	4	4	5	1	8	14	12	11	2	.	66
Lutjanus jocu	.	.	.	.	.	.	.	.	.	1	.	.	1
Lutjanus synagris	.	.	.	1	.	.	.	.	7	1	8	3	20
Megalops atlanticus	1	.	.	.	.	.	.	.	.	.	.	.	1
Membras martinica	.	.	1	.	776	108	56	151	.	12	.	1	1,105
Menidia spp.	218	292	399	1,121	1,545	1,464	490	708	174	531	1,031	319	8,292
Menippe spp.	1	.	.	1	.	.	1	1	15	1	4	4	28
Menticirrhus americanus	2	2	1	10	4	45	34	71	36	43	24	10	282
Menticirrhus littoralis	.	.	.	.	.	1	.	.	.	.	.	.	1
Microgobius gulosus	31	6	4	37	164	20	59	50	54	90	161	52	728
Microgobius thalassinus	.	.	.	1	.	.	.	35	1	.	.	.	37
Microphis brachyurus	.	.	.	2	1	.	.	.	.	.	1	1	5
Micropogonias undulatus	79	6	47	46	25	5	.	31	22	6	3	.	270
Micropterus salmoides	.	1	1	3	1	1	.	.	.	.	.	.	7

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Monacanthus ciliatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Mugil cephalus	1,348	1,921	1,366	245	321	523	1,158	341	387	250	245	593	8,698
Mugil curema	194	851	689	1,522	1,248	902	887	260	349	500	404	1,707	9,513
Mugil sp. (redeye mullet)	.	.	.	.	.	1	.	.	6	4	2	.	13
Mugil spp.	.	.	13	.	.	.	.	.	.	.	.	.	13
Notemigonus crysoleucas	.	.	.	.	.	.	1	.	.	.	.	.	1
Oligoplites saurus	2	.	.	1	2	9	24	31	47	25	4	1	146
Opisthonema oglinum	.	.	8	899	148	237	7	234	672	283	2	3	2,493
Opsanus tau	.	.	.	.	1	.	2	1	2	2	.	.	8
Orthopristis chrysoptera	5	2	1	45	39	11	16	72	50	9	1	1	252
Paralichthys albigutta	.	3	.	1	1	4	1	2	4	1	.	.	17
Paralichthys lethostigma	.	.	.	.	.	.	1	.	.	.	3	1	5
Paralichthys sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Poecilia latipinna	30	1	67	18	4	5	1	5	2	22	.	.	155
Pogonias cromis	5	21	10	13	84	204	186	90	131	41	4	8	797
Pomatomus saltatrix	.	.	.	.	2	.	2	6	2	.	.	1	13
Portunus spp.	.	.	2	.	2	1	.	2	6	.	.	2	16
Prionotus scitulus	.	.	.	.	.	.	.	.	.	1	.	2	3
Prionotus tribulus	1	2	.	.	.	2	.	1	3	1	2	1	13
Rhinoptera bonasus	.	21	.	.	.	.	.	.	.	.	.	.	21
Sardinella aurita	.	.	.	.	1	1	.	1	2	.	.	.	5
Sarotherodon melanotheron	.	2	.	.	.	.	.	.	.	.	.	.	2
Sciaenops ocellatus	17	20	57	38	40	28	22	22	32	51	74	70	471
Scomberomorus maculatus	.	.	.	.	.	.	.	1	.	1	.	2	4
Scorpaena grandicornis	.	.	.	.	.	.	.	.	1	.	.	.	1

Appendix IR12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=64	E=86	E=86	E=64	E=812
Scorpaena plumieri	.	.	.	.	.	1	.	.	.	.	.	.	1
Selene vomer	.	2	3	53	11	59	9	7	4	3	.	1	152
Sphoeroides nephelus	34	6	19	14	20	20	9	16	20	13	53	30	254
Sphoeroides spengleri	.	.	.	.	.	.	.	2	.	.	5	3	10
Sphoeroides testudineus	.	.	.	.	.	.	.	.	.	8	1	2	11
Sphyraena barracuda	.	.	.	.	.	6	8	4	6	8	3	12	47
Sphyraena borealis	.	.	.	1	.	.	.	.	.	.	.	.	1
Stephanolepis hispidus	.	.	1	.	1	.	.	.	2	1	2	.	7
Strongylura marina	11	.	2	7	3	3	.	.	1	2	1	2	32
Strongylura notata	6	5	.	2	2	25	36	31	9	25	29	9	179
Strongylura spp.	.	.	1	13	2	1	.	.	.	.	1	.	18
Strongylura timucu	.	1	.	.	.	.	.	.	.	2	.	.	3
Symphurus plagiusa	3	2	.	.	.	.	.	.	.	.	.	.	5
Syngnathus louisianae	.	1	1	4	4	3	4	2	3	1	6	1	30
Syngnathus scovelli	.	7	4	10	3	9	11	2	21	7	30	41	145
Synodus foetens	3	.	1	1	.	2	1	1	.	.	7	1	17
Trachinotus carolinus	.	3	.	.	5	3	1	2	4	.	.	.	18
Trachinotus falcatus	.	.	3	6	35	16	37	20	21	15	8	2	163
Trinectes maculatus	2	1	.	.	1	2	.	4	11	5	2	1	29
Totals	**14,468**	**12,333**	**11,440**	**16,675**	**30,703**	**57,722**	**22,789**	**29,535**	**84,542**	**48,731**	**10,724**	**8,446**	**348,108**

Appendix IR12-02. Summary by gear and stratum of species collected during northern Indian River Lagoon stratified-random sampling, 2012. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were further stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine and 183-m haul seine was stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Sampling with 6.1-m otter trawl was not stratified. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Acanthostracion quadricornis	.	.	.	.	.	.	.	1	1
Achirus lineatus	17	10	30	7	3	30	3	8	108
Aetobatus narinari	.	.	.	.	.	1	.	.	1
Agonostomus monticola	.	.	.	.	1	.	.	.	1
Albula vulpes	1	4	35	1	1	5	1	.	48
Aluterus schoepfii	.	.	.	.	.	.	.	1	1
Anchoa cubana	.	.	.	.	.	.	.	84	84
Anchoa hepsetus	48	182	254	4	2,669	.	.	11	3,168
Anchoa lyolepis	.	6	4	.	6	.	.	1	17
Anchoa mitchilli	2,565	22,498	137,188	30,743	14,950	.	.	132	208,076
Anchoa spp.	.	.	.	1	.	.	.	1	2
Archosargus probatocephalus	2	11	101	115	3	1,135	328	14	1,709
Archosargus rhomboidalis	.	.	.	.	.	7	2	.	9
Archosargus spp.	.	.	.	.	.	5	1	.	6
Ariopsis felis	6	92	36	1	.	378	216	147	876
Bagre marinus	.	.	.	.	.	8	.	1	9
Bairdiella chrysoura	27	145	1,141	366	196	252	33	34	2,194
Bairdiella sp.	.	.	.	.	.	1	.	.	1
Bathygobius soporator	.	.	2	.	1	.	.	.	3
Brevoortia spp.	6	32	2,377	1,764	89	2,591	334	.	7,193
Callinectes ornatus	5	2	103	1	7	3	5	115	241
Callinectes sapidus	3	5	90	89	129	30	9	73	428
Callinectes similis	.	.	49	1	8	7	5	34	104
Callinectes spp.	.	.	10	.	.	.	.	5	15
Caranx hippos	.	.	8	17	7	210	30	2	274
Caranx latus	.	.	.	4	.	16	3	.	23

Appendix IR12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Carcharhinus leucas	.	.	.	.	.	2	1	.	3
Centropomus ensiferus	.	.	.	3	.	.	.	.	3
Centropomus parallelus	.	.	.	2	5	.	.	.	7
Centropomus pectinatus	.	.	.	3	.	.	.	.	3
Centropomus undecimalis	.	.	9	401	32	55	39	.	536
Chaetodipterus faber	.	.	.	.	.	69	69	1	139
Charybdis hellerii	.	.	.	.	.	.	.	6	6
Chasmodes saburrae	2	3	14	1	.	.	.	10	30
Chilomycterus schoepfii	4	2	4	.	.	28	16	55	109
Chloroscombrus chrysurus	.	1	8	.	1	8	6	.	24
Cichlasoma urophthalmus	.	.	.	1	.	.	.	.	1
Citharichthys macrops	.	.	.	.	.	.	1	.	1
Citharichthys spilopterus	1	.	43	2	5	9	4	14	78
Clupeidae sp.	.	1	.	.	.	.	.	.	1
Coryphaena hippurus	.	.	.	.	1	.	.	.	1
Ctenogobius boleosoma	.	.	16	.	11	.	.	.	27
Ctenogobius pseudofasciatus	.	.	.	20	1	.	.	.	21
Ctenogobius shufeldti	.	.	.	1	.	.	.	.	1
Ctenogobius smaragdus	.	.	2	.	.	.	.	.	2
Cynoscion complex	.	2	157	.	.	8	.	9	176
Cynoscion nebulosus	59	19	198	21	1	190	31	6	525
Cyprinodon variegatus	.	1	152	.	1	.	.	.	154
Dasyatis sabina	2	7	15	.	1	348	105	5	483
Dasyatis say	.	.	.	.	.	63	19	1	83
Diapterus auratus	20	79	1,636	2,850	981	1,051	1,101	198	7,916
Diplodus holbrookii	.	.	1	.	.	3	.	.	4
Dormitator maculatus	.	.	.	2	14	.	.	.	16
Dorosoma cepedianum	.	.	.	.	.	1	.	.	1

Appendix IR12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Echeneis neucratoides	.	.	.	.	.	1	.	.	1
Elops saurus	1	5	27	8	1	704	357	.	1,103
Elops smithi	.	.	2	.	.	.	.	1	3
Enneacanthus gloriosus	.	.	.	.	1	.	.	.	1
Etropus crossotus	.	.	.	.	.	.	1	4	5
Eucinostomus argenteus	.	.	34	.	.	.	7	2	43
Eucinostomus gula	14	15	914	63	64	3,443	649	112	5,274
Eucinostomus harengulus	26	60	1,402	1,491	286	4,225	1,362	17	8,869
Eucinostomus jonesii	11	2	67	.	.	.	.	.	80
Eucinostomus lefroyi	2	.	.	.	.	.	.	.	2
Eucinostomus spp.	1,013	523	3,664	4,530	2,139	.	.	1,374	13,243
Eugerres plumieri	.	.	6	2,122	372	.	1	.	2,501
Evorthodus lyricus	.	.	.	5	.	.	.	.	5
Farfantepenaeus aztecus	.	.	.	1	.	.	.	1	2
Farfantepenaeus duorarum	1	1	28	1	1	3	1	6	42
Farfantepenaeus spp.	17	46	470	256	96	.	.	163	1,048
Floridichthys carpio	2	2	344	.	.	.	.	.	348
Fundulus chrysotus	.	.	1	.	.	.	.	.	1
Fundulus grandis	.	.	25	.	.	.	.	.	25
Fundulus majalis	.	.	3	.	.	.	.	.	3
Fundulus seminolis	.	.	.	1	8	.	.	.	9
Gambusia holbrooki	.	.	1	674	584	.	.	.	1,259
Gerres cinereus	.	.	23	11	2	1	2	.	39
Gobiesox strumosus	.	.	7	.	.	.	.	.	7
Gobiomorus dormitor	.	.	.	13	.	.	.	.	13
Gobionellus oceanicus	.	.	.	3	1	.	.	1	5
Gobiosoma bosc	3	7	56	24	24	.	.	1	115
Gobiosoma ginsburgi	.	.	.	.	.	.	.	1	1
Gobiosoma robustum	32	41	29	.	1	.	.	88	191
Gobiosoma spp.	40	49	176	51	74	.	.	129	519
Gymnura micrura	.	1	6	.	.	31	15	.	53
Haemulon parra	.	.	.	.	10	.	.	12	22

Appendix IR12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Harengula jaguana	.	376	763	1	1,337	1,934	3,321	.	7,732
Heterandria formosa	.	.	.	1	7	.	.	.	8
Hippocampus erectus	.	.	2	.	.	2	.	2	6
Hypleurochilus geminatus	.	.	.	.	.	.	.	1	1
Hyporhamphus meeki	.	38	.	.	.	.	.	.	38
Hyporhamphus spp.	.	1	4	.	.	.	.	.	5
Labidesthes sicculus	.	.	.	155	88	.	.	.	243
Labrisomus nuchipinnis	.	.	1	.	.	2	.	.	3
Lactophrys trigonus	.	.	.	.	.	1	.	2	3
Lagodon rhomboides	4	46	529	40	71	23,748	6,549	104	31,091
Leiostomus xanthurus	1	3	241	4	82	526	315	11	1,183
Lepisosteus platyrhincus	.	.	.	3	.	.	.	.	3
Lepomis auritus	.	.	.	.	2	.	.	.	2
Lepomis gulosus	.	.	.	.	2	.	.	.	2
Lepomis macrochirus	.	.	.	28	1	.	.	.	29
Lepomis microlophus	.	.	.	29	3	.	.	.	32
Lepomis punctatus	.	.	.	1	.	.	.	.	1
Lepomis spp.	.	.	.	15	2	.	.	.	17
Limulus polyphemus	.	.	2	.	.	8	2	2	14
Litopenaeus setiferus	.	.	20	8	1	.	.	1	30
Lobotes surinamensis	.	.	.	.	.	1	1	.	2
Lophogobius cyprinoides	.	.	.	100	2	.	.	.	102
Lucania goodei	.	.	.	7	24	.	.	.	31
Lucania parva	532	26	2,350	85	119	.	.	.	3,112
Lutjanus analis	.	1	1	.	.	2	7	6	17
Lutjanus griseus	.	4	5	23	12	8	7	7	66
Lutjanus jocu	.	1	.	.	.	.	.	.	1
Lutjanus synagris	.	.	6	.	.	1	3	10	20
Megalops atlanticus	.	.	.	1	.	.	.	.	1
Membras martinica	75	135	882	.	13	.	.	.	1,105
Menidia spp.	501	529	5,564	1,001	697	.	.	.	8,292

Appendix IR12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Menippe spp.	.	.	.	.	.	2	1	25	28
Menticirrhus americanus	1	5	181	.	.	63	28	4	282
Menticirrhus littoralis	.	.	1	.	.	.	.	.	1
Microgobius gulosus	257	74	280	17	96	.	.	4	728
Microgobius thalassinus	.	37	.	.	.	.	.	.	37
Microphis brachyurus	.	.	.	3	2	.	.	.	5
Micropogonias undulatus	.	4	155	38	2	14	54	3	270
Micropterus salmoides	.	.	.	1	6	.	.	.	7
Monacanthus ciliatus	.	.	.	.	.	.	.	1	1
Mugil cephalus	3	28	2,958	42	63	3,593	2,010	1	8,698
Mugil curema	6	13	393	56	45	6,399	2,601	.	9,513
Mugil sp. (redeye mullet)	.	.	5	.	.	8	.	.	13
Mugil spp.	.	.	.	13	.	.	.	.	13
Notemigonus crysoleucas	.	.	.	1	.	.	.	.	1
Oligoplites saurus	9	24	67	2	.	25	19	.	146
Opisthonema oglinum	50	119	942	19	770	555	36	2	2,493
Opsanus tau	.	.	.	.	.	5	.	3	8
Orthopristis chrysoptera	3	6	55	.	5	29	97	57	252
Paralichthys albigutta	1	.	3	.	.	3	2	8	17
Paralichthys lethostigma	.	.	1	1	.	1	.	2	5
Paralichthys sp.	.	1	.	.	.	.	.	.	1
Poecilia latipinna	.	.	14	122	19	.	.	.	155
Pogonias cromis	3	2	60	.	.	685	47	.	797
Pomatomus saltatrix	.	.	2	.	.	11	.	.	13
Portunus spp.	1	.	2	.	.	.	.	12	15
Prionotus scitulus	.	2	1	.	.	.	.	.	3
Prionotus tribulus	.	.	5	.	.	2	.	6	13
Rhinoptera bonasus	.	.	.	.	.	21	.	.	21
Sardinella aurita	1	2	1	.	1	.	.	.	5
Sarotherodon melanotheron	.	.	.	.	.	.	2	.	2
Sciaenops ocellatus	14	1	136	3	4	197	114	2	471

Appendix IR12-02. (Continued)

Species	Gear and Strata								Totals
	21.3-m bay seine			21.3-m river seine		183-m haul seine		6.1-m otter trawl	
	Veg	Unveg	Shore	Over	Nonover	Over	Nonover		
	E=39	E=125	E=216	E=72	E=36	E=158	E=70	E=96	E=812
Scomberomorus maculatus	.	.	.	.	.	4	.	.	4
Scorpaena grandicornis	.	.	.	.	.	.	.	1	1
Scorpaena plumieri	.	.	.	.	.	1	.	.	1
Selene vomer	.	1	2	.	.	117	32	.	152
Sphoeroides nephelus	3	9	23	.	4	80	107	28	254
Sphoeroides spengleri	.	.	1	.	.	1	.	8	10
Sphoeroides testudineus	.	.	3	.	8	.	.	.	11
Sphyraena barracuda	.	.	4	5	11	25	2	.	47
Sphyraena borealis	.	.	1	.	.	.	.	.	1
Stephanolepis hispidus	.	.	.	.	.	.	.	7	7
Strongylura marina	.	4	11	.	1	8	8	.	32
Strongylura notata	7	21	138	1	8	4	.	.	179
Strongylura spp.	.	3	15	.	.	.	.	.	18
Strongylura timucu	.	.	.	.	3	.	.	.	3
Symphurus plagiusa	.	.	3	.	.	.	.	2	5
Syngnathus louisianae	5	6	9	.	.	1	.	9	30
Syngnathus scovelli	21	20	62	.	.	.	.	42	145
Synodus foetens	1	.	5	.	.	4	.	7	17
Trachinotus carolinus	.	.	9	.	.	7	2	.	18
Trachinotus falcatus	.	.	56	.	39	31	37	.	163
Trinectes maculatus	1	.	.	15	11	.	.	2	29
Totals	**5,430**	**25,396**	**166,942**	**47,516**	**26,349**	**53,051**	**20,161**	**3,263**	**348,108**

Appendix IR12-03. Summary by zone of species collected during northern Indian River Lagoon stratified-random sampling, 2012. Zones A-C and H were located in the Indian River; Zones D-E encompassed the Banana River; and Zones F and O encompassed the lower Sebastian River and Turkey Creek, respectively. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Zone								Totals
	A	B	C	D	E	H	F	O	
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Acanthostracion quadricornis	.	.	.	.	.	1	.	.	1
Achirus lineatus	2	1	30	37	10	18	10	.	108
Aetobatus narinari	.	.	.	.	.	1	.	.	1
Agonostomus monticola	.	.	.	.	.	.	1	.	1
Albula vulpes	.	.	3	.	1	42	2	.	48
Aluterus schoepfii	.	.	.	.	.	1	.	.	1
Anchoa cubana	.	.	.	.	.	84	.	.	84
Anchoa hepsetus	.	.	58	2	.	435	2,668	5	3,168
Anchoa lyolepis	.	.	.	.	.	11	6	.	17
Anchoa mitchilli	99	1,433	130,052	18,807	749	11,243	39,138	6,555	208,076
Anchoa spp.	.	.	.	.	.	1	1	.	2
Archosargus probatocephalus	.	2	256	928	162	243	113	5	1,709
Archosargus rhomboidalis	.	.	.	.	.	9	.	.	9
Archosargus spp.	.	.	.	2	.	4	.	.	6
Ariopsis felis	.	1	223	172	166	313	1	.	876
Bagre marinus	.	.	4	.	.	5	.	.	9
Bairdiella chrysoura	8	17	1,166	301	42	98	562	.	2,194
Bairdiella sp.	.	.	.	.	.	1	.	.	1
Bathygobius soporator	.	.	.	.	.	2	1	.	3
Brevoortia spp.	.	.	2,378	1,205	1,114	643	1,852	1	7,193
Callinectes ornatus	.	.	1	.	.	232	8	.	241
Callinectes sapidus	1	2	18	12	10	167	211	7	428
Callinectes similis	.	.	.	.	.	95	9	.	104
Callinectes spp.	.	.	.	.	.	15	.	.	15
Caranx hippos	.	.	91	10	10	139	23	1	274
Caranx latus	.	.	11	.	1	7	4	.	23

Appendix IR12-03. (Continued)

Species	Zone								Totals
	A	B	C	D	E	H	F	O	
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Carcharhinus leucas	.	.	.	.	.	3	.	.	3
Centropomus ensiferus	.	.	.	.	.	.	3	.	3
Centropomus parallelus	.	.	.	.	.	.	7	.	7
Centropomus pectinatus	.	.	.	.	.	.	3	.	3
Centropomus undecimalis	.	.	30	6	2	65	399	34	536
Chaetodipterus faber	.	.	74	52	1	12	.	.	139
Charybdis hellerii	.	.	.	.	.	6	.	.	6
Chasmodes saburrae	.	2	13	.	1	13	1	.	30
Chilomycterus schoepfii	.	1	18	14	6	70	.	.	109
Chloroscombrus chrysurus	.	.	.	.	2	21	1	.	24
Cichlasoma urophthalmus	.	.	.	.	.	.	1	.	1
Citharichthys macrops	.	.	.	.	.	1	.	.	1
Citharichthys spilopterus	.	.	1	.	.	70	7	.	78
Clupeidae sp.	.	.	.	.	.	1	.	.	1
Coryphaena hippurus	.	.	.	.	.	.	1	.	1
Ctenogobius boleosoma	.	.	.	.	.	16	11	.	27
Ctenogobius pseudofasciatus	.	.	.	.	.	.	21	.	21
Ctenogobius shufeldti	.	.	.	.	.	.	1	.	1
Ctenogobius smaragdus	.	.	.	.	.	2	.	.	2
Cynoscion complex	.	.	160	.	2	14	.	.	176
Cynoscion nebulosus	23	30	100	191	72	87	22	.	525
Cyprinodon variegatus	16	.	3	134	.	.	1	.	154
Dasyatis sabina	.	1	58	253	107	63	1	.	483
Dasyatis say	.	.	17	21	21	24	.	.	83
Diapterus auratus	4	1	1,542	51	180	2,307	3,493	338	7,916
Diplodus holbrookii	.	.	.	.	.	4	.	.	4
Dormitator maculatus	.	.	.	.	.	.	2	14	16
Dorosoma cepedianum	.	.	.	1	.	.	.	.	1
Echeneis neucratoides	.	.	.	.	.	1	.	.	1
Elops saurus	.	.	332	433	187	142	1	8	1,103
Elops smithi	.	.	.	.	.	3	.	.	3
Enneacanthus gloriosus	.	.	.	.	.	.	.	1	1

Appendix IR12-03. (Continued)

Species	Zone								Totals
	A	B	C	D	E	H	F	O	
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Etropus crossotus	.	.	.	.	.	5	.	.	5
Eucinostomus argenteus	.	.	.	.	7	36	.	.	43
Eucinostomus gula	.	.	150	373	78	4,546	127	.	5,274
Eucinostomus harengulus	7	5	1,126	1,056	941	3,957	1,566	211	8,869
Eucinostomus jonesii	.	.	1	.	.	79	.	.	80
Eucinostomus lefroyi	.	.	.	.	.	2	.	.	2
Eucinostomus spp.	181	12	501	205	188	5,487	5,419	1,250	13,243
Eugerres plumieri	.	.	1	.	3	3	2,419	75	2,501
Evorthodus lyricus	.	.	.	.	.	.	5	.	5
Farfantepenaeus aztecus	.	.	.	.	.	1	1	.	2
Farfantepenaeus duorarum	2	.	21	2	5	10	1	1	42
Farfantepenaeus spp.	9	3	43	2	1	638	342	10	1,048
Floridichthys carpio	197	7	2	141	1	.	.	.	348
Fundulus chrysotus	.	.	.	1	.	.	.	.	1
Fundulus grandis	3	1	.	13	.	8	.	.	25
Fundulus majalis	.	.	.	3	.	.	.	.	3
Fundulus seminolis	.	.	.	.	.	.	2	7	9
Gambusia holbrooki	.	.	1	.	.	.	625	633	1,259
Gerres cinereus	.	.	1	.	1	24	12	1	39
Gobiesox strumosus	.	.	3	2	.	2	.	.	7
Gobiomorus dormitor	.	.	.	.	.	.	13	.	13
Gobionellus oceanicus	.	.	.	.	.	1	4	.	5
Gobiosoma bosc	.	.	30	11	.	26	25	23	115
Gobiosoma ginsburgi	.	.	.	.	.	1	.	.	1
Gobiosoma robustum	14	8	4	59	2	103	1	.	191
Gobiosoma spp.	9	7	99	30	41	208	57	68	519
Gymnura micrura	.	.	19	.	2	32	.	.	53
Haemulon parra	.	.	.	.	.	12	10	.	22
Harengula jaguana	.	.	3,289	45	4	3,056	1,338	.	7,732
Heterandria formosa	.	.	.	.	.	.	.	8	8
Hippocampus erectus	.	.	.	.	1	5	.	.	6
Hypleurochilus geminatus	.	.	.	.	.	1	.	.	1
Hyporhamphus meeki	.	3	1	.	.	34	.	.	38

Appendix IR12-03. (Continued)

Species	Zone A	B	C	D	E	H	F	O	Totals
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Hyporhamphus spp.	.	.	.	1	.	4	.	.	5
Labidesthes sicculus	.	.	.	.	.	.	2	241	243
Labrisomus nuchipinnis	.	.	.	.	.	3	.	.	3
Lactophrys trigonus	.	.	.	.	.	3	.	.	3
Lagodon rhomboides	.	.	3,352	16,074	7,945	3,609	101	10	31,091
Leiostomus xanthurus	.	.	361	227	57	452	86	.	1,183
Lepisosteus platyrhincus	.	.	.	.	.	.	3	.	3
Lepomis auritus	.	.	.	.	.	.	.	2	2
Lepomis gulosus	.	.	.	.	.	.	.	2	2
Lepomis macrochirus	.	.	.	.	.	.	.	29	29
Lepomis microlophus	.	.	.	.	.	.	.	32	32
Lepomis punctatus	.	.	.	.	.	.	1	.	1
Lepomis spp.	.	.	.	.	.	.	1	16	17
Limulus polyphemus	.	.	.	9	3	2	.	.	14
Litopenaeus setiferus	.	12	.	.	.	9	8	1	30
Lobotes surinamensis	.	.	.	.	2	.	.	.	2
Lophogobius cyprinoides	.	.	.	.	.	.	102	.	102
Lucania goodei	.	.	.	.	.	.	.	31	31
Lucania parva	584	228	12	2,079	4	1	72	132	3,112
Lutjanus analis	.	.	.	.	.	17	.	.	17
Lutjanus griseus	.	.	10	.	.	21	30	5	66
Lutjanus jocu	.	.	.	.	.	1	.	.	1
Lutjanus synagris	.	.	.	.	.	20	.	.	20
Megalops atlanticus	.	.	.	.	.	.	1	.	1
Membras martinica	4	.	1,004	76	.	8	13	.	1,105
Menidia spp.	1,049	163	1,244	3,668	119	351	1,367	331	8,292
Menippe spp.	.	.	1	.	2	25	.	.	28
Menticirrhus americanus	.	2	187	20	35	38	.	.	282
Menticirrhus littoralis	.	.	.	.	.	1	.	.	1
Microgobius gulosus	116	30	47	292	39	91	15	98	728
Microgobius thalassinus	.	.	35	.	.	2	.	.	37
Microphis brachyurus	.	.	.	.	.	.	5	.	5

Appendix IR12-03. (Continued)

Species	Zone								Totals
	A	B	C	D	E	H	F	O	
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Micropogonias undulatus	.	.	39	14	3	174	38	2	270
Micropterus salmoides	.	.	.	.	.	.	.	7	7
Monacanthus ciliatus	.	.	.	.	.	1	.	.	1
Mugil cephalus	4	2	1,964	3,788	981	1,854	97	8	8,698
Mugil curema	1	8	1,189	2,905	3,837	1,472	92	9	9,513
Mugil sp. (redeye mullet)	.	1	3	1	2	6	.	.	13
Mugil spp.	.	.	.	.	.	.	13	.	13
Notemigonus crysoleucas	.	.	.	.	.	.	.	1	1
Oligoplites saurus	2	11	73	29	3	26	2	.	146
Opisthonema oglinum	.	.	239	.	.	1,465	788	1	2,493
Opsanus tau	.	.	3	1	1	3	.	.	8
Orthopristis chrysoptera	.	.	114	12	6	115	5	.	252
Paralichthys albigutta	.	.	.	.	.	17	.	.	17
Paralichthys lethostigma	.	.	.	1	.	3	1	.	5
Paralichthys sp.	.	.	.	.	.	1	.	.	1
Poecilia latipinna	5	.	.	9	.	.	65	76	155
Pogonias cromis	.	.	67	698	18	14	.	.	797
Pomatomus saltatrix	.	.	3	2	.	8	.	.	13
Portunus spp.	.	.	.	.	.	15	.	.	15
Prionotus scitulus	.	.	.	2	1	.	.	.	3
Prionotus tribulus	.	.	.	.	.	13	.	.	13
Rhinoptera bonasus	.	.	.	.	.	21	.	.	21
Sardinella aurita	.	.	.	.	.	4	1	.	5
Sarotherodon melanotheron	.	.	2	.	.	.	.	.	2
Sciaenops ocellatus	7	13	82	210	88	64	7	.	471
Scomberomorus maculatus	.	.	1	.	.	3	.	.	4
Scorpaena grandicornis	.	.	.	.	.	1	.	.	1
Scorpaena plumieri	.	.	.	.	.	1	.	.	1
Selene vomer	.	.	50	.	.	102	.	.	152
Sphoeroides nephelus	.	1	147	29	25	48	4	.	254
Sphoeroides spengleri	.	.	.	.	.	10	.	.	10
Sphoeroides testudineus	.	.	.	.	.	3	8	.	11

Appendix IR12-03. (Continued)

Species	Zone								Totals
	A	B	C	D	E	H	F	O	
	E=16	E=14	E=168	E=168	E=62	E=276	E=84	E=24	E=812
Sphyraena barracuda	.	.	2	.	1	28	16	.	47
Sphyraena borealis	.	.	.	.	.	1	.	.	1
Stephanolepis hispidus	.	.	.	.	.	7	.	.	7
Strongylura marina	.	1	17	8	1	4	1	.	32
Strongylura notata	3	10	35	88	22	12	9	.	179
Strongylura spp.	1	.	15	2	.	.	.	.	18
Strongylura timucu	.	.	.	.	.	.	3	.	3
Symphurus plagiusa	.	.	.	.	.	5	.	.	5
Syngnathus louisianae	2	1	10	4	1	12	.	.	30
Syngnathus scovelli	12	3	40	31	7	52	.	.	145
Synodus foetens	.	.	.	.	.	17	.	.	17
Trachinotus carolinus	.	.	5	.	.	13	.	.	18
Trachinotus falcatus	.	.	33	5	2	84	39	.	163
Trinectes maculatus	1	.	.	.	.	2	9	17	29
Totals	**2,366**	**2,023**	**152,317**	**54,860**	**17,326**	**45,351**	**63,558**	**10,307**	**348,108**

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Cedar Key

Cedar Key is in the Suwannee River estuary, an open system located along the Gulf Coast of Florida within the area known as the Big Bend. Freshwater inflow into the estuary comes primarily from the Suwannee River with additional input from many fringing marsh tidal creeks (Lindberg et al. 1992). The shoreline consists largely of marsh grasses, oyster bars, and mud flats. Seagrass meadows primarily occur in the southern portions of the estuary (Tuckey and Dehaven 2006).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling in the Cedar Key area since 1996. The area sampled was divided into two geographically-defined bay zones (B and C) and one riverine zone (F; Figure CK12-01). Monthly stratified-random sampling (SRS) was conducted in Zones B and C using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Tidal creeks in Zone B were sampled using 21.3-m river seines. Monthly SRS was conducted in Zone F with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in the Cedar Key area.

Stratified-Random Sampling

A total of 86,829 animals, which included 143 taxa of fishes and eight taxa of selected invertebrates, were collected from 792 Cedar Key SRS samples in 2012 (Table CK12-01; Appendices CK12-01 and -02). *Anchoa mitchilli* (n=23,855) was the most numerous species collected, representing 27.5% of the total catch. *Lagodon rhomboides* (n=9,662) and *Leiostomus xanthurus* (n=7,587) were the next most abundant taxa collected, accounting for an additional 19.9% of the total catch. Twenty-six Selected Taxa (n=16,516 animals) composed 19.0% of the total catch. *Leiostomus xanthurus* (n=7,587) was the most abundant Selected Taxon, representing 8.7% of the annual catch. Collections in 2012 included one species new to the Cedar Key FIM collection: *Erimyzon sucetta* (lake chubsucker).

Bay Sampling

21.3-m Bay Seine. A total of 21,425 animals were collected in 252 21.3-m bay seines, representing 24.7% of the overall SRS catch (Table CK12-01). *Anchoa mitchilli* (n=6,121) and *Membras martinica* (n=4,001) were the most abundant taxa, accounting for 47.2% of the 21.3-m bay seine catch (Table CK12-02). The taxa most frequently caught in 21.3-m bay seines were *L. rhomboides* (44.8% occurrence) and *A. mitchilli* (32.9% occurrence).

A total of 1,710 animals from 21 Selected Taxa were collected, representing 8.0% of the entire 21.3-m bay seine catch (Table CK12-03). *Leiostomus xanthurus* (n=359) and *Cynoscion arenarius* (n=340) were the most abundant Selected Taxa, accounting for 40.9% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m bay seines were *Callinectes sapidus* (21.0% occurrence), *Menticirrhus americanus* (19.4% occurrence), and *Farfantepenaeus* spp. (19.0% occurrence).

183-m Haul Seine. A total of 22,392 animals were collected in 192 183-m haul seines, representing 25.8% of the overall SRS catch (Table CK12-01). *Lagodon rhomboides* (n=5,474) and *Bairdiella chrysoura* (n=4,302) were the most abundant taxa, accounting for 43.7% of the 183-m haul seine catch (Table CK12-04). The taxa most frequently caught in 183-m haul seines were *L. rhomboides* (81.3% occurrence), *Dasyatis sabina* (72.9% occurrence), and *Mugil cephalus* (72.9% occurrence).

A total of 6,778 animals from 23 Selected Taxa were collected, representing 30.3% of the entire 183-m haul seine catch (Table CK12-05). *Mugil cephalus* (n=2,500) and *L. xanthurus* (n=2,254) were the most abundant Selected Taxa, accounting for 70.1% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *M. cephalus* (72.9% occurrence) and *L. xanthurus* (52.6% occurrence).

6.1-m Bay Otter Trawl. A total of 10,568 animals were collected in 120 6.1-m bay otter trawls, representing 12.2% of the overall SRS catch (Table CK12-01). *Chloroscombrus chrysurus* (n=1,631), *Anchoa hepsetus* (n=1,073), and *A. mitchilli* (n=1,035) were the most abundant taxa, accounting for 35.4% of the 6.1-m bay otter trawl catch (Table CK12-06). The taxa most frequently caught in 6.1-m bay otter trawls were *Etropus crossotus* (73.3% occurrence), *L. rhomboides* (48.3% occurrence) and *Orthopristis chrysoptera* (45.8% occurrence).

A total of 1,347 animals from nine Selected Taxa were collected, representing 12.7% of the entire 6.1-m bay otter trawl catch (Table CK12-07). *Menticirrhus americanus* (n=577) and *C. arenarius* (n=348) were the most abundant Selected Taxa, accounting for 68.7% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 6.1-m bay otter trawls were *Menippe* spp. (39.2% occurrence), *M. americanus* (27.5% occurrence), and *Paralichthys albigutta* (26.7% occurrence).

River Sampling

Tidal Creeks

21.3-m River Seines. A total of 18,254 animals were collected in 108 21.3-m river seines conducted in tidal creeks, representing 21.0% of the overall SRS catch (Table CK12-01). *Anchoa mitchilli* (n=7,437) and *L. xanthurus* (n=4,715) were the most abundant taxa collected, accounting for 66.6% of the total 21.3-m river seine catch in tidal creeks (Table CK12-08). The taxa most frequently caught in 21.3-m river seines conducted in tidal creeks were *A. mitchilli* (66.7% occurrence), *Menidia* spp. (66.7% occurrence), and *L. rhomboides* (51.9% occurrence).

A total of 5,122 animals from 13 Selected Taxa were collected, representing 28.1% of the entire 21.3-m river seine catch in tidal creeks (Table CK12-09). *Leiostomus xanthurus* (n=4,715) was the most abundant Selected Taxon, accounting for 92.1% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines conducted in tidal creeks was *C. sapidus* (36.1% occurrence).

Lower Suwannee River

21.3-m River Seines. A total of 10,847 animals were collected in 60 21.3-m river seine samples conducted in the Lower Suwannee River (LSR), representing 12.5% of the overall SRS catch (Table CK12-01). *Anchoa mitchilli* (n=8,357) was the most abundant taxon collected, accounting for 77.0% of the total 21.3-m river seine catch in the LSR (Table CK12-10). The taxa most frequently caught in 21.3-m river seines conducted in the LSR were *C. sapidus* (58.3% occurrence) and *Eucinostomus* spp. (51.7% occurrence).

A total of 424 animals from 12 Selected Taxa were collected, representing 3.9% of the entire 21.3-m river seine catch in the LSR (Table CK12-11). *Leiostomus xanthurus* (n=188) and *C. sapidus* (n=148) were the most abundant Selected Taxa, accounting for 79.2% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines conducted in the LSR was *C. sapidus* (58.3% occurrence).

6.1-m River Otter Trawl. A total of 3,343 animals were collected in 60 6.1-m river otter trawl samples conducted in the LSR, representing 3.9% of the overall SRS catch (Table CK12-01). *Anchoa mitchilli* (n=905) was the most abundant taxon collected, accounting for 27.1% of the 6.1-m river otter trawl catch (Table CK12-12). The taxon most frequently caught in 6.1-m river otter trawls conducted in the LSR was *C. sapidus* (73.3% occurrence).

A total of 1,135 animals from 14 Selected Taxa were collected, representing 34.0% of the entire 6.1-m river otter trawl catch in the LSR (Table CK12-13). *Callinectes sapidus* (n=554) and *C. arenarius* (n=365) were the most abundant Selected Taxa, accounting for 81.0% of the Selected Taxa captured by this gear. The Selected Taxa most frequently caught in 6.1-m river otter trawls conducted in the LSR were *C. sapidus* (73.3% occurrence) and *C. arenarius* (41.7% occurrence).

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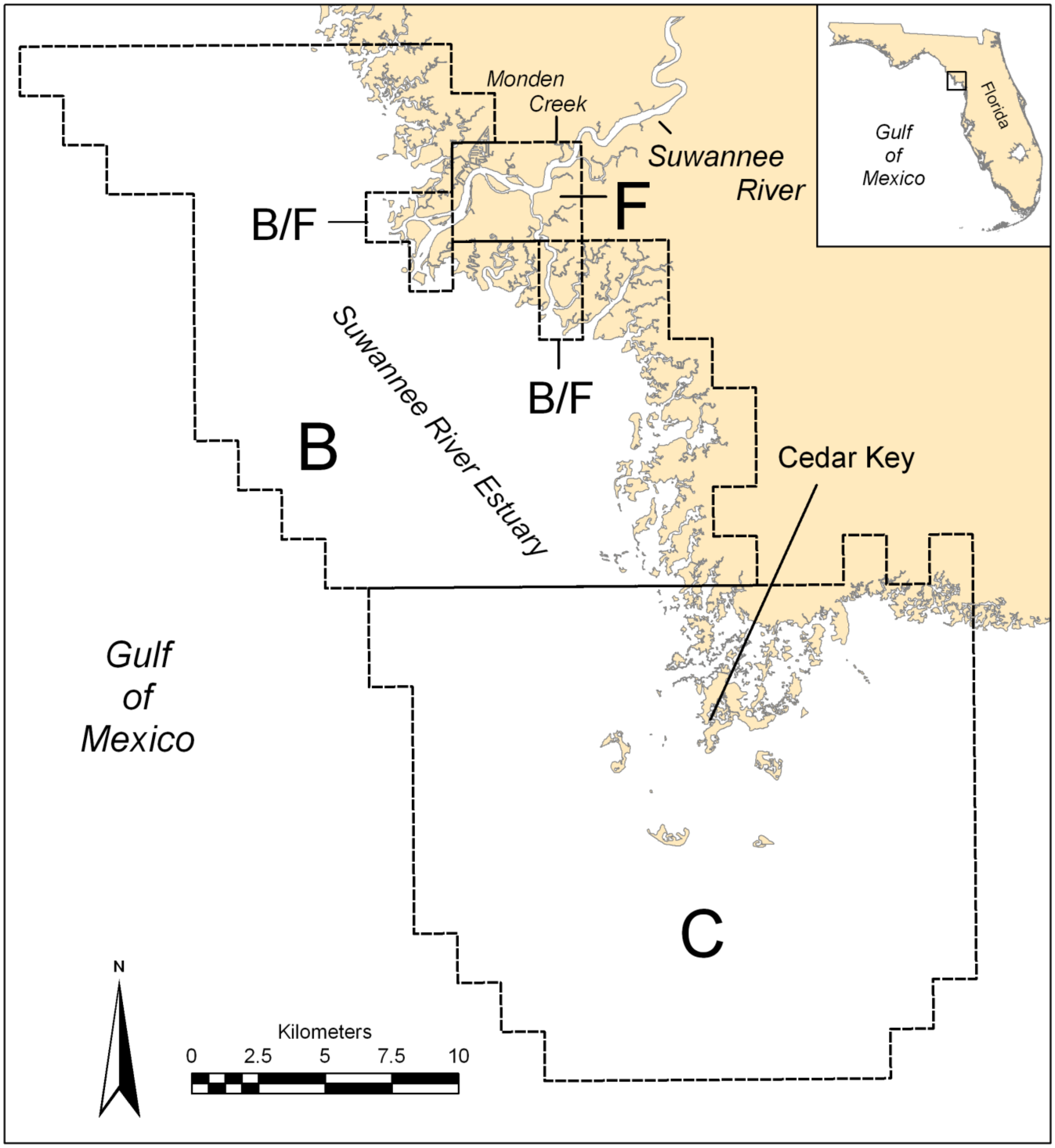

Figure CK12-01. Map of Cedar Key sampling area. Zones are labeled B, C, and F. Grids containing portions of Zones B and F are labeled B/F.

Table CK12-01. Summary of catch and effort data for Cedar Key stratified-random sampling, 2012.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
B	8,750	120	18,254	108	9,260	96	6,557	60	42,821	384
C	12,675	132	.	.	13,132	96	4,011	60	29,818	288
F	.	.	10,847	60	.	.	3,343	60	14,190	120
Totals	**21,425**	**252**	**29,101**	**168**	**22,392**	**192**	**13,911**	**180**	**86,829**	**792**

Table CK12-02. Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	6,121	28.6	32.9	17.35	4.05	370.27	729.29	29	0.10	17	73
Membras martinica	4,001	18.7	18.3	11.34	3.95	552.84	582.14	43	0.23	16	92
Lagodon rhomboides	2,270	10.6	44.8	6.43	2.00	494.61	418.57	40	0.44	11	135
Anchoa hepsetus	1,442	6.7	19.8	4.09	2.47	957.66	611.43	40	0.31	20	104
Chloroscombrus chrysurus	1,308	6.1	3.2	3.71	3.68	1,575.27	927.14	42	0.07	12	47
Ariopsis felis	644	3.0	13.1	1.83	0.92	797.19	198.57	89	1.50	55	321
Bairdiella chrysoura	632	2.9	16.3	1.79	0.68	605.61	141.43	41	1.42	10	154
Eucinostomus spp.	494	2.3	17.1	1.40	0.46	526.99	92.86	25	0.31	10	39
Orthopristis chrysoptera	474	2.2	13.5	1.34	0.47	556.95	81.43	37	0.95	14	186
Leiostomus xanthurus	359	1.7	13.9	1.02	0.37	570.71	60.00	32	2.17	11	185
Subtotal	17,745	82.8	.	.	.	.	.	.	.	10	321
Totals	**21,425**	**100.0**	**.**	**60.73**	**9.02**	**235.69**	**1,217.86**	**.**	**.**	**2**	**680**

Table CK12-03. Catch statistics for Selected Taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	359	1.7	13.9	1.02	0.37	570.71	60.00	32	2.17	11	185
Cynoscion arenarius	340	1.6	11.5	0.96	0.41	668.87	75.71	30	0.75	10	80
Farfantepenaeus spp.	224	1.0	19.0	0.63	0.16	406.36	26.43	8	0.23	2	15
Menticirrhus americanus	192	0.9	19.4	0.54	0.14	407.01	27.14	39	2.55	11	246
Callinectes sapidus	154	0.7	21.0	0.44	0.08	293.57	13.57	33	2.77	4	159
Trachinotus falcatus	92	0.4	2.4	0.26	0.21	1,287.84	52.86	30	0.96	20	69
Mugil cephalus	77	0.4	9.5	0.22	0.08	581.15	16.43	64	8.60	18	315
Cynoscion nebulosus	62	0.3	6.0	0.18	0.05	472.18	6.43	32	2.27	13	115
Lutjanus synagris	60	0.3	2.8	0.17	0.09	868.67	17.86	42	1.73	22	76
Menticirrhus saxatilis	44	0.2	3.6	0.12	0.08	999.42	18.57	41	2.22	14	75
Paralichthys albigutta	23	0.1	7.1	0.07	0.02	420.10	2.86	86	18.22	16	356
Pogonias cromis	19	0.1	3.2	0.05	0.03	765.29	5.71	130	20.50	84	492
Lutjanus griseus	15	0.1	3.2	0.04	0.02	735.49	4.29	70	16.32	18	197
Menippe spp.	12	0.1	1.6	0.03	0.02	1,004.49	5.00	11	1.80	4	23
Farfantepenaeus duorarum	10	<0.1	3.6	0.03	0.01	541.82	1.43	16	0.55	15	20
Mugil curema	9	<0.1	2.4	0.03	0.01	721.77	2.14	85	7.60	43	111
Sciaenops ocellatus	8	<0.1	3.2	0.02	0.01	553.37	0.71	206	69.52	15	533

Table CK12-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Scomberomorus maculatus	3	<0.1	1.2	0.01	<0.01	912.86	0.71	113	67.30	35	247
Archosargus probatocephalus	2	<0.1	0.8	0.01	<0.01	1,120.26	0.71	260	46.00	214	306
Mugil gyrans	2	<0.1	0.8	0.01	<0.01	1,120.26	0.71	22	5.50	16	27
Mycteroperca microlepis	2	<0.1	0.4	0.01	0.01	1,587.45	1.43	148	9.50	138	157
Rachycentron canadum	1	<0.1	0.4	<0.01	<0.01	1,587.45	0.71	62	.	62	62
Totals	**1,710**	**8.0**	**65.1**	**4.85**	**0.70**	**230.13**	**80.71**	**.**	**.**	**2**	**533**

Table CK12-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2012. 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**		**% Occur**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	5,474	24.4	81.3	28.51	3.20	155.51	215	97	0.25	47	176
Bairdiella chrysoura	4,302	19.2	39.6	22.41	10.72	663.07	1,993	135	0.26	77	170
Mugil cephalus	2,500	11.2	72.9	13.02	2.88	306.56	461	204	1.30	104	464
Leiostomus xanthurus	2,254	10.1	52.6	11.74	1.96	230.77	181	147	0.45	67	223
Dasyatis sabina	1,498	6.7	79.2	7.80	0.75	132.70	54	220	1.07	81	355
Ogcocephalus cubifrons	703	3.1	36.5	3.66	0.76	288.03	88	148	1.07	40	222
Orthopristis chrysoptera	656	2.9	37.0	3.42	0.60	245.36	73	131	1.20	55	216
Ariopsis felis	632	2.8	43.8	3.29	0.58	245.59	78	214	2.33	74	392
Elops saurus	452	2.0	41.1	2.35	0.35	204.15	29	264	1.92	141	456
Etropus crossotus	434	1.9	34.9	2.26	0.43	264.80	47	86	0.82	38	191
Subtotal	18,905	84.3	.	.	.	.	.	.	.	38	464
Totals	**22,392**	**100.0**	**.**	**116.63**	**12.55**	**149.12**	**2,084**	**.**	**.**	**16**	**1195**

Table CK12-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil cephalus	2,500	11.2	72.9	13.02	2.88	306.56	461	204	1.30	104	464
Leiostomus xanthurus	2,254	10.1	52.6	11.74	1.96	230.77	181	147	0.45	67	223
Elops saurus	452	2.0	41.1	2.35	0.35	204.15	29	264	1.92	141	456
Pogonias cromis	392	1.8	32.8	2.04	0.60	409.02	93	223	10.43	91	893
Mugil curema	262	1.2	27.1	1.36	0.27	270.92	20	165	2.88	97	293
Paralichthys albigutta	140	0.6	30.7	0.73	0.11	205.75	10	155	6.16	53	490
Sciaenops ocellatus	133	0.6	25.0	0.69	0.13	253.48	14	363	10.28	121	683
Cynoscion nebulosus	133	0.6	26.0	0.69	0.16	316.98	25	209	5.96	112	392
Archosargus probatocephalus	125	0.6	25.0	0.65	0.13	266.65	14	294	5.77	89	446
Menticirrhus americanus	100	0.4	21.9	0.52	0.09	250.81	8	182	5.10	29	302
Callinectes sapidus	80	0.4	24.0	0.42	0.07	221.48	6	110	5.43	29	236
Lutjanus griseus	54	0.2	7.8	0.28	0.12	583.73	18	153	2.85	95	193
Scomberomorus maculatus	44	0.2	12.5	0.23	0.06	334.03	6	236	14.90	85	536
Farfantepenaeus duorarum	21	0.1	7.3	0.11	0.04	480.27	6	23	1.10	16	35
Mugil gyrans	19	0.1	2.1	0.10	0.06	777.68	8	134	4.26	107	186
Cynoscion arenarius	15	0.1	4.7	0.08	0.03	522.52	3	185	15.19	89	265
Lutjanus synagris	15	0.1	4.7	0.08	0.03	569.64	4	82	2.75	55	95

Table CK12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus falcatus	11	<0.1	3.1	0.06	0.03	648.55	4	87	7.50	44	146
Micropogonias undulatus	11	<0.1	2.1	0.06	0.03	761.66	5	181	15.33	136	282
Centropomus undecimalis	10	<0.1	3.6	0.05	0.02	580.82	3	339	88.42	105	760
Menippe spp.	3	<0.1	1.6	0.02	0.01	795.80	1	53	21.13	28	95
Trachinotus carolinus	3	<0.1	1.6	0.02	0.01	795.80	1	257	20.80	220	292
Rachycentron canadum	1	<0.1	0.5	0.01	0.01	1,385.64	1	174	.	174	174
Totals	**6,778**	**30.3**	**98.4**	**35.30**	**3.85**	**150.92**	**493**	**.**	**.**	**16**	**893**

Table CK12-06. Catch statistics for 10 dominant taxa collected in 120 6.1-m bay otter trawl samples during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Chloroscombrus chrysurus	1,631	15.4	12.5	0.92	0.84	997.62	100.65	43	0.18	10	103
Anchoa hepsetus	1,073	10.2	16.7	0.60	0.54	986.94	65.16	28	0.24	24	108
Anchoa mitchilli	1,035	9.8	13.3	0.60	0.32	580.42	31.31	40	0.29	19	75
Orthopristis chrysoptera	952	9.0	45.8	0.60	0.36	652.80	42.54	104	0.81	41	194
Portunus spp.	898	8.5	37.5	0.56	0.47	908.29	55.84	26	0.25	5	72
Lagodon rhomboides	880	8.3	48.3	0.54	0.24	495.05	27.43	97	0.57	32	179
Menticirrhus americanus	577	5.5	27.5	0.33	0.14	471.85	14.98	44	1.96	11	252
Bairdiella chrysoura	545	5.2	12.5	0.32	0.23	771.16	26.91	117	0.68	29	158
Etropus crossotus	436	4.1	73.3	0.26	0.03	120.50	1.69	79	0.92	24	147
Cynoscion arenarius	348	3.3	18.3	0.21	0.10	524.00	9.04	37	2.11	8	220
Subtotal	8,375	79.3	.	.	.	.	.	.	.	5	252
Totals	**10,568**	**100.0**	**.**	**6.25**	**1.42**	**248.46**	**111.64**	**.**	**.**	**3**	**1114**

Table CK12-07. Catch statistics for Selected Taxa collected in 120 6.1-m bay otter trawl samples during Cedar Key stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Menticirrhus americanus	577	5.5	27.5	0.33	0.14	471.85	14.98	44	1.96	11	252
Cynoscion arenarius	348	3.3	18.3	0.21	0.10	524.00	9.04	37	2.11	8	220
Menippe spp.	164	1.6	39.2	0.10	0.02	227.61	1.59	21	1.03	3	74
Farfantepenaeus spp.	80	0.8	12.5	0.05	0.03	653.52	3.10	9	0.34	3	15
Farfantepenaeus duorarum	53	0.5	17.5	0.03	0.01	361.73	1.08	21	0.89	15	41
Paralichthys albigutta	46	0.4	26.7	0.03	0.01	318.03	0.88	153	7.10	71	288
Leiostomus xanthurus	30	0.3	9.2	0.02	0.01	399.18	0.50	148	2.44	114	169
Cynoscion nebulosus	20	0.2	2.5	0.01	0.01	781.13	0.88	24	3.72	12	58
Lutjanus synagris	16	0.2	7.5	0.01	<0.01	449.24	0.37	73	4.07	32	102
Callinectes sapidus	13	0.1	6.7	0.01	<0.01	439.97	0.27	80	15.42	11	167
Totals	**1,347**	**12.8**	**74.2**	**0.79**	**0.25**	**342.56**	**25.43**	**.**	**.**	**3**	**288**

Table CK12-08. Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples conducted in tidal creeks during Cedar Key stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	7,437	40.7	66.7	101.27	30.67	314.72	2,419.12	29	0.11	14	76
Leiostomus xanthurus	4,715	25.8	24.1	64.20	55.36	896.18	5,976.47	19	0.07	11	158
Menidia spp.	2,354	12.9	66.7	32.05	6.09	197.35	386.76	47	0.23	12	87
Eucinostomus spp.	709	3.9	43.5	9.65	2.03	218.36	107.35	23	0.28	8	39
Brevoortia spp.	694	3.8	9.3	9.45	7.94	872.92	847.06	21	0.08	17	30
Membras martinica	455	2.5	12.0	6.20	3.06	512.84	230.88	36	0.88	16	89
Lagodon rhomboides	413	2.3	51.9	5.62	1.76	326.14	169.12	34	1.13	12	142
Bairdiella chrysoura	325	1.8	25.9	4.43	1.70	400.38	163.24	33	1.27	10	134
Anchoa hepsetus	225	1.2	13.0	3.06	2.03	687.81	210.29	27	0.65	16	110
Harengula jaguana	133	0.7	9.3	1.81	0.94	540.76	88.24	42	1.46	18	88
Subtotal	17,460	95.6	.	.	.	.	.	.	.	8	158
Totals	**18,254**	**100.0**	**.**	**248.56**	**66.21**	**276.82**	**6,230.88**	**.**	**.**	**3**	**313**

Table CK12-09. Catch statistics for Selected Taxa collected in 108 21.3-m river seine samples conducted in tidal creeks during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	4,715	25.8	24.1	64.20	55.36	896.18	5,976.47	19	0.07	11	158
Callinectes sapidus	131	0.7	36.1	1.78	0.50	291.11	44.12	16	1.49	5	161
Mugil cephalus	83	0.5	16.7	1.13	0.53	489.33	52.94	39	3.66	18	148
Cynoscion arenarius	54	0.3	13.9	0.74	0.24	337.67	17.65	39	2.13	18	90
Farfantepenaeus spp.	42	0.2	19.4	0.57	0.15	265.03	8.82	7	0.51	3	13
Sciaenops ocellatus	41	0.2	8.3	0.56	0.34	639.90	35.29	28	1.78	15	73
Cynoscion nebulosus	23	0.1	12.0	0.31	0.09	308.22	5.88	60	7.65	15	151
Lutjanus griseus	11	0.1	9.3	0.15	0.05	327.15	2.94	85	10.99	25	123
Farfantepenaeus duorarum	6	<0.1	2.8	0.08	0.06	731.40	5.88	17	1.02	15	21
Menticirrhus americanus	6	<0.1	2.8	0.08	0.06	731.40	5.88	38	7.97	25	77
Pogonias cromis	5	<0.1	3.7	0.07	0.04	543.26	2.94	134	29.62	91	250
Mugil curema	2	<0.1	1.9	0.03	0.02	731.40	1.47	37	5.00	32	42
Paralichthys lethostigma	2	<0.1	1.9	0.03	0.02	731.40	1.47	244	45.50	198	289
Centropomus undecimalis	1	<0.1	0.9	0.01	0.01	1,039.23	1.47	85	.	85	85
Totals	**5,122**	**28.1**	**75.0**	**69.74**	**55.39**	**825.31**	**5,982.35**	**.**	**.**	**3**	**289**

Table CK12-10. Catch statistics for 10 dominant taxa collected in 60 21.3-m river seine samples conducted in the Lower Suwannee River (LSR) during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	8,357	77.0	40.0	204.83	110.89	419.36	5,697.06	26	0.08	16	69
Menidia spp.	601	5.5	45.0	14.73	5.05	265.56	250.00	47	0.49	16	88
Eucinostomus spp.	498	4.6	51.7	12.21	3.19	202.23	97.06	24	0.29	9	39
Notropis petersoni	260	2.4	23.3	6.37	3.10	376.60	160.29	28	0.35	17	52
Leiostomus xanthurus	188	1.7	21.7	4.61	2.29	385.16	129.41	26	0.67	12	59
Callinectes sapidus	148	1.4	58.3	3.63	0.70	150.48	23.53	19	1.61	6	135
Eucinostomus harengulus	139	1.3	33.3	3.41	0.89	202.85	30.88	57	1.01	41	91
Brevoortia spp.	138	1.3	3.3	3.38	3.36	768.91	201.47	24	0.28	20	31
Lagodon rhomboides	124	1.1	30.0	3.04	1.03	262.75	41.18	37	1.73	10	146
Anchoa hepsetus	64	0.6	11.7	1.57	0.95	468.87	44.12	41	1.69	24	59
Subtotal	10,517	96.9	.	.	.	.	.	.	.	6	146
Totals	**10,847**	**100.0**	**.**	**265.86**	**111.03**	**323.48**	**5,714.71**	**.**	**.**	**4**	**515**

Table CK12-11. Catch statistics for Selected Taxa collected in 60 21.3-m river seine samples conducted in the Lower Suwannee River (LSR) during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	188	1.7	21.7	4.61	2.29	385.16	129.41	26	0.67	12	59
Callinectes sapidus	148	1.4	58.3	3.63	0.70	150.48	23.53	19	1.61	6	135
Sciaenops ocellatus	39	0.4	8.3	0.96	0.58	472.13	32.35	27	2.18	13	63
Farfantepenaeus spp.	15	0.1	5.0	0.37	0.32	673.47	19.12	7	0.67	4	13
Lutjanus griseus	11	0.1	11.7	0.27	0.11	309.40	4.41	96	11.07	40	141
Mugil cephalus	9	0.1	8.3	0.22	0.13	456.38	7.35	36	10.24	21	114
Cynoscion arenarius	4	<0.1	5.0	0.10	0.06	467.59	2.94	25	3.64	15	32
Archosargus probatocephalus	3	<0.1	3.3	0.07	0.05	573.42	2.94	215	54.34	145	322
Paralichthys albigutta	3	<0.1	3.3	0.07	0.05	573.42	2.94	64	17.61	34	95
Cynoscion nebulosus	2	<0.1	1.7	0.05	0.05	774.60	2.94	45	11.00	34	56
Mugil curema	1	<0.1	1.7	0.02	0.02	774.60	1.47	250	.	250	250
Paralichthys lethostigma	1	<0.1	1.7	0.02	0.02	774.60	1.47	235	.	235	235
Totals	**424**	**3.9**	**76.7**	**10.39**	**2.76**	**205.61**	**135.29**	**.**	**.**	**4**	**322**

Table CK12-12. Catch statistics for 10 dominant taxa collected in 60 6.1-m river otter trawl samples conducted in the Lower Suwannee River (LSR) during Cedar Key stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	905	27.1	33.3	2.01	1.09	417.76	60.58	40	0.39	16	65
Callinectes sapidus	554	16.6	73.3	1.27	0.48	291.12	26.44	34	1.57	5	181
Lagodon rhomboides	501	15.0	30.0	1.03	0.51	382.04	28.33	24	0.52	12	125
Cynoscion arenarius	365	10.9	41.7	0.82	0.28	264.20	11.60	38	1.03	7	99
Bairdiella chrysoura	334	10.0	30.0	0.77	0.26	264.58	10.12	107	1.88	41	165
Eucinostomus spp.	75	2.2	13.3	0.18	0.11	468.58	6.00	27	0.69	12	39
Ameiurus catus	69	2.1	21.7	0.17	0.05	241.79	2.19	77	3.06	23	134
Menticirrhus americanus	66	2.0	10.0	0.15	0.08	419.30	4.32	20	0.79	12	39
Trinectes maculatus	59	1.8	16.7	0.14	0.07	369.46	3.45	51	1.16	34	76
Eucinostomus harengulus	59	1.8	26.7	0.13	0.05	262.21	1.62	66	1.74	40	90
Subtotal	2,987	89.5	.	.	.	.	.	.	.	5	181
Totals	**3,343**	**100.0**	**.**	**7.52**	**1.37**	**140.68**	**65.70**	**.**	**.**	**4**	**1037**

Table CK12-13. Catch statistics for Selected Taxa collected in 60 6.1-m river otter trawl samples conducted in the Lower Suwannee River (LSR) during Cedar Key stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Callinectes sapidus	554	16.6	73.3	1.27	0.48	291.12	26.44	34	1.57	5	181
Cynoscion arenarius	365	10.9	41.7	0.82	0.28	264.20	11.60	38	1.03	7	99
Menticirrhus americanus	66	2.0	10.0	0.15	0.08	419.30	4.32	20	0.79	12	39
Leiostomus xanthurus	41	1.2	21.7	0.09	0.04	314.83	2.02	67	7.39	9	165
Farfantepenaeus spp.	33	1.0	23.3	0.08	0.02	249.68	1.08	10	0.61	4	18
Sciaenops ocellatus	21	0.6	11.7	0.05	0.02	343.35	0.94	36	4.28	15	87
Menippe spp.	16	0.5	3.3	0.04	0.04	620.34	2.02	21	2.61	9	37
Lutjanus griseus	20	0.6	13.3	0.03	0.01	299.03	0.54	113	6.34	58	149
Paralichthys albigutta	6	0.2	8.3	0.01	0.01	361.59	0.30	84	28.91	15	180
Cynoscion nebulosus	4	0.1	5.0	0.01	0.01	455.95	0.27	113	34.30	15	175
Farfantepenaeus duorarum	4	0.1	6.7	0.01	<0.01	379.42	0.17	18	1.31	16	22
Paralichthys lethostigma	2	0.1	3.3	<0.01	<0.01	543.84	0.15	242	21.00	221	263
Menticirrhus saxatilis	1	<0.1	1.7	<0.01	<0.01	774.60	0.13	34	.	34	34
Elops saurus	1	<0.1	1.7	<0.01	<0.01	774.60	0.11	298	.	298	298
Pogonias cromis	1	<0.1	1.7	<0.01	<0.01	774.60	0.11	136	.	136	136
Totals	**1,135**	**34.0**	**91.7**	**2.58**	**0.57**	**170.23**	**27.52**	**.**	**.**	**4**	**298**

Appendix CK12-01. Monthly summary of species collected during Cedar Key stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Acanthostracion quadricornis	2	4	1	3	.	.	.	.	4	1	5	.	20
Achirus lineatus	.	.	.	.	.	1	4	12	.	.	3	.	20
Adinia xenica	1	2	.	1	.	.	4	2	.	4	.	1	15
Aetobatus narinari	.	.	.	.	.	.	.	1	.	.	.	.	1
Alosa alabamae	10	8	2	.	.	.	1	.	.	.	.	.	21
Alosa chrysochloris	.	.	.	.	.	.	1	.	.	.	.	.	1
Aluterus schoepfii	.	.	.	.	.	1	4	1	.	.	.	.	6
Ameiurus catus	.	.	.	.	1	.	27	6	19	8	8	.	69
Anarchopterus criniger	.	.	.	.	.	.	.	.	1	.	.	.	1
Anchoa hepsetus	.	.	12	391	404	37	1,898	11	26	9	9	8	2,805
Anchoa lyolepis	.	.	.	.	.	.	.	.	.	.	1	1	2
Anchoa mitchilli	2,501	1,260	183	264	6,305	6,011	1,632	925	1,351	1,666	1,575	182	23,855
Ancylopsetta quadrocellata	.	3	8	3	2	.	1	.	.	.	.	.	17
Anguilla rostrata	.	.	.	.	.	.	1	.	.	.	.	.	1
Archosargus probatocephalus	1	3	26	2	11	5	5	7	12	28	8	22	130
Argopecten spp.	.	.	.	.	1	1	1	.	.	.	.	.	3
Ariopsis felis	36	4	201	54	63	195	175	150	80	569	72	27	1,626
Astroscopus y-graecum	.	.	1	.	.	.	.	.	.	.	.	1	2
Bagre marinus	.	.	.	7	9	14	47	112	117	110	.	.	416
Bairdiella chrysoura	417	127	2,142	684	516	545	505	535	262	92	245	90	6,160
Bathygobius soporator	.	1	.	.	.	.	3	12	1	2	7	.	26
Brevoortia spp.	.	21	23	428	603	55	10	29	69	1	22	3	1,264
Calamus arctifrons	.	.	1	1	5	2	2	1	.	1	2	1	16
Callinectes sapidus	110	115	103	34	16	22	158	39	16	21	63	383	1,080
Callinectes similis	.	.	.	.	.	.	1	.	.	.	.	.	1
Caranx crysos	.	.	1	.	.	.	.	.	.	.	.	.	1
Caranx hippos	.	.	1	.	.	1	.	2	2	20	.	.	26
Carcharhinus leucas	.	.	.	.	.	.	.	1	.	.	.	.	1
Centropomus undecimalis	.	.	.	1	1	.	1	.	1	1	6	.	11

Appendix CK12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Centropristis striata	4	9	9	3	1	1	1	5	24	.	22	6	85
Chaetodipterus faber	.	.	4	8	4	9	14	45	14	40	4	.	142
Chasmodes saburrae	2	2	.	5	1	1	1	2	1	.	1	.	16
Chilomycterus schoepfii	3	4	9	3	5	7	1	4	7	1	14	4	62
Chloroscombrus chrysurus	.	.	.	.	.	2	13	1,518	1,395	10	4	20	2,962
Citharichthys macrops	1	5	2	2	2	.	3	.	2	4	17	12	50
Ctenogobius boleosoma	.	.	.	.	.	1	.	1	.	.	5	3	10
Cynoscion arenarius	.	.	2	163	34	284	64	307	138	38	94	2	1,126
Cynoscion nebulosus	32	22	22	9	1	21	66	24	13	16	14	4	244
Cyprinodon variegatus	11	.	.	.	.	.	.	.	.	.	.	.	11
Dasyatis americana	.	.	.	1	.	.	.	.	1	.	.	.	2
Dasyatis sabina	23	150	251	131	142	157	90	143	94	195	126	198	1,700
Dasyatis say	.	.	6	15	20	10	1	5	4	22	.	10	93
Diplectrum formosum	.	1	1	.	1	1	.	.	.	.	1	2	7
Diplodus holbrookii	1	.	3	19	35	3	1	4	5	15	10	.	96
Dorosoma cepedianum	.	1	3	.	.	.	.	1	.	.	.	.	5
Dorosoma petenense	.	.	24	16	5	10	2	.	4	.	.	.	61
Echeneis neucratoides	.	.	.	9	9	2	6	.	6	3	5	.	40
Elops saurus	.	3	23	53	37	91	32	24	42	121	20	7	453
Erimyzon sucetta	.	.	.	.	.	.	1	.	.	.	.	.	1
Etropus crossotus	65	83	138	35	12	26	17	94	113	72	159	102	916
Eucinostomus gula	20	4	14	6	.	1	5	39	81	76	46	19	311
Eucinostomus harengulus	37	1	34	36	31	7	97	64	128	49	53	63	600
Eucinostomus spp.	32	53	13	.	8	318	404	130	265	258	143	156	1,780
Farfantepenaeus duorarum	6	12	9	5	4	.	5	34	4	1	12	2	94
Farfantepenaeus spp.	10	6	6	.	.	52	130	68	20	48	22	32	394
Floridichthys carpio	1	.	12	.	.	.	.	.	.	.	.	.	13
Fundulus grandis	23	2	10	.	2	2	20	11	3	19	12	25	129

Appendix CK12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Fundulus seminolis	.	2	2	.	.	.	.	1	.	.	1	.	6
Fundulus similis	33	1	6	3	.	1	2	.	11	7	16	11	91
Gambusia holbrooki	.	4	.	.	.	.	6	.	.	.	.	.	10
Gobiesox strumosus	.	.	.	.	.	.	3	2	.	.	.	.	5
Gobiosoma bosc	1	2	1	.	.	12	8	3	1	.	5	1	34
Gobiosoma robustum	1	.	.	.	.	.	1	.	.	.	.	.	2
Gobiosoma spp.	1	3	.	.	4	35	13	3	.	1	6	1	67
Gymnura micrura	.	.	1	1	5	7	2	6	4	2	.	.	28
Haemulon plumierii	.	.	4	1	.	.	.	.	5	.	5	.	15
Halichoeres bivittatus	.	.	1	.	.	.	.	.	1	.	.	.	2
Harengula jaguana	.	1	7	18	6	200	245	46	254	42	1	2	822
Hemicaranx amblyrhynchus	.	.	.	.	.	.	2	2	6	.	.	.	10
Hippocampus erectus	1	1	2	1	1	.	.	1	.	.	.	2	9
Hippocampus zosterae	.	.	.	.	1	.	.	.	.	.	.	.	1
Hypleurochilus caudovittatus	1	.	.	.	.	.	.	1	.	.	1	.	3
Hyporhamphus meeki	.	.	.	5	17	12	27	7	.	.	1	.	69
Hypsoblennius hentz	.	1	.	.	.	1	.	.	.	.	1	.	3
Ictalurus punctatus	.	.	.	.	.	.	17	12	1	6	.	.	36
Labidesthes sicculus	.	.	.	.	.	13	.	.	1	.	.	.	14
Lagodon rhomboides	402	1,224	839	1,532	1,059	589	494	857	785	660	789	432	9,662
Leiostomus xanthurus	4,977	292	311	355	332	313	243	265	202	290	1	6	7,587
Lepisosteus osseus	10	1	2	2	3	4	5	3	1	4	1	1	37
Lepisosteus platyrhincus	3	.	1	.	.	.	.	.	.	.	.	.	4
Lepomis auritus	.	.	.	.	.	.	1	2	4	1	6	.	14
Lepomis macrochirus	.	.	.	.	.	.	.	3	.	.	1	.	4
Lepomis microlophus	.	.	.	.	.	1	.	1	.	2	1	.	5
Lepomis punctatus	1	.	.	.	.	.	.	1	.	.	.	.	2
Lepomis spp.	.	1	.	.	.	.	.	2	.	.	.	.	3

Appendix CK12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Limulus polyphemus	.	2	.	1	.	1	14	1	.	3	.	.	22
Lobotes surinamensis	.	.	.	1	.	.	.	.	.	.	.	.	1
Lucania goodei	.	1	.	.	.	.	.	.	.	.	.	.	1
Lucania parva	.	.	.	.	.	4	.	.	.	.	.	.	4
Lutjanus griseus	.	.	2	4	2	9	3	4	11	35	29	12	111
Lutjanus synagris	.	.	.	.	.	.	.	30	35	9	17	.	91
Membras martinica	1	27	4	84	997	1,948	425	175	733	56	4	2	4,456
Menidia spp.	82	106	91	41	53	415	536	260	650	701	198	133	3,266
Menippe spp.	42	4	14	8	1	10	3	23	4	9	44	33	195
Menticirrhus americanus	1	3	19	42	78	44	120	461	72	67	29	5	941
Menticirrhus saxatilis	.	.	.	39	5	.	.	.	.	.	1	.	45
Microgobius gulosus	.	.	2	2	3	2	7	6	.	.	1	.	23
Microgobius thalassinus	.	.	.	.	.	4	4	1	.	4	.	2	15
Micropogonias undulatus	.	.	.	.	.	.	5	.	4	2	.	.	11
Micropterus salmoides	3	4	.	.	.	.	2	1	.	1	1	1	13
Monacanthus ciliatus	1	.	4	.	1	.	.	3	1	.	13	.	23
Mugil cephalus	297	436	777	57	97	93	115	138	60	158	94	347	2,669
Mugil curema	22	2	44	3	8	10	4	32	14	45	35	55	274
Mugil gyrans	.	.	.	1	1	.	5	.	.	13	1	.	21
Mycteroperca microlepis	.	.	.	.	.	.	.	2	.	.	.	.	2
Myrophis punctatus	3	.	.	.	.	.	4	.	1	.	.	.	8
Narcine bancroftii	.	.	.	.	.	.	.	1	1	.	.	.	2
Nicholsina usta	.	.	.	.	.	.	.	.	.	.	6	3	9
Notropis petersoni	.	1	.	.	.	13	8	169	20	49	.	.	260
Ogcocephalus cubifrons	32	149	180	80	30	81	45	20	31	72	71	97	888
Oligoplites saurus	.	.	.	2	1	37	15	25	11	6	.	2	99
Ophidion holbrookii	.	.	.	.	.	.	.	.	.	.	1	.	1
Opisthonema oglinum	.	.	.	6	4	5	12	1	53	3	.	1	85

Appendix CK12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Opsanus beta	1	2	1	3	1	1	3	10	.	4	2	1	29
Orthopristis chrysoptera	.	58	81	353	174	196	52	165	171	157	107	570	2,084
Parablennius marmoreus	.	.	.	1	.	.	.	.	.	.	.	.	1
Paraclinus marmoratus	.	1	1	.	.	.	.	.	.	.	.	.	2
Paralichthys albigutta	14	25	41	18	14	42	9	14	15	18	2	6	218
Paralichthys lethostigma	.	1	.	.	1	1	2	.	.	.	.	.	5
Peprilus burti	.	.	.	.	.	.	.	.	.	.	1	.	1
Peprilus paru	.	.	.	.	.	.	.	.	42	77	.	1	120
Poecilia latipinna	.	.	.	.	.	1	2	1	.	.	.	.	4
Pogonias cromis	9	14	3	13	11	14	16	55	115	38	92	37	417
Portunus spp.	3	2	62	16	10	778	4	4	6	7	11	13	916
Prionotus scitulus	14	21	33	25	25	15	8	9	39	22	50	19	280
Prionotus tribulus	5	19	16	3	9	2	1	1	3	1	19	17	96
Rachycentron canadum	.	.	.	.	.	.	1	1	.	.	.	.	2
Raja texana	.	.	.	.	.	.	.	.	.	.	.	1	1
Rhinoptera bonasus	.	9	2	32	11	16	7	11	39	1	5	3	136
Rhizoprionodon terraenovae	.	.	.	.	.	1	1	.	.	.	.	.	2
Sciaenops ocellatus	24	7	16	3	16	10	15	16	5	19	56	55	242
Scomberomorus maculatus	.	1	9	15	.	3	.	1	8	6	1	3	47
Scorpaena brasiliensis	.	.	.	.	.	.	.	.	.	.	1	.	1
Selene vomer	.	.	.	.	2	1	8	21	7	2	.	.	41
Serranus subligarius	1	2	.	.	.	.	.	.	.	.	.	.	3
Sicyonia parri	.	.	.	1	.	.	.	.	.	.	.	.	1
Sphoeroides nephelus	1	5	2	8	22	7	4	5	7	6	9	2	78
Sphoeroides spengleri	.	.	.	.	.	.	.	1	1	.	.	.	2
Sphyraena borealis	.	.	.	2	.	.	.	.	.	1	.	.	3
Sphyrna tiburo	.	.	1	3	8	2	.	3	7	6	.	.	30
Stephanolepis hispidus	.	2	2	30	9	3	23	4	9	3	11	3	99

Appendix CK12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=66	E=792
Strongylura marina	2	4	12	5	3	5	1	2	2	6	11	.	53
Strongylura notata	.	1	.	1	1	.	5	5	.	1	6	.	20
Strongylura spp.	.	.	.	11	3	.	.	2	1	2	.	.	19
Strongylura timucu	.	.	.	.	12	5	7	5	.	3	1	.	33
Symphurus plagiusa	1	2	22	7	5	15	7	22	37	9	21	10	158
Syngnathus floridae	1	1	5	9	9	5	17	27	13	1	9	2	99
Syngnathus louisianae	.	.	.	.	2	6	2	4	5	.	1	2	22
Syngnathus scovelli	1	5	3	5	4	31	18	18	2	4	2	2	95
Trachinotus carolinus	.	.	.	.	.	.	1	.	1	1	.	.	3
Trachinotus falcatus	.	.	.	.	.	.	10	4	78	8	3	.	103
Trinectes maculatus	2	.	4	4	3	6	76	46	9	8	4	.	162
Tylosurus crocodilus	.	.	.	.	.	.	.	3	.	.	.	.	3
Synodus foetens	.	.	2	23	22	20	9	5	.	3	2	8	94
Urophycis floridana	11	5	5	.	.	.	.	.	.	.	.	1	22
Urophycis regia	.	1	.	.	.	.	.	.	.	.	.	.	1
Totals	**9,354**	**4,362**	**5,937**	**5,272**	**11,377**	**12,946**	**8,160**	**7,405**	**7,924**	**6,183**	**4,618**	**3,291**	**86,829**

Appendix CK12-02. Summary by gear, stratum, and zone of species collected during Cedar Key stratified-random sampling, 2012. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were post-stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl were not stratified. Zone B encompassed the northern portion of the universe and included all tidal creeks; Zone C encompassed the southern portion of the universe; and Zone F encompassed the lower Suwannee River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				B	C	F	
	E=38	E=106	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Acanthostracion quadricornis	1	.	.	.	3	16	1	19	.	20
Achirus lineatus	.	4	3	2	1	10	13	7	.	20
Adinia xenica	.	.	1	14	.	.	13	1	1	15
Aetobatus narinari	.	.	.	.	.	1	.	1	.	1
Alosa alabamae	.	.	.	1	20	.	18	2	1	21
Alosa chrysochloris	.	.	.	.	.	1	.	.	1	1
Aluterus schoepfii	1	.	.	.	1	4	.	6	.	6
Ameiurus catus	.	.	.	.	.	69	.	.	69	69
Anarchopterus criniger	.	.	.	.	.	1	.	1	.	1
Anchoa hepsetus	7	314	1,121	289	1	1,073	1,669	1,072	64	2,805
Anchoa lyolepis	.	1	.	.	.	1	.	2	.	2
Anchoa mitchilli	200	1,138	4,783	15,794	.	1,940	11,444	3,149	9,262	23,855
Ancylopsetta quadrocellata	.	.	.	.	7	10	6	11	.	17
Anguilla rostrata	.	.	.	.	.	1	.	.	1	1
Archosargus probatocephalus	.	1	1	3	125	.	97	30	3	130
Argopecten spp.	2	.	.	.	1	.	.	3	.	3
Ariopsis felis	5	621	18	1	632	349	464	1,127	35	1,626
Astroscopus y-graecum	.	.	1	.	.	1	.	2	.	2
Bagre marinus	.	104	2	.	219	91	108	307	1	416
Bairdiella chrysoura	293	265	74	347	4,302	879	2,289	3,515	356	6,160
Bathygobius soporator	.	.	1	23	.	2	3	.	23	26
Brevoortia spp.	.	112	37	832	283	.	1,034	92	138	1,264
Calamus arctifrons	1	.	.	.	3	12	.	16	.	16
Callinectes sapidus	5	44	105	279	80	567	262	116	702	1,080
Callinectes similis	.	.	.	.	.	1	1	.	.	1
Caranx crysos	.	.	.	.	1	.	1	.	.	1

Appendix CK12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				B	C	F	
	E=38	E=106	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Caranx hippos	.	.	.	1	25	.	20	6	.	26
Carcharhinus leucas	.	.	.	.	1	.	1	.	.	1
Centropomus undecimalis	.	.	.	1	10	.	6	5	.	11
Centropristis striata	30	1	.	.	3	51	5	80	.	85
Chaetodipterus faber	.	2	2	6	71	61	97	45	.	142
Chasmodes saburrae	11	.	1	.	1	3	.	16	.	16
Chilomycterus schoepfii	11	1	3	.	9	38	10	52	.	62
Chloroscombrus chrysurus	3	1,301	4	.	23	1,631	1,622	1,340	.	2,962
Citharichthys macrops	1	2	.	.	1	46	19	31	.	50
Ctenogobius boleosoma	.	1	1	8	.	.	10	.	.	10
Cynoscion arenarius	.	140	200	58	15	713	452	305	369	1,126
Cynoscion nebulosus	23	24	15	25	133	24	155	83	6	244
Cyprinodon variegatus	.	2	1	8	.	.	8	3	.	11
Dasyatis americana	.	.	.	.	2	.	.	2	.	2
Dasyatis sabina	4	17	24	4	1,498	153	801	871	28	1,700
Dasyatis say	.	2	3	.	74	14	26	67	.	93
Diplectrum formosum	.	.	.	.	.	7	1	6	.	7
Diplodus holbrookii	58	.	.	.	21	17	1	95	.	96
Dorosoma cepedianum	.	.	.	.	5	.	1	4	.	5
Dorosoma petenense	.	.	.	1	60	.	13	48	.	61
Echeneis neucratoides	1	.	.	.	38	1	27	12	1	40
Elops saurus	.	.	.	.	452	1	237	215	1	453
Erimyzon sucetta	.	.	.	1	.	.	.	.	1	1
Etropus crossotus	1	20	18	1	434	442	396	514	6	916
Eucinostomus gula	11	14	91	12	51	132	70	224	17	311
Eucinostomus harengulus	20	33	160	239	80	68	231	171	198	600
Eucinostomus spp.	23	24	447	1,207	.	79	840	367	573	1,780
Farfantepenaeus duorarum	1	6	3	6	21	57	52	38	4	94
Farfantepenaeus spp.	53	49	122	57	.	113	206	140	48	394
Floridichthys carpio	1	.	11	.	1	.	.	13	.	13
Fundulus grandis	.	.	35	93	1	.	103	23	3	129
Fundulus seminolis	.	.	.	6	.	.	.	.	6	6
Fundulus similis	.	1	30	59	1	.	66	24	1	91

Appendix CK12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				B	C	F	
	E=38	E=106	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Gambusia holbrooki	.	.	.	10	.	.	.	.	10	10
Gobiesox strumosus	.	3	.	.	.	2	4	.	1	5
Gobiosoma bosc	.	1	9	14	.	10	15	2	17	34
Gobiosoma robustum	2	.	.	.	.	.	1	1	.	2
Gobiosoma spp.	.	5	12	23	.	27	11	11	45	67
Gymnura micrura	.	1	.	.	22	5	7	21	.	28
Haemulon plumierii	7	.	.	.	.	8	.	15	.	15
Halichoeres bivittatus	1	.	.	.	.	1	.	2	.	2
Harengula jaguana	2	34	317	134	327	8	490	330	2	822
Hemicaranx amblyrhynchus	.	.	3	.	5	2	2	8	.	10
Hippocampus erectus	1	.	.	.	.	8	4	5	.	9
Hippocampus zosterae	.	.	1	.	.	.	.	1	.	1
Hypleurochilus caudovittatus	.	.	.	.	.	3	2	1	.	3
Hyporhamphus meeki	32	27	7	2	1	.	1	67	1	69
Hypsoblennius hentz	1	.	1	.	.	1	1	2	.	3
Ictalurus punctatus	.	.	.	.	.	36	.	.	36	36
Labidesthes sicculus	.	.	.	14	.	.	.	.	14	14
Lagodon rhomboides	1,796	79	395	537	5,474	1,381	2,378	6,659	625	9,662
Leiostomus xanthurus	8	113	238	4,903	2,254	71	5,986	1,372	229	7,587
Lepisosteus osseus	.	.	.	.	31	6	29	6	2	37
Lepisosteus platyrhincus	.	.	.	3	1	.	1	.	3	4
Lepomis auritus	.	.	.	12	1	1	1	.	13	14
Lepomis macrochirus	.	.	.	4	.	.	.	.	4	4
Lepomis microlophus	.	.	.	5	.	.	.	.	5	5
Lepomis punctatus	.	.	.	2	.	.	.	.	2	2
Lepomis spp.	.	.	.	3	.	.	.	.	3	3
Limulus polyphemus	.	15	.	.	6	1	15	7	.	22
Lobotes surinamensis	.	.	.	.	1	.	1	.	.	1
Lucania goodei	.	.	.	1	.	.	.	.	1	1
Lucania parva	.	.	.	4	.	.	.	.	4	4
Lutjanus griseus	.	1	14	22	54	20	63	17	31	111
Lutjanus synagris	60	.	.	.	15	16	5	86	.	91
Membras martinica	211	344	3,446	455	.	.	2,815	1,641	.	4,456

Appendix CK12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				B	C	F	
	E=38	E=106	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Menidia spp.	1	74	236	2,955	.	.	2,567	98	601	3,266
Menippe spp.	.	3	9	.	3	180	56	123	16	195
Menticirrhus americanus	44	90	58	6	100	643	651	224	66	941
Menticirrhus saxatilis	1	6	37	.	.	1	42	2	1	45
Microgobius gulosus	.	7	1	15	.	.	11	.	12	23
Microgobius thalassinus	.	11	4	.	.	.	.	15	.	15
Micropogonias undulatus	.	.	.	.	11	.	5	6	.	11
Micropterus salmoides	.	.	.	13	.	.	2	.	11	13
Monacanthus ciliatus	6	2	.	.	.	15	2	21	.	23
Mugil cephalus	1	1	75	92	2,500	.	1,713	947	9	2,669
Mugil curema	.	.	9	3	262	.	125	148	1	274
Mugil gyrans	.	.	2	.	19	.	1	20	.	21
Mycteroperca microlepis	2	.	.	.	.	.	.	2	.	2
Myrophis punctatus	1	4	2	.	.	1	2	5	1	8
Narcine bancroftii	.	.	.	.	.	2	2	.	.	2
Nicholsina usta	.	.	.	.	3	6	.	9	.	9
Notropis petersoni	.	.	.	260	.	.	.	.	260	260
Ogcocephalus cubifrons	1	4	2	.	703	178	105	783	.	888
Oligoplites saurus	1	14	58	17	8	1	52	39	8	99
Ophidion holbrookii	.	.	.	.	.	1	.	1	.	1
Opisthonema oglinum	.	13	30	12	14	16	66	19	.	85
Opsanus beta	2	.	1	1	9	16	7	20	2	29
Orthopristis chrysoptera	422	14	38	2	656	952	707	1,376	1	2,084
Parablennius marmoreus	.	.	.	.	.	1	1	.	.	1
Paraclinus marmoratus	.	.	.	.	.	2	2	.	.	2
Paralichthys albigutta	5	10	8	3	140	52	93	116	9	218
Paralichthys lethostigma	.	.	.	3	.	2	2	.	3	5
Peprilus burti	.	.	.	.	1	.	.	1	.	1
Peprilus paru	.	.	.	.	119	1	.	120	.	120
Poecilia latipinna	.	.	.	4	.	.	4	.	.	4
Pogonias cromis	1	.	18	5	392	1	356	60	1	417
Portunus spp.	1	5	2	1	9	898	817	99	.	916
Prionotus scitulus	1	17	16	.	7	239	100	177	3	280

Appendix CK12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				B	C	F	
	E=38	E=106	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Prionotus tribulus	.	2	10	4	64	16	42	50	4	96
Rachycentron canadum	1	.	.	.	1	.	.	2	.	2
Raja texana	.	.	.	.	.	1	.	1	.	1
Rhinoptera bonasus	.	.	3	.	131	2	38	98	.	136
Rhizoprionodon terraenovae	.	.	.	.	2	.	.	2	.	2
Sciaenops ocellatus	.	.	8	80	133	21	133	49	60	242
Scomberomorus maculatus	.	2	1	.	44	.	15	32	.	47
Scorpaena brasiliensis	.	1	.	.	.	.	.	1	.	1
Selene vomer	1	1	.	.	24	15	16	25	.	41
Serranus subligarius	.	.	.	.	.	3	3	.	.	3
Sicyonia parri	.	.	.	.	.	1	1	.	.	1
Sphoeroides nephelus	15	15	24	6	14	4	29	46	3	78
Sphoeroides spengleri	.	.	1	.	.	1	1	1	.	2
Sphyraena borealis	2	.	.	.	1	.	.	3	.	3
Sphyrna tiburo	.	.	.	.	28	2	8	22	.	30
Stephanolepis hispidus	49	5	7	.	3	35	15	84	.	99
Strongylura marina	1	1	5	.	46	.	30	23	.	53
Strongylura notata	.	3	12	1	4	.	10	10	.	20
Strongylura spp.	.	2	4	13	.	.	12	3	4	19
Strongylura timucu	.	1	17	15	.	.	20	11	2	33
Symphurus plagiusa	3	10	15	6	4	120	47	83	28	158
Syngnathus floridae	79	1	6	.	1	12	9	90	.	99
Syngnathus louisianae	3	.	.	.	.	19	2	18	2	22
Syngnathus scovelli	54	7	7	3	.	24	12	78	5	95
Synodus foetens	15	14	22	8	8	27	29	59	6	94
Trachinotus carolinus	.	.	.	.	3	.	1	2	.	3
Trachinotus falcatus	.	.	92	.	11	.	94	9	.	103
Trinectes maculatus	.	4	9	47	8	94	21	37	104	162
Tylosurus crocodilus	.	.	.	.	3	.	.	3	.	3
Urophycis floridana	.	3	.	.	1	18	10	12	.	22
Urophycis regia	.	.	.	.	.	1	1	.	.	1
Totals	**3,601**	**5,214**	**12,610**	**29,101**	**22,392**	**13,911**	**42,821**	**29,818**	**14,190**	**86,829**

Apalachicola Bay

Apalachicola Bay is a shallow, semi-enclosed estuary, located on the northwestern coast of Florida. The estuary is bounded by a barrier island complex (St. Vincent Island, Little St. George Island, St. George Island, and Dog Island) and connected to the Gulf of Mexico through four passes (Indian Pass, West Pass, East Pass, and Sikes Cut). East of Dog Island, St. George Sound is open to the Gulf (Figure AP12-01). Freshwater inflow to Apalachicola Bay primarily comes from the Apalachicola River and to a lesser extent the Carrabelle River (Livingston 1983). Shoreline vegetation consists largely of marsh grasses and bottom substrates are typically characterized as sand or mud with oyster beds scattered throughout the bay (Ingle and Dawson 1953). Less than 7% of the substrate is covered by seagrass (Continental Shelf Associates, Inc. 1985).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in Apalachicola Bay since 1998. The area sampled was divided into two geographically-defined bay zones (A and B) and one riverine zone (C; Figure AP12-01). Monthly stratified-random sampling (SRS) was conducted in Zones A and B using 21.3-m bay seines, 183-m haul seines, and 6.1-m bay otter trawls. Monthly SRS was conducted in Zone C with 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in Apalachicola Bay.

Stratified-Random Sampling

A total of 169,350 animals, which included 171 taxa of fishes and 12 taxa of selected invertebrates, were collected from 840 Apalachicola Bay SRS samples in 2012 (Table AP12-01; Appendices AP12-01 and -02). *Anchoa mitchilli* (n=80,426) was the most numerous taxon collected, representing 47.5% of the total catch. *Lagodon rhomboides* (n=14,082) and *Micropogonias undulatus* (n=8,967) were the next most abundant taxa collected, accounting for an additional 13.6% of the total catch. Twenty-nine Selected Taxa (n=32,957) composed 19.5% of the total catch. *Micropogonias* *undulatus* (n=8,967), *Litopenaeus setiferus* (n=5,764), and *Cynoscion arenarius* (n=4,906) were the most abundant Selected Taxa, representing 11.6% of the annual catch. Collections in 2012 included four species new to the Apalachicola Bay FIM collection: *Cosmocampus albirostris* (whitenose pipefish), *Mugil gyrans* (whirligig mullet), *Rhinobatos lentiginosus* (Atlantic guitarfish), and *Rypticus maculatus* (whitespotted soapfish).

Bay Sampling

21.3-m Bay Seines. A total of 33,212 animals were collected in 240 21.3-m bay seines, representing 19.6% of the overall SRS catch (Table AP12-01). *Anchoa mitchilli* (n=7,424) and *L. rhomboides* (n=5,327) were the most abundant taxa, accounting for 38.4% of the 21.3-m bay seine catch (Table AP12-02). The taxa most frequently caught in 21.3-m bay seines were *L. rhomboides* (49.6% occurrence) and *Farfantepenaeus* spp. (38.8% occurrence).

A total of 5,030 animals from 26 Selected Taxa were collected, representing 15.1% of the entire 21.3-m bay seine catch (Table AP12-03). *Mugil cephalus* (n=1,312) and *Farfantepenaeus* spp. (n=1,171) were the most abundant Selected Taxa, accounting for 49.4% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m bay seines was *Farfantepenaeus* spp. (38.8% occurrence).

183-m Haul Seines. A total of 23,414 animals were collected in 216 183-m haul seines, representing 13.8% of the overall SRS catch (Table AP12-01). *Lagodon rhomboides* (n=7,552) was the most abundant taxon, accounting for 32.3% of the 183-m haul seine catch (Table AP12-04). The taxa most frequently caught in 183-m haul seines were *M. cephalus* (84.3% occurrence), *L. rhomboides* (75.0% occurrence), and *Dasyatis sabina* (61.1% occurrence).

A total of 9,372 animals from 25 Selected Taxa were collected, representing 40.0% of the entire 183-m haul seine catch (Table AP12-05). *Micropogonias undulatus* (n=2,922), *M. cephalus* (n=2,292), and *Leiostomus xanthurus* (n=1,534) were the most abundant Selected Taxa, accounting for 72.0% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 183-m haul seines were *M. cephalus*

(84.3% occurrence), *Sciaenops ocellatus* (51.9% occurrence), and *L. xanthurus* (49.1% occurrence).

6.1-m Bay Otter Trawls. A total of 25,279 animals were collected in 144 6.1-m bay otter trawls, representing 14.9% of the overall SRS catch (Table AP12-01). *Anchoa mitchilli* (n=10,804) was the most abundant taxon collected, accounting for 42.7% of the 6.1-m bay otter trawl catch (Table AP12-06). The taxa most frequently caught in 6.1-m bay otter trawls were *Etropus crossotus* (86.1% occurrence), *Farfantepenaeus duorarum* (49.3% occurrence), *Orthopristis chrysoptera* (45.1% occurrence), *A. mitchilli* (43.1% occurrence), and *M. undulatus* (41.7% occurrence).

A total of 5,428 animals from 18 Selected Taxa were collected, representing 21.5% of the entire 6.1-m bay otter trawl catch (Table AP12-07). *Litopenaeus setiferus* (n=2,028) and *Cynoscion arenarius* (n=1,567) were the most abundant Selected Taxa, accounting for 66.2% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 6.1-m bay otter trawls were *Farfantepenaeus duorarum* (49.3% occurrence) and *M. undulatus* (41.7% occurrence).

River Sampling

21.3-m River Seines. A total of 16,252 animals were collected in 156 21.3-m river seines, representing 9.6% of the overall SRS catch (Table AP12-01). *Anchoa mitchilli* (n=6,216), *Gambusia holbrooki* (n=3,025), and *Menidia* spp. (n=1,613) were the most abundant taxa collected, accounting for 66.8% of the 21.3-m river seine catch (Table AP12-08). The taxa most frequently caught in 21.3-m river seines were *C. sapidus* (46.2% occurrence), *Trinectes maculatus* (42.9% occurrence), *Ctenogobius boleosoma* (36.5% occurrence), *Eucinostomus* spp. (35.9% occurrence), and *Menidia* spp. (32.7% occurrence).

A total of 1,008 animals from 13 Selected Taxa were collected, representing 6.2% of the entire 21.3-m river seine catch (Table AP12-09). *Leiostomus xanthurus* (n=472) and *Callinectes sapidus* (n=347) were the most abundant Selected Taxa, accounting for 81.3% of the Selected Taxa collected by this gear. The Selected Taxon most frequently caught in 21.3-m river seines was *C. sapidus* (46.2% occurrence).

6.1-m River Otter Trawls. A total of 71,193 animals were collected in 84 6.1-m river otter trawls, representing 42.0% of the overall SRS catch (Table AP12-01). *Anchoa mitchilli* (n=55,982) was the most abundant taxon collected, accounting for 78.6% of the 6.1-m river otter trawl catch (Table AP12-10). The taxa most frequently caught in 6.1-m river otter trawls were *A. mitchilli* (77.1% occurrence), *M. undulatus* (61.4% occurrence), and *C. sapidus* (57.8% occurrence).

A total of 12,119 animals from 17 Selected Taxa were collected, representing 17.0% of the entire 6.1-m river otter trawl catch (Table AP12-11). *Micropogonias undulatus* (n=5,004), *L. setiferus* (n=3,206), and *C. arenarius* (n=3,101) were the most abundant Selected Taxa, accounting for 93.3% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 6.1-m river otter trawls were *M. undulatus* (61.4% occurrence) and *C. sapidus* (57.8% occurrence).

References

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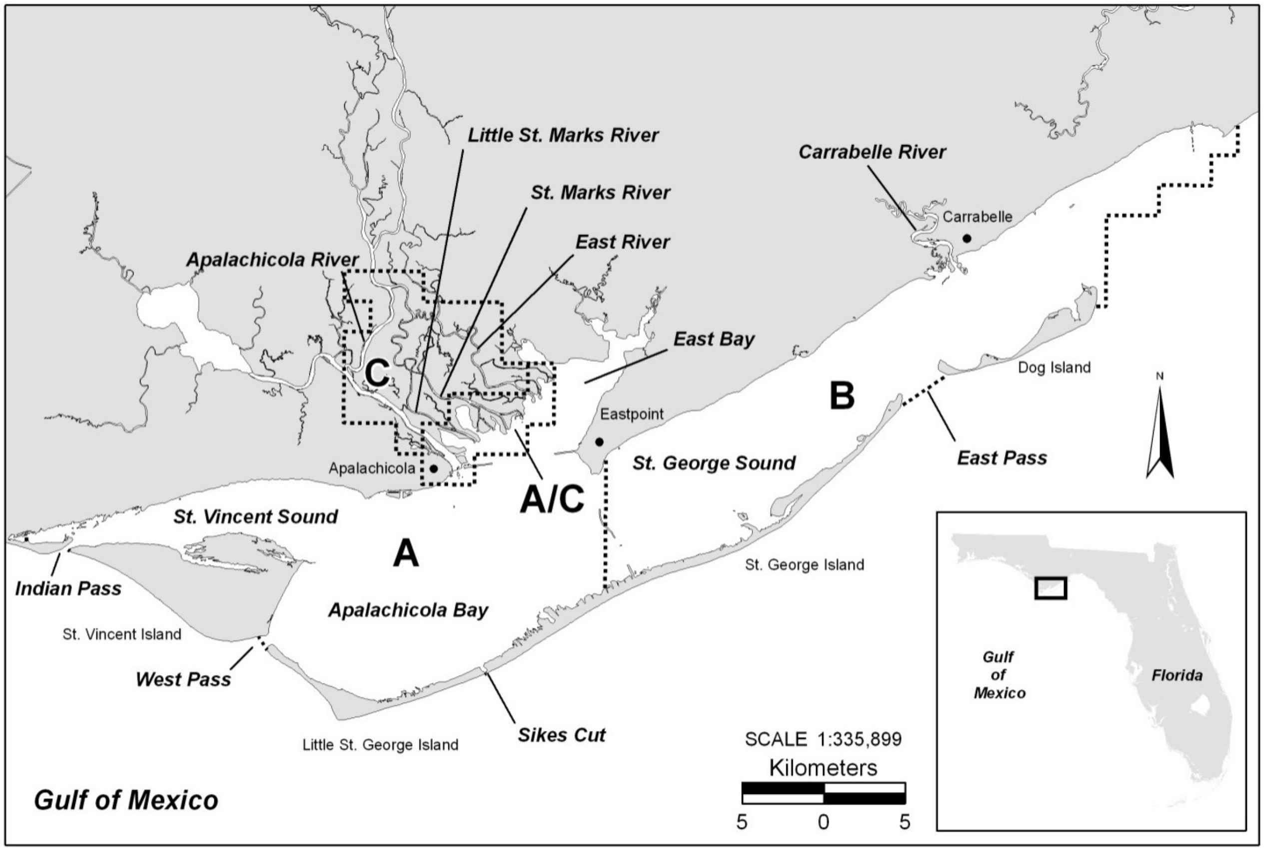

Figure AP12-01. Map of Apalachicola Bay sampling area. Zones are labeled A - C. Grids containing portions of Zones A and C are labeled A/C.

Table AP12-01. Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2012.

Zone	21.3-m bay seine		21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls	Animals	Hauls
A	17,923	120	.	.	12,374	108	16,209	72	46,506	300
B	15,289	120	.	.	11,040	108	9,070	72	35,399	300
C	.	.	16,252	156	.	.	71,193	84	87,445	240
Totals	**33,212**	**240**	**16,252**	**156**	**23,414**	**216**	**96,472**	**228**	**169,350**	**840**

Table AP12-02. Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Anchoa mitchilli	7,424	22.4	32.5	22.10	8.70	610.08	1,820.71	31	0.08	16	65
Lagodon rhomboides	5,327	16.0	49.6	15.85	3.39	331.72	406.43	36	0.26	9	173
Eucinostomus spp.	3,280	9.9	34.2	9.76	2.35	373.36	420.00	24	0.13	9	39
Harengula jaguana	2,000	6.0	8.3	5.95	3.73	971.37	814.29	37	0.27	20	103
Anchoa hepsetus	1,903	5.7	15.0	5.66	3.13	856.25	709.29	35	0.16	15	86
Orthopristis chrysoptera	1,803	5.4	22.1	5.37	2.16	624.35	465.71	32	0.42	12	190
Menidia spp.	1,445	4.4	25.4	4.30	1.19	429.57	152.14	47	0.46	17	104
Brevoortia spp.	1,335	4.0	4.6	3.97	3.80	1,481.86	912.14	25	0.17	20	175
Mugil cephalus	1,312	4.0	12.5	3.90	1.86	736.24	364.29	26	0.54	17	409
Farfantepenaeus spp.	1,171	3.5	38.8	3.49	1.22	543.50	270.71	8	0.08	2	14
Subtotal	27,000	81.3	.	.	.	.	.	.	.	2	409
Totals	**33,212**	**100.0**	**.**	**98.85**	**12.88**	**201.81**	**1,903.57**	**.**	**.**	**2**	**478**

Table AP12-03. Catch statistics for Selected Taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil cephalus	1,312	4.0	12.5	3.90	1.86	736.24	364.29	26	0.54	17	409
Farfantepenaeus spp.	1,171	3.5	38.8	3.49	1.22	543.50	270.71	8	0.08	2	14
Leiostomus xanthurus	738	2.2	24.2	2.20	0.56	393.07	83.57	28	0.73	10	186
Litopenaeus setiferus	290	0.9	13.8	0.86	0.30	535.58	49.29	9	0.26	3	25
Micropogonias undulatus	268	0.8	17.1	0.80	0.21	412.33	38.57	26	1.62	10	190
Cynoscion arenarius	230	0.7	10.0	0.68	0.23	511.71	29.29	26	0.76	10	76
Callinectes sapidus	228	0.7	22.5	0.68	0.17	391.82	34.29	18	1.68	3	175
Mugil curema	163	0.5	8.8	0.49	0.20	635.07	37.86	33	1.86	20	176
Menticirrhus americanus	142	0.4	14.2	0.42	0.09	345.37	9.29	32	1.43	9	110
Cynoscion nebulosus	128	0.4	13.8	0.38	0.12	497.08	23.57	39	2.29	13	164
Sciaenops ocellatus	77	0.2	7.9	0.23	0.09	580.25	16.43	40	5.93	10	311
Trachinotus carolinus	74	0.2	1.7	0.22	0.18	1,270.42	42.86	40	1.29	22	82
Lutjanus griseus	47	0.1	6.7	0.14	0.04	471.53	5.71	33	3.10	14	132
Lutjanus synagris	42	0.1	6.3	0.13	0.06	684.21	12.14	32	2.37	10	90
Trachinotus falcatus	31	0.1	0.8	0.09	0.09	1,499.84	21.43	38	1.76	15	67
Paralichthys albigutta	22	0.1	5.4	0.07	0.02	498.89	3.57	42	5.51	17	114
Archosargus probatocephalus	21	0.1	1.3	0.06	0.05	1,217.33	11.43	26	9.49	12	215

Table AP12-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Menticirrhus saxatilis	19	0.1	4.2	0.06	0.02	574.83	3.57	42	4.84	13	89
Farfantepenaeus duorarum	8	<0.1	2.9	0.02	0.01	605.41	1.43	16	0.37	15	18
Mycteroperca microlepis	6	<0.1	0.8	0.02	0.02	1,315.50	3.57	79	25.41	45	204
Menippe spp.	3	<0.1	1.3	0.01	0.01	890.68	0.71	9	2.52	6	14
Paralichthys lethostigma	3	<0.1	1.3	0.01	0.01	890.68	0.71	119	87.99	18	294
Elops saurus	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	239	98.50	140	337
Scomberomorus maculatus	2	<0.1	0.8	0.01	<0.01	1,093.15	0.71	40	3.00	37	43
Farfantepenaeus aztecus	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	15	.	15	15
Pogonias cromis	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	100	.	100	100
Mugil gyrans	1	<0.1	0.4	<0.01	<0.01	1,549.19	0.71	25	.	25	25
Totals	**5,030**	**15.2**	**80.8**	**14.97**	**2.52**	**260.96**	**375.71**	**.**	**.**	**2**	**409**

Table AP12-04. Catch statistics for 10 dominant taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2012. 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**		**% Occur**	**Catch-per-unit-effort (animals/set)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Lagodon rhomboides	7,552	32.3	75.0	34.96	4.13	173.55	416	119	0.30	40	191
Micropogonias undulatus	2,922	12.5	33.3	13.53	4.48	487.11	852	165	0.32	107	274
Mugil cephalus	2,292	9.8	84.3	10.61	1.05	145.61	132	277	1.32	82	465
Bairdiella chrysoura	1,949	8.3	30.1	9.02	2.88	468.84	545	140	0.32	45	178
Leiostomus xanthurus	1,534	6.6	49.1	7.10	1.06	218.49	130	164	0.46	90	218
Orthopristis chrysoptera	1,139	4.9	36.6	5.27	0.99	275.15	122	133	0.92	12	219
Brevoortia spp.	985	4.2	15.3	4.56	2.79	900.17	586	138	1.04	79	245
Dasyatis sabina	773	3.3	61.1	3.58	0.60	247.70	98	224	1.70	100	450
Mugil curema	484	2.1	32.9	2.24	0.60	391.78	107	181	2.00	104	350
Elops saurus	470	2.0	33.8	2.18	0.59	401.57	118	287	1.79	186	440
Subtotal	20,100	86.0	.	.	.	.	.	.	.	12	465
Totals	**23,414**	**100.0**	**.**	**108.40**	**9.02**	**122.33**	**904**	**.**	**.**	**12**	**1022**

Table AP12-05. Catch statistics for Selected Taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Micropogonias undulatus	2,922	12.5	33.3	13.53	4.48	487.11	852	165	0.32	107	274
Mugil cephalus	2,292	9.8	84.3	10.61	1.05	145.61	132	277	1.32	82	465
Leiostomus xanthurus	1,534	6.6	49.1	7.10	1.06	218.49	130	164	0.46	90	218
Mugil curema	484	2.1	32.9	2.24	0.60	391.78	107	181	2.00	104	350
Elops saurus	470	2.0	33.8	2.18	0.59	401.57	118	287	1.79	186	440
Sciaenops ocellatus	438	1.9	51.9	2.03	0.26	188.94	31	377	4.46	118	620
Pogonias cromis	317	1.4	22.7	1.47	0.56	559.92	92	219	6.13	100	840
Cynoscion nebulosus	241	1.0	36.1	1.12	0.16	214.38	16	254	6.14	110	578
Litopenaeus setiferus	184	0.8	3.7	0.85	0.71	1,230.77	153	21	0.18	15	30
Archosargus probatocephalus	117	0.5	25.9	0.54	0.09	237.44	9	284	7.54	68	418
Paralichthys albigutta	90	0.4	24.1	0.42	0.07	249.58	10	173	6.71	78	380
Paralichthys lethostigma	61	0.3	8.8	0.28	0.08	420.90	9	243	8.17	123	432
Trachinotus carolinus	43	0.2	3.2	0.20	0.10	764.84	20	104	10.89	74	398
Menticirrhus americanus	39	0.2	9.3	0.18	0.05	396.08	7	187	7.13	117	267
Callinectes sapidus	38	0.2	12.5	0.18	0.03	288.32	3	112	8.01	27	194
Lutjanus griseus	24	0.1	4.2	0.11	0.05	629.95	8	137	9.39	33	197
Mycteroperca microlepis	24	0.1	4.6	0.11	0.06	779.62	12	181	6.45	71	224

Table AP12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus falcatus	13	0.1	1.4	0.06	0.04	1,014.91	8	67	2.92	55	97
Menticirrhus littoralis	11	<0.1	3.2	0.05	0.02	605.45	3	179	13.37	130	274
Farfantepenaeus duorarum	11	<0.1	2.8	0.05	0.03	851.62	6	24	1.24	19	31
Cynoscion arenarius	7	<0.1	1.4	0.03	0.02	861.87	3	242	15.11	185	289
Lutjanus synagris	5	<0.1	2.3	0.02	0.01	651.12	1	88	12.11	43	109
Scomberomorus maculatus	5	<0.1	1.9	0.02	0.01	773.02	2	248	49.55	135	378
Menippe sp.	1	<0.1	0.5	<0.01	<0.01	1,469.69	1	40	.	40	40
Pomatomus saltatrix	1	<0.1	0.5	<0.01	<0.01	1,469.69	1	120	.	120	120
Totals	**9,372**	**40.0**	**94.9**	**43.39**	**5.28**	**178.82**	**886**	**.**	**.**	**15**	**840**

Table AP12-06. Catch statistics for 10 dominant taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	10,804	42.7	43.1	5.19	1.25	289.19	110.13	40	0.12	12	71
Litopenaeus setiferus	2,028	8.0	34.0	0.92	0.70	908.89	99.13	23	0.28	4	45
Etropus crossotus	1,583	6.3	86.1	0.75	0.07	118.01	5.46	77	0.44	18	122
Cynoscion arenarius	1,567	6.2	38.9	0.74	0.18	289.12	13.56	34	0.63	7	243
Lagodon rhomboides	1,066	4.2	31.9	0.51	0.34	811.19	48.43	73	0.74	13	160
Bairdiella chrysoura	963	3.8	20.8	0.45	0.21	570.83	22.42	112	0.79	17	165
Micropogonias undulatus	762	3.0	41.7	0.36	0.13	424.55	16.93	111	2.00	5	260
Anchoa hepsetus	710	2.8	13.2	0.34	0.22	788.89	31.17	32	0.37	11	104
Orthopristis chrysoptera	618	2.4	45.1	0.29	0.05	219.02	4.05	108	1.53	15	195
Stomolophus meleagris	488	1.9	12.5	0.25	0.23	1,107.93	33.50	90	0.66	13	168
Subtotal	20,589	81.3	.	.	.	.	.	.	.	4	260
Totals	**25,279**	**100.0**	**.**	**12.03**	**1.77**	**176.83**	**116.10**	**.**	**.**	**2**	**990**

Table AP12-07. Catch statistics for Selected Taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Litopenaeus setiferus	2,028	8.0	34.0	0.92	0.70	908.89	99.13	23	0.28	4	45
Cynoscion arenarius	1,567	6.2	38.9	0.74	0.18	289.12	13.56	34	0.63	7	243
Micropogonias undulatus	762	3.0	41.7	0.36	0.13	424.55	16.93	111	2.00	5	260
Farfantepenaeus duorarum	238	0.9	49.3	0.11	0.02	203.17	1.69	21	0.34	15	38
Leiostomus xanthurus	163	0.6	30.6	0.08	0.02	261.59	1.86	99	5.09	9	190
Menippe spp.	137	0.5	22.9	0.07	0.02	441.95	2.43	17	1.45	3	116
Menticirrhus americanus	137	0.5	29.9	0.07	0.01	237.87	1.11	59	3.50	11	245
Farfantepenaeus spp.	112	0.4	22.2	0.05	0.02	356.09	1.80	11	0.25	4	14
Lutjanus synagris	72	0.3	17.4	0.03	0.01	355.86	1.01	54	3.46	14	125
Callinectes sapidus	52	0.2	22.2	0.03	<0.01	236.52	0.36	56	6.42	6	180
Paralichthys albigutta	51	0.2	20.1	0.02	<0.01	235.27	0.28	177	8.51	87	395
Farfantepenaeus aztecus	46	0.2	6.3	0.02	0.01	504.54	0.99	21	0.53	15	31
Paralichthys lethostigma	39	0.2	16.0	0.02	0.01	413.69	0.85	200	7.07	105	288
Lutjanus griseus	11	<0.1	3.5	0.01	<0.01	598.94	0.27	98	22.33	11	180
Cynoscion nothus	5	<0.1	2.1	<0.01	<0.01	724.41	0.13	49	6.07	35	67
Cynoscion nebulosus	4	<0.1	2.8	<0.01	<0.01	595.77	0.08	78	42.37	14	200
Archosargus probatocephalus	2	<0.1	1.4	<0.01	<0.01	845.84	0.07	127	35.00	92	162

Table AP12-07. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mycteroperca microlepis	1	<0.1	0.7	<0.01	<0.01	1,200.00	0.07	220	.	220	220
Menticirrhus saxatilis	1	<0.1	0.7	<0.01	<0.01	1,200.00	0.06	22	.	22	22
Totals	**5,428**	**21.5**	**90.3**	**2.53**	**0.75**	**354.48**	**102.22**	**.**	**.**	**3**	**395**

Table AP12-08. Catch statistics for 10 dominant taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	6,216	38.2	22.4	58.60	28.54	608.30	3,850.00	29	0.06	15	65
Gambusia holbrooki	3,025	18.6	26.9	28.52	14.85	650.27	2,075.00	23	0.08	12	44
Menidia spp.	1,613	9.9	32.7	15.21	4.64	381.04	614.71	39	0.21	19	71
Eucinostomus spp.	658	4.0	35.9	6.20	1.31	263.04	142.65	24	0.29	11	39
Micropterus salmoides	617	3.8	27.6	5.82	4.71	1,010.41	733.82	24	1.44	12	342
Leiostomus xanthurus	472	2.9	7.1	4.45	3.89	1,092.50	605.88	19	0.11	11	32
Ctenogobius boleosoma	411	2.5	36.5	3.87	1.26	404.94	172.06	23	0.20	11	35
Poecilia latipinna	384	2.4	3.8	3.62	2.37	816.81	311.76	22	0.29	12	43
Notropis petersoni	363	2.2	19.2	3.42	0.99	360.98	88.24	34	0.38	16	56
Trinectes maculatus	360	2.2	42.9	3.39	0.70	258.30	82.35	19	0.53	9	61
Subtotal	14,119	86.7	.	.	.	.	.	.	.	9	342
Totals	**16,252**	**100.0**	**.**	**153.21**	**35.36**	**288.27**	**3,936.76**	**.**	**.**	**2**	**531**

Table AP12-09. Catch statistics for Selected Taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Leiostomus xanthurus	472	2.9	7.1	4.45	3.89	1,092.50	605.88	19	0.11	11	32
Callinectes sapidus	347	2.1	46.2	3.27	0.81	307.96	111.76	22	1.12	3	105
Litopenaeus setiferus	56	0.3	9.0	0.53	0.21	505.26	22.06	4	0.28	2	11
Mugil cephalus	45	0.3	8.3	0.42	0.20	576.07	25.00	24	0.71	17	43
Farfantepenaeus spp.	30	0.2	11.5	0.28	0.07	313.20	4.41	8	0.57	2	13
Lutjanus griseus	15	0.1	7.1	0.14	0.04	387.85	2.94	50	8.81	12	121
Cynoscion nebulosus	11	0.1	4.5	0.10	0.04	537.01	4.41	36	6.36	20	95
Micropogonias undulatus	11	0.1	2.6	0.10	0.07	838.81	10.29	14	0.66	12	19
Paralichthys lethostigma	7	<0.1	4.5	0.07	0.02	462.85	1.47	141	29.01	24	261
Archosargus probatocephalus	5	<0.1	3.2	0.05	0.02	551.32	1.47	106	23.59	69	196
Mugil curema	3	<0.1	1.3	0.03	0.02	928.54	2.94	24	1.33	21	25
Sciaenops ocellatus	3	<0.1	0.6	0.03	0.03	1,249.00	4.41	24	0.33	24	25
Farfantepenaeus duorarum	2	<0.1	1.3	0.02	0.01	880.32	1.47	17	1.50	15	18
Cynoscion arenarius	1	<0.1	0.6	0.01	0.01	1,249.00	1.47	29	.	29	29
Totals	**1,008**	**6.2**	**66.7**	**9.50**	**4.78**	**627.76**	**744.12**	**.**	**.**	**2**	**261**

Table AP12-10. Catch statistics for 10 dominant taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	55,982	78.6	77.1	91.81	23.20	230.23	1,128.74	28	0.03	16	87
Micropogonias undulatus	5,004	7.0	61.4	7.95	4.02	461.25	314.89	22	0.32	9	243
Cynoscion arenarius	3,101	4.4	43.4	5.04	1.42	256.07	71.91	31	0.23	8	125
Litopenaeus setiferus	3,206	4.5	33.7	4.97	1.82	333.25	106.83	9	0.09	3	22
Eucinostomus spp.	1,212	1.7	37.3	1.92	0.53	252.92	26.85	24	0.22	10	39
Trinectes maculatus	543	0.8	45.8	0.93	0.56	550.77	46.47	25	0.68	7	63
Callinectes sapidus	328	0.5	57.8	0.55	0.19	310.87	12.55	28	2.12	3	185
Bairdiella chrysoura	227	0.3	22.9	0.41	0.26	594.89	21.29	54	2.94	15	165
Leiostomus xanthurus	196	0.3	37.3	0.32	0.12	335.79	8.09	82	4.64	13	200
Portunus spp.	184	0.3	2.4	0.31	0.26	747.71	20.64	20	0.32	11	26
Subtotal	69,983	98.4	.	.	.	.	.	.	.	3	243
Totals	**71,193**	**100.0**	**.**	**114.82**	**23.84**	**190.31**	**1,199.41**	**.**	**.**	**3**	**590**

Table AP12-11. Catch statistics for Selected Taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Micropogonias undulatus	5,004	7.0	61.4	7.95	4.02	461.25	314.89	22	0.32	9	243
Litopenaeus setiferus	3,206	4.5	33.7	4.97	1.82	333.25	106.83	9	0.09	3	22
Cynoscion arenarius	3,101	4.4	43.4	5.04	1.42	256.07	71.91	31	0.23	8	125
Callinectes sapidus	328	0.5	57.8	0.55	0.19	310.87	12.55	28	2.12	3	185
Leiostomus xanthurus	196	0.3	37.3	0.32	0.12	335.79	8.09	82	4.64	13	200
Farfantepenaeus spp.	104	0.1	34.9	0.17	0.04	219.83	2.29	10	0.31	4	14
Archosargus probatocephalus	63	0.1	31.3	0.10	0.03	233.22	1.48	137	7.33	74	390
Paralichthys lethostigma	37	0.1	28.9	0.06	0.01	182.35	0.40	158	11.45	43	432
Menticirrhus americanus	17	<0.1	6.0	0.03	0.02	564.85	1.23	39	3.09	22	70
Cynoscion nebulosus	14	<0.1	10.8	0.02	0.01	325.99	0.45	95	30.64	9	380
Lutjanus synagris	12	<0.1	3.6	0.02	0.01	589.43	0.90	30	1.11	24	39
Farfantepenaeus duorarum	10	<0.1	7.2	0.02	0.01	398.44	0.40	17	0.38	15	19
Pogonias cromis	9	<0.1	7.2	0.01	0.01	381.39	0.27	261	30.40	154	393
Farfantepenaeus aztecus	7	<0.1	6.0	0.01	0.01	422.47	0.27	16	0.64	15	19
Sciaenops ocellatus	4	<0.1	4.8	0.01	<0.01	447.11	0.13	85	46.17	20	222
Lutjanus griseus	4	<0.1	3.6	0.01	<0.01	537.06	0.22	101	31.79	29	184
Mugil cephalus	2	<0.1	2.4	<0.01	<0.01	640.26	0.13	257	28.00	229	285
Mugil curema	1	<0.1	1.2	<0.01	<0.01	911.04	0.13	225	.	225	225
Totals	**12,119**	**17.0**	**92.8**	**19.05**	**4.66**	**224.27**	**315.70**	**.**	**.**	**3**	**432**

Appendix AP12-01. Monthly summary of species collected during Apalachicola Bay stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Acanthostracion quadricornis	15	.	.	1	.	2	1	.	2	2	1	1	25
Achirus lineatus	.	.	.	.	.	1	.	.	.	.	.	.	1
Adinia xenica	.	.	.	.	.	.	.	.	1	7	1	135	144
Aetobatus narinari	.	.	.	.	.	.	.	1	.	.	.	.	1
Alosa chrysochloris	.	.	.	2	.	.	.	.	.	.	.	.	2
Ameiurus catus	.	3	.	.	.	.	.	1	.	.	.	.	4
Amia calva	.	.	.	.	.	.	.	1	.	.	1	.	2
Anarchopterus criniger	1	.	.	.	.	.	.	.	.	.	.	.	1
Anchoa cubana	.	.	.	.	6	.	.	46	15	.	1	.	68
Anchoa hepsetus	.	.	.	12	1,225	1,067	266	55	11	3	.	.	2,639
Anchoa lyolepis	.	.	.	.	91	.	.	2	1	.	.	.	94
Anchoa mitchilli	774	7,394	1,224	1,145	5,916	8,116	14,093	764	14,846	15,328	5,460	5,366	80,426
Anchoa spp.	.	.	.	.	1	.	.	1	.	.	.	.	2
Ancylopsetta quadrocellata	3	10	8	1	3	.	.	.	3	.	.	.	28
Archosargus probatocephalus	3	23	11	30	38	10	15	29	10	9	11	19	208
Argopecten irradians	.	1	.	1	.	.	.	.	.	3	.	.	5
Ariopsis felis	1	14	44	108	73	85	65	263	229	107	6	1	996
Astroscopus y-graecum	.	.	.	.	.	.	.	.	.	.	1	.	1
Bagre marinus	.	.	.	.	3	25	1	8	13	5	.	.	55
Bairdiella chrysoura	433	124	21	136	611	285	479	68	600	963	68	7	3,795
Bothidae sp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Brevoortia spp.	28	59	1,320	50	32	638	59	137	16	54	5	.	2,398
Callinectes sapidus	157	61	55	50	37	36	204	51	50	87	58	147	993

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Callinectes similis	.	4	.	3	1	6	92	9	25	29	14	14	197
Caranx hippos	.	.	.	.	1	13	21	4	2	.	.	1	42
Caranx latus	.	.	.	.	.	.	.	1	1	.	.	.	2
Carcharhinus limbatus	.	.	.	.	.	2	.	.	.	.	.	.	2
Centropristis philadelphica	.	.	.	.	.	1	2	.	2	.	.	.	5
Centropristis striata	3	5	.	20	6	7	.	2	9	143	2	15	212
Chaetodipterus faber	.	.	.	5	.	5	15	7	7	3	1	.	43
Chasmodes saburrae	1	.	.	.	1	.	1	.	4	5	.	2	14
Chilomycterus schoepfii	3	2	2	6	5	7	6	3	7	29	6	12	88
Chloroscombrus chrysurus	.	.	.	.	.	1	29	18	228	11	3	.	290
Citharichthys macrops	3	11	3	7	1	.	4	9	2	22	5	6	73
Citharichthys spilopterus	2	.	1	2	7	2	.	4	2	3	2	8	33
Cosmocampus albirostris	.	.	.	.	.	.	.	.	.	1	.	.	1
Ctenogobius boleosoma	63	52	23	61	28	8	.	7	109	214	285	525	1,375
Cynoscion arenarius	.	1	1	506	1,091	316	736	864	738	608	45	.	4,906
Cynoscion nebulosus	24	7	15	33	26	52	33	25	83	44	20	36	398
Cynoscion nothus	.	.	.	.	.	.	.	.	.	4	.	1	5
Cyprinella venusta	2	55	66	1	23	.	.	23	29	.	21	.	220
Cyprinodon variegatus	2	.	1	.	.	.	.	.	.	.	.	.	3
Dasyatis americana	.	.	.	.	1	1	2	2	2	.	.	.	8
Dasyatis sabina	31	73	50	144	79	176	68	63	61	99	43	34	921
Dasyatis say	.	.	.	5	6	47	18	18	14	6	.	.	114
Diplectrum bivittatum	.	1	2	.	.	.	.	.	.	.	1	.	4
Diplectrum formosum	.	.	.	4	.	.	6	1	.	3	1	.	15
Diplodus holbrookii	.	.	.	.	3	1	.	.	.	.	.	.	4

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Dorosoma cepedianum	.	.	.	.	.	1	.	.	.	10	.	.	11
Dorosoma petenense	.	.	.	9	.	3	2	1	1	1	2	.	19
Echeneis neucratoides	.	.	.	.	.	.	6	3	.	2	.	.	11
Echeneis sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Elops saurus	.	.	3	30	51	93	34	44	144	50	20	3	472
Elops smithi	.	.	.	6	.	.	.	.	.	.	.	.	6
Elops spp.	.	5	.	.	.	.	.	.	.	.	.	.	5
Enneacanthus gloriosus	.	2	.	.	.	1	.	1	.	.	.	.	4
Erotelis smaragdus	1	.	.	.	.	.	.	.	.	.	.	.	1
Esox niger	.	.	.	.	1	.	.	.	.	.	.	.	1
Etropus crossotus	108	148	129	74	21	65	101	138	305	284	252	111	1,736
Etropus cyclosquamus	.	.	.	.	1	5	11	4	.	3	.	.	24
Eucinostomus argenteus	.	.	.	.	.	1	16	28	.	1	1	1	48
Eucinostomus gula	1	1	8	2	2	9	60	35	64	90	24	9	305
Eucinostomus harengulus	49	7	4	1	1	8	67	90	34	38	32	22	353
Eucinostomus spp.	57	2	.	.	.	1,293	1,034	628	656	901	502	155	5,228
Farfantepenaeus aztecus	.	2	.	3	37	10	.	.	.	2	.	.	54
Farfantepenaeus duorarum	2	16	6	39	53	28	19	20	24	35	10	17	269
Farfantepenaeus spp.	24	20	64	81	59	404	78	51	166	327	37	106	1,417
Fundulus chrysotus	.	.	1	.	1	1	.	.	.	.	1	.	4
Fundulus confluentus	6	.	1	.	.	.	.	.	.	6	.	43	56
Fundulus grandis	1	2	1	.	.	.	.	.	.	2	2	.	8
Fundulus similis	.	.	1	17	7	1	1	17	2	1	.	1	48
Gambusia holbrooki	48	6	61	10	3	.	1	.	52	301	430	2,113	3,025
Gobiesox strumosus	.	.	.	.	2	2	.	.	.	.	.	.	4

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Gobionellus oceanicus	.	.	.	.	.	.	.	.	8	9	30	5	52
Gobiosoma bosc	.	3	5	2	2	3	1	7	1	4	6	24	58
Gobiosoma longipala	.	.	.	1	.	.	.	.	1	.	.	.	2
Gobiosoma robustum	1	.	14	3	.	.	.	.	.	.	2	1	21
Gobiosoma spp.	1	3	.	.	7	4	5	6	1	2	2	8	39
Gymnura micrura	.	.	1	26	10	17	4	5	11	3	4	1	82
Haemulon plumierii	.	.	.	.	.	.	.	1	.	.	.	.	1
Halichoeres bivittatus	.	.	.	1	.	1	.	19	1	2	.	.	24
Harengula jaguana	.	.	1	200	30	24	32	1,808	217	7	.	.	2,319
Hemicaranx amblyrhynchus	.	.	.	.	.	8	12	20	15	11	1	.	67
Heterandria formosa	.	1	2	1	2	3	1	.	7	5	14	17	53
Hippocampus erectus	3	2	1	2	1	.	1	1	.	.	1	.	12
Hyporhamphus meeki	.	.	.	.	2	2	1	.	5	2	.	1	13
Hypsoblennius hentz	.	.	.	.	.	.	.	4	.	2	1	.	7
Ictalurus furcatus	1	.	.	.	.	.	.	6	.	.	.	.	7
Ictalurus punctatus	3	2	19	.	.	1	.	6	.	.	8	.	39
Labidesthes sicculus	.	.	6	1	2	6	.	.	.	.	1	.	16
Lagodon rhomboides	200	1,030	863	2,504	2,601	856	1,295	891	1,148	1,773	600	321	14,082
Leiostomus xanthurus	578	424	251	605	167	378	115	131	122	310	15	7	3,103
Lepisosteus oculatus	.	.	.	.	5	1	2	2	1	.	.	.	11
Lepisosteus osseus	.	1	.	.	3	2	.	.	4	1	.	.	11
Lepomis auritus	8	1	3	1	.	1	.	.	1	.	.	.	15
Lepomis macrochirus	21	5	15	14	35	1	25	7	1	2	15	13	154
Lepomis microlophus	17	3	10	12	2	11	4	8	1	19	8	16	111
Lepomis punctatus	2	4	3	5	.	1	.	2	1	9	4	.	31
Lepomis spp.	1	.	2	3	3	1	6	4	.	.	.	.	20

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Litopenaeus setiferus	42	19	9	45	3	763	377	2,785	1,043	150	520	8	5,764
Lobotes surinamensis	.	.	.	.	.	.	.	1	1	.	.	.	2
Lucania goodei	4	2	80	.	10	8	28	4	.	.	120	.	256
Lucania parva	57	.	30	1	4	1	57	101	81	5	24	72	433
Lutjanus griseus	1	2	.	.	.	.	17	25	31	23	2	.	101
Lutjanus synagris	.	.	.	.	.	6	30	56	7	31	.	1	131
Membras martinica	.	.	6	214	33	27	105	9	12	3	.	63	472
Menidia spp.	86	67	47	90	395	555	542	269	568	261	77	104	3,061
Menippe spp.	8	1	5	13	15	3	2	1	35	42	2	14	141
Menticirrhus americanus	1	9	2	9	23	56	24	34	73	45	51	8	335
Menticirrhus littoralis	.	4	.	.	1	.	1	2	.	.	3	.	11
Menticirrhus saxatilis	.	.	2	11	4	1	1	.	.	1	.	.	20
Microgobius gulosus	.	4	15	12	11	7	2	5	11	8	.	.	75
Microgobius thalassinus	.	1	7	.	3	6	9	59	41	26	36	13	201
Micropogonias undulatus	510	598	3,302	632	563	1,503	124	178	182	78	187	1,110	8,967
Micropterus salmoides	8	9	3	507	70	6	4	.	3	5	3	7	625
Minytrema melanops	.	.	.	.	1	.	.	.	.	.	.	.	1
Monacanthus ciliatus	2	.	.	8	.	.	.	.	1	26	.	.	37
Morone chrysops x saxatilis	.	.	.	4	.	.	.	.	.	.	.	.	4
Morone saxatilis	.	.	.	1	.	.	.	.	.	.	.	2	3
Moxostoma sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Mugil cephalus	553	878	323	391	288	120	148	120	128	229	161	312	3,651
Mugil curema	43	125	11	51	66	133	13	72	20	74	31	12	651
Mugil gyrans	.	.	.	.	.	1	.	.	.	.	.	.	1
Mugil sp.	.	.	1	.	.	.	.	.	.	.	.	.	1
Mullus auratus	.	.	.	3	.	.	.	.	.	.	.	.	3

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Mycteroperca microlepis	.	.	.	.	5	1	2	3	17	3	.	.	31
Myrophis punctatus	.	1	.	1	.	.	.	.	1	.	.	.	3
Narcine bancroftii	.	.	.	.	1	.	.	.	1	.	.	.	2
Nicholsina usta	1	.	.	3	.	.	.	.	.	.	.	.	4
Notemigonus crysoleucas	.	7	.	1	7	20	.	1	1	.	.	.	37
Notropis petersoni	23	8	26	1	10	90	12	46	105	2	41	.	364
Notropis sp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Notropis texanus	.	.	.	.	.	26	3	.	.	.	.	.	29
Ogcocephalus cubifrons	.	1	2	2	1	1	1	.	.	6	1	1	16
Oligoplites saurus	.	.	.	.	1	15	37	6	2	2	1	.	64
Ophichthus gomesii	.	.	.	.	.	.	.	.	.	.	1	.	1
Opisthonema oglinum	.	.	.	.	1	15	1	8	.	.	.	.	25
Opsanus beta	.	2	.	.	6	3	2	4	2	10	1	1	31
Opsopoeodus emiliae	1	.	.	.	.	.	1	.	.	.	.	.	2
Orthopristis chrysoptera	3	43	56	1,388	777	332	277	203	168	299	13	1	3,560
Paralichthys albigutta	14	6	24	16	18	11	20	13	4	20	10	7	163
Paralichthys lethostigma	24	18	6	14	11	24	3	19	6	14	3	5	147
Paralichthys spp.	.	2	.	.	.	.	.	.	.	.	.	.	2
Peprilus burti	43	1	2	2	.	7	.	.	.	2	5	.	62
Peprilus paru	.	1	.	1	15	9	11	2	8	50	6	1	104
Percina nigrofasciata	.	.	.	.	.	1	.	.	.	.	.	.	1
Poecilia latipinna	1	.	.	1	.	.	.	.	.	3	.	380	385
Pogonias cromis	8	11	4	3	10	1	17	5	13	12	20	223	327
Pomatomus saltatrix	.	.	.	1	.	.	.	.	.	.	.	.	1
Porichthys plectrodon	.	.	.	1	3	4	2	.	.	.	1	1	12
Portunus spp.	3	1	6	12	.	2	242	6	17	6	4	8	307

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Prionotus rubio	.	2	2	.	.	1	.	.	.	1	2	.	8
Prionotus scitulus	9	10	13	.	5	9	12	19	6	25	27	17	152
Prionotus tribulus	12	4	25	3	2	.	13	2	17	17	22	26	143
Raja eglanteria	.	.	.	.	.	.	.	.	.	.	.	1	1
Rhinobatos lentiginosus	.	.	.	.	.	.	1	.	.	.	.	.	1
Rhinoptera bonasus	1	.	2	7	6	12	5	.	1	6	.	2	42
Rhizoprionodon terraenovae	.	.	.	.	2	2	.	.	.	.	.	.	4
Rimapenaeus constrictus	2	14	2	4	21	17	5	53	201	59	33	13	424
Rypticus maculatus	.	.	.	.	.	.	.	.	1	.	.	.	1
Sardinella aurita	.	.	.	.	5	.	.	.	.	.	.	.	5
Sciaenidae sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
Sciaenops ocellatus	25	26	85	59	62	22	19	38	30	45	62	49	522
Scomberomorus maculatus	.	.	.	.	.	1	2	2	1	1	.	.	7
Scorpaena brasiliensis	.	.	.	.	.	.	1	.	1	.	.	.	2
Selene setapinnis	.	.	.	.	.	.	.	1	.	1	.	.	2
Selene vomer	.	.	.	.	.	1	2	7	.	6	1	.	17
Serraniculus pumilio	6	.	2	2	.	1	.	.	3	.	1	.	15
Serranus subligarius	.	.	.	1	.	.	.	1	4	2	.	2	10
Sicyonia dorsalis	1	.	.	.	.	.	.	.	.	.	.	.	1
Sicyonia laevigata	.	.	.	.	.	.	.	.	1	.	.	.	1
Sparidae spp.	1	6	.	.	.	.	.	.	.	.	.	.	7
Sphoeroides nephelus	1	.	.	7	7	1	2	1	5	6	5	2	37
Sphoeroides parvus	.	.	.	.	.	2	.	.	1	.	.	.	3
Sphoeroides spp.	.	.	.	7	3	2	.	.	.	.	.	.	12
Sphyraena barracuda	.	.	.	.	.	.	1	1	2	.	.	.	4

Appendix AP12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=70	E=840
Sphyraena borealis	.	.	.	9	2	3	.	.	.	.	.	.	14
Sphyrna tiburo	.	.	.	2	2	2	6	2	5	8	.	1	28
Stellifer lanceolatus	.	.	.	1	7	126	13	36	2	3	1	.	189
Stenotomus caprinus	.	.	1	5	.	.	.	.	.	.	.	.	6
Stephanolepis hispidus	3	.	.	11	6	34	16	5	1	8	5	11	100
Stomolophus meleagris	1	.	.	.	.	450	6	13	21	5	2	1	499
Strongylura marina	1	6	8	2	6	15	10	.	7	7	3	8	73
Strongylura notata	.	.	.	.	.	1	.	.	.	.	1	1	3
Strongylura spp.	.	.	.	3	2	10	1	1	.	.	.	.	17
Strongylura timucu	.	.	.	.	.	.	2	.	.	.	.	.	2
Symphurus plagiusa	6	20	3	28	2	5	9	49	101	51	30	19	323
Syngnathus floridae	4	.	.	8	3	4	2	5	.	18	2	5	51
Syngnathus louisianae	.	1	4	1	6	9	26	5	1	2	.	1	56
Syngnathus scovelli	20	8	7	20	7	.	15	4	7	9	5	6	108
Synodus foetens	1	4	2	65	56	37	35	31	20	18	10	7	286
Trachinotus carolinus	.	.	.	.	.	25	9	75	8	.	.	.	117
Trachinotus falcatus	.	.	.	.	.	1	.	39	4	.	.	.	44
Trichiurus lepturus	.	.	.	.	.	.	.	2	3	.	.	.	5
Trinectes maculatus	354	43	127	58	109	44	36	115	91	6	29	20	1,032
Tylosurus crocodilus	.	.	.	.	.	1	1	.	.	1	.	.	3
Urophycis floridana	1	12	3	1	.	.	.	.	.	.	.	1	18
Urophycis regia	.	.	1	.	.	.	.	.	.	.	.	.	1
Totals	**4,567**	**11,568**	**8,578**	**9,729**	**15,104**	**18,753**	**21,516**	**11,019**	**23,243**	**23,748**	**9,653**	**11,872**	**169,350**

Appendix AP12-02. Summary by gear, stratum, and zone of species collected during Apalachicola Bay stratified-random sampling, 2012. Sampling with 21.3-m bay seine was stratified by the presence or absence of a shoreline ('Shore' or offshore) within 5-m. Offshore sets were post-stratified by the presence or absence of bottom vegetation ('Veg' or 'Unveg'). Sampling with 21.3-m river seine, 183-m haul seine, and 6.1-m otter trawl were not stratified. Zones A and B were located in Apalachicola Bay, and Zone C encompassed the lower Apalachicola River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Acanthostracion quadricornis	.	.	.	.	3	22	.	25	.	25
Achirus lineatus	.	.	1	.	.	.	.	1	.	1
Adinia xenica	.	.	2	142	.	.	2	.	142	144
Aetobatus narinari	.	.	.	.	1	.	.	1	.	1
Alosa chrysochloris	.	.	.	.	2	.	2	.	.	2
Ameiurus catus	.	.	.	1	.	3	.	.	4	4
Amia calva	.	.	.	2	.	.	.	.	2	2
Anarchopterus criniger	.	.	.	.	.	1	.	1	.	1
Anchoa cubana	.	.	.	5	.	63	16	47	5	68
Anchoa hepsetus	206	72	1,625	22	.	714	369	2,244	26	2,639
Anchoa lyolepis	2	.	.	.	.	92	91	3	.	94
Anchoa mitchilli	1,351	1,112	4,961	6,216	.	66,786	13,239	4,989	62,198	80,426
Anchoa spp.	.	.	.	1	.	1	1	.	1	2
Ancylopsetta quadrocellata	.	.	.	.	3	25	12	16	.	28
Archosargus probatocephalus	4	1	16	5	117	65	67	73	68	208
Argopecten irradians	1	.	.	.	1	3	2	3	.	5
Ariopsis felis	1	122	63	.	343	467	734	226	36	996
Astroscopus y-graecum	.	1	.	.	.	.	1	.	.	1
Bagre marinus	.	.	.	.	45	10	49	5	1	55
Bairdiella chrysoura	277	10	344	25	1,949	1,190	2,888	655	252	3,795
Bothidae sp.	.	.	.	.	.	1	1	.	.	1
Brevoortia spp.	.	20	1,315	16	985	62	2,180	185	33	2,398
Callinectes sapidus	23	64	141	347	38	380	243	75	675	993
Callinectes similis	.	2	2	.	.	193	86	22	89	197
Caranx hippos	.	14	2	.	24	2	36	5	1	42
Caranx latus	.	.	.	.	2	.	.	2	.	2

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Carcharhinus limbatus	.	.	.	.	2	.	2	.	.	2
Centropristis philadelphica	.	.	.	.	.	5	.	5	.	5
Centropristis striata	7	.	.	.	19	186	.	212	.	212
Chaetodipterus faber	.	.	5	.	11	27	20	15	8	43
Chasmodes saburrae	11	.	3	.	.	.	6	8	.	14
Chilomycterus schoepfii	7	.	.	.	56	25	10	78	.	88
Chloroscombrus chrysurus	.	2	2	.	1	285	278	1	11	290
Citharichthys macrops	.	.	.	.	9	64	1	72	.	73
Citharichthys spilopterus	.	8	1	.	6	18	21	.	12	33
Cosmocampus albirostris	.	.	.	.	.	1	.	1	.	1
Ctenogobius boleosoma	148	44	623	411	.	149	770	120	485	1,375
Cynoscion arenarius	7	79	144	1	7	4,668	1,357	447	3,102	4,906
Cynoscion nebulosus	77	3	48	11	241	18	261	112	25	398
Cynoscion nothus	.	.	.	.	.	5	5	.	.	5
Cyprinella venusta	.	.	.	220	.	.	.	.	220	220
Cyprinodon variegatus	1	.	2	.	.	.	.	3	.	3
Dasyatis americana	.	.	.	.	8	.	1	7	.	8
Dasyatis sabina	4	3	5	.	773	136	561	348	12	921
Dasyatis say	.	.	.	.	113	1	16	98	.	114
Diplectrum bivittatum	.	.	.	.	.	4	1	3	.	4
Diplectrum formosum	.	.	.	.	.	15	.	15	.	15
Diplodus holbrookii	.	.	.	.	4	.	.	4	.	4
Dorosoma cepedianum	.	.	.	.	11	.	11	.	.	11
Dorosoma petenense	1	1	.	.	15	2	14	3	2	19
Echeneis neucratoides	.	.	1	.	8	2	8	3	.	11
Echeneis sp.	.	.	.	.	1	.	1	.	.	1
Elops saurus	.	.	2	.	470	.	329	143	.	472
Elops smithi	.	1	.	.	.	5	1	.	5	6
Elops spp.	.	.	.	.	.	5	.	5	.	5
Enneacanthus gloriosus	.	.	.	4	.	.	.	.	4	4
Erotelis smaragdus	.	.	.	.	.	1	1	.	.	1
Esox niger	.	.	.	1	.	.	.	.	1	1

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Etropus crossotus	.	5	7	.	122	1,602	1,061	656	19	1,736
Etropus cyclosquamus	.	.	.	.	.	24	.	24	.	24
Eucinostomus argenteus	22	.	1	.	.	25	1	47	.	48
Eucinostomus gula	63	9	137	.	28	68	42	263	.	305
Eucinostomus harengulus	4	16	129	67	13	124	73	105	175	353
Eucinostomus spp.	1,194	142	1,944	658	.	1,290	639	2,719	1,870	5,228
Farfantepenaeus aztecus	.	.	1	.	.	53	42	5	7	54
Farfantepenaeus duorarum	2	.	6	2	11	248	178	79	12	269
Farfantepenaeus spp.	324	27	820	30	.	216	553	730	134	1,417
Fundulus chrysotus	.	.	.	4	.	.	.	.	4	4
Fundulus confluentus	.	.	.	56	.	.	.	.	56	56
Fundulus grandis	1	.	5	.	2	.	6	2	.	8
Fundulus similis	.	.	39	.	9	.	10	38	.	48
Gambusia holbrooki	.	.	.	3,025	.	.	.	.	3,025	3,025
Gobiesox strumosus	.	.	.	.	.	4	1	2	1	4
Gobionellus oceanicus	.	8	.	6	.	38	38	.	14	52
Gobiosoma bosc	.	2	9	41	.	6	13	.	45	58
Gobiosoma longipala	.	.	.	.	.	2	.	2	.	2
Gobiosoma robustum	18	1	2	.	.	.	14	7	.	21
Gobiosoma spp.	1	.	2	24	.	12	6	1	32	39
Gymnura micrura	.	1	.	.	66	15	44	38	.	82
Haemulon plumierii	1	.	.	.	.	.	.	1	.	1
Halichoeres bivittatus	23	.	.	.	.	1	1	23	.	24
Harengula jaguana	1,782	6	212	.	312	7	344	1,973	2	2,319
Hemicaranx amblyrhynchus	.	.	2	.	.	65	59	2	6	67
Heterandria formosa	.	.	.	53	.	.	.	.	53	53
Hippocampus erectus	.	.	1	.	.	11	1	11	.	12
Hyporhamphus meeki	4	3	2	.	4	.	1	12	.	13
Hypsoblennius hentz	5	.	.	.	1	1	.	7	.	7
Ictalurus furcatus	.	.	.	.	.	7	.	.	7	7
Ictalurus punctatus	.	.	.	.	.	39	.	.	39	39
Labidesthes sicculus	.	.	.	16	.	.	.	.	16	16

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Lagodon rhomboides	4,350	60	917	68	7,552	1,135	3,876	10,069	137	14,082
Leiostomus xanthurus	63	122	553	472	1,534	359	1,580	855	668	3,103
Lepisosteus oculatus	.	.	.	10	1	.	1	.	10	11
Lepisosteus osseus	.	.	.	3	4	4	3	3	5	11
Lepomis auritus	.	.	.	12	.	3	.	.	15	15
Lepomis macrochirus	.	.	.	153	.	1	.	.	154	154
Lepomis microlophus	.	.	.	94	.	17	.	.	111	111
Lepomis punctatus	.	.	.	31	.	.	.	.	31	31
Lepomis spp.	.	.	.	20	.	.	.	.	20	20
Litopenaeus setiferus	2	27	261	56	184	5,234	2,480	22	3,262	5,764
Lobotes surinamensis	.	.	1	.	1	.	2	.	.	2
Lucania goodei	.	.	.	256	.	.	.	.	256	256
Lucania parva	193	.	107	133	.	.	38	262	133	433
Lutjanus griseus	28	1	18	15	24	15	44	38	19	101
Lutjanus synagris	39	1	2	.	5	84	39	80	12	131
Membras martinica	37	199	236	.	.	.	292	180	.	472
Menidia spp.	18	205	1,222	1,613	.	3	888	558	1,615	3,061
Menippe spp.	.	.	3	.	1	137	20	121	.	141
Menticirrhus americanus	4	35	103	.	39	154	247	71	17	335
Menticirrhus littoralis	.	.	.	.	11	.	.	11	.	11
Menticirrhus saxatilis	.	4	15	.	.	1	4	16	.	20
Microgobius gulosus	27	.	29	18	.	1	36	20	19	75
Microgobius thalassinus	.	7	14	1	.	179	91	69	41	201
Micropogonias undulatus	.	103	165	11	2,922	5,766	3,481	471	5,015	8,967
Micropterus salmoides	.	.	.	617	.	8	.	.	625	625
Minytrema melanops	.	.	.	1	.	.	.	.	1	1
Monacanthus ciliatus	1	.	.	.	.	36	.	37	.	37
Morone chrysops x saxatilis	.	.	.	.	4	.	4	.	.	4
Morone saxatilis	.	.	.	.	3	.	3	.	.	3
Moxostoma sp.	.	.	.	.	.	1	.	.	1	1
Mugil cephalus	1	5	1,306	45	2,292	2	2,626	978	47	3,651
Mugil curema	1	3	159	3	484	1	343	304	4	651

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Mugil gyrans	.	.	1	.	.	.	1	.	.	1
Mugil sp.	.	.	1	.	.	.	1	.	.	1
Mullus auratus	.	.	.	.	.	3	.	3	.	3
Mycteroperca microlepis	6	.	.	.	24	1	23	8	.	31
Myrophis punctatus	.	.	2	.	.	1	2	1	.	3
Narcine bancroftii	.	.	.	.	2	.	.	2	.	2
Nicholsina usta	.	.	.	.	.	4	.	4	.	4
Notemigonus crysoleucas	.	.	.	37	.	.	.	.	37	37
Notropis petersoni	.	.	.	363	.	1	.	.	364	364
Notropis sp.	.	.	.	1	.	.	.	.	1	1
Notropis texanus	.	.	.	.	.	29	.	.	29	29
Ogcocephalus cubifrons	.	.	.	.	9	7	2	14	.	16
Oligoplites saurus	6	12	20	21	5	.	23	20	21	64
Ophichthus gomesii	.	.	.	.	1	.	1	.	.	1
Opisthonema oglinum	5	9	.	.	3	8	10	15	.	25
Opsanus beta	.	.	1	.	11	19	2	29	.	31
Opsopoeodus emiliae	.	.	.	2	.	.	.	.	2	2
Orthopristis chrysoptera	1,567	3	233	.	1,139	618	1,135	2,425	.	3,560
Paralichthys albigutta	4	6	12	.	90	51	43	120	.	163
Paralichthys lethostigma	.	.	3	7	61	76	90	13	44	147
Paralichthys spp.	1	.	.	.	.	1	.	1	1	2
Peprilus burti	.	.	.	.	40	22	21	41	.	62
Peprilus paru	.	.	.	.	76	28	81	15	8	104
Percina nigrofasciata	.	.	.	.	.	1	.	.	1	1
Poecilia latipinna	.	.	1	384	.	.	1	.	384	385
Pogonias cromis	.	1	.	.	317	9	272	46	9	327
Pomatomus saltatrix	.	.	.	.	1	.	1	.	.	1
Porichthys plectrodon	.	.	2	.	.	10	6	3	3	12
Portunus spp.	.	2	.	.	.	305	69	54	184	307
Prionotus rubio	.	.	.	.	.	8	3	5	.	8
Prionotus scitulus	.	.	.	.	1	151	10	142	.	152
Prionotus tribulus	1	8	18	2	3	111	74	40	29	143

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Raja eglanteria	.	.	.	.	.	1	.	1	.	1
Rhinobatos lentiginosus	.	.	.	.	.	1	.	1	.	1
Rhinoptera bonasus	1	.	.	.	39	2	34	8	.	42
Rhizoprionodon terraenovae	.	.	.	.	2	2	1	3	.	4
Rimapenaeus constrictus	1	3	4	.	.	416	221	203	.	424
Rypticus maculatus	.	.	.	.	.	1	.	1	.	1
Sardinella aurita	.	.	5	.	.	.	.	5	.	5
Sciaenidae sp.	.	.	1	.	.	.	1	.	.	1
Sciaenops ocellatus	6	3	68	3	438	4	365	150	7	522
Scomberomorus maculatus	1	.	1	.	5	.	4	3	.	7
Scorpaena brasiliensis	.	.	.	.	.	2	.	2	.	2
Selene setapinnis	.	.	.	.	.	2	2	.	.	2
Selene vomer	.	.	.	.	5	12	15	2	.	17
Serraniculus pumilio	1	.	.	.	.	14	.	15	.	15
Serranus subligarius	3	.	3	.	.	4	2	8	.	10
Sicyonia dorsalis	.	.	.	.	.	1	.	1	.	1
Sicyonia laevigata	.	.	.	.	.	1	.	1	.	1
Sparidae spp.	.	.	.	.	.	7	5	2	.	7
Sphoeroides nephelus	7	5	16	.	6	3	13	24	.	37
Sphoeroides parvus	.	1	1	.	.	1	2	1	.	3
Sphoeroides spp.	3	1	8	.	.	.	1	11	.	12
Sphyraena barracuda	.	.	2	.	2	.	1	3	.	4
Sphyraena borealis	3	1	1	.	.	9	.	14	.	14
Sphyrna tiburo	.	.	.	.	27	1	10	18	.	28
Stellifer lanceolatus	.	5	.	.	5	179	127	5	57	189
Stenotomus caprinus	.	.	.	.	.	6	.	6	.	6
Stephanolepis hispidus	57	12	3	.	.	28	23	76	1	100
Stomolophus meleagris	.	.	1	.	9	489	497	1	1	499
Strongylura marina	2	1	11	1	58	.	30	42	1	73
Strongylura notata	.	.	1	.	2	.	1	2	.	3
Strongylura spp.	.	.	13	4	.	.	1	12	4	17
Strongylura timucu	.	.	2	.	.	.	1	1	.	2

Appendix AP12-02. (Continued)

Species	Gear and Strata						Zone			Totals
	21.3-m bay seine			21.3-m river seine	183-m haul seine	6.1-m otter trawl				
	Veg	Unveg	Shore				A	B	C	
	E=69	E=63	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Symphurus plagiusa	1	13	18	6	.	285	140	44	139	323
Syngnathus floridae	20	.	2	.	.	29	1	50	.	51
Syngnathus louisianae	8	.	5	.	1	42	19	18	19	56
Syngnathus scovelli	51	.	11	16	.	30	26	46	36	108
Synodus foetens	36	36	94	1	20	99	128	153	5	286
Trachinotus carolinus	.	.	74	.	43	.	9	108	.	117
Trachinotus falcatus	.	.	31	.	13	.	.	44	.	44
Trichiurus lepturus	.	.	.	.	.	5	5	.	.	5
Trinectes maculatus	.	.	3	360	57	612	28	101	903	1,032
Tylosurus crocodilus	.	.	1	.	2	.	.	3	.	3
Urophycis floridana	.	.	.	.	.	18	3	15	.	18
Urophycis regia	.	.	.	.	.	1	.	1	.	1
Totals	**12,127**	**2,673**	**18,412**	**16,252**	**23,414**	**96,472**	**46,506**	**35,399**	**87,445**	**169,350**

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Southern Indian River Lagoon

Along the eastern central coast of Florida, the sampling area identified as the southern Indian River Lagoon (IRL) system is a narrow estuary that extends from Vero Beach south to the Jupiter Inlet. The southern IRL is connected to the Atlantic Ocean by three inlets (Ft. Pierce, St. Lucie, and Jupiter). Freshwater inflow comes primarily from the St. Lucie and Loxahatchee rivers. In addition, there is freshwater input from numerous creeks and canals along the western shoreline. Shoreline vegetation consists largely of fringing mangrove, Brazilian pepper, and marsh grasses. Bottom substrates are typically characterized as sand or mud mixed with shell hash and oysters. Seagrasses, primarily *Halodule wrightii*, are the dominant vegetative cover in the southern IRL (Sime 2005).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in the southern IRL since 1997. The area sampled was divided into two geographically-defined bay zones (I and J) and one riverine zone (T; Figure TQ12-01). Monthly stratified-random sampling (SRS) was conducted in all zones using the 183-m haul seine. All sampling methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in the southern IRL.

Stratified-Random Sampling

183-m Haul Seines. A total of 23,140 animals, which included 102 taxa of fishes and 2 taxa of selected invertebrates, were collected from 144 southern IRL samples in 2012 (Table TQ12-01, Appendices TQ12-01 and -02). *Lagodon rhomboides* (n=7,695) was the most numerous taxon collected, representing 33.3% of the 183-m haul seine catch (Table TQ12-02). *Diapterus auratus* (n=2,181) and *Mugil curema* (n=1,665) were the next most abundant taxa collected, accounting for an additional 16.6% of the 183-m haul seine catch. The taxa most frequently collected in the 183-m haul seine were *M. curema* (77.8% occurrence), *Archosargus probatocephalus* (73.6% occurrence), and *Mugil cephalus* (72.2% occurrence). Collections in 2012 included no species new to the southern IRL FIM collection.

A total of 5,569 animals from 30 Selected Taxa were collected, representing 24.1% of the entire 183-m haul seine catch (Table TQ12-03). *Mugil curema* (n=1,665) and *M. cephalus* (n=1,229) were the most abundant Selected Taxa, accounting for 52.0% of the Selected Taxa collected with this gear. The Selected Taxa most frequently caught were *M. curema* (77.8% occurrence), *A. probatocephalus* (73.6% occurrence), and *M. cephalus* (72.2% occurrence).

Reference

Sime, P. 2005. St. Lucie Estuary and Indian River Lagoon conceptual ecological model. Wetlands 25(4):898-907.

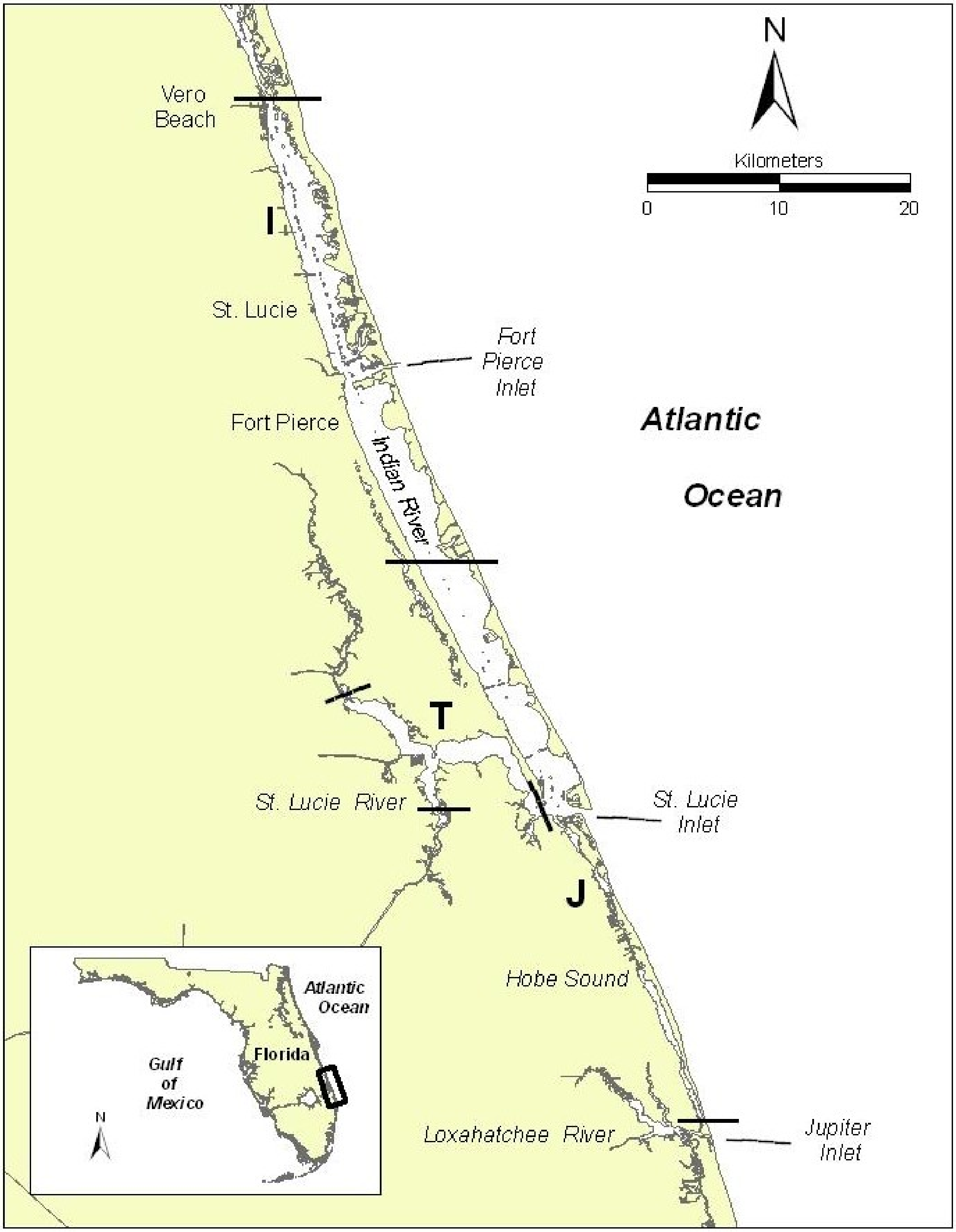

Figure TQ12-01. Map of southern Indian River Lagoon sampling area. Zones are labeled I, J, and T.

Table TQ12-01. Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2012.

Zone	183-m haul seine		Totals	
	Animals	Hauls	Animals	Hauls
I	11,515	48	11,515	48
J	9,584	48	9,584	48
T	2,041	48	2,041	48
Totals	**23,140**	**144**	**23,140**	**144**

Table TQ12-02. Catch statistics for 10 dominant taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lagodon rhomboides	7,695	33.3	60.4	53.44	11.25	252.66	1,049	107	0.37	42	191
Diapterus auratus	2,181	9.4	55.6	15.15	4.38	346.76	535	124	0.86	34	281
Mugil curema	1,665	7.2	77.8	11.56	2.02	209.79	200	189	1.00	77	328
Orthopristis chrysoptera	1,241	5.4	21.5	8.62	4.15	577.19	515	146	0.80	45	212
Mugil cephalus	1,229	5.3	72.2	8.53	1.36	191.84	128	243	1.65	94	448
Eucinostomus gula	1,062	4.6	47.2	7.38	1.71	277.61	116	80	0.34	45	153
Ariopsis felis	945	4.1	47.2	6.56	2.06	377.17	199	224	2.54	76	526
Selene vomer	923	4.0	34.0	6.41	4.54	850.00	652	132	0.79	31	316
Bairdiella chrysoura	641	2.8	8.3	4.45	2.98	803.75	419	118	0.86	55	205
Archosargus probatocephalus	526	2.3	73.6	3.65	0.36	118.57	21	238	2.91	62	390
Subtotal	18,108	78.4	.	.	.	.	.	.	.	31	526
Totals	**23,140**	**100.0**	**.**	**160.69**	**22.78**	**170.12**	**1,934**	**.**	**.**	**22**	**1090**

Table TQ12-03. Catch statistics for Selected Taxa collected in 144 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil curema	1,665	7.2	77.8	11.56	2.02	209.79	200	189	1.00	77	328
Mugil cephalus	1,229	5.3	72.2	8.53	1.36	191.84	128	243	1.65	94	448
Archosargus probatocephalus	526	2.3	73.6	3.65	0.36	118.57	21	238	2.91	62	390
Leiostomus xanthurus	488	2.1	10.4	3.39	2.42	858.05	342	178	1.31	78	233
Elops saurus	485	2.1	39.6	3.37	0.73	259.57	55	300	2.26	185	495
Centropomus undecimalis	353	1.5	50.0	2.45	0.42	203.70	30	444	9.26	135	894
Lutjanus griseus	158	0.7	20.1	1.10	0.38	416.37	39	153	3.20	71	250
Lutjanus analis	114	0.5	21.5	0.79	0.18	272.55	12	133	3.64	73	296
Pogonias cromis	106	0.5	27.8	0.74	0.15	238.83	14	243	4.80	176	406
Lutjanus synagris	85	0.4	9.0	0.59	0.24	478.92	22	100	2.09	69	179
Micropogonias undulatus	80	0.3	16.7	0.56	0.19	403.77	24	246	6.77	119	378
Sciaenops ocellatus	70	0.3	20.8	0.49	0.12	302.87	11	366	10.77	85	615
Callinectes sapidus	61	0.3	20.8	0.42	0.09	259.77	6	116	4.85	22	192
Trachinotus falcatus	34	0.1	8.3	0.24	0.12	625.57	17	100	10.17	47	379
Trachinotus carolinus	32	0.1	5.6	0.22	0.16	840.52	22	218	11.81	155	400
Cynoscion nebulosus	21	0.1	10.4	0.15	0.04	353.19	4	259	26.69	139	532
Paralichthys albigutta	20	0.1	11.1	0.14	0.03	302.38	2	143	14.12	72	365

Table TQ12-03. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Pomatomus saltatrix	13	0.1	5.6	0.09	0.04	505.88	4	421	8.89	362	471
Scomberomorus regalis	7	<0.1	2.8	0.05	0.03	658.66	3	216	22.63	136	320
Lutjanus apodus	4	<0.1	1.4	0.03	0.02	845.56	2	140	21.47	91	195
Mycteroperca microlepis	4	<0.1	0.7	0.03	0.03	1,200.00	4	192	44.27	110	290
Cynoscion complex	3	<0.1	1.4	0.02	0.02	891.92	2	267	39.47	191	324
Menticirrhus americanus	2	<0.1	1.4	0.01	0.01	845.56	1	271	17.00	254	288
Scomberomorus maculatus	2	<0.1	1.4	0.01	0.01	845.56	1	259	4.50	254	263
Paralichthys lethostigma	2	<0.1	1.4	0.01	0.01	845.56	1	300	74.50	225	374
Panulirus argus	1	<0.1	0.7	0.01	0.01	1,200.00	1	72	.	72	72
Albula vulpes	1	<0.1	0.7	0.01	0.01	1,200.00	1	155	.	155	155
Epinephelus itajara	1	<0.1	0.7	0.01	0.01	1,200.00	1	273	.	273	273
Epinephelus morio	1	<0.1	0.7	0.01	0.01	1,200.00	1	114	.	114	114
Scomberomorus cavalla	1	<0.1	0.7	0.01	0.01	1,200.00	1	225	.	225	225
Totals	**5,569**	**24.1**	**99.3**	**38.67**	**3.89**	**120.81**	**350**	**.**	**.**	**22**	**894**

Appendix TQ12-01. Monthly summary of species collected during southern Indian River Lagoon stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=144
Acanthostracion quadricornis	.	6	6	.	.	.	.	.	.	1	.	.	13
Achirus lineatus	.	2	.	.	.	.	.	1	.	.	.	.	3
Albula vulpes	.	.	.	.	.	.	.	1	.	.	.	.	1
Archosargus probatocephalus	55	38	33	31	68	46	31	56	34	61	32	41	526
Archosargus rhomboidalis	.	8	9	1	9	24	37	27	46	37	21	52	271
Archosargus spp.	.	.	.	.	.	1	.	.	.	1	.	.	2
Ariopsis felis	7	351	212	21	63	107	12	23	35	30	22	62	945
Astroscopus y-graecum	.	.	.	.	1	.	.	.	.	.	.	.	1
Bagre marinus	.	1	.	.	2	3	.	.	.	.	1	.	7
Bairdiella chrysoura	8	4	37	.	.	.	8	.	95	420	68	1	641
Brevoortia spp.	7	126	2	.	.	.	.	5	.	32	19	.	191
Calamus arctifrons	.	.	.	.	.	.	.	.	.	1	.	.	1
Calamus penna	.	.	.	.	1	.	.	.	.	.	.	.	1
Callinectes sapidus	.	18	8	9	6	.	3	3	8	4	2	.	61
Caranx bartholomaei	.	.	.	.	.	.	.	.	.	6	.	.	6
Caranx crysos	.	.	.	2	2	.	.	.	.	.	1	.	5
Caranx hippos	53	29	61	33	20	2	2	7	12	11	20	19	269
Caranx latus	.	.	3	.	.	1	.	1	5	2	1	.	13
Centropomus undecimalis	5	18	29	41	15	20	46	12	52	53	33	29	353
Centropristis striata	.	.	.	.	1	.	.	2	.	.	.	.	3
Chaetodipterus faber	.	.	.	.	.	.	1	1	6	2	1	.	11
Chilomycterus schoepfii	9	6	13	14	19	9	11	6	13	29	4	7	140
Chloroscombrus chrysurus	.	.	5	.	.	.	.	.	.	.	.	.	5

Appendix TQ12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=144
Citharichthys spilopterus	1	2	.	1	1	2	6	1	2	.	.	.	16
Cynoscion complex	2	1	.	.	.	.	.	.	.	.	.	.	3
Cynoscion nebulosus	1	5	3	1	.	.	1	.	2	4	2	2	21
Dasyatis sabina	.	46	10	5	32	34	15	8	18	8	10	1	187
Dasyatis say	2	7	2	2	11	4	4	9	4	10	3	5	63
Diapterus auratus	12	571	89	26	133	83	355	102	84	284	82	360	2,181
Diodon holocanthus	.	.	.	.	1	.	.	.	.	.	.	.	1
Diodon hystrix	.	.	.	1	.	.	.	.	.	2	.	.	3
Diplectrum formosum	.	.	.	.	.	.	.	.	.	1	.	.	1
Diplodus holbrookii	.	.	.	.	.	.	.	1	.	.	.	.	1
Dorosoma petenense	.	.	.	.	.	.	.	.	.	1	.	.	1
Echeneis naucrates	.	.	.	.	3	.	.	.	.	.	.	.	3
Elops saurus	40	71	53	38	90	23	10	6	5	69	23	57	485
Epinephelus itajara	.	.	.	.	.	.	.	.	.	.	1	.	1
Epinephelus morio	.	.	.	.	.	.	.	1	.	.	.	.	1
Eucinostomus gula	133	122	19	48	123	6	23	144	185	213	22	24	1,062
Eucinostomus harengulus	10	2	1	6	40	18	14	30	5	.	.	.	126
Eucinostomus melanopterus	.	.	.	.	.	.	.	1	.	.	.	.	1
Eucinostomus spp.	9	.	1	.	.	.	.	.	.	.	.	.	10
Eugerres plumieri	.	.	.	1	.	3	2	3	.	2	.	.	11
Fistularia tabacaria	.	.	.	.	1	.	.	.	.	.	.	.	1
Gerres cinereus	6	.	1	2	4	6	2	6	1	.	3	2	33
Gymnura micrura	1	.	1	2	.	.	2	4	.	.	1	1	12
Haemulon aurolineatum	.	.	.	.	.	.	1	1	1	11	.	.	14
Haemulon parra	2	.	3	.	.	.	1	2	.	28	9	.	45

Appendix TQ12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=144
Haemulon plumierii	.	1	2	.	2	.	.	.	8	101	.	.	114
Haemulon sciurus	.	.	.	.	.	2	13	.	1	21	.	.	37
Harengula jaguana	.	.	7	.	.	.	.	2	9	19	18	.	55
Hemiramphus balao	.	.	.	.	.	.	.	.	.	.	1	.	1
Hippocampus erectus	.	.	.	1	.	.	.	.	.	.	.	.	1
Hyporhamphus meeki	.	2	.	.	.	.	.	.	.	.	.	.	2
Hyporhamphus spp.	2	.	.	.	.	.	.	.	.	.	.	.	2
Lachnolaimus maximus	.	.	.	.	8	.	.	34	3	5	.	.	50
Lactophrys trigonus	1	7	9	.	3	1	1	1	4	3	1	1	32
Lagodon rhomboides	442	465	719	377	111	166	983	1,266	1,398	1,510	149	109	7,695
Leiostomus xanthurus	.	67	6	.	35	342	7	.	4	16	10	1	488
Lobotes surinamensis	.	.	1	.	.	.	.	.	.	.	.	.	1
Lutjanus analis	2	5	3	5	12	1	10	21	8	26	2	19	114
Lutjanus apodus	.	.	.	.	2	.	.	.	.	.	.	2	4
Lutjanus griseus	5	.	9	12	5	5	54	14	5	39	.	10	158
Lutjanus synagris	.	1	5	.	24	.	9	18	16	7	.	5	85
Menticirrhus americanus	.	1	.	.	.	.	1	.	.	.	.	.	2
Micropogonias undulatus	2	29	2	1	10	2	3	13	5	4	6	3	80
Monacanthus ciliatus	.	.	.	.	.	.	.	11	2	4	.	1	18
Mugil cephalus	197	62	90	123	108	184	152	71	95	58	45	44	1,229
Mugil curema	559	128	181	55	69	72	87	82	30	79	210	113	1,665
Mycteroperca microlepis	.	.	.	.	.	.	.	4	.	.	.	.	4
Nicholsina usta	.	1	.	.	7	.	.	3	.	3	.	10	24
Ocyurus chrysurus	.	.	.	.	.	.	.	6	4	2	.	.	12
Oligoplites saurus	.	2	.	1	10	.	.	10	5	10	2	.	40
Opisthonema oglinum	.	.	2	.	.	.	.	.	34	173	1	.	210

Appendix TQ12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=144
Opsanus spp.	.	.	.	.	.	.	.	.	1	1	2	.	4
Orthopristis chrysoptera	6	53	4	1	.	2	46	44	737	227	101	20	1,241
Panulirus argus	.	1	.	.	.	.	.	.	.	.	.	.	1
Paralichthys albigutta	3	1	.	3	3	2	2	3	2	.	1	.	20
Paralichthys lethostigma	.	1	.	1	.	.	.	.	.	.	.	.	2
Pogonias cromis	1	6	2	5	5	12	.	3	13	14	11	34	106
Pomatomus saltatrix	1	7	1	1	1	2	.	.	.	.	.	.	13
Prionotus tribulus	1	.	1	.	.	.	.	.	.	.	.	.	2
Pterygoplichthys sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Rhinoptera bonasus	.	.	.	2	6	.	.	.	.	.	.	.	8
Sardinella aurita	.	.	.	.	.	.	.	.	.	.	2	.	2
Sciaenops ocellatus	14	14	13	4	10	1	2	3	4	4	.	1	70
Scomberomorus cavalla	.	.	.	.	.	.	1	.	.	.	.	.	1
Scomberomorus maculatus	1	.	1	.	.	.	.	.	.	.	.	.	2
Scomberomorus regalis	.	.	.	.	.	.	.	5	.	1	1	.	7
Scorpaena brasiliensis	.	.	.	.	.	.	.	.	.	1	.	.	1
Scorpaena plumieri	.	.	.	.	.	.	.	.	.	3	.	.	3
Selene vomer	54	675	14	23	13	16	20	6	10	5	6	81	923
Sparisoma chrysopterum	.	.	.	.	6	.	.	.	.	.	.	.	6
Sparisoma radians	.	.	.	.	.	.	.	30	.	.	.	.	30
Sparisoma rubripinne	.	.	.	.	.	.	.	.	4	.	1	.	5
Sphoeroides nephelus	5	1	9	2	.	2	3	12	16	23	21	4	98
Sphoeroides spengleri	.	.	.	1	.	.	1	2	1	.	5	9	19
Sphoeroides testudineus	1	.	5	8	11	13	9	4	5	8	.	1	65
Sphyraena barracuda	9	12	27	32	13	10	25	51	19	57	12	37	304
Sphyrna tiburo	.	1	.	.	.	.	.	.	.	.	.	3	4

Appendix TQ12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=12	E=144
Stephanolepis hispidus	.	1	2	.	3	10	6	14	3	90	.	3	132
Strongylura marina	5	.	.	.	.	.	.	.	1	.	.	2	8
Strongylura notata	11	8	11	7	1	7	2	2	3	23	10	25	110
Synodus foetens	.	1	.	.	.	.	1	1	.	3	.	2	8
Trachinotus carolinus	1	2	22	.	1	4	1	1	.	.	.	.	32
Trachinotus falcatus	1	.	.	.	1	1	4	22	3	.	2	.	34
Trinectes maculatus	.	.	1	.	.	.	.	.	.	2	.	.	3
Totals	**1,687**	**2,989**	**1,750**	**950**	**1,126**	**1,249**	**2,030**	**2,223**	**3,066**	**3,865**	**1,002**	**1,203**	**23,140**

Appendix TQ12-02. Summary by gear, stratum and zone of species collected during southern Indian River Lagoon stratified-random sampling, 2012. Sampling with 183-m haul seine was post-stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Zones I and J were located in the Indian River, and Zone T encompassed the lower St. Lucie River. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	**Gear and Strata**		**Zone**			**Totals**
	183-m haul seine					
	Over	**Nonover**	**I**	**J**	**T**	
	E=103	**E=41**	**E=48**	**E=48**	**E=48**	**E=144**
Acanthostracion quadricornis	13	.	1	12	.	13
Achirus lineatus	3	.	.	3	.	3
Albula vulpes	.	1	.	.	1	1
Archosargus probatocephalus	387	139	198	128	200	526
Archosargus rhomboidalis	267	4	188	83	.	271
Archosargus spp.	1	1	2	.	.	2
Ariopsis felis	799	146	663	173	109	945
Astroscopus y-graecum	1	.	.	.	1	1
Bagre marinus	5	2	3	1	3	7
Bairdiella chrysoura	587	54	538	103	.	641
Brevoortia spp.	182	9	186	4	1	191
Calamus arctifrons	1	.	.	1	.	1
Calamus penna	1	.	.	1	.	1
Callinectes sapidus	53	8	18	23	20	61
Caranx bartholomaei	6	.	1	5	.	6
Caranx crysos	4	1	.	4	1	5
Caranx hippos	201	68	178	77	14	269
Caranx latus	12	1	3	9	1	13
Centropomus undecimalis	235	118	108	171	74	353
Centropristis striata	3	.	2	1	.	3
Chaetodipterus faber	11	.	5	6	.	11
Chilomycterus schoepfii	108	32	55	76	9	140
Chloroscombrus chrysurus	5	.	5	.	.	5
Citharichthys spilopterus	16	.	13	.	3	16
Cynoscion complex	1	2	3	.	.	3
Cynoscion nebulosus	17	4	16	5	.	21
Dasyatis sabina	159	28	71	34	82	187
Dasyatis say	56	7	37	22	4	63

Appendix TQ12-02. (Continued)

Species	Gear and Strata 183-m haul seine		Zone			Totals
	Over	Nonover	I	J	T	
	E=103	E=41	E=48	E=48	E=48	E=144
Diapterus auratus	1,822	359	1,234	440	507	2,181
Diodon holocanthus	1	.	.	1	.	1
Diodon hystrix	2	1	.	3	.	3
Diplectrum formosum	1	.	.	1	.	1
Diplodus holbrookii	1	.	.	1	.	1
Dorosoma petenense	1	.	.	.	1	1
Echeneis naucrates	.	3	.	.	3	3
Elops saurus	294	191	216	144	125	485
Epinephelus itajara	1	.	1	.	.	1
Epinephelus morio	1	.	1	.	.	1
Eucinostomus gula	991	71	566	427	69	1,062
Eucinostomus harengulus	96	30	55	30	41	126
Eucinostomus melanopterus	.	1	.	.	1	1
Eucinostomus spp.	10	.	9	1	.	10
Eugerres plumieri	10	1	1	5	5	11
Fistularia tabacaria	1	.	.	1	.	1
Gerres cinereus	29	4	2	27	4	33
Gymnura micrura	8	4	5	3	4	12
Haemulon aurolineatum	13	1	4	10	.	14
Haemulon parra	44	1	19	26	.	45
Haemulon plumierii	114	.	4	110	.	114
Haemulon sciurus	37	.	.	37	.	37
Harengula jaguana	30	25	28	9	18	55
Hemiramphus balao	1	.	1	.	.	1
Hippocampus erectus	1	.	.	1	.	1
Hyporhamphus meeki	2	.	2	.	.	2
Hyporhamphus spp.	.	2	.	2	.	2
Lachnolaimus maximus	50	.	34	16	.	50
Lactophrys trigonus	32	.	5	27	.	32
Lagodon rhomboides	6,787	908	3,490	4,184	21	7,695
Leiostomus xanthurus	482	6	478	10	.	488
Lobotes surinamensis	.	1	1	.	.	1

Appendix TQ12-02. (Continued)

Species	Gear and Strata: 183-m haul seine		Zone			Totals
	Over	Nonover	I	J	T	
	E=103	E=41	E=48	E=48	E=48	E=144
Lutjanus analis	106	8	61	50	3	114
Lutjanus apodus	2	2	.	4	.	4
Lutjanus griseus	138	20	26	122	10	158
Lutjanus synagris	80	5	28	57	.	85
Menticirrhus americanus	2	.	1	.	1	2
Micropogonias undulatus	62	18	34	18	28	80
Monacanthus ciliatus	17	1	11	7	.	18
Mugil cephalus	585	644	643	428	158	1,229
Mugil curema	951	714	623	680	362	1,665
Mycteroperca microlepis	4	.	4	.	.	4
Nicholsina usta	14	10	3	21	.	24
Ocyurus chrysurus	12	.	5	7	.	12
Oligoplites saurus	26	14	11	23	6	40
Opisthonema oglinum	210	.	21	189	.	210
Opsanus spp.	2	2	1	3	.	4
Orthopristis chrysoptera	1,199	42	459	782	.	1,241
Panulirus argus	1	.	.	1	.	1
Paralichthys albigutta	15	5	16	1	3	20
Paralichthys lethostigma	2	.	2	.	.	2
Pogonias cromis	79	27	23	53	30	106
Pomatomus saltatrix	11	2	1	6	6	13
Prionotus tribulus	2	.	2	.	.	2
Pterygoplichthys sp.	1	.	.	.	1	1
Rhinoptera bonasus	.	8	.	.	8	8
Sardinella aurita	.	2	.	.	2	2
Sciaenops ocellatus	58	12	53	11	6	70
Scomberomorus cavalla	1	.	1	.	.	1
Scomberomorus maculatus	1	1	2	.	.	2
Scomberomorus regalis	7	.	5	2	.	7
Scorpaena brasiliensis	1	.	.	1	.	1
Scorpaena plumieri	3	.	3	.	.	3
Selene vomer	820	103	730	144	49	923

Appendix TQ12-02. (Continued)

Species	Gear and Strata		Zone			Totals
	183-m haul seine					
	Over	Nonover	I	J	T	
	E=103	E=41	E=48	E=48	E=48	E=144
Sparisoma chrysopterum	6	.	.	6	.	6
Sparisoma radians	30	.	30	.	.	30
Sparisoma rubripinne	5	.	1	4	.	5
Sphoeroides nephelus	70	28	40	58	.	98
Sphoeroides spengleri	12	7	9	10	.	19
Sphoeroides testudineus	43	22	20	32	13	65
Sphyraena barracuda	252	52	82	199	23	304
Sphyrna tiburo	4	.	4	.	.	4
Stephanolepis hispidus	128	4	15	117	.	132
Strongylura marina	7	1	5	3	.	8
Strongylura notata	84	26	38	70	2	110
Synodus foetens	6	2	3	5	.	8
Trachinotus carolinus	32	.	23	4	5	32
Trachinotus falcatus	30	4	25	8	1	34
Trinectes maculatus	1	2	1	.	2	3
Totals	**19,118**	**4,022**	**11,515**	**9,584**	**2,041**	**23,140**

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Northeast Florida

Northeast Florida encompasses three coastal plain estuaries; each defined by their respective lower river basins (St. Marys River, Nassau River, and St. Johns River) and interconnected via the Intracoastal Waterway (ICW; Figure JX12-01). Shoreline vegetation in the lower St. Marys and Nassau rivers is characterized by an expansive saltmarsh system, while the lower St. Johns River is characterized by marshes, hardwood forests, and hardwood swamps (St. Johns River Water Management District 1993; St. Johns River Water Management District 2000). Bottom substrates are typically characterized as mud, sand, and occasional oysters (Solomon et al. 2006). Bottom vegetation is only present in the oligohaline reaches of the St. Johns River upriver of downtown Jacksonville (Burns et al. 1997).

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of fish and selected invertebrates in northeast Florida since 2001. The area sampled was divided into six geographically-defined riverine zones (A-F; Figure JX12-01). Monthly stratified-random sampling (SRS) was conducted in Zones A-D using 21.3--m river seines, 183-m haul seines, and 6.1-m river otter trawls. Monthly SRS was conducted in Zone E and F with only 21.3-m river seines and 6.1-m river otter trawls. All methods were the same as those described in the Methods section of this report. This section summarizes data collected by the FIM program during 2012 in northeast Florida.

Stratified-Random Sampling

A total of 263,853 animals, which included 164 taxa of fishes and 14 taxa of selected invertebrates, were collected from 1,356 northeast Florida samples in 2012 (Table JX12-01; Appendices JX12-01 and -02). *Anchoa mitchilli* (n=102,207) was the most numerous species collected, representing 38.7% of the total catch. The next three most abundant taxa, *Micropogonias undulatus* (n=22,316), *Leiostomus xanthurus* (n=17,944), and *Menidia menidia* (n=16,300) accounted for an additional 21.4% of the total catch. Thirty-six Selected Taxa (n=70,321 animals) composed 26.7% of the total catch. *Micropogonias undulatus* (n=22,316) was the most abundant Selected Taxon, representing 8.5% of the annual catch. *Leiostomus xanthurus* (n=17,944) and

Litopenaeus setiferus (n=12,452) were the next two most abundant Selected Taxa, comprising 11.5% of the total catch. Collections in 2012 included three species new to the northeast Florida FIM collection: *Aluterus scriptus* (scrawled filefish), *Gobiosoma ginsburgi* (seaboard goby), and *Ophichthus puncticeps* (palespotted eel).

21.3-m River Seines. A total of 177,250 animals were collected in 576 21.3-m river seine samples, representing 67.2% of the overall SRS collections (Table JX12-01). *Anchoa mitchilli* (n=83,020) was the most abundant species, accounting for 46.8% of the 21.3-m river seine catch (Table JX12-02). *Menidia menidia* (n=16,300), *L. xanthurus* (n=12,713), and *Menidia* spp. (n=10,592) were the next three most abundant species, accounting for an additional 22.3% of the 21.3-m river seine catch. The taxa most frequently caught in 21.3-m river seines were *A. mitchilli* (46.4% occurrence) and *Menidia* spp. (41.0% occurrence).

A total of 27,762 animals from 30 Selected Taxa were collected, representing 15.7% of the entire 21.3-m river seine catch (Table JX12-03). *Leiostomus xanthurus* (n=12,713) and *L. setiferus* (n=8,081) were the most abundant Selected Taxa, accounting for 74.9% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in 21.3-m river seines were *L. xanthurus* (35.1% occurrence) and *Callinectes sapidus* (28.3% occurrence).

183-m Haul Seines. A total of 17,116 animals were collected in 192 183-m haul seines, representing 6.5% of the overall SRS catch (Table JX12-01). *Mugil cephalus* (n=4,489) was the most abundant species, accounting for 26.2% of the 183-m haul seine catch (Table JX12-04). *Brevoortia* spp. (n=2,996), *Mugil curema* (n=2,225), *L. xanthurus* (n=1,738), and *Lagodon rhomboides* (n=1,426) were the next four most abundant species, accounting for an additional 49.0% of the 183-m haul seine catch. The taxa most frequently caught in the 183-m haul seines were *M. cephalus* (81.3% occurrence), *M. curema* (60.4% occurrence), *L. xanthurus* (59.4% occurrence), and *L. rhomboides* (56.8% occurrence).

A total of 10,079 animals from 27 Selected Taxa were collected, representing 58.9% of the entire 183-m haul seine catch (Table JX12-05). *Mugil cephalus* (n=4,489), *M. curema* (n=2,225), and *L. xanthurus* (n=1,738) were the most abundant Selected Taxa, accounting for 83.9% of the Selected Taxa collected by this gear. The Selected

Taxa most frequently caught in 183-m haul seines were *M. cephalus* (81.3% occurrence), *M. curema* (60.4% occurrence), and *L. xanthurus* (59.4% occurrence).

6.1-m River Otter Trawl. A total of 69,487 animals were collected in 588 6.1-m river otter trawl samples, representing 26.3% of the overall SRS catch (Table JX12-01). *Micropogonias undulatus* (n=20,984), *A. mitchilli* (n=19,184), and *Stellifer lanceolatus* (n=11,211) were the most abundant species collected, accounting for 73.9% of the 6.1-m river otter trawl catch (Table JX12-06). The taxa most frequently caught in 6.1-m river otter trawls were *M. undulatus* (62.2% occurrence), *C. sapidus* (62.1% occurrence), *A. mitchilli* (52.6% occurrence), and *L. setiferus* (50.2% occurrence).

A total of 32,480 animals from 25 Selected Taxa were collected, representing 46.7% of the entire 6.1-m river otter trawl catch (Table JX12-07). *Micropogonias undulatus* (n=20,984) was the most abundant Selected Taxon, accounting for 64.6% of the Selected Taxa collected by this gear. The Selected Taxa most frequently caught in the 6.1-m river otter trawls were *M. undulatus* (62.2% occurrence), *C. sapidus* (62.1% occurrence), and *L. setiferus* (50.2% occurrence).

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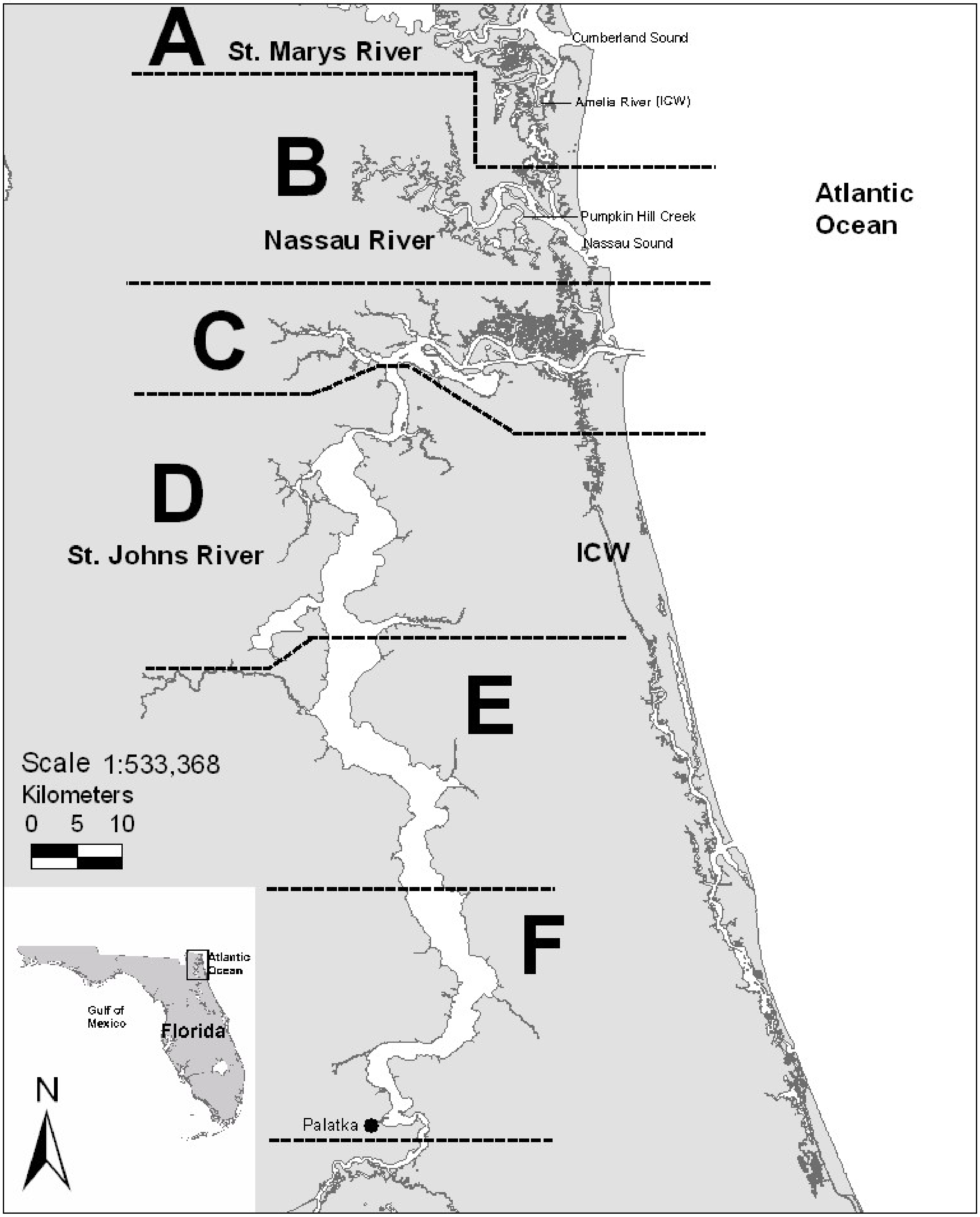

Figure JX12-01. Map of northeast Florida sampling area. Zones are labeled A – F. ICW = Intracoastal Waterway.

Table JX12-01. Summary of catch and effort data for northeast Florida stratified-random sampling, 2012.

Zone	21.3-m river seine		183-m haul seine		6.1-m otter trawl		Totals	
	Animals	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**	**Animals**	**Hauls**
A	41,839	84	2,196	36	15,311	84	59,346	204
B	47,698	84	3,042	36	11,391	84	62,131	204
C	28,279	108	6,646	60	9,856	108	44,781	276
D	16,649	108	5,232	60	9,041	120	30,922	288
E	12,910	96	.	.	7,155	96	20,065	192
F	29,875	96	.	.	16,733	96	46,608	192
Totals	**177,250**	**576**	**17,116**	**192**	**69,487**	**588**	**263,853**	**1,356**

Table JX12-02. Catch statistics for 10 dominant taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Anchoa mitchilli	83,020	46.8	46.4	211.96	37.73	427.26	12,388.24	31	0.03	15	75
Menidia menidia	16,300	9.2	33.7	41.62	8.79	507.04	3,297.06	45	0.11	15	93
Leiostomus xanthurus	12,713	7.2	35.1	32.46	12.26	906.78	6,601.47	23	0.11	10	159
Menidia spp.	10,592	6.0	41.0	27.04	6.34	562.55	2,473.53	32	0.08	12	82
Lucania parva	8,334	4.7	22.7	21.28	3.58	403.78	804.41	24	0.04	11	46
Litopenaeus setiferus	8,081	4.6	23.4	20.63	4.80	557.97	1,388.24	14	0.05	3	29
Anchoa hepsetus	5,730	3.2	20.7	14.63	3.97	651.32	1,325.00	35	0.09	20	90
Fundulus heteroclitus	4,952	2.8	13.5	12.64	3.85	731.45	1,027.94	44	0.18	10	81
Gambusia holbrooki	4,474	2.5	14.1	11.42	3.41	715.99	1,610.29	23	0.06	11	40
Mugil curema	2,545	1.4	16.7	6.50	4.64	1,713.37	2,664.71	47	0.51	17	168
Subtotal	156,741	88.4	.	.	.	.	.	.	.	3	168
Totals	**177,250**	**100.0**	**.**	**452.54**	**42.81**	**227.07**	**12,683.82**	**.**	**.**	**3**	**882**

Table JX12-03. Catch statistics for Selected Taxa collected in 576 21.3-m river seine samples during northeast Florida stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Leiostomus xanthurus	12,713	7.2	35.1	32.46	12.26	906.78	6,601.47	23	0.11	10	159
Litopenaeus setiferus	8,081	4.6	23.4	20.63	4.80	557.97	1,388.24	14	0.05	3	29
Mugil curema	2,545	1.4	16.7	6.50	4.64	1,713.37	2,664.71	47	0.51	17	168
Mugil cephalus	1,700	1.0	17.9	4.34	1.99	1,102.27	963.24	40	1.02	17	378
Micropogonias undulatus	1,095	0.6	16.8	2.80	0.91	779.73	461.76	26	0.53	10	176
Callinectes sapidus	446	0.3	28.3	1.14	0.15	311.11	48.53	52	1.98	5	170
Farfantepenaeus spp.	247	0.1	12.2	0.63	0.16	598.16	77.94	10	0.20	3	14
Sciaenops ocellatus	233	0.1	9.5	0.59	0.12	499.42	38.24	29	2.18	10	429
Cynoscion nebulosus	150	0.1	10.2	0.38	0.09	554.95	38.24	41	2.58	8	222
Trachinotus carolinus	107	0.1	1.2	0.27	0.24	2,116.10	138.24	24	0.43	14	37
Trachinotus falcatus	95	0.1	4.3	0.24	0.07	730.79	29.41	22	1.30	11	67
Farfantepenaeus aztecus	55	<0.1	3.1	0.14	0.04	768.65	16.18	17	0.25	15	22
Paralichthys lethostigma	53	<0.1	6.3	0.14	0.02	435.01	4.41	173	15.65	20	427
Elops saurus	45	<0.1	4.5	0.11	0.03	597.96	10.29	72	7.53	28	263
Menticirrhus americanus	43	<0.1	1.9	0.11	0.05	1,128.08	23.53	36	1.47	17	66
Lutjanus griseus	42	<0.1	5.0	0.11	0.02	527.10	7.35	71	8.15	10	191
Paralichthys albigutta	23	<0.1	2.3	0.06	0.02	848.99	7.35	77	11.12	14	170

Table JX12-03. (Continued)

Species	Number No.	Number %	% Occur	Density Estimate (animals/100m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Cynoscion complex	20	<0.1	2.4	0.05	0.02	733.58	5.88	42	4.32	15	77
Menticirrhus saxatilis	15	<0.1	1.2	0.04	0.02	1,116.50	7.35	45	4.37	25	83
Lutjanus synagris	11	<0.1	0.7	0.03	0.02	1,784.64	11.76	45	10.69	22	136
Pogonias cromis	8	<0.1	1.2	0.02	0.01	944.22	2.94	62	15.01	35	160
Archosargus probatocephalus	8	<0.1	1.0	0.02	0.01	1,035.31	2.94	174	64.25	29	420
Pomatomus saltatrix	6	<0.1	0.5	0.02	0.01	1,494.62	4.41	88	12.23	42	128
Scomberomorus maculatus	6	<0.1	0.3	0.02	0.01	2,038.93	7.35	48	9.40	25	92
Cynoscion nothus	4	<0.1	0.3	0.01	0.01	1,896.38	4.41	15	1.71	11	19
Albula vulpes	3	<0.1	0.3	0.01	0.01	1,787.61	2.94	34	5.03	28	44
Farfantepenaeus duorarum	2	<0.1	0.3	0.01	<0.01	1,695.58	1.47	17	1.50	15	18
Centropomus undecimalis	2	<0.1	0.2	0.01	0.01	2,400.00	2.94	67	13.00	54	80
Menticirrhus littoralis	2	<0.1	0.2	0.01	0.01	2,400.00	2.94	50	16.50	33	66
Scomberomorus cavalla	1	<0.1	0.2	<0.01	<0.01	2,400.00	1.47	27	.	27	27
Paralichthys squamilentus	1	<0.1	0.2	<0.01	<0.01	2,400.00	1.47	32	.	32	32
Totals	**27,762**	**15.7**	**73.1**	**70.88**	**14.17**	**479.64**	**6,602.94**	**.**	**.**	**3**	**429**

Table JX12-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil cephalus	4,489	26.2	81.3	23.38	7.20	426.54	1,290	190	0.63	72	397
Brevoortia spp.	2,996	17.5	29.7	15.60	10.35	918.69	1,950	144	0.41	75	262
Mugil curema	2,225	13.0	60.4	11.59	2.77	331.79	395	145	0.62	81	282
Leiostomus xanthurus	1,738	10.2	59.4	9.05	1.69	258.59	245	120	0.64	47	211
Lagodon rhomboides	1,426	8.3	56.8	7.43	1.19	221.80	145	123	0.62	50	252
Bairdiella chrysoura	859	5.0	26.6	4.47	1.41	437.11	240	130	0.56	69	189
Dasyatis sabina	354	2.1	42.7	1.84	0.34	255.34	41	242	2.99	92	440
Litopenaeus setiferus	296	1.7	13.0	1.54	0.57	510.95	86	23	0.24	10	35
Micropogonias undulatus	237	1.4	15.6	1.23	0.37	417.32	53	153	2.39	78	252
Cynoscion nebulosus	205	1.2	29.2	1.07	0.18	238.84	19	235	4.91	75	564
Subtotal	14,825	86.6	.	.	.	.	.	.	.	10	564
Totals	**17,116**	**100.0**	**.**	**89.15**	**13.68**	**212.60**	**1,970**	**.**	**.**	**10**	**1234**

Table JX12-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2012. 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		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mugil cephalus	4,489	26.2	81.3	23.38	7.20	426.54	1,290	190	0.63	72	397
Mugil curema	2,225	13.0	60.4	11.59	2.77	331.79	395	145	0.62	81	282
Leiostomus xanthurus	1,738	10.2	59.4	9.05	1.69	258.59	245	120	0.64	47	211
Litopenaeus setiferus	296	1.7	13.0	1.54	0.57	510.95	86	23	0.24	10	35
Micropogonias undulatus	237	1.4	15.6	1.23	0.37	417.32	53	153	2.39	78	252
Cynoscion nebulosus	205	1.2	29.2	1.07	0.18	238.84	19	235	4.91	75	564
Callinectes sapidus	173	1.0	25.5	0.90	0.24	364.93	29	116	2.72	30	202
Elops saurus	159	0.9	28.6	0.83	0.17	286.26	26	308	5.98	148	534
Sciaenops ocellatus	129	0.8	20.3	0.67	0.20	406.73	33	288	12.33	119	594
Archosargus probatocephalus	99	0.6	17.7	0.52	0.14	367.53	20	325	7.06	81	441
Paralichthys lethostigma	97	0.6	20.3	0.51	0.12	317.04	13	212	8.77	71	456
Paralichthys albigutta	38	0.2	10.9	0.20	0.05	370.10	7	131	6.01	69	202
Menticirrhus americanus	37	0.2	10.4	0.19	0.05	389.97	6	178	7.86	55	265
Pogonias cromis	36	0.2	8.9	0.19	0.05	388.31	6	221	15.00	121	409
Pomatomus saltatrix	31	0.2	9.4	0.16	0.04	364.06	4	209	10.67	109	352
Lutjanus griseus	25	0.1	7.3	0.13	0.04	470.70	6	163	5.61	92	220
Trachinotus falcatus	19	0.1	4.2	0.10	0.05	642.12	7	153	13.13	75	254

Table JX12-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion complex	12	0.1	1.0	0.06	0.06	1,274.81	11	290	9.21	237	341
Farfantepenaeus aztecus	11	0.1	3.1	0.06	0.03	648.55	4	22	0.76	18	27
Scomberomorus maculatus	8	<0.1	1.0	0.04	0.04	1,223.85	7	166	4.13	148	180
Lutjanus synagris	4	<0.1	1.0	0.02	0.02	1,093.72	3	126	4.78	115	137
Paralichthys dentatus	3	<0.1	1.6	0.02	0.01	795.80	1	110	29.83	80	170
Rachycentron canadum	2	<0.1	1.0	0.01	0.01	977.23	1	289	57.00	232	346
Trachinotus carolinus	2	<0.1	1.0	0.01	0.01	977.23	1	102	24.00	78	126
Farfantepenaeus sp.	1	<0.1	0.5	0.01	0.01	1,385.64	1	14	.	14	14
Farfantepenaeus duorarum	1	<0.1	0.5	0.01	0.01	1,385.64	1	23	.	23	23
Menticirrhus littoralis	1	<0.1	0.5	0.01	0.01	1,385.64	1	200	.	200	200
Menticirrhus saxatilis	1	<0.1	0.5	0.01	0.01	1,385.64	1	173	.	173	173
Totals	**10,079**	**58.9**	**98.4**	**52.49**	**8.90**	**235.00**	**1,377**	**.**	**.**	**10**	**594**

Table JX12-06. Catch statistics for 10 dominant taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2012. 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**	**Density Estimate (animals/100m^2)**				**Standard Length (mm)**			
	No.	**%**		**Mean**	**Stderr**	**CV**	**Max**	**Mean**	**Stderr**	**Min**	**Max**
Micropogonias undulatus	20,984	30.2	62.2	4.90	1.48	734.74	833.92	29	0.14	7	300
Anchoa mitchilli	19,184	27.6	52.6	4.52	1.00	535.74	383.76	37	0.07	14	79
Stellifer lanceolatus	11,211	16.1	10.2	2.72	1.00	892.61	422.89	28	0.10	7	104
Litopenaeus setiferus	4,075	5.9	50.2	0.95	0.20	497.90	86.21	18	0.10	3	42
Leiostomus xanthurus	3,493	5.0	26.7	0.93	0.58	1,508.81	337.12	31	0.52	8	178
Callinectes sapidus	1,681	2.4	62.1	0.40	0.03	179.65	6.45	96	1.12	8	206
Trinectes maculatus	1,314	1.9	35.7	0.31	0.04	338.17	11.74	45	0.68	9	140
Microgobius gulosus	938	1.3	14.1	0.22	0.08	871.19	41.42	25	0.24	11	52
Cynoscion complex	808	1.2	26.7	0.19	0.03	324.31	6.88	46	1.17	8	232
Rimapenaeus constrictus	429	0.6	9.0	0.10	0.04	851.18	18.21	5	0.07	2	12
Subtotal	64,117	92.2	.	.	.	.	.	.	.	2	300
Totals	**69,487**	**100.0**	**.**	**16.53**	**2.17**	**318.20**	**849.16**	**.**	**.**	**2**	**1085**

Table JX12-07. Catch statistics for Selected Taxa collected in 588 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2012. 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	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Micropogonias undulatus	20,984	30.2	62.2	4.90	1.48	734.74	833.92	29	0.14	7	300
Litopenaeus setiferus	4,075	5.9	50.2	0.95	0.20	497.90	86.21	18	0.10	3	42
Leiostomus xanthurus	3,493	5.0	26.7	0.93	0.58	1,508.81	337.12	31	0.52	8	178
Callinectes sapidus	1,681	2.4	62.1	0.40	0.03	179.65	6.45	96	1.12	8	206
Cynoscion complex	808	1.2	26.7	0.19	0.03	324.31	6.88	46	1.17	8	232
Farfantepenaeus aztecus	359	0.5	11.9	0.09	0.02	475.77	4.99	21	0.25	15	64
Menticirrhus americanus	297	0.4	13.1	0.07	0.01	464.68	5.53	40	1.37	15	275
Farfantepenaeus spp.	277	0.4	15.6	0.07	0.01	372.56	2.82	10	0.17	3	14
Elops saurus	204	0.3	8.2	0.05	0.01	653.09	6.24	40	1.00	22	233
Paralichthys lethostigma	167	0.2	20.2	0.04	<0.01	238.05	0.81	168	5.00	37	423
Paralichthys albigutta	24	<0.1	3.1	0.01	<0.01	641.09	0.45	141	10.45	30	231
Archosargus probatocephalus	21	<0.1	1.9	<0.01	<0.01	931.58	0.86	251	25.04	78	406
Farfantepenaeus duorarum	17	<0.1	2.6	<0.01	<0.01	643.50	0.27	20	1.08	15	31
Sciaenops ocellatus	15	<0.1	1.4	<0.01	<0.01	981.92	0.60	78	36.34	10	509
Lutjanus synagris	15	<0.1	1.5	<0.01	<0.01	1,202.05	0.94	52	9.11	20	110
Cynoscion nebulosus	11	<0.1	1.7	<0.01	<0.01	784.86	0.27	74	21.68	15	196
Lutjanus griseus	10	<0.1	1.7	<0.01	<0.01	764.19	0.17	115	22.22	12	194

Table JX12-07. (Continued)

Species	Number No.	Number %	% Occur	Density Estimate (animals/100m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Menticirrhus saxatilis	4	<0.1	0.5	<0.01	<0.01	1,441.68	0.25	38	12.20	18	73
Paralichthys dentatus	3	<0.1	0.5	<0.01	<0.01	1,399.86	0.17	180	13.91	152	196
Pogonias cromis	3	<0.1	0.3	<0.01	<0.01	1,832.68	0.30	167	5.69	159	178
Menippe spp.	3	<0.1	0.3	<0.01	<0.01	1,781.97	0.27	18	2.85	15	24
Cynoscion nothus	2	<0.1	0.3	<0.01	<0.01	1,723.76	0.17	18	6.00	12	24
Epinephelus itajara	2	<0.1	0.3	<0.01	<0.01	1,713.18	0.15	202	1.00	201	203
Lutjanus analis	2	<0.1	0.3	<0.01	<0.01	1,713.18	0.15	32	10.00	22	42
Albula vulpes	2	<0.1	0.3	<0.01	<0.01	1,734.48	0.17	57	2.00	55	59
Megalops atlanticus	1	<0.1	0.2	<0.01	<0.01	2,424.87	0.17	27	.	27	27
Totals	**32,480**	**46.7**	**94.0**	**7.73**	**1.60**	**503.51**	**835.40**	**.**	**.**	**3**	**509**

Appendix JX12-01. Monthly summary of species collected during northeast Florida stratified-random sampling, 2012. Effort, or total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Achirus lineatus	7	2	4	2	4	9	7	1	1	9	6	.	52
Aetobatus narinari	.	.	.	.	.	.	1	.	.	.	.	.	1
Albula vulpes	.	.	1	.	1	.	.	.	2	1	.	.	5
Alosa aestivalis	.	.	.	.	.	.	.	.	.	.	2	.	2
Alosa mediocris	.	.	.	.	.	.	.	.	.	.	1	.	1
Alosa sapidissima	8	.	.	.	.	.	.	.	.	.	.	.	8
Aluterus heudelotii	.	.	.	.	.	.	1	.	.	.	.	.	1
Aluterus scriptus	.	.	.	.	.	.	.	.	.	1	.	.	1
Ameiurus catus	31	30	20	6	.	9	6	4	77	27	45	22	277
Ameiurus nebulosus	3	3	1	1	1	1	2	1	.	1	.	2	16
Amia calva	.	.	1	.	.	.	.	.	.	1	.	.	2
Anchoa hepsetus	4	.	4	2,474	2,129	973	175	96	83	43	8	62	6,051
Anchoa lyolepis	.	.	.	2	177	.	.	9	2	1	.	.	191
Anchoa mitchilli	10,959	5,831	3,576	4,346	14,877	16,518	11,273	7,822	4,509	3,130	15,357	4,009	102,207
Anchoa spp.	.	.	.	.	26	.	.	1	.	.	.	.	27
Ancylopsetta quadrocellata	.	3	13	5	2	1	.	.	.	.	.	.	24
Anguilla rostrata	.	1	1	1	.	2	1	.	.	.	.	.	6
Archosargus probatocephalus	10	10	.	1	19	3	9	7	15	6	36	12	128
Ariopsis felis	.	.	.	2	9	.	13	2	1	2	.	.	29
Astroscopus y-graecum	4	4	10	5	4	7	.	1	1	.	.	.	36
Bagre marinus	.	.	.	.	.	12	9	5	3	.	.	.	29
Bairdiella chrysoura	66	158	123	98	1,030	969	218	97	135	40	285	129	3,348
Bathygobius soporator	.	.	.	.	.	.	.	.	.	5	.	.	5
Bothidae sp.	.	.	.	.	.	.	.	1	.	.	.	.	1

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Brevoortia spp.	108	127	563	165	279	115	64	164	17	7	1,960	9	3,578
Callinectes ornatus	.	.	.	1	.	5	2	.	.	.	.	1	9
Callinectes sapidus	192	247	344	274	229	208	273	180	126	93	53	81	2,300
Callinectes similis	8	7	25	24	145	65	38	21	28	29	4	3	397
Caranx hippos	.	.	.	1	2	12	14	28	10	2	9	.	78
Caranx latus	.	.	.	.	.	.	1	.	.	1	.	.	2
Carcharhinus limbatus	.	.	.	.	.	.	2	.	.	.	.	.	2
Centropomus undecimalis	.	.	.	.	.	.	.	.	.	.	.	2	2
Centropristis philadelphica	1	.	2	1	10	2	2	4	2	5	1	1	31
Centropristis striata	.	.	.	.	.	.	.	.	.	.	1	.	1
Chaetodipterus faber	1	.	.	.	3	37	30	21	2	2	.	.	96
Charybdis hellerii	.	.	.	.	.	3	.	.	.	.	.	2	5
Chasmodes bosquianus	.	.	.	.	.	.	.	.	.	1	.	.	1
Chilomycterus schoepfii	1	5	6	1	8	14	24	6	3	.	5	1	74
Chloroscombrus chrysurus	.	.	.	1	2	5	34	15	21	14	.	.	92
Citharichthys macrops	.	.	1	.	.	.	.	.	.	.	.	.	1
Citharichthys spilopterus	.	4	8	25	99	118	61	52	27	5	1	1	401
Citharichthys sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
Clupeidae spp.	.	.	1	.	.	.	.	.	.	.	1	.	2
Ctenogobius boleosoma	.	1	1	1	2	1	7	3	55	14	10	1	96
Ctenogobius shufeldti	2	.	1	1	.	1	3	4	7	28	4	.	51
Ctenogobius smaragdus	1	.	.	.	.	.	5	4	1	3	2	.	16
Ctenogobius spp.	.	.	.	.	1	.	.	1	.	.	.	.	2
Ctenogobius stigmaticus	.	.	.	.	.	1	.	.	2	.	.	.	3
Cynoscion complex	12	1	1	11	125	87	230	80	182	88	16	7	840
Cynoscion nebulosus	38	26	20	8	26	48	79	38	30	20	22	11	366

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Cynoscion nothus	.	.	.	1	.	.	.	.	.	1	.	4	6
Cyprinodon variegatus	15	1	.	.	.	.	.	.	.	.	.	8	24
Dasyatis sabina	11	14	35	16	44	83	68	31	32	44	25	65	468
Dasyatis say	.	.	4	1	3	9	1	.	3	1	.	.	22
Diapterus auratus	21	1	8	1	3	3	70	25	69	12	38	9	260
Diplectrum formosum	.	.	1	.	.	.	.	.	.	.	.	.	1
Dorosoma cepedianum	6	6	9	.	3	9	30	7	14	1	3	8	96
Dorosoma petenense	4	9	1	.	1	6	160	1	.	6	8	6	202
Elops saurus	15	8	70	121	32	12	59	25	33	14	18	1	408
Enneacanthus gloriosus	.	.	1	.	3	3	1	.	44	.	.	.	52
Epinephelus itajara	.	.	.	.	.	.	.	.	1	1	.	.	2
Esox niger	.	.	.	.	.	.	.	.	1	1	.	1	3
Etropus crossotus	20	7	43	5	7	19	22	49	20	55	21	5	273
Eucinostomus gula	23	17	11	48	21	15	9	17	16	21	9	8	215
Eucinostomus harengulus	35	27	19	21	32	22	18	60	115	84	75	47	555
Eucinostomus spp.	48	26	.	.	2	46	29	129	369	475	271	123	1,518
Evorthodus lyricus	.	.	.	.	.	.	.	.	.	1	.	.	1
Farfantepenaeus aztecus	.	1	9	15	198	169	29	3	.	.	1	.	425
Farfantepenaeus duorarum	.	2	4	6	4	.	.	.	.	.	1	3	20
Farfantepenaeus spp.	11	12	14	43	209	64	29	37	41	46	14	5	525
Fundulus chrysotus	.	.	.	.	5	.	4	1	18	.	.	.	28
Fundulus heteroclitus	1,379	691	385	14	10	108	832	88	217	447	76	705	4,952
Fundulus majalis	12	18	6	13	9	14	13	5	5	1	1	1	98
Fundulus seminolis	14	133	36	46	216	109	78	74	47	124	60	65	1,002
Gambusia holbrooki	148	491	1,935	1,156	490	6	35	22	166	17	7	1	4,474
Gobiesox strumosus	1	.	.	1	.	2	.	.	.	.	.	.	4

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Gobioides broussonetii	1	.	.	2	.	.	1	1	.	1	.	.	6
Gobiomorus dormitor	.	.	.	.	.	.	.	1	.	3	.	1	5
Gobionellus oceanicus	6	4	1	6	2	6	4	.	3	2	4	3	41
Gobiosoma bosc	8	9	24	32	16	33	15	5	6	7	5	6	166
Gobiosoma ginsburgi	.	.	1	.	.	.	.	.	.	.	.	.	1
Gobiosoma spp.	20	4	34	15	16	18	13	67	19	129	32	28	395
Gymnura micrura	.	1	6	.	11	.	6	7	13	19	4	.	67
Harengula jaguana	.	.	15	.	.	.	.	2	.	2	.	.	19
Heterandria formosa	9	34	12	81	195	.	3	1	20	2	.	.	357
Hippocampus erectus	.	.	.	.	1	.	.	.	.	.	.	.	1
Hypsoblennius hentz	.	.	.	.	2	.	.	1	.	.	1	.	4
Hypsoblennius ionthas	1	.	.	.	.	.	.	.	.	.	.	.	1
Ictalurus punctatus	6	1	.	.	.	.	1	2	13	2	10	13	48
Jordanella floridae	.	.	.	.	.	.	8	.	.	.	.	.	8
Labidesthes sicculus	2	6	5	.	12	.	.	.	9	85	7	41	167
Lagodon rhomboides	187	71	151	201	117	232	428	293	163	140	96	27	2,106
Larimus fasciatus	.	.	.	.	.	4	.	1	.	3	.	.	8
Leiostomus xanthurus	870	6,498	6,826	1,447	1,303	245	198	150	68	151	117	71	17,944
Lepisosteus osseus	3	1	10	17	2	15	3	12	10	10	5	.	88
Lepisosteus platyrhincus	.	2	1	3	.	.	.	2	1	1	4	7	21
Lepomis auritus	18	7	4	2	2	9	4	21	8	15	15	14	119
Lepomis gulosus	1	.	1	.	1	2	.	.	8	2	.	.	15
Lepomis macrochirus	24	32	67	25	27	20	20	65	157	354	284	56	1,131
Lepomis microlophus	7	15	31	8	10	43	19	22	43	186	106	9	499
Lepomis punctatus	.	.	.	.	2	2	1	1	2	9	.	.	17
Lepomis spp.	10	.	4	1	2	9	31	85	150	97	6	2	397

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Limulus polyphemus	.	1	.	1	2	.	1	.	1	.	.	.	6
Litopenaeus setiferus	312	196	133	162	52	988	4,056	4,020	1,641	384	415	93	12,452
Lobotes surinamensis	.	.	.	.	.	.	2	.	.	.	1	.	3
Loricariidae sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Lucania goodei	7	35	49	127	24	3	56	.	84	21	.	4	410
Lucania parva	203	611	1,215	2,488	1,721	530	642	134	121	545	73	51	8,334
Lutjanus analis	.	.	.	.	.	.	.	.	2	.	.	.	2
Lutjanus griseus	.	3	.	.	3	1	18	14	11	11	11	5	77
Lutjanus synagris	3	1	1	.	1	7	1	9	2	3	1	1	30
Megalops atlanticus	.	.	.	.	.	.	.	1	.	.	.	.	1
Membras martinica	3	1	.	.	281	277	18	95	26	13	.	89	803
Menidia menidia	1,044	1,427	579	389	3,844	2,861	2,401	1,149	1,020	471	446	669	16,300
Menidia spp.	1,409	703	606	137	301	359	285	765	291	1,032	3,801	905	10,594
Menippe spp.	.	.	.	.	1	.	2	.	.	.	.	.	3
Menticirrhus americanus	2	5	7	13	49	112	94	25	40	23	5	2	377
Menticirrhus littoralis	.	.	.	.	.	.	.	.	.	.	1	2	3
Menticirrhus saxatilis	.	.	.	3	15	1	1	.	.	.	.	.	20
Menticirrhus sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Microgobius gulosus	13	13	17	30	41	38	68	111	499	592	181	114	1,717
Microgobius thalassinus	13	24	31	4	7	151	17	6	1	2	5	.	261
Micropogonias undulatus	4,533	1,826	1,677	8,234	879	380	348	132	81	388	2,034	1,804	22,316
Micropterus salmoides	6	7	4	123	143	50	37	17	12	12	3	6	420
Mugil cephalus	1,683	351	1,555	312	330	130	191	304	432	239	110	552	6,189
Mugil curema	210	193	409	64	266	102	1,904	248	506	361	198	309	4,770
Myrophis punctatus	.	.	1	1	.	1	3	1	.	1	.	.	8
Notemigonus crysoleucas	2	12	.	8	50	36	68	79	41	110	28	21	455

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Notropis maculatus	.	.	.	.	.	2	.	8	.	.	.	.	10
Ogcocephalus cubifrons	.	.	2	.	.	.	1	1	.	.	.	.	4
Oligoplites saurus	.	.	.	.	.	2	4	7	6	3	1	.	23
Ophichthus gomesii	.	.	.	.	.	2	.	.	.	.	.	.	2
Ophichthus puncticeps	.	.	.	.	.	2	.	.	.	.	.	.	2
Ophidion marginatum	.	.	1	1	.	.	.	.	.	.	.	1	3
Opisthonema oglinum	3	2	.	1	50	11	3	1	.	2	.	1	74
Opsanus tau	5	2	17	10	5	27	10	12	5	4	7	1	105
Oreochromis/Sarotherodon spp.	1	.	.	.	.	.	1	6	8	12	.	.	28
Orthopristis chrysoptera	.	.	2	206	133	28	14	7	4	2	1	.	397
Paralichthys albigutta	5	2	6	4	16	4	11	20	4	7	2	4	85
Paralichthys dentatus	.	.	1	1	.	4	.	.	.	.	.	.	6
Paralichthys lethostigma	44	28	27	17	44	31	31	26	25	28	11	5	317
Paralichthys squamilentus	.	.	1	.	.	.	.	.	.	.	.	.	1
Peprilus paru	.	2	1	1	5	.	15	.	1	.	.	.	25
Peprilus triacanthus	2	1	.	.	.	.	.	.	.	.	.	.	3
Poecilia latipinna	16	35	388	222	60	4	9	1	582	.	2	.	1,319
Pogonias cromis	7	.	.	1	5	3	2	11	2	8	6	2	47
Pomatomus saltatrix	5	6	8	2	7	3	3	.	1	.	2	.	37
Pomoxis nigromaculatus	.	1	1	.	.	.	.	.	1	.	1	.	4
Portunus spp.	.	4	28	6	5	46	.	4	6	6	1	.	106
Prionotus carolinus	.	1	4	9	.	.	.	.	.	.	.	1	15
Prionotus evolans	.	2	2	5	2	.	.	.	.	.	.	.	11
Prionotus scitulus	3	.	1	4	39	14	3	1	1	1	.	2	69
Prionotus tribulus	11	21	18	9	15	7	1	1	4	3	11	11	112
Rachycentron canadum	.	.	.	.	.	1	.	.	1	.	.	.	2

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Rhinoptera bonasus	.	.	.	.	.	.	1	.	1	.	.	.	2
Rimapenaeus constrictus	.	10	11	41	16	187	14	16	92	24	15	10	436
Sardinella aurita	.	.	.	.	.	1	.	.	.	.	.	.	1
Sciaenops ocellatus	15	27	1	14	37	8	7	16	22	73	107	50	377
Scomberomorus cavalla	.	.	.	.	1	.	.	.	.	.	.	.	1
Scomberomorus maculatus	.	.	.	.	.	5	9	.	.	.	.	.	14
Scophthalmus aquosus	.	.	.	.	1	.	.	.	.	.	.	.	1
Selene setapinnis	.	.	.	.	.	.	.	1	2	.	.	.	3
Selene vomer	10	.	.	.	3	5	5	11	6	1	2	.	43
Sicyonia parri	.	1	.	.	.	.	.	.	.	.	.	.	1
Sphoeroides nephelus	5	4	4	13	27	7	11	7	8	2	8	.	96
Sphoeroides spengleri	.	.	.	.	.	.	1	.	.	.	.	.	1
Sphoeroides sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Sphyraena barracuda	.	.	.	.	.	.	.	.	1	.	1	.	2
Sphyraena borealis	.	.	.	1	.	.	.	.	.	.	.	.	1
Sphyraena guachancho	.	.	.	.	.	.	1	1	.	.	.	.	2
Sphyrna tiburo	.	.	.	3	3	1	3	.	1	3	.	.	14
Stellifer lanceolatus	2	11	1	6	69	830	2,928	3,956	3,391	14	67	6	11,281
Stephanolepis hispidus	.	1	.	2	4	9	1	1	13	.	1	.	32
Stomolophus meleagris	9	1	1	.	.	2	.	.	.	.	2	.	15
Strongylura marina	21	1	9	8	19	19	33	24	34	5	14	5	192
Strongylura spp.	1	.	.	51	13	11	10	6	10	5	3	2	112
Symphurus civitatium	.	.	.	.	.	.	.	.	1	.	.	.	1
Symphurus plagiusa	6	13	29	6	35	227	99	92	41	18	16	3	585
Syngnathus floridae	.	.	2	.	.	.	.	.	.	.	.	.	2
Syngnathus fuscus	.	.	2	1	1	.	.	.	.	.	.	.	4

Appendix JX12-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=113	E=1,356
Syngnathus louisianae	1	.	6	13	13	23	8	6	2	6	2	1	81
Syngnathus scovelli	9	3	17	32	31	55	14	26	9	4	12	7	219
Syngnathus sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Synodus foetens	1	.	3	2	4	3	6	8	8	10	.	3	48
Trachinotus carolinus	.	.	.	1	104	.	1	.	.	1	2	.	109
Trachinotus falcatus	1	.	3	1	11	14	4	7	24	42	7	.	114
Trichiurus lepturus	2	.	2	6	.	.	16	15	2	.	.	.	43
Trinectes maculatus	54	53	50	52	47	66	233	181	166	267	196	97	1,462
Tylosurus crocodilus	.	.	.	.	.	.	.	1	.	.	.	.	1
Urophycis regia	.	.	1	.	.	.	.	.	.	.	.	.	1
Xiphopenaeus kroyeri	.	.	.	.	.	.	.	5	29	.	.	.	34
Totals	**24,074**	**20,250**	**21,445**	**23,653**	**31,058**	**28,254**	**28,552**	**21,578**	**16,571**	**10,913**	**26,966**	**10,539**	**263,853**

Appendix JX12-02. Summary by gear, stratum, and zone of species collected during northeast Florida stratified-random sampling, 2012. Effort, or the total number of hauls, is labeled 'E'. Taxa are arranged alphabetically.

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Achirus lineatus	1	10	41	6	12	22	11	1	.	52
Aetobatus narinari	.	1	.	.	1	.	.	.	.	1
Albula vulpes	3	.	2	.	3	1	1	.	.	5
Alosa aestivalis	2	.	.	.	.	.	.	.	2	2
Alosa mediocris	.	1	.	.	.	1	.	.	.	1
Alosa sapidissima	.	8	.	.	.	8	.	.	.	8
Aluterus heudelotii	1	.	.	.	.	1	.	.	.	1
Aluterus scriptus	.	1	.	.	1	.	.	.	.	1
Ameiurus catus	9	12	256	10	4	1	34	61	167	277
Ameiurus nebulosus	5	.	11	.	.	.	1	9	6	16
Amia calva	2	.	.	.	.	.	1	.	1	2
Anchoa hepsetus	5,730	.	321	562	2,642	2,178	423	241	5	6,051
Anchoa lyolepis	170	.	21	174	14	3	.	.	.	191
Anchoa mitchilli	83,020	3	19,184	33,592	30,743	10,886	12,391	3,166	11,429	102,207
Anchoa spp.	26	.	1	.	26	1	.	.	.	27
Ancylopsetta quadrocellata	.	11	13	16	7	1	.	.	.	24
Anguilla rostrata	3	.	3	1	.	.	1	2	2	6
Archosargus probatocephalus	8	99	21	12	34	71	9	1	1	128
Ariopsis felis	.	8	21	.	12	6	11	.	.	29
Astroscopus y-graecum	1	2	33	10	16	10	.	.	.	36
Bagre marinus	.	15	14	5	16	3	5	.	.	29
Bairdiella chrysoura	2,112	859	377	733	517	349	273	1,084	392	3,348
Bathygobius soporator	5	.	.	.	.	5	.	.	.	5
Bothidae sp.	.	.	1	.	1	.	.	.	.	1
Brevoortia spp.	529	2,996	53	379	278	2,617	300	1	3	3,578
Callinectes ornatus	3	1	5	4	1	3	1	.	.	9
Callinectes sapidus	446	173	1,681	240	308	364	665	317	406	2,300
Callinectes similis	111	34	252	190	130	64	12	1	.	397
Caranx hippos	11	66	1	23	16	32	7	.	.	78
Caranx latus	.	2	.	1	.	1	.	.	.	2

Appendix JX12-02. (Continued)

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Carcharhinus limbatus	.	2	.	2	.	.	.	.	.	2
Centropomus undecimalis	2	.	.	.	.	2	.	.	.	2
Centropristis philadelphica	.	1	30	15	5	11	.	.	.	31
Centropristis striata	.	.	1	.	.	1	.	.	.	1
Chaetodipterus faber	3	21	72	26	25	45	.	.	.	96
Charybdis hellerii	1	2	2	.	5	.	.	.	.	5
Chasmodes bosquianus	1	.	.	.	.	1	.	.	.	1
Chilomycterus schoepfii	26	30	18	30	16	27	1	.	.	74
Chloroscombrus chrysurus	21	56	15	17	13	37	25	.	.	92
Citharichthys macrops	.	.	1	1	.	.	.	.	.	1
Citharichthys spilopterus	103	68	230	95	86	93	79	25	23	401
Citharichthys sp.	1	.	.	.	1	.	.	.	.	1
Clupeidae spp.	2	.	.	1	.	1	.	.	.	2
Ctenogobius boleosoma	94	.	2	22	5	64	5	.	.	96
Ctenogobius shufeldti	48	.	3	6	5	33	5	2	.	51
Ctenogobius smaragdus	16	.	.	10	1	5	.	.	.	16
Ctenogobius spp.	2	.	.	.	.	1	.	1	.	2
Ctenogobius stigmaticus	2	.	1	1	.	2	.	.	.	3
Cynoscion complex	20	12	808	252	130	87	229	83	59	840
Cynoscion nebulosus	150	205	11	85	90	130	39	20	2	366
Cynoscion nothus	4	.	2	.	1	.	5	.	.	6
Cyprinodon variegatus	24	.	.	.	21	2	1	.	.	24
Dasyatis sabina	13	354	101	93	140	148	71	4	12	468
Dasyatis say	.	21	1	8	9	5	.	.	.	22
Diapterus auratus	102	124	34	14	61	148	34	3	.	260
Diplectrum formosum	.	.	1	.	.	1	.	.	.	1
Dorosoma cepedianum	9	82	5	.	2	43	46	2	3	96
Dorosoma petenense	180	2	20	.	2	166	8	10	16	202
Elops saurus	45	159	204	61	128	92	50	55	22	408
Enneacanthus gloriosus	52	.	.	.	.	.	.	1	51	52
Epinephelus itajara	.	.	2	.	1	.	1	.	.	2
Esox niger	3	.	.	.	.	.	.	3	.	3

Appendix JX12-02. (Continued)

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Etropus crossotus	25	85	163	122	60	66	5	20	.	273
Eucinostomus gula	101	92	22	4	13	185	13	.	.	215
Eucinostomus harengulus	445	67	43	33	44	264	160	33	21	555
Eucinostomus spp.	1,460	.	58	129	155	1,057	150	14	13	1,518
Evorthodus lyricus	1	.	.	.	.	1	.	.	.	1
Farfantepenaeus aztecus	55	11	359	174	96	24	79	47	5	425
Farfantepenaeus duorarum	2	1	17	6	5	6	3	.	.	20
Farfantepenaeus spp.	247	1	277	89	60	226	103	37	10	525
Fundulus chrysotus	28	.	.	.	.	.	.	2	26	28
Fundulus heteroclitus	4,952	.	.	1,108	3,450	386	7	.	1	4,952
Fundulus majalis	98	.	.	9	13	76	.	.	.	98
Fundulus seminolis	1,002	.	.	.	.	1	8	313	680	1,002
Gambusia holbrooki	4,474	.	.	7	1	2	53	1,422	2,989	4,474
Gobiesox strumosus	.	.	4	.	3	.	1	.	.	4
Gobioides broussonetii	.	.	6	.	.	.	6	.	.	6
Gobiomorus dormitor	5	.	.	.	1	.	.	.	4	5
Gobionellus oceanicus	16	.	25	.	1	9	22	7	2	41
Gobiosoma bosc	125	.	41	14	7	56	26	27	36	166
Gobiosoma ginsburgi	.	.	1	1	.	.	.	.	.	1
Gobiosoma spp.	360	.	35	7	3	19	39	38	289	395
Gymnura micrura	1	45	21	31	34	2	.	.	.	67
Harengula jaguana	4	15	.	.	17	2	.	.	.	19
Heterandria formosa	357	.	.	.	.	.	.	72	285	357
Hippocampus erectus	.	.	1	.	.	1	.	.	.	1
Hypsoblennius hentz	2	.	2	1	3	.	.	.	.	4
Hypsoblennius ionthas	1	.	.	.	1	.	.	.	.	1
Ictalurus punctatus	.	3	45	.	.	.	4	8	36	48
Jordanella floridae	8	.	.	.	.	.	.	1	7	8
Labidesthes sicculus	167	.	.	.	.	.	23	51	93	167
Lagodon rhomboides	525	1,426	155	73	86	958	779	207	3	2,106
Larimus fasciatus	.	.	8	4	4	.	.	.	.	8
Leiostomus xanthurus	12,713	1,738	3,493	1,587	5,126	8,243	2,509	430	49	17,944

Appendix JX12-02. (Continued)

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Lepisosteus osseus	10	74	4	19	21	1	42	2	3	88
Lepisosteus platyrhincus	12	9	.	.	.	.	10	5	6	21
Lepomis auritus	101	6	12	.	.	.	26	28	65	119
Lepomis gulosus	14	.	1	.	.	.	.	2	13	15
Lepomis macrochirus	1,091	13	27	2	5	1	25	590	508	1,131
Lepomis microlophus	468	9	22	1	.	.	11	206	281	499
Lepomis punctatus	17	.	.	.	.	.	.	7	10	17
Lepomis spp.	397	.	.	.	1	1	4	200	191	397
Limulus polyphemus	.	1	5	2	3	1	.	.	.	6
Litopenaeus setiferus	8,081	296	4,075	1,874	6,309	1,901	1,084	747	537	12,452
Lobotes surinamensis	.	3	.	.	1	2	.	.	.	3
Loricariidae sp.	1	.	.	.	.	.	.	.	1	1
Lucania goodei	410	.	.	.	.	.	.	220	190	410
Lucania parva	8,334	.	.	.	.	.	27	3,733	4,574	8,334
Lutjanus analis	.	.	2	1	1	.	.	.	.	2
Lutjanus griseus	42	25	10	12	17	27	12	6	3	77
Lutjanus synagris	11	4	15	1	17	12	.	.	.	30
Megalops atlanticus	.	.	1	.	.	1	.	.	.	1
Membras martinica	801	.	2	403	81	15	304	.	.	803
Menidia menidia	16,300	.	.	5,823	3,550	6,859	68	.	.	16,300
Menidia spp.	10,592	.	2	42	92	67	734	1,162	8,497	10,594
Menippe spp.	.	.	3	1	.	2	.	.	.	3
Menticirrhus americanus	43	37	297	119	170	62	26	.	.	377
Menticirrhus littoralis	2	1	.	2	1	.	.	.	.	3
Menticirrhus saxatilis	15	1	4	10	5	4	1	.	.	20
Menticirrhus sp.	.	.	1	.	1	.	.	.	.	1
Microgobius gulosus	779	.	938	.	1	1	1,010	349	356	1,717
Microgobius thalassinus	11	.	250	4	2	81	162	11	1	261
Micropogonias undulatus	1,095	237	20,984	860	1,152	974	4,324	2,714	12,292	22,316
Micropterus salmoides	409	9	2	.	.	1	26	140	253	420
Mugil cephalus	1,700	4,489	.	495	1,357	1,192	2,384	757	4	6,189
Mugil curema	2,545	2,225	.	168	634	3,073	860	7	28	4,770

Appendix JX12-02. (Continued)

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Myrophis punctatus	.	.	8	.	.	3	1	4	.	8
Notemigonus crysoleucas	455	.	.	.	.	2	.	146	307	455
Notropis maculatus	10	.	.	.	.	.	.	8	2	10
Ogcocephalus cubifrons	.	2	2	.	1	3	.	.	.	4
Oligoplites saurus	19	4	.	9	5	3	6	.	.	23
Ophichthus gomesii	.	.	2	.	2	.	.	.	.	2
Ophichthus puncticeps	.	.	2	.	2	.	.	.	.	2
Ophidion marginatum	.	.	3	1	2	.	.	.	.	3
Opisthonema oglinum	63	10	1	54	4	16	.	.	.	74
Opsanus tau	9	14	82	17	27	36	25	.	.	105
Oreochromis/Sarotherodon spp.	27	1	.	.	.	.	1	7	20	28
Orthopristis chrysoptera	206	17	174	152	98	104	37	6	.	397
Paralichthys albigutta	23	38	24	12	20	43	10	.	.	85
Paralichthys dentatus	.	3	3	2	3	.	1	.	.	6
Paralichthys lethostigma	53	97	167	35	60	64	74	45	39	317
Paralichthys squamilentus	1	.	.	.	.	1	.	.	.	1
Peprilus paru	1	21	3	16	3	1	5	.	.	25
Peprilus triacanthus	.	.	3	2	1	.	.	.	.	3
Poecilia latipinna	1,319	.	.	1	.	20	1	446	851	1,319
Pogonias cromis	8	36	3	5	4	19	14	5	.	47
Pomatomus saltatrix	6	31	.	16	14	5	2	.	.	37
Pomoxis nigromaculatus	1	.	3	.	.	.	1	.	3	4
Portunus spp.	7	.	99	62	43	1	.	.	.	106
Prionotus carolinus	.	.	15	9	5	1	.	.	.	15
Prionotus evolans	.	.	11	1	8	1	1	.	.	11
Prionotus scitulus	1	2	66	42	13	12	2	.	.	69
Prionotus tribulus	11	25	76	37	38	28	9	.	.	112
Rachycentron canadum	.	2	.	.	1	1	.	.	.	2
Rhinoptera bonasus	.	2	.	1	.	1	.	.	.	2
Rimapenaeus constrictus	7	.	429	88	306	40	2	.	.	436
Sardinella aurita	.	1	.	.	.	.	1	.	.	1
Sciaenops ocellatus	233	129	15	17	8	85	213	47	7	377
Scomberomorus cavalla	1	.	.	.	.	1	.	.	.	1

Appendix JX12-02. (Continued)

Species	Gear and Strata			Zone						Totals
	21.3-m river seine	183-m haul seine	6.1-m otter trawl	A	B	C	D	E	F	
	E=576	E=192	E=588	E=204	E=204	E=276	E=288	E=192	E=192	E=1,356
Scomberomorus maculatus	6	8	.	7	.	7	.	.	.	14
Scophthalmus aquosus	.	.	1	.	.	1	.	.	.	1
Selene setapinnis	.	3	.	2	1	.	.	.	.	3
Selene vomer	3	29	11	6	14	21	2	.	.	43
Sicyonia parri	.	.	1	1	.	.	.	.	.	1
Sphoeroides nephelus	30	27	39	18	20	49	9	.	.	96
Sphoeroides spengleri	1	.	.	1	.	.	.	.	.	1
Sphoeroides sp.	.	1	.	.	.	.	1	.	.	1
Sphyraena barracuda	2	.	.	1	.	1	.	.	.	2
Sphyraena borealis	1	.	.	.	.	1	.	.	.	1
Sphyraena guachancho	1	.	1	.	1	1	.	.	.	2
Sphyrna tiburo	.	14	.	12	2	.	.	.	.	14
Stellifer lanceolatus	70	.	11,211	8,119	2,762	204	196	.	.	11,281
Stephanolepis hispidus	16	.	16	9	5	18	.	.	.	32
Stomolophus meleagris	.	2	13	11	.	2	2	.	.	15
Strongylura marina	56	136	.	4	14	108	35	22	9	192
Strongylura spp.	111	1	.	4	3	4	36	30	35	112
Symphurus civitatium	.	.	1	1	.	.	.	.	.	1
Symphurus plagiusa	334	1	250	231	229	54	71	.	.	585
Syngnathus floridae	.	.	2	.	.	2	.	.	.	2
Syngnathus fuscus	.	.	4	4	.	.	.	.	.	4
Syngnathus louisianae	55	.	26	40	15	13	.	12	1	81
Syngnathus scovelli	209	.	10	8	15	7	21	112	56	219
Syngnathus sp.	1	.	.	.	.	.	.	1	.	1
Synodus foetens	24	2	22	8	22	18	.	.	.	48
Trachinotus carolinus	107	2	.	11	95	3	.	.	.	109
Trachinotus falcatus	95	19	.	18	42	50	4	.	.	114
Trichiurus lepturus	.	13	30	10	18	13	2	.	.	43
Trinectes maculatus	90	58	1,314	272	71	77	262	466	314	1,462
Tylosurus crocodilus	.	1	.	.	.	1	.	.	.	1
Urophycis regia	.	.	1	.	1	.	.	.	.	1
Xiphopenaeus kroyeri	.	.	34	34	.	.	.	.	.	34
Totals	**177,250**	**17,116**	**69,487**	**59,346**	**62,131**	**44,781**	**30,922**	**20,065**	**46,608**	**263,853**

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Fish Health Monitoring

Introduction

Long-term multi-gear and multi-habitat sampling programs, such as the Fisheries-Independent Monitoring (FIM) program, not only provide fish population information to fisheries managers, but also help to document changes and evaluate the effects of natural and anthropogenic disturbances to ecosystems (Wolfe et al. 1987). Increased urban development in coastal areas has made adjacent aquatic ecosystems (estuaries, bays, and tidal rivers) some of the most intensively fertilized environments on earth (Cloern et al. 1995). The influx of nutrients and other materials commonly associated with urban development and industry has led to concerns about the concomitant eutrophication and degradation of water quality in Florida's coastal systems. Evidence of a correlation between environmental degradation and the occurrence of certain fish diseases continues to accumulate (Sinderman 1979). The incidence of gross external abnormalities (GEAs) in marine species, defined as those illnesses or deformations easily observed in the field, provides valuable information on the level of environmental stress placed upon species in estuarine and coastal waters (Fournie et al. 1996). Baseline information on the frequency of occurrence of GEAs is necessary to identify changes in the ecological health of Florida's estuaries.

The Fish and Wildlife Research Institute's (FWRI) FIM program began to document visually observed GEAs (including parasites) on fish and select invertebrates in Florida's estuaries in April 1998. The main objectives of the fish health monitoring component of the FIM program are to categorize prominent types of GEAs observed, document which species are most susceptible, and document normal background levels of fish health problems. This report summarizes the occurrence of GEAs observed on larger fish (≥ 75 mm SL) and selected invertebrates collected during routine stratified-random sampling (SRS) in select Florida estuaries in 2012.

Methods

Fish health monitoring was conducted in all Florida estuarine areas sampled by the FIM program. All fish (≥ 75 mm SL) and selected invertebrates were visually examined for GEAs. Abnormalities that were opportunistically observed on specimens < 75 mm SL were also recorded; however, they are not presented in this report. Specimens with external abnormalities were assigned a “Health Code” in the field by FIM staff, packed on ice and returned to the lab. These specimens were sent to the FWRI’s Fish and Wildlife Health (FWH) group in St. Petersburg, Florida for detailed diagnosis. Specimens collected from estuaries outside the Tampa Bay region were either fixed in 10% formalin or shipped on ice to the FWH group. After evaluating each specimen, the FWH group assigned a health code to each specimen and provided these data to the FIM program for input into a database. Health codes assigned by fish pathologists in the FWH group took priority over those assigned in the field. For specimens that were assigned a health code and released in the field (i.e., fish with scoliosis or gill isopods) the health codes were not changed. Nine health codes were used:

B Red or bloody areas (no scale loss)
E Erosion or scale loss (only epidermis or dermis involved, muscle tissue not affected)
F Fin rot (inflamed or frayed fins)
S Skeletal abnormalities (vertebral, opercular, or fin deformities)
T Tumor, cyst (raised area)
U Ulcer or lesion (muscle tissue affected)
P Parasitic infestation
D Dead prior to collection
O Other (i.e., emaciated fish, healing wound, eye discoloration, missing parts, and mechanical damage)

Results and Discussion

Of the 295,645 fish (≥ 75 mm SL) and selected invertebrates that were collected during 2012 FIM SRS, 862 (36 taxa, 0.3%) were observed to have a GEA (Table FH12-01). The northern Indian River Lagoon had the highest incidence of GEAs (0.8%), followed by northeast Florida (0.3%; Table FH12-01). Cedar Key and Charlotte Harbor had very low incidence of GEAs (both <0.1%). Statewide, all nine types of GEAs were observed. The most often identified GEAs were parasitic infestation (n=392), followed by bloody areas (n=242; Table FH12-02). Six taxa of recreational or commercial importance (i.e., Selected Taxa) were among the top 10 taxa observed with a GEA (Table FH12-02). *Mugil cephalus and Mugil curema* were the most common species collected with a GEA. The majority (59.4%) of the affected *M. cephalus* and *M. curema* collected had parasitic infestation. No selected invertebrates were collected with a GEA during routine monitoring in 2012.

Incidence by Lab

Apalachicola Bay: Apalachicola Bay staff examined 29,976 specimens for GEAs. Twenty-eight individuals (0.1%) from 15 taxa, five of which were Selected Taxa, had a GEA (Table FH12-03). Parasitic infestation (n=10) was the most common GEA observed and occurred on seven taxa.

Cedar Key: Cedar Key staff examined 27,704 specimens for GEAs. A single *M. cephalus* was the only taxon that had a GEA (Table FH12-04). Cedar Key had the lowest occurrence of GEAs (<0.1%).

Charlotte Harbor: Charlotte Harbor staff examined 42,836 specimens for GEAs. Two individuals from two taxa, one of which was a Selected Taxa, had a GEA (Table FH12-05). Charlotte Harbor also had the lowest occurrence of GEAs (<0.1%).

Northern Indian River Lagoon: Northern Indian River Lagoon staff examined 74,963 specimens for GEAs. Six hundred thirty-three individuals (0.8%) from 18 taxa, 10 of which were Selected Taxa, had a GEA (Table FH12-06). Northern Indian River Lagoon had the highest occurrence of GEAs. Fish collected in the northern Indian River Lagoon had the highest incidence of parasitic infestation or bloody areas (83.8% of affected specimens) of all sampled estuaries. Parasitic infestation was primarily observed on *M. curema* (n=162) and *M. cephalus* (n=144), while bloody areas were primarily observed on *Ariopsis felis* (n=84) and *M. cephalus* (n=82). Incidence of all GEA health codes were observed from this region.

Northeast Florida: Northeast Florida staff examined 24,210 specimens for GEAs. Sixty-four individuals (0.3%) from 17 taxa, five of which were Selected Taxa, had a GEA (Table FH12-07). Fish collected in northeast Florida had the highest incidence of ulcers/lesions (70.1% of affected specimens) of all sampled estuaries. Ulcers/lesions were observed on 14 of the taxa, with the majority of the ulcers/lesions occurring in *Brevoortia* spp., *M. curema*, and *M. cephalus*.

Tampa Bay: Tampa Bay staff examined 75,197 specimens for GEAs. One hundred eleven individuals (0.2%) from 14 taxa, five of which were Selected Taxa, had a GEA (Table FH12-08). Parasitic infestation (n=70), bloody areas (n=15), and ulcers/lesions (n=9) comprised 84.7% of the GEAs observed in Tampa Bay. *Brevoortia* spp. was the most common taxon with parasitic infestation. Incidence of all GEA health codes were observed from this region.

Southern Indian River Lagoon: Southern Indian River Lagoon staff examined 20,759 specimens for GEAs. Twenty-three individuals (0.1%) from five taxa, four of which were Selected Taxa, had a GEA (Table FH12-09). Fin rot (n=11) was the most common GEA observed and was observed on *M. curema* and *M. cephalus*. Bloody areas and ulcers/lesions were the next most common GEAs observed.

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Table FH12-01. Incidence of external abnormalities in fish and selected invertebrates collected during stratified-random sampling at each FIM field lab during 2012. Data are based only on fish ($\geq$75 mm SL) and include total number collected, number affected by abnormalities, and percentage affected by abnormalities.

Field Laboratory	**Number Collected**	**Number Affected**	**Percent Affected**
Apalachicola Bay	29,976	28	0.1
Cedar Key	27,704	1	<0.1
Charlotte Harbor	42,836	2	<0.1
N. Indian River Lagoon	74,963	633	0.8
Northeast Florida	24,210	64	0.3
Tampa Bay	75,197	111	0.2
S. Indian River Lagoon	20,759	23	0.1
Totals	**295,645**	**862**	**0.3**

Table FH12-02. Top 10 taxa having gross external abnormalities collected from all estuaries sampled by the Fisheries-Independent Monitoring program during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	**Number Collected (≥75-mm SL)**	**Number Affected (≥75-mm SL)**	**Health Code P**	**B**	**F**	**U**	**E**	**S**	**T**	**O**	**D**	**Percent Affected**
Mugil cephalus	17,726	299	147	91	38	12	5	1	1	2	2	1.7
Mugil curema	13,704	221	162	30	10	17	1	.	.	1	.	1.6
Ariopsis felis	2,581	109	3	88	14	3	.	.	.	1	.	4.2
Brevoortia spp.	4,767	88	64	1	1	18	1	.	.	3	.	1.9
Dasyatis sabina	483	30	1	1	.	.	.	.	.	28	.	6.2
Sciaenops ocellatus	883	18	1	15	.	1	.	.	.	1	.	2.0
Lagodon rhomboides	67,401	17	1	4	.	9	.	3	.	.	.	0.0
Archosargus probatocephalus	2,920	11	.	2	1	2	.	6	.	.	.	0.4
Leiostomus xanthurus	5,793	10	1	.	4	2	1	.	.	2	.	0.2
Centropomus undecimalis	934	10	.	6	.	2	.	1	1	.	.	1.1
Totals	**117,192**	**813**	**380**	**238**	**68**	**66**	**8**	**11**	**2**	**38**	**2**	0.7
All others	178,453	49	12	4	6	11	1	8	3	3	1	<0.1
Totals (all taxa)	**295,645**	**862**	**392**	**242**	**74**	**77**	**9**	**19**	**5**	**41**	**3**	0.3

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-03. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
Tylosurus crocodilus	2	1	1	.	.	.	.	.	.	.	.	50.0
Dorosoma cepedianum	11	1	.	.	.	.	.	1	.	.	.	9.1
Peprilus paru	44	2	1	.	1	.	.	.	.	.	.	4.6
Gymnura micrura	82	2	2	.	.	.	.	.	.	.	.	2.4
Lepomis microlophus	47	1	.	.	.	.	.	.	1	.	.	2.1
Strongylura marina	72	1	.	.	.	1	.	.	.	.	.	1.4
Chilomycterus schoepfii	73	1	.	.	.	.	1	.	.	.	.	1.4
Archosargus probatocephalus	185	1	.	.	.	.	.	1	.	.	.	0.5
Leiostomus xanthurus	1,700	6	1	.	3	1	1	.	.	.	.	0.4
Mugil cephalus	2,254	6	3	.	.	.	3	.	.	.	.	0.3
Sciaenops ocellatus	440	1	1	.	.	.	.	.	.	.	.	0.2
Ariopsis felis	908	2	1	.	.	1	.	.	.	.	.	0.2
Brevoortia spp.	991	1	.	.	1	.	.	.	.	.	.	0.1
Bairdiella chrysoura	2,955	1	.	.	.	1	.	.	.	.	.	<0.1
Micropogonias undulatus	3,610	1	.	.	1	.	.	.	.	.	.	<0.1
Totals (all taxa)	**29,976**	**28**	**10**	**.**	**6**	**4**	**5**	**2**	**1**	**.**	**.**	**0.1**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-04. Taxon having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) $*$ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	P	B	F	U	E	S	T	O	D	Percent Affected
Mugil cephalus	2,515	1	.	.	.	.	.	.	.	1	.	<0.1
Totals (all taxa)	**27,704**	**1**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**1**	**.**	**<0.1**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-05. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected ($\geq$75-mm SL)	Number Affected ($\geq$75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
Mugil cephalus	306	1	.	.	.	.	1	.	.	.	.	0.3
Chilomycterus schoepfii	769	1	.	.	.	.	.	.	.	1	.	0.1
Totals (all taxa)	**42,836**	**2**	**.**	**.**	**.**	**.**	**1**	**.**	**.**	**1**	**.**	**<0.1**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-06. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
***Cynoscion* complex**	1	1	.	.	1	.	.	.	.	.	.	100.0
Carcharhinus leucas	3	1	1	.	.	.	.	.	.	.	.	33.3
Ariopsis felis	716	100	1	84	14	.	.	.	.	1	.	14.0
Mugil* spp. *(redeye mullet)	11	1	1	.	.	.	.	.	.	.	.	9.1
Dasyatis sabina	483	30	1	1	.	.	.	.	.	28	.	6.2
Sciaenops ocellatus	308	16	.	15	.	.	.	.	.	1	.	5.2
Mugil cephalus	5,662	264	144	82	32	2	1	1	1	1	.	4.7
Centropomus undecimalis	138	6	.	6	.	.	.	.	.	.	.	4.4
Chilomycterus schoepfii	89	2	.	1	.	.	.	.	.	1	.	2.3
Mugil curema	9,092	196	162	29	4	1	.	.	.	.	.	2.2
Caranx hippos	245	3	.	1	.	1	.	1	.	.	.	1.2
Selene vomer	139	1	.	.	.	.	.	.	1	.	.	0.7
Strongylura notata	151	1	.	.	.	.	.	1	.	.	.	0.7
Cynoscion nebulosus	234	1	.	.	.	.	.	.	.	.	1	0.4
Archosargus probatocephalus	1,576	5	.	2	.	1	.	2	.	.	.	0.3
Pogonias cromis	758	1	.	.	1	.	.	.	.	.	.	0.1
Leiostomus xanthurus	863	1	.	.	.	.	.	.	.	1	.	0.1
Lagodon rhomboides	30,352	3	.	.	.	1	.	2	.	.	.	<0.1
Totals (all taxa)	**74,963**	**633**	**310**	**221**	**52**	**6**	**1**	**7**	**2**	**33**	**1**	**0.8**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-07. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in northeast Florida during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
Chilomycterus schoepfii	25	1	.	.	.	1	.	.	.	.	.	4.0
Ictalurus punctatus	27	1	1	.	.	.	.	.	.	.	.	3.7
Dorosoma petenense	32	1	.	.	.	1	.	.	.	.	.	3.1
Lepisosteus osseus	88	2	1	.	1	.	.	.	.	.	.	2.3
Dorosoma cepedianum	94	1	.	.	.	1	.	.	.	.	.	1.1
Sciaenops ocellatus	135	1	.	.	.	1	.	.	.	.	.	0.7
Paralichthys lethostigma	298	2	.	.	1	1	.	.	.	.	.	0.7
Lepomis macrochirus	183	1	.	.	.	1	.	.	.	.	.	0.6
Mugil curema	2,650	14	.	.	.	13	1	.	.	.	.	0.5
Brevoortia spp.	3,050	16	.	.	.	15	.	.	.	1	.	0.5
Strongylura marina	198	1	.	.	.	.	.	1	.	.	.	0.5
Trinectes maculatus	206	1	.	.	.	1	.	.	.	.	.	0.5
Lagodon rhomboides	1,614	6	.	.	.	6	.	.	.	.	.	0.4
Mugil cephalus	4,724	12	.	1	1	10	.	.	.	.	.	0.3
Fundulus seminolis	442	1	.	.	.	1	.	.	.	.	.	0.2
Leiostomus xanthurus	2,154	2	.	.	.	1	.	.	.	1	.	0.1
Bairdiella chrysoura	1,214	1	.	.	.	1	.	.	.	.	.	0.1
Totals (all taxa)	**24,210**	**64**	**2**	**1**	**3**	**54**	**1**	**1**	**.**	**2**	**.**	**0.3**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-08. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
Lepisosteus osseus	18	4	4	.	.	.	.	.	.	.	.	22.2
Brevoortia spp.	726	71	64	1	.	3	1	.	.	2	.	9.8
Ariopsis felis	957	7	1	4	.	2	.	.	.	.	.	0.7
Archosargus probatocephalus	644	4	.	.	1	1	.	2	.	.	.	0.6
Centropomus undecimalis	796	4	.	.	.	2	.	1	1	.	.	0.5
Mugil cephalus	1,060	5	.	3	.	.	.	.	.	.	2	0.5
Sphoeroides nephelus	255	1	.	.	.	.	.	.	1	.	.	0.4
Mugil curema	296	1	.	1	.	.	.	.	.	.	.	0.3
Leiostomus xanthurus	1,076	1	.	.	1	.	.	.	.	.	.	0.1
Harengula jaguana	2,563	2	.	1	.	.	.	1	.	.	.	0.1
Orthopristis chrysoptera	2,482	2	.	.	.	.	.	1	.	1	.	0.1
Strongylura notata	1,700	1	.	.	.	.	.	1	.	.	.	0.1
Lagodon rhomboides	29,322	7	1	4	.	1	.	1	.	.	.	<0.1
Bairdiella chrysoura	13,578	1	.	1	.	.	.	.	.	.	.	<0.1
Totals (all taxa)	**75,197**	**111**	**70**	**15**	**2**	**9**	**1**	**7**	**2**	**3**	**2**	**0.2**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Table FH12-09. List of taxa, sorted by Percent Affected, having gross external abnormalities collected in southern Indian River Lagoon during stratified-random sampling, 2012. Number collected = total number of each species collected. Number affected = total number of individuals with abnormalities by health code. Percent affected = (number affected / number collected) ∗ 100.

Scientific Name	Number Collected (≥75-mm SL)	Number Affected (≥75-mm SL)	Health Code P	B	F	U	E	S	T	O	D	Percent Affected
Pogonias cromis	106	1	.	.	.	.	.	1	.	.	.	0.9
Mugil cephalus	1,205	10	.	5	5	.	.	.	.	.	.	0.8
Mugil curema	1,666	10	.	.	6	3	.	.	.	1	.	0.6
Archosargus probatocephalus	515	1	.	.	.	.	.	1	.	.	.	0.2
Lagodon rhomboides	6,113	1	.	.	.	1	.	.	.	.	.	<0.1
Totals (all taxa)	**20,759**	**23**	**.**	**5**	**11**	**4**	**.**	**2**	**.**	**1**	**.**	**0.1**

P = parasitic infestation; B = red or bloody areas; F = fin rot; U = ulcer or lesion; E = erosion or scale loss; S = skeletal abnormalities; T = tumor/cysts; O = other; D=dead. **Bold species are Selected Taxa**.

Species Profiles

Introduction

An important use of Fisheries-Independent Monitoring (FIM) program data is to track relative abundance of fish stocks and provide information for use in species management plans, including information on the abundance of juvenile fish. Juvenile indices of abundance (IOAs) measure the relative abundance of newly-recruited or young-of-the-year (YOY) fish and may be used to describe recruitment processes and forecast population trends. Adult IOAs measure the relative abundance of larger, older fish and may be used to describe the sexually mature portion of a population and also help forecast future population trends. When combined, these two pieces of information can provide a comprehensive picture of the relative condition of a fish population. This section provides profiles of species that are routinely collected in FIM program sampling and are of recreational or commercial importance in Florida (e.g., red drum, spotted seatrout, sheepshead, striped mullet, pinfish, common snook, and blue crabs).

Similar analyses were used to develop recruitment indices for each species examined. Data from stratified-random sampling (SRS) were used to create IOAs for YOY of target species. Study areas included in the analyses were selected based upon adequate sample sizes of the target species or years of available data, and separate IOAs were calculated for each study area. The specific time periods and sizes of specimens included in the analyses varied among species based upon their individual patterns of recruitment and growth. Length-frequency histograms were examined to determine the time period and size at which the target species fully recruited to the sampling gears. In general, only months of peak abundance were included in the analyses. Larger sizes of fish were omitted from the YOY analyses because they were considered to be sub-adult or adult. Such fish were analyzed separately from YOYs for select species.

The IOAs representing either annual recruitment (YOY IOAs) or the sexually mature portion of the population (Adult IOAs) were computed using generalized linear models to reduce spatial and temporal variability between sets. The FIM program's stratified random sampling design generates count data, the distribution of which is bounded by zero. Often, the frequency distribution of these counts is highly non-normal. Therefore, a Poisson or negative binomial distribution was used to create IOAs instead of log-transformed counts as in years prior to 2009. Location, time, and environmental variables were treated as either classification variables (zone, year, month, gear, deployment technique, shore type, sediment type, and presence / absence of bottom vegetation) or covariates (water temperature, salinity, and depth) in the analyses. The GLIMMIX procedure (SAS Institute Inc. 2006) was used to complete all analyses. In order to normalize the data, water temperature, salinity, and depth were natural log transformed [ln (X+1)] prior to analysis. With the exception of year, all variables that were not significant ($P>0.05$) and did not improve the fit of the model were dropped and the analysis was repeated. Least squares adjusted means and standard errors were calculated for each year.

Relative abundance was calculated as the median annual number of fish per set. Median values were determined from the least-squares adjusted means by multiplying the standard error by a random normal deviate ($\mu=0$, $\sigma=1$) and adding it to the least-squares mean. These data were then back-transformed (e^x). The process was repeated 500 times for each year to create a sampling distribution of back-transformed values, and summary statistics (25 and 75 percentiles) were then calculated and plotted to view annual trends in IOAs (Sokal and Rohlf 1981).

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Red Drum, *Sciaenops ocellatus*

The red drum, *Sciaenops ocellatus*, is an estuarine-dependent species inhabiting coastal waters from Massachusetts to northern Mexico (Yokel 1966; Reagan 1985). This species supports important recreational fisheries throughout the U.S. south Atlantic and Gulf of Mexico coasts. In Florida, dramatic stock reductions in the mid 1980s resulted in a 1986 moratorium on commercial and recreational red drum fisheries. In 1989, the fishery was reopened with strict size and bag limits, as well as a no-sale provision that effectively eliminated the commercial red drum fishery in Florida. Since that time, red drum stocks have shown signs of recovery, and in 1994 abundances were equal to or slightly greater than those observed in the early to mid 1980s (Muller and Murphy 1994). Although fishing mortality estimates have steadily increased since the early 1990s, the most recent model predictions for age-specific indices of red drum indicated that populations in Florida exceeded the Commission's management target for red drum of at least a 40% escapement rate through age four (Murphy and Munyandorero 2008). In addition, continued improvement of escapement rates within the northeast and northwest management regions of the state has led to an increase of the daily bag limit from one to two fish in early 2012. However, bag limits within the southern management areas of the state have remained at one fish per person per day.

In Florida, adult red drum spawn from mid-August through late November (Yokel 1966). Spawning occurs primarily near bay mouths, inlets, or over nearshore continental shelf waters (Mercer 1984; Murphy and Taylor 1990), and in some locations inside estuaries (Murphy and Taylor 1990; Johnson and Funicelli 1991). In Florida estuaries, recruitment of juveniles begins in September and continues through February, with peaks occurring in October and November (Reagan 1985; Peters and McMichael 1987; Daniel 1988). Settlement of young-of-the-year (YOY) red drum typically occurs in the middle or upper reaches of estuaries, away from ocean inlets or passes, and can be strongly influenced by the availability of low to moderate salinity habitats (FDEP-FMRI 1997). On both coasts, large juvenile red drum enter the fishery at approximately 15 – 18 months of age, and are fully recruited at the beginning of their third year (age-2) (FWC-FMRI 2004). The legal recreational slot limit (457-686 mm total length [TL]; 18-27 inch TL) includes predominantly age-1 and age-2 fish. Red drum greater than 700 mm standard length (SL) are uncommon in the FIM program samples from west Florida estuaries, but are occasionally collected on the east coast in the Indian River Lagoon (IRL) (FWC-FMRI 2004).

In an effort to monitor year-class strength and to improve the ability to predict future adult red drum abundances, the FIM program developed relative indices of abundance (IOAs) of YOY red drum recruitment into selected Florida estuaries. Abundance data for YOY red drum ≤ 40 mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of sampling inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Young-of-the-year red drum recruited to habitats sampled with our 21.3-m seines primarily from September – December, although in some bays the onset of recruitment was delayed until October (Tampa Bay and Apalachicola), and extended into January (Charlotte Harbor and Cedar Key) or February (northern IRL). Therefore, these bay-specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) for YOY red drum were not calculated for the southern IRL where 21.3-m seines were not included as a sampling gear. Indices of abundance (IOAs) for YOY red drum were also not calculated for the bay habitats in northeast Florida where only river seines are used or for river habitats in Charlotte Harbor and Apalachicola Bay where the catches were small and highly variable. In all six estuaries, data from stratified-random 183-m haul seines were used to develop IOAs for fish that fall within the permitted recreational harvest size range (457-686 mm TL; 374-565 mm SL; Murphy and Taylor 1990). These IOAs were derived by including all legal size red drum collected between January and December from 1996 through 2012.

Annual IOAs for YOY red drum in 2012 indicated similar recruitment patterns between Tampa Bay and Charlotte Harbor (Figure SP12-01). In Tampa Bay, strong year classes were evident in both riverine and bay habitats. Indices of abundance for riverine habitats were high from 2002-2004 and 2009-2010 and lower during intervening years. In bay habitats, abundances were low but stable, except for an exceptional year class in 1995. In Charlotte Harbor, the majority of juveniles were captured in bay habitats and the trends were similar to Tampa Bay -- low but stable abundances and one exceptional year class in 1995. The similarity in the patterns of YOY abundance observed over the past 20 years in these estuarine systems suggests that YOY red drum recruitment along this section of Florida's Gulf of Mexico coast may be influenced by factors which operate over regional scales. Annual IOAs for legal-size fish in Tampa Bay have been relatively stable since 1996 with lows in 2002 and 2011 and with slight peaks in 2000, 2005, 2008, and 2012. In Charlotte Harbor, abundance of legal-size fish has been relatively stable since 1996 with peaks in abundance in 1998, 2003, and 2007-2008.

Indices of abundance for YOY red drum varied without trend on Florida's northwest coast (Figure SP12-01). The IOAs for YOY red drum in Apalachicola Bay indicated one strong year class in 2002; otherwise recruitment was relatively low, but stable. The IOAs for legal-size red drum in Apalachicola Bay indicated an overall increase in abundance over time with peaks in 2003, 2008-09, and 2012. Young-of-the-year IOAs in Cedar Key riverine habitats indicated a relatively strong year class in 1997; otherwise, YOY red drum IOAs remained fairly low and stable. In Cedar Key bay habitats, YOY IOAs indicated the presence of a relatively strong year class in 2003. The IOAs for legal-size red drum in Cedar Key were relatively high from 1998 through 2001, but have declined steadily through 2012.

Red drum IOAs varied substantially between estuaries on Florida's Atlantic coast (Figure SP12-01). Indices of abundance for YOY red drum in northeast Florida estuaries varied without trend from 2001 through 2012 with stronger year classes in 2003, 2006, and 2012. Annual IOAs for legal-size red drum increased from 2004-2006, but have since returned to previously-observed levels. In the northern IRL, strong year classes were observed for YOY red drum in 2003, 2004, and 2008 in river habitats; otherwise, recruitment was relatively low, but stable. In bay habitats, IOAs for YOY red drum were not estimated from 1990 to 1995 due to low numbers of fish collected. In 1998, the bay sampling area was expanded to the southern portion of the Indian River Lagoon to include some of the more productive YOY red drum nursery habitats located near the St. Sebastian River. In bay habitats, increases in YOY red drum IOAs were observed during 1999, 2002-2004, 2008-2009, and 2012. All other years had low but stable recruitment. Annual IOAs for legal-size red drum in the northern IRL fluctuated without trend with peaks in abundance in 2007-2008 and 2012. In the southern IRL, legal-size red drum abundances were also stable with peaks in abundance in 1997 and 2012.

Length-frequency data collected with 183-m haul seines suggested that this gear provides valuable information on larger juvenile and adult red drum (Figure SP12-02). In most estuaries, the length-frequency distributions were tri-modal with one cohort between ~100-200 mm SL, a second cohort from ~300-400 mm SL, and a third from ~450-600 mm SL. The 183-m haul seines were able to capture large YOY (100-200 mm SL), age-1 (300-400 mm SL), and age-2-3 (450-600 mm SL) red drum. In Tampa Bay, Charlotte Harbor, and the northern IRL, the length-frequency distributions showed abundances of individuals within the legal slot-limit were roughly equivalent to the abundance of individuals approaching the minimum slot-limit length. In contrast, in Apalachicola Bay, Cedar Key, northeast Florida, and the southern IRL, the abundances of red drum within the legal slot-limit dropped off sharply from the abundances of individuals available just prior to attaining the legal harvestable size range. This disparity could have been a result of differential behavior of the fish (i.e., these fish leave the estuary system at smaller sizes in Apalachicola Bay, Cedar Key, northeast Florida, and southern IRL) or as a result of angler behavior (i.e., more catch-and-release activities in Tampa Bay, Charlotte Harbor and the northern IRL). Legal-size red drum were likely age-1 and age-2 individuals, and the length-frequency distributions dropped off sharply after the upper slot limit. This may have been due to the fact that older red drum (age-4 and older), once sexually mature, typically leave the estuaries and move to coastal areas to join schools of other reproductively mature individuals and become unavailable to routine FIM sampling gears.

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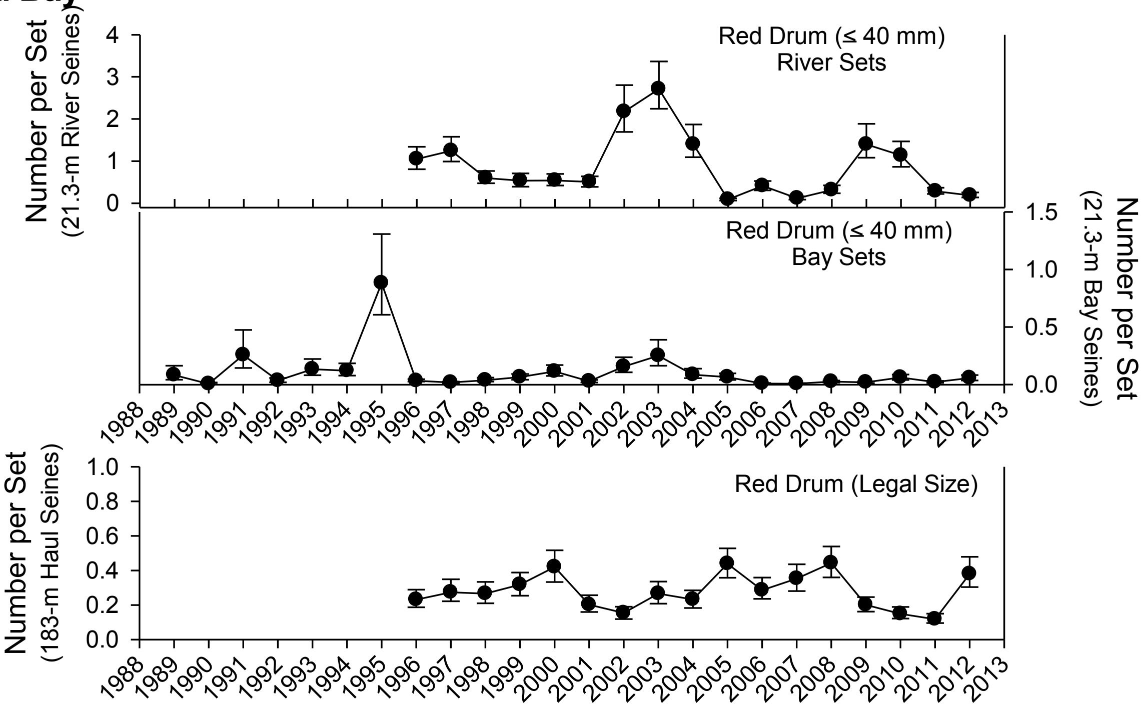
Tampa Bay



Charlotte Harbor

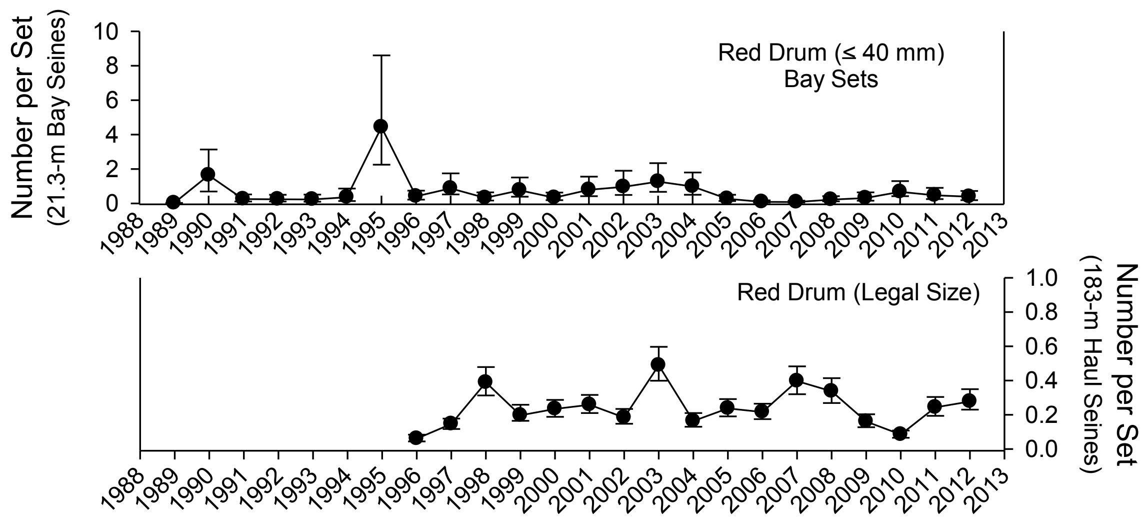
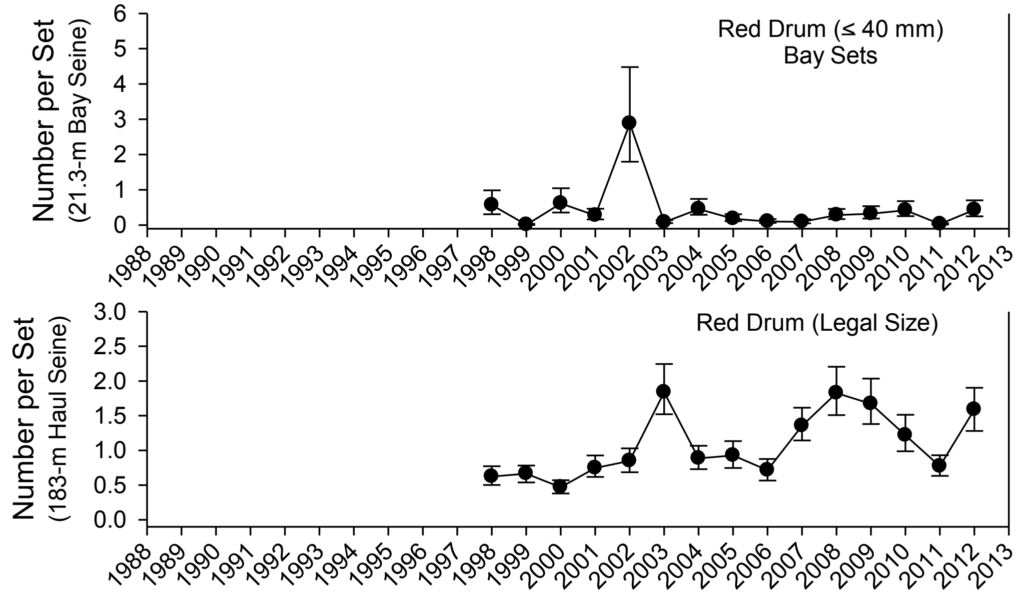


Figure SP12-01. Relative abundance of young-of-the-year red drum (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2012 and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for river and bay sets were created to examine differences in YOY recruitment between the two habitats. Points represent the median estimate while the vertical bars represent the 25^{th} – 75^{th} percentiles. Note different scales of abundance among plots for different gears and estuaries.

Apalachicola Bay



Cedar Key

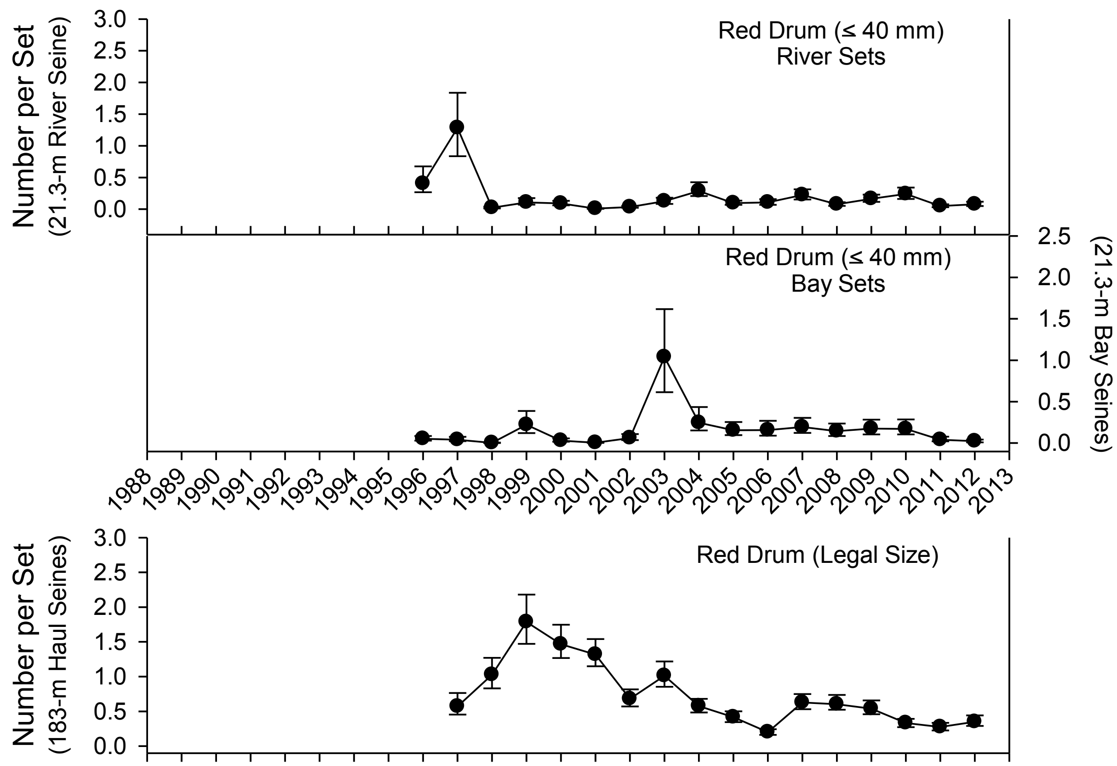
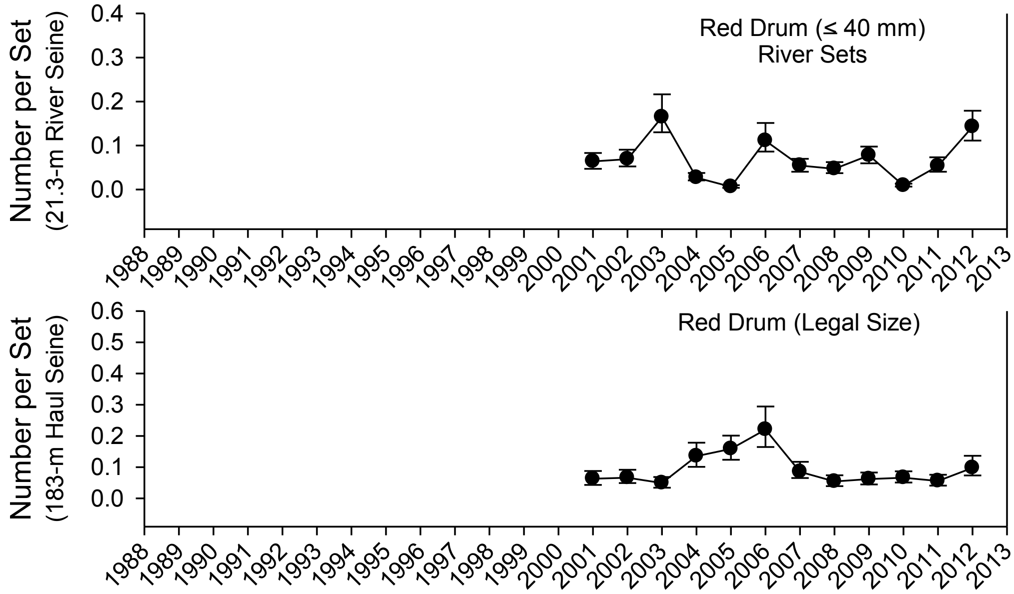


Figure SP12-01. (Continued) Relative abundance of young-of-the-year red drum (≤ 40 mm SL) collected in 21.3-m seines between 1996 and 2012 and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

Northeast Florida



Indian River Lagoon

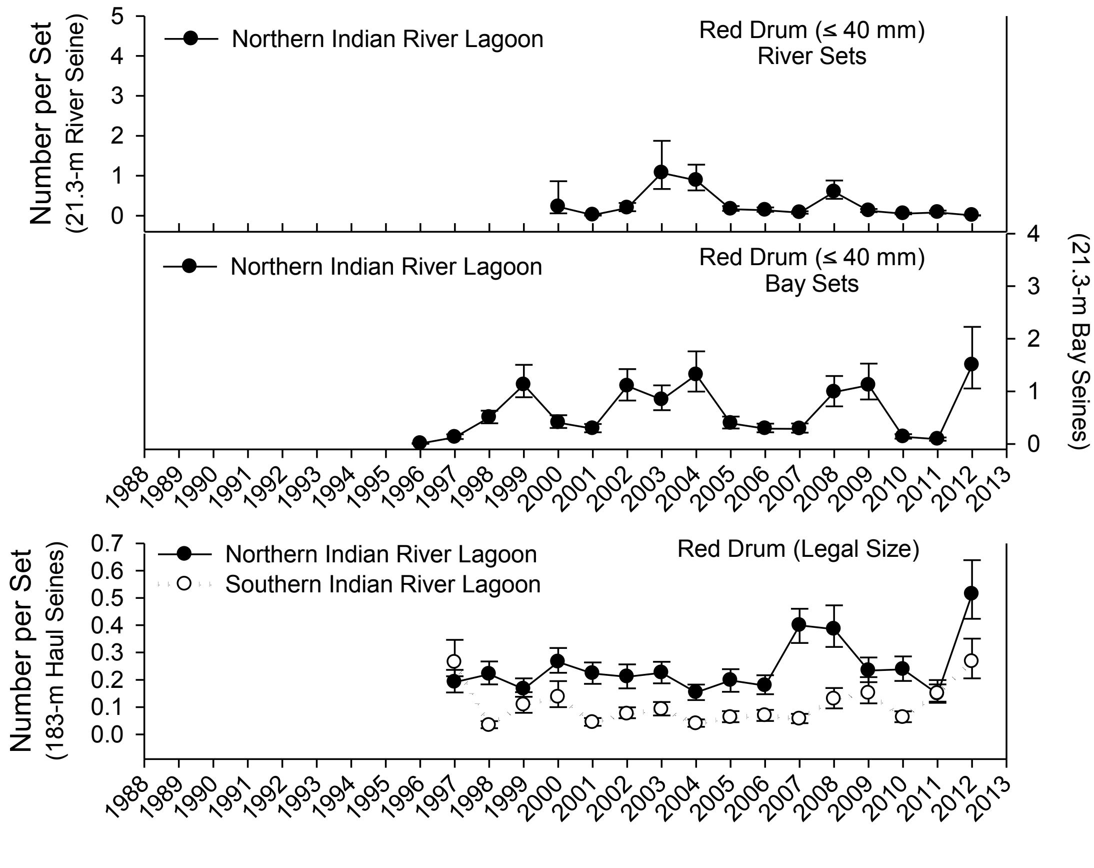
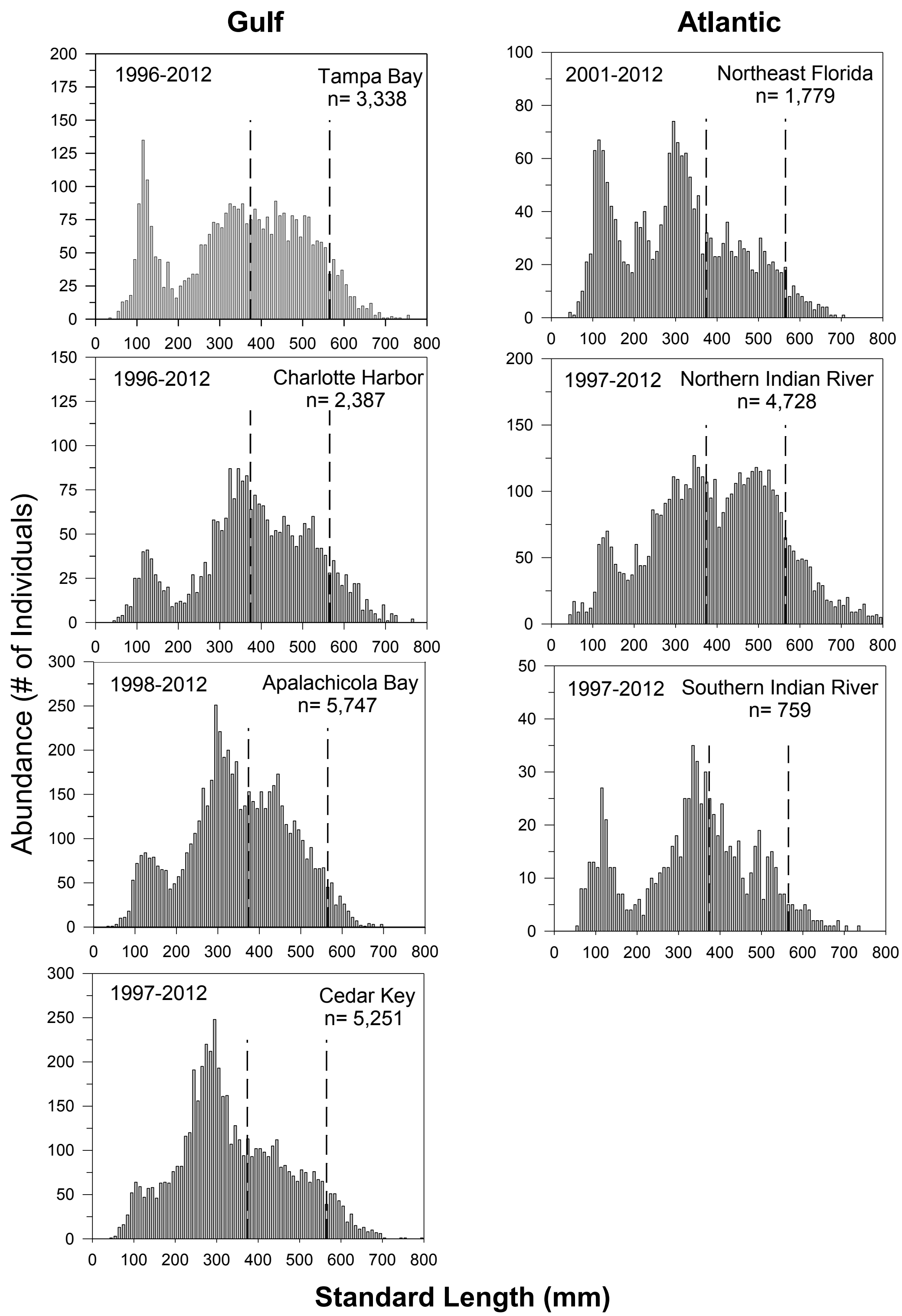


Figure SP12-01. (Continued) Relative abundance of young-of-the-year red drum (≤ 40 mm SL) collected in 21.3-m seines between 1996 and 2012 and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.



SP12-02. Length frequency diagrams of red drum collected using 183-m haul seines. Area between dashed lines (- - -) indicates permitted recreational harvest size range. All lengths are standard length (SL). Note different scales and years of collection among plots.

Spotted Seatrout, *Cynoscion nebulosus*

Spotted seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine and coastal waters on the Atlantic and Gulf of Mexico (Gulf) coasts of the United States (Bortone 2003). In Florida, spotted seatrout have historically supported economically-important recreational and commercial fisheries. Overall, annual commercial landings of spotted seatrout in Florida declined quite slowly during the period 1950 through the 1970s. During the 1980s, the decline accelerated, especially in the Southwest region (Murphy et al. 2011). Statewide commercial landings never exceeded much more than 500,000 fish during the early 1990s and dropped drastically to fewer than 50,000 fish after implementation of the constitutional amendment banning the use of entangling gear in 1995 and the establishment of a 3-month open season in 1996 (Murphy et al. 2010). Declines in the number of commercial trips from the mid-1980s to recent years were over 90% on the Atlantic coast and nearly 99% on the Gulf coast (Murphy et al. 2010). Commercial effort levels continue to be significantly less than the recreational sector (Murphy et al. 2011). Since the mid-1990s various commercial and recreational fishing regulations have been adopted to support the rebuilding of spotted seatrout stocks (Murphy et al. 1999). With these regulatory changes, the spotted seatrout fishery has moved from a mixed–sector fishery, with about 20% of the landings made by commercial fishers, to an almost exclusive recreational fishery (Chagaris et al. 2008). Total estimated landings for this species in Florida during 2009 were 1,589,030 fish, with 98% of this total from the recreational fishery (Murphy et al. 2011).

Adult spotted seatrout begin to spawn in March or April in southwest and west-central Florida estuaries (i.e., Tampa Bay and Charlotte Harbor; McMichael and Peters 1989) and in April or May in the more northerly Florida estuaries (i.e., northern Indian River Lagoon: Tabb 1961, Crabtree and Adams 1998; Cedar Key: Moody 1950; and Apalachicola Bay: Devries et al. 2002). Spotted seatrout are generally reproductively mature at age 2 (males > 200 mm standard length [SL]; females > 235 mm SL; Murphy et al. 2006). Protracted spawning of spotted seatrout continues throughout the summer and into late September or October, depending upon location (Murphy et al. 1999). Spawning generally occurs during the evening hours in deep channels and depressions near grass flats in estuarine areas with water temperature >21°C (Tabb 1966; Helser et al. 1993). Estuarine water temperatures below 20°C may reduce hatching success for spotted seatrout (Gray et al. 1991).

In an effort to monitor year-class strength and to improve the ability to predict future adult spotted seatrout abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) spotted seatrout recruitment into selected Florida estuaries. Abundance data for YOY spotted seatrout (≤ 100 mm SL) collected from stratified-random 21.3-m seine samples were examined to assess recruitment in six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Young-of-the-year spotted seatrout recruited to habitats sampled with our 21.3-m seines primarily from April through October in Tampa Bay and Charlotte Harbor, and from May through November in the northern Indian River Lagoon, northeast Florida, and Cedar Key. In Apalachicola Bay, recruitment of YOY spotted seatrout was evident from June through October. These recruitment periods coincide with published recruitment and spawning periods of spotted seatrout throughout Florida (Moody 1950; Nelson and Leffler 2001; Devries et al. 2002; Walters et al. 2007). Therefore, these bay-specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance for YOY spotted seatrout were not calculated for the southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. Data from stratified-random 183-m haul seines collected within these same Florida estuarine systems (including the southern Indian River Lagoon) were used to develop IOAs for adult spotted seatrout (≥200 mm SL). These IOAs were derived by including all spotted seatrout ≥200 mm SL collected between January and December from 1996 to 2012.

Trends in relative abundance of juvenile spotted seatrout in Tampa bay have remained relatively stable since the early 1990s, but do exhibit an overall downward trend (Figure SP12-03). Stronger year classes were evident in 1996-1997, 1999, 2001, and 2003-2004 in riverine habitats. In bay habitats, an exceptionally strong year class in 1991 was observed with smaller peaks in abundance occurring in 1996, 2001, and 2004; a noticeably lower, but stable trend was observed from 2005 through 2012.

Abundance of YOY spotted seatrout in Charlotte Harbor riverine habitats has remained relatively stable since 1999, with peaks in abundance occurring in 1998, 2004, 2008 and 2011. In Charlotte Harbor bay habitats, strong year classes were evident in YOY abundance during 1990-1991, from 1995-1997, and 2003. Patterns of relative abundance for adult spotted seatrout in Tampa Bay and Charlotte Harbor have been variable, but relatively stable since 1996 (Figure SP12-03). Periods of greater abundance occurred in 1999, 2003-2004, 2008 and 2010-2012 in Tampa Bay, and in 2002 and 2004-2005 in Charlotte Harbor. Each period of greater abundance was generally followed by a decline in abundance the next year.

Indices of abundance for YOY spotted seatrout on Florida's northwest coast have been variable, but relatively stable since 1996 (Figure SP12-03). The IOAs of YOY spotted seatrout in Apalachicola Bay were variable with higher abundances in 1998, 2001, 2003, 2005, 2009-2011, followed by a sharp decline in 2012 (Figure SP12-03). In Cedar Key, strong year classes were evident in riverine habitats during 1997-1998 and 2002 and have otherwise remained relatively stable. In Cedar Key bay habitats, strong year classes were evident in 1998 and 2001. The IOAs for adult spotted seatrout in Apalachicola Bay indicated increased abundance in recent years (2008-2012). In Cedar Key, a strong year class was observed in adult spotted seatrout in 1998. From 1999-2002 abundances decreased steadily and then remained low, but stable through 2012 (Figure SP12-03).

Trends in YOY spotted seatrout abundance on Florida's Atlantic coast have been relatively stable with periods of strong recruitment evident (Figure SP12-03). In northeast Florida, IOAs for YOY spotted seatrout increased slightly from 2001-2007, then declined from 2008-2010, and increased sharply in 2011-2012. In northeast Florida, IOAs for adult spotted seatrout have been relatively stable since 2001, with the exception of a noticeable decrease in 2004. In the northern Indian River Lagoon, IOAs for YOY spotted seatrout were variable from 1990-1996 and relatively stable from 1997-2012; peaks in IOAs occurred in 1991, 1995, 2005, and 2011. Indices of abundance for adult spotted seatrout in the northern Indian River Lagoon have generally fluctuated without trend until 2010 when abundance began to increase. In the southern Indian River Lagoon, relative abundance of adult spotted seatrout has remained low, but stable since 1997; however, due to the comparatively small sample size in this area, results should be interpreted with caution.

Length-frequency data collected with 183-m haul seines suggest that this gear provides valuable information on sub-adult and adult spotted seatrout (Figure SP12-04). Two or three distinct cohorts are evident from the 183-m haul seine data collected within the Gulf coast estuaries. The smaller cohort primarily consisted of fish ~100 to 200 mm SL, while the larger cohort(s) consisted of adults > 200 mm SL. The size distributions of spotted seatrout collected with 183-m haul seines in the Atlantic coast estuaries indicate two distinct cohorts in northeast Florida, but was unimodal in the northern Indian River Lagoon. In all sampling areas, abundance dropped off sharply as the permitted recreational harvest size (325 mm SL) was reached.

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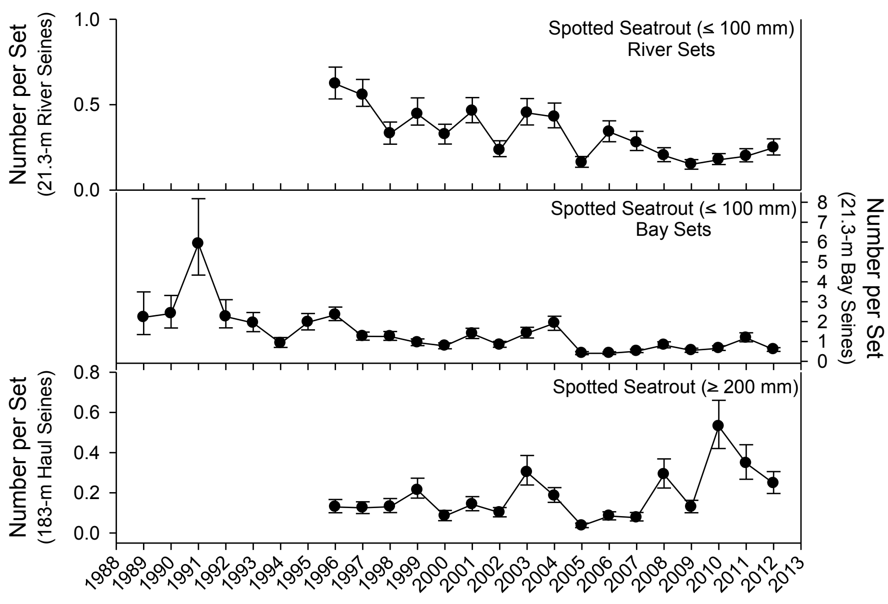
A) Tampa Bay



B) Charlotte Harbor

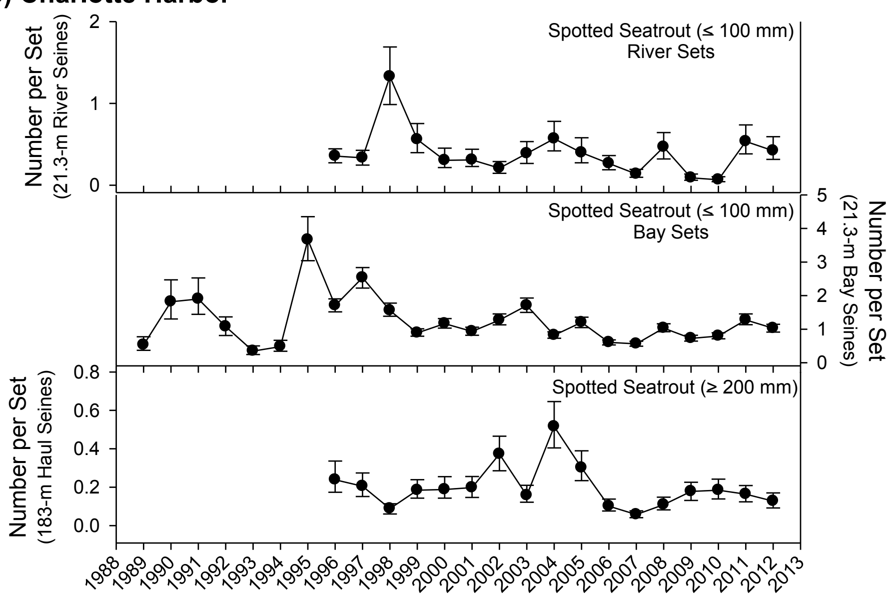
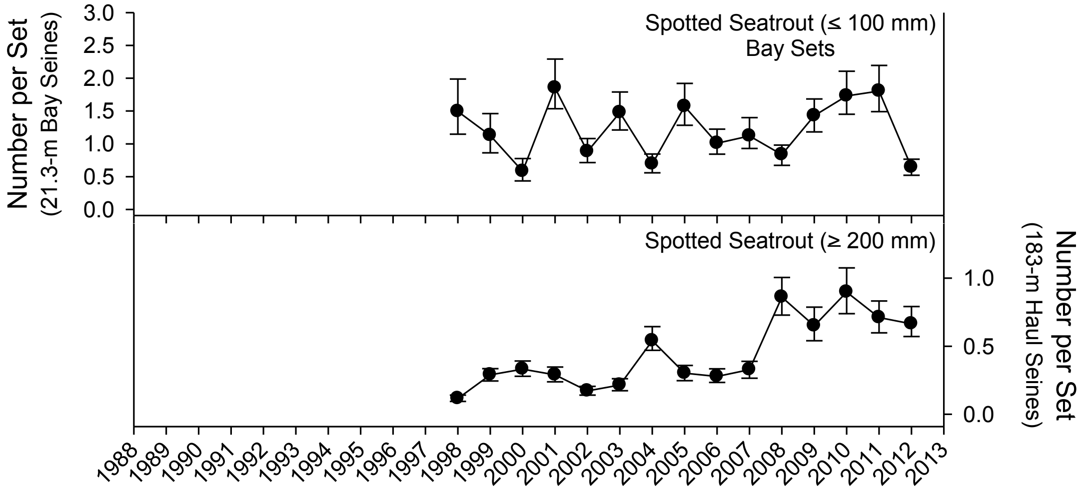


Figure SP12-03. Relative abundance of young-of-the-year spotted seatrout (≤ 100 mm SL) collected in 21.3-m seines between 1989 and 2012 and of reproductively mature spotted seatrout (≥ 200 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for river and bay sets were created to examine differences in YOY recruitment between the two habitats. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

C) Apalachicola Bay



D) Cedar Key

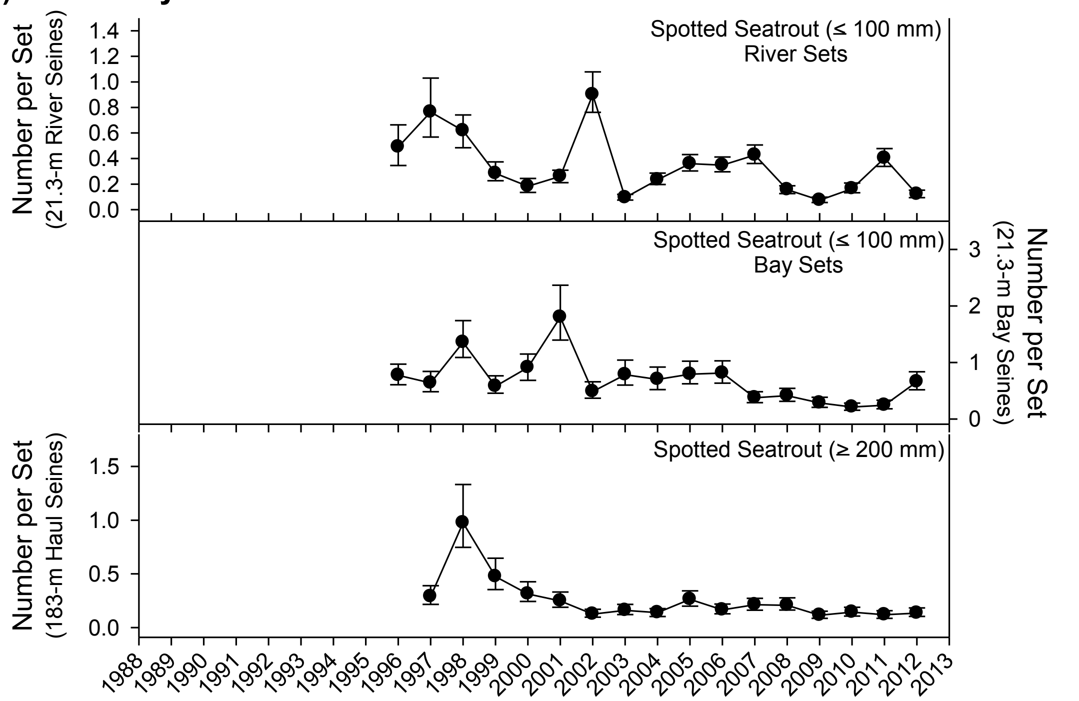
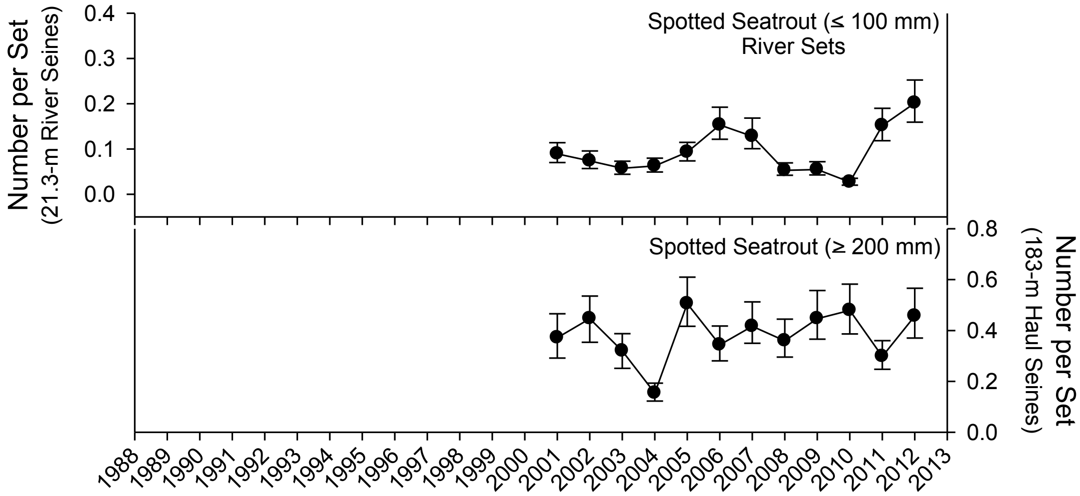


Figure SP12-03. Relative abundance of young-of-the-year spotted seatrout (≤ 100 mm SL) collected in 21.3-m seines between 1996 and 2012 and of reproductively mature spotted seatrout ($\geq$ 200 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

E) Northeast Florida



F) Indian River Lagoon

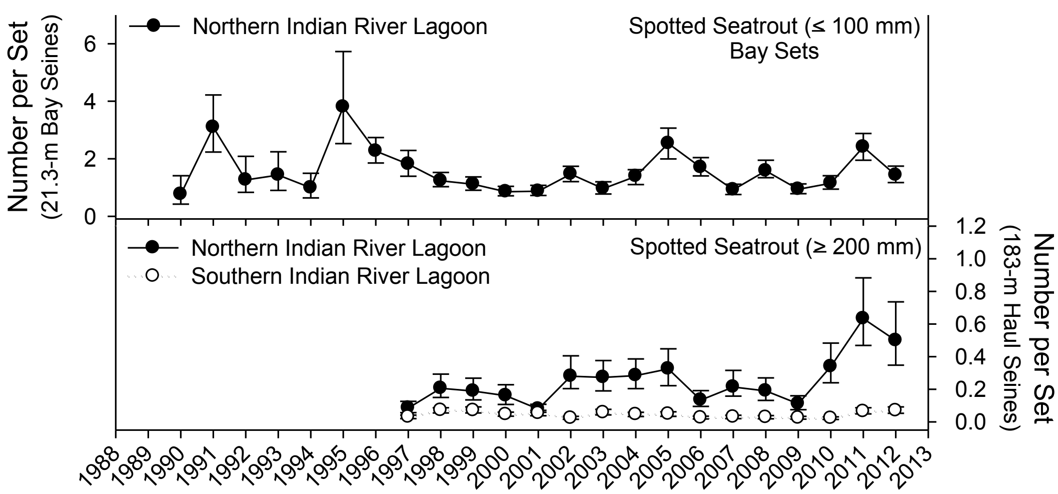


Figure SP12-03. Relative abundance of young-of-the-year spotted seatrout (≤ 100 mm SL) collected in 21.3-m seines between 1990 and 2012 and of reproductively mature spotted seatrout (≥ 200 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

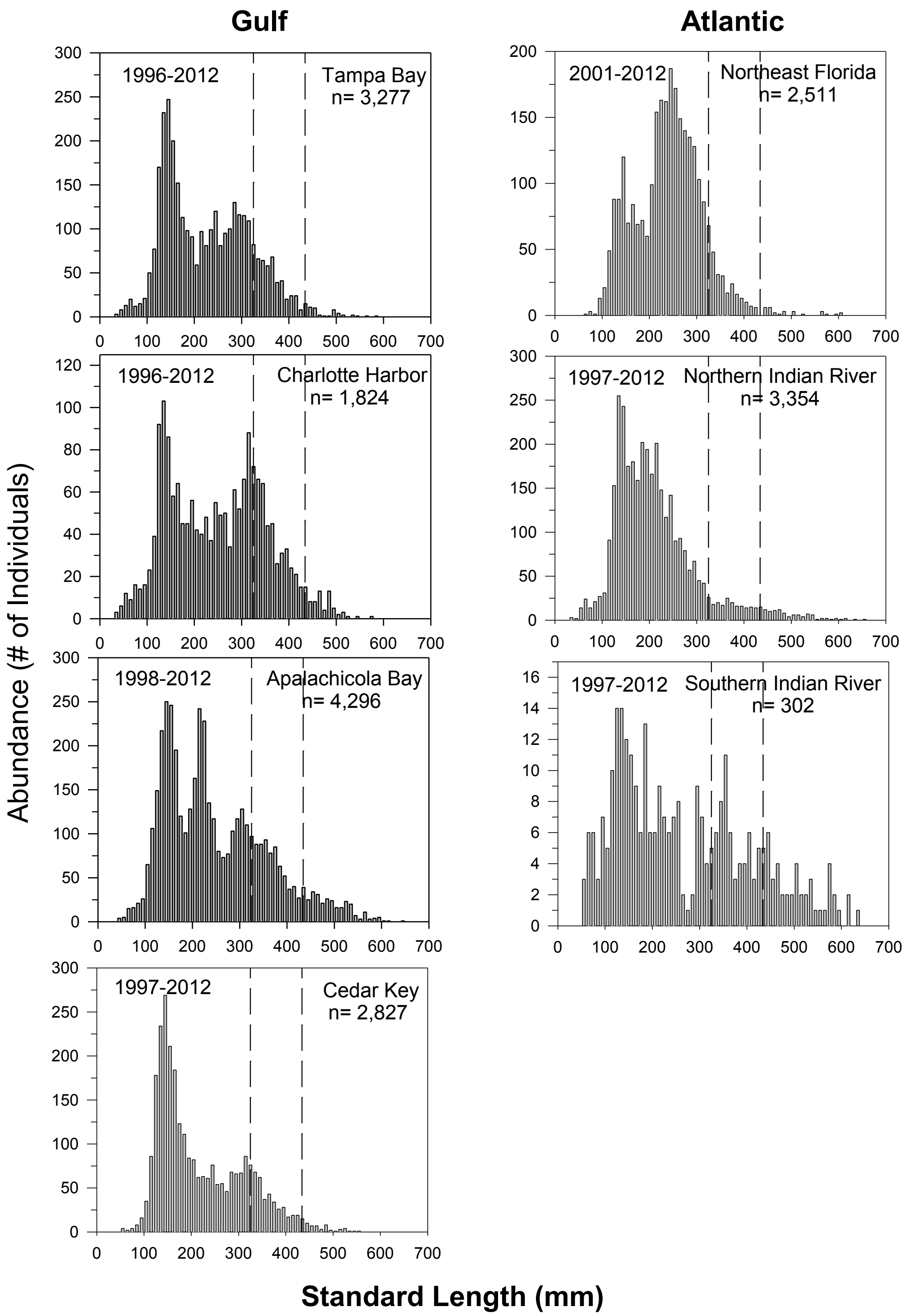


Figure SP12-04. Length frequency diagrams of spotted seatrout collected using 183-m haul seines. Area between dashed lines (- - -) indicates permitted recreational harvest size range (325 to 434 mm SL). Current Florida regulations allow anglers to keep one fish greater than the maximum slot limit size. All lengths are standard length (SL). Note different scales and years of collection among plots.

Sheepshead, *Archosargus probatocephalus*

The sheepshead, *Archosargus probatocephalus*, is common in coastal estuarine and inner- to mid-shelf waters from Cape Cod to Brazil (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 in Florida waters are currently regulated by size (305-mm fork length, 268-mm standard length) and bag limits (15 fish/day). The most recent stock assessment for sheepshead used Fisheries-Independent Monitoring (FIM) program data to derive annual indices of abundance (IOAs) during different life history stages to constrain coast-specific catch-at-age models (Munyandorero et al. 2006). This stock assessment determined that sheepshead stocks on the Gulf and Atlantic coasts appeared abundant enough to supply adequate numbers of new recruits while maintaining current harvest rates.

Adult sheepshead reproduce between February and April in Florida waters and the newly recruited young-of-the-year (YOY) are most abundant in shallow estuarine areas between April and June. Young-of-the-year sheepshead grow approximately 0.32 mm per day (FWC-FMRI 2001) and typically reach 40 mm standard length (SL) at two months and 130 mm SL at one year of age. Sheepshead in Florida waters enter the fishery at 268 mm SL, which typically corresponds to an age of 3 - 6 years (Dutka-Gianelli and Murie 2001).

To monitor year-class strength and improve the ability to predict future adult sheepshead abundance, the FIM program developed annual IOAs for three life history stages: YOY, pre-fishery and fully-recruited. Abundance data for YOY ($\leq$40 mm SL) collected in stratified-random 21.3-m seines were examined to assess recruitment into three Florida estuaries: (in order of FIM program inception) Tampa Bay, Charlotte Harbor, and northern Indian River Lagoon. This life history stage was not examined for Apalachicola Bay, Cedar Key, or northeast Florida due to small sample sizes. Indices of abundance of YOY sheepshead were not calculated for southern IRL where 21.3-m seines were not included as a sampling gear. Young-of-the-year sheepshead recruited to habitats sampled with 21.3-m seines primarily from April through June. These months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Abundance indices were calculated for pre-fishery sheepshead (131-267 mm SL) and those fully recruited to the fishery (≥268 mm SL) for six Florida estuaries: Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, southern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Data from stratified-random 183-m haul seines were used to develop IOAs for pre-fishery and fully-recruited sheepshead from April through March representing a biological year. Therefore, the IOA for 2012 did not include 2013 data (January through March).

Annual trends in YOY sheepshead IOAs were variable between the two southwest Florida estuaries, Tampa Bay and Charlotte Harbor. Young-of-the-year IOAs for both estuaries were relatively stable since 1989 with infrequent strong year classes evident (Figure SP12-05). In Tampa Bay riverine and bay habitats, stronger year classes occurred in 1997, 2000, and 2008, with decreased abundance recorded in 2010 and 2011. In 2012, YOY IOAs increased dramatically in riverine habitats; but this trend was not reflected in bay habitats within Tampa Bay. In Charlotte Harbor, relatively strong year classes were evident in 1991, 1994, and 2008. Similar to Tampa Bay, the YOY IOAs from Charlotte Harbor proper did not reflect any increase in 2012. Annual IOAs of pre-fishery sheepshead exhibited a general cyclical pattern in Tampa Bay with peaks in 1999, 2004, 2007, 2008, 2010, and again in 2012. Annual IOAs of pre-fishery sheepshead in Charlotte Harbor remained relatively stable from 1996-2012, with peaks in 2007 and 2010. Annual IOAs of fully-recruited sheepshead in Tampa Bay remained relatively stable through 2012 with the exception of two peaks in abundance during 1998 and 2004. Abundance of fully-recruited sheepshead in Charlotte Harbor varied without trend from 1996-2001, increased in 2002 after which abundance declined through 2006, increased in 2007, and declined through 2012 to levels seen prior to 2002.

Annual IOAs were only calculated for pre-fishery and fully-recruited sheepshead in the two northwest Florida estuaries of Apalachicola Bay and Cedar Key (Figure SP12-05). Trends in abundance for pre-fishery sheepshead in Apalachicola Bay have remained low, but relatively stable, with peaks in abundance during 2000 and 2012. Pre-fishery IOAs have remained relatively stable in Cedar Key since 1997 with lower abundance during 1997 and 2005. Annual IOAs for fully-recruited sheepshead in Apalachicola Bay have fluctuated over time, but indicated an overall increasing trend through 2012, with peaks in 2001 and 2007. Abundance of fully-recruited sheepshead in Cedar Key exhibited a decreasing trend from 1997 through 2005 and have remained relatively stable in subsequent years, 2006-2012.

Annual IOAs of pre-fishery and fully-recruited sheepshead in northeast Florida demonstrated similar trends. Increased abundance occurred in 2002 through 2005 with a general decreasing trend indicated through 2012 (Figure SP12-05,). Young-of-the-year IOAs for northern IRL riverine habitats were variable with strong year classes evident in 2001, 2004-2005, 2009-2010, and 2012 (Figure SP12-05). Young-of-the-year IOAs in northern IRL bay habitats remained relatively stable from 1998-2003 and were variable thereafter with peaks in abundance occurring in 2004, 2007, 2009, and 2012. Pre-fishery IOAs for the northern and southern IRL were relatively stable with only slight variation from year to year. The trends were almost mirror images of each other through 2007 and then tracked each other with similar patterns from 2008 to 2012. Annual IOAs of fully-recruited sheepshead in the southern IRL followed a similar trend to the pre-fishery IOA, with relative peaks in abundance in 1998, 2004, and 2012. Northern IRL IOAs have remained relatively stable from 1997 through 2012, but at lower abundances than in the southern IRL.

Length-frequency data collected with 183-m haul seines suggested that this gear provides valuable information on late YOY, pre-fishery, and fully-recruited sheepshead (Figure SP12-06). The length frequency indices generally indicated multiple cohorts captured in the 183-m seines. The first cohort occurred between 60-100 mm, a second slightly larger cohort occurred between 100-200 mm SL, and above 200 mm SL there were several cohorts that coalesced and were not separable. This 'fully-recruited' mode was generally shifted to the right in the northern Florida estuaries (>300 mm SL; Apalachicola Bay, Cedar Key, northeast Florida, and northern IRL) and was slightly smaller in the southern Florida estuaries (~ 250 mm SL, Tampa Bay, Charlotte Harbor, and southern IRL). Modal peaks in length frequencies did not appear to be truncated above the legal minimum size.

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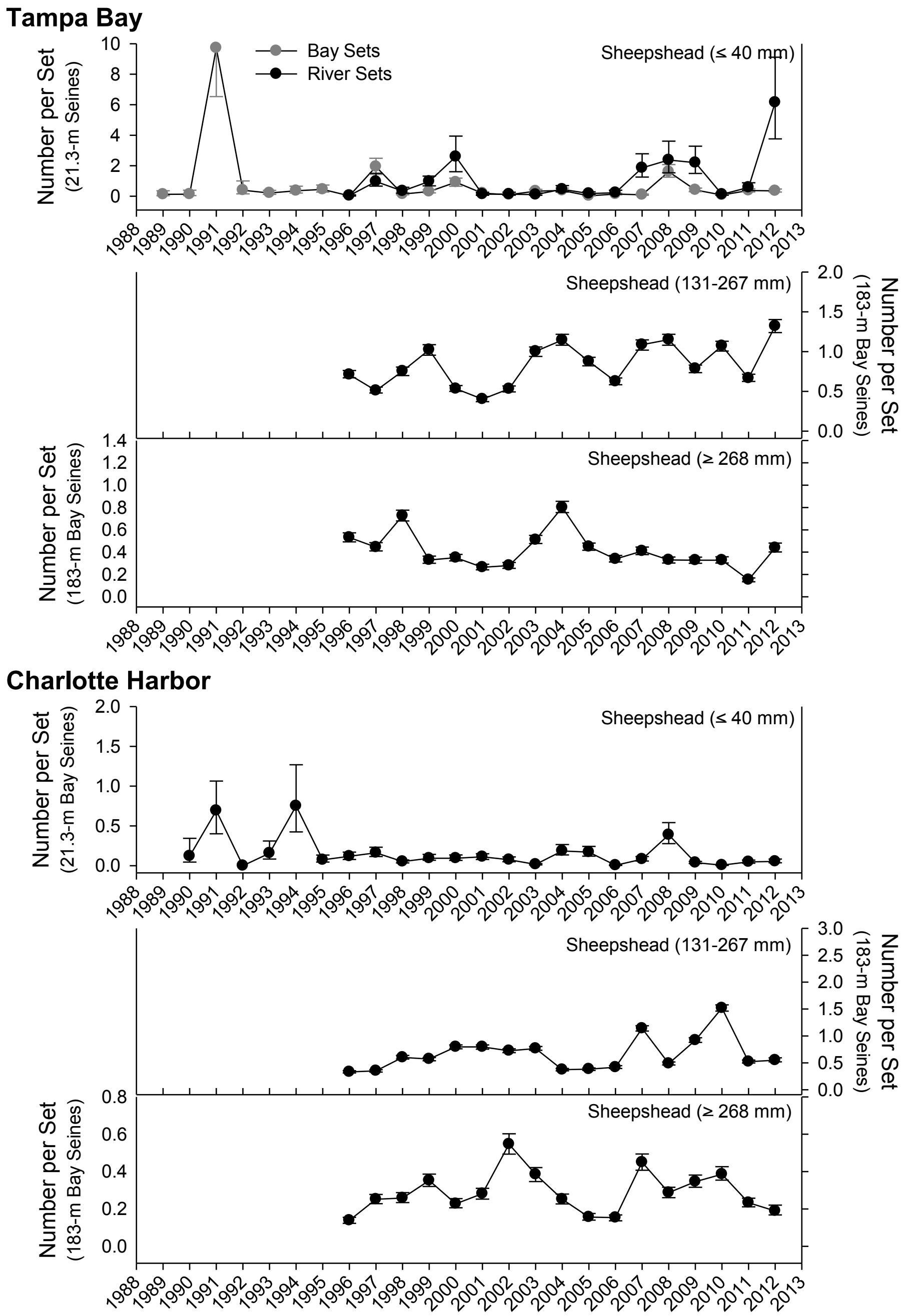


Figure SP12-05. Relative abundance of young-of-the-year sheepshead (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2012 and pre-fisherey (131-267 mm SL) and fully-recruited sheepshead (≥ 268 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for river and bay sets were created to examine differences in recruitment. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

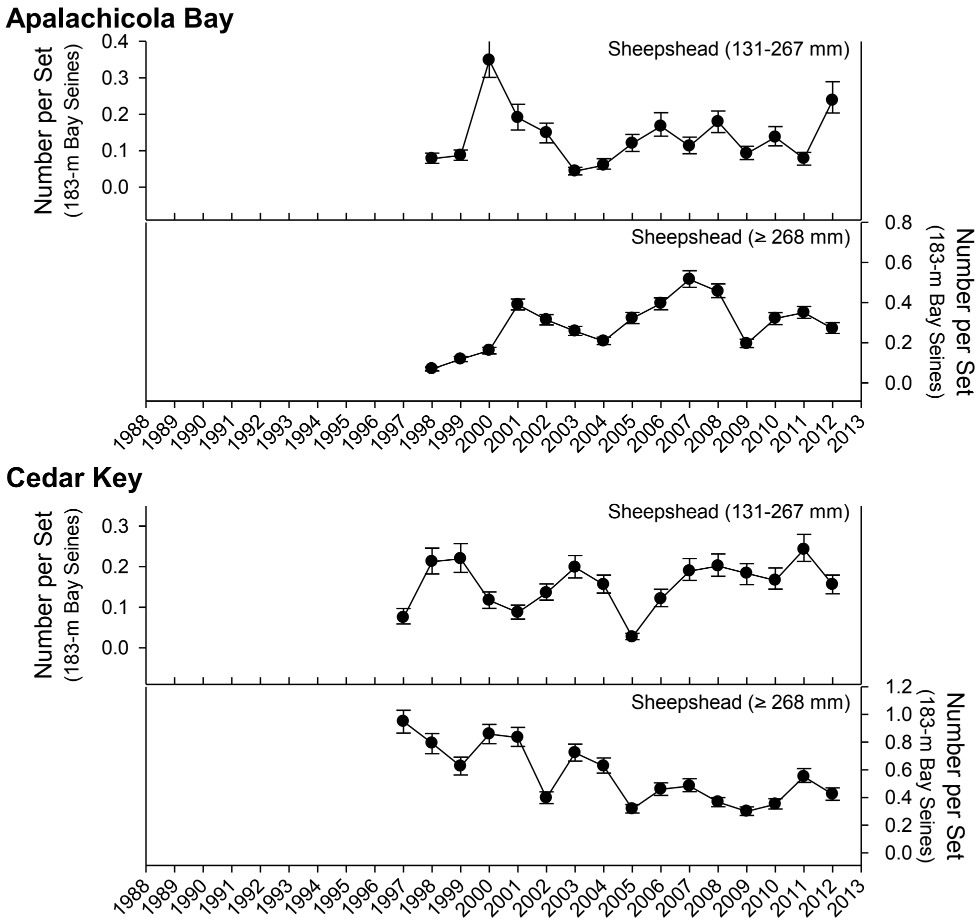
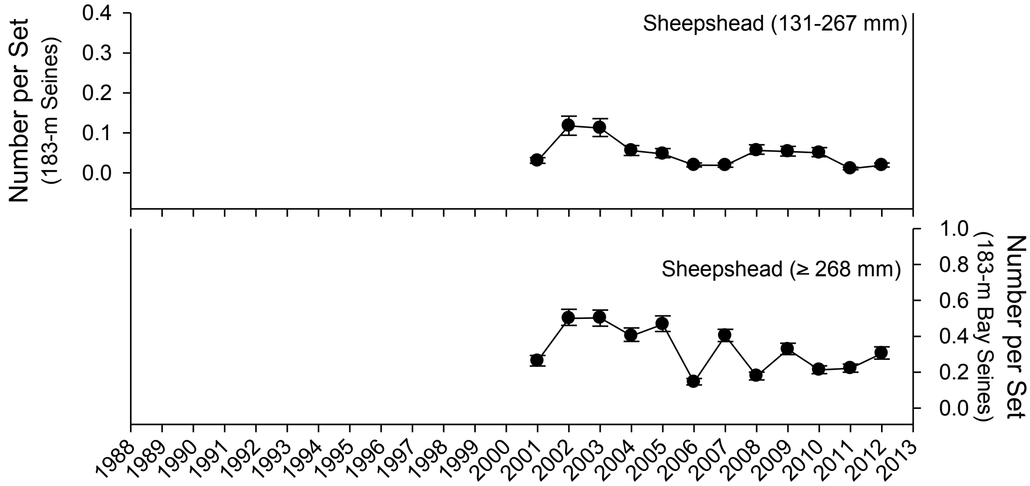


Figure SP12-05. (Continued) Relative abundance of young-of-the-year sheepshead (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2012 and pre-fisherey (131-267 mm SL) and fully-recruited sheepshead (≥ 268 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems.

Northeast Florida



Indian River Lagoon

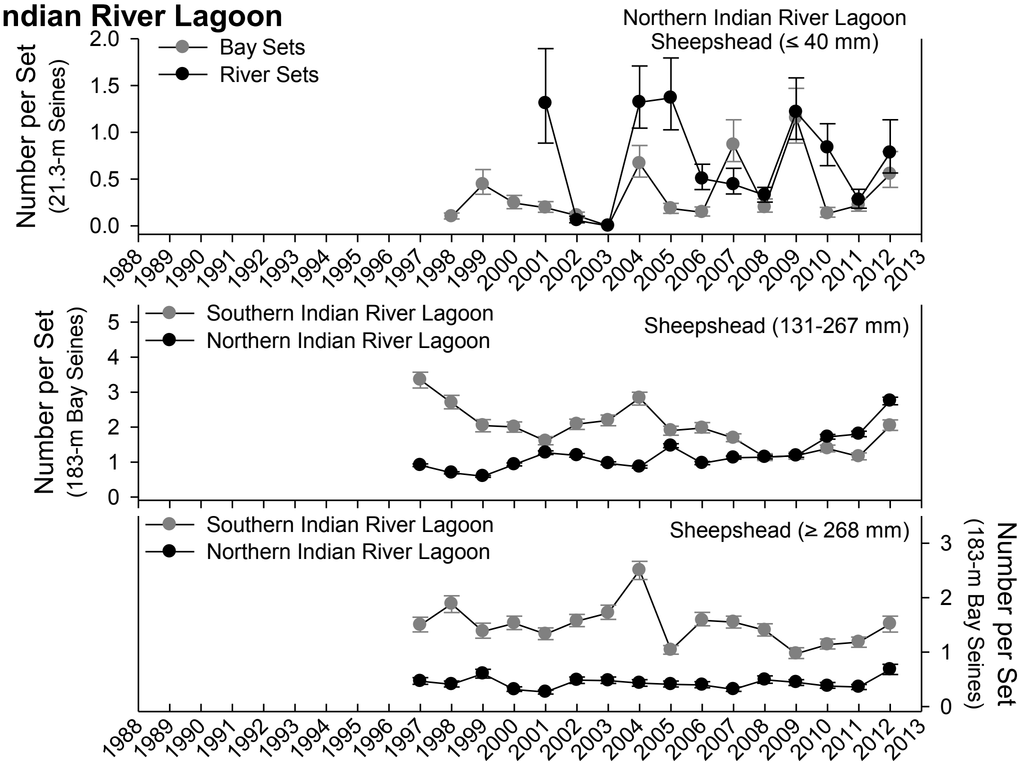


Figure SP12-05. (Continued) Relative abundance of young-of-the-year sheepshead (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2012 and pre-fisherey (131-267 mm SL) and fully-recruited sheepshead (≥ 268 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems.

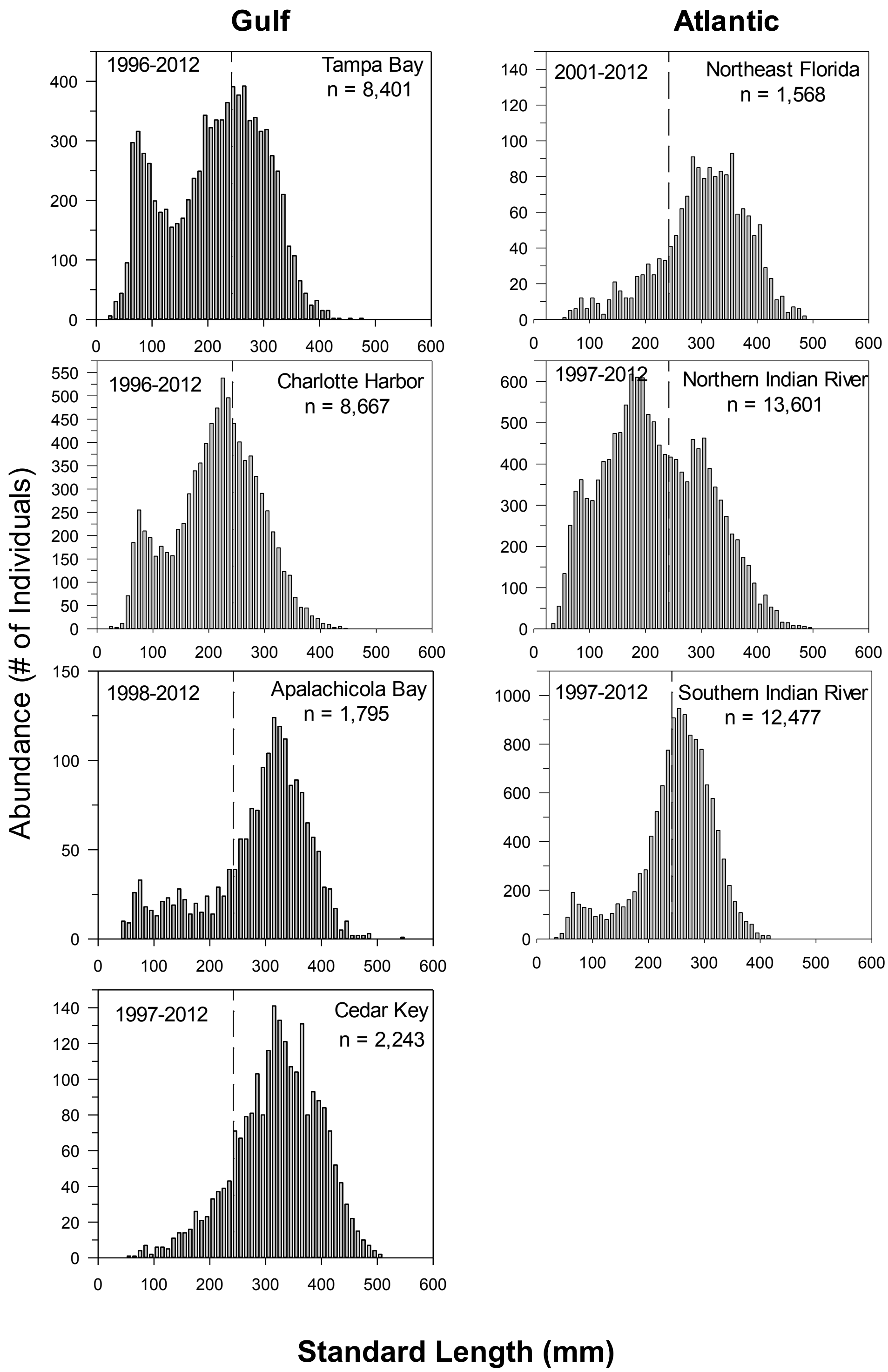


Figure SP12-06. Length frequency diagrams of sheepshead collected using 183-m haul seines. Area after dashed line (- - -) indicates permitted recreational minimum harvest length (242 mm SL). All lengths are standard length (SL). Note different scales and years of collection among plots.

Striped Mullet, *Mugil cephalus*

Striped mullet, *Mugil cephalus*, are one of Florida's most abundant and widespread estuarine-dependent fishes (Odum 1970; Leard et al. 1995). Striped mullet supported a valuable commercial fishery from the early 1960s through the late 1980s, with approximately 90% of all U.S. landings occurring in the Gulf of Mexico (Gulf) and over 80% of all commercial landings occurring in Florida waters (Rivas 1980; Leard et al. 1995). Changes were documented from 1991 to 1994 when commercial striped mullet landings in Florida severely declined from 79% to 46% of the total Gulf production (Leard et al. 1995). Following the implementation of the Florida net limitation referendum (July 1, 1995), which eliminated the use of entangling nets within three miles of the Atlantic coast and nine miles of the Gulf coast, striped mullet commercial landings were reduced even further to about 5.1 million pounds (Mahmoudi 1997). After an initial decline in fishing effort and landings following the net limitation ban, fishing effort and landings have gradually increased to about 8.1 million pounds annually (Mahmoudi 2000; Mahmoudi 2005). Despite these increases, overall fishing mortality rates have declined substantially during the post net-limitation period, resulting in a significant increase in overall stock size and spawning stock biomass in recent years. Stocks throughout the state of Florida are healthy, and current levels of fishing effort appear to be sustainable (Mahmoudi 2005). Currently, cast nets are used in both the recreational and commercial fisheries.

Striped mullet form large schools in estuarine and nearshore waters from October to December, prior to their migration offshore. These schools migrate to offshore spawning areas over the outer continental shelf and slope during the passage of weather fronts from October through February. Typically, young-of-the-year (YOY) striped mullet recruit to Florida's estuaries at 20 to 35 mm standard length (Kilby 1949; Futch 1966). Recruitment usually begins in January and continues through April, with peaks in abundance during February and March; however, previous analysis of length-frequency data indicated that recruitment has occurred in Florida's estuaries as early as the end of December.

In an effort to monitor year-class strength and to improve the ability to predict future adult striped mullet abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) striped mullet recruitment into selected Florida estuaries. Abundance data for YOY striped mullet ≤ 35 mm standard length (SL) that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of sampling inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Young-of-the year striped mullet recruited to habitats sampled with 21.3-m seines primarily from January to March. Therefore, these specific months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance for YOY striped mullet were not calculated for the southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. All zones not sampled consistently throughout the time period being analyzed were excluded from the analyses.

In Tampa Bay, IOAs for YOY striped mullet have been relatively stable in both riverine and bay habitats. Increases in abundance were evident in 2001, 2006, and 2010 in riverine habitats and in 1998, 2006, and 2010 in bay habitats (Figure SP12-07). In Charlotte Harbor, IOAs for YOY striped mullet have varied without trend in riverine and bay habitats. In riverine habitats, increased abundance was evident in 2000-2002, 2004, 2006, and 2010-2011. In bay habitats two distinct peaks in IOAs for YOY for striped mullet were observed; one in 1997 and a second from 2008-2010.

Indices of abundance for YOY striped mullet on Florida's northwest coast were variable. In Apalachicola Bay, IOAs for YOY for striped mullet revealed two strong year classes in 2001 and 2006 for riverine habitats and 2002, 2006, 2008, and 2010 for bay habitats (Figure SP12-07). In Cedar Key, IOAs for YOY striped mullet in riverine habitats varied without trend, although increased abundance was evident in 2000, 2006, and 2011. Indices of abundance for YOY striped mullet in Cedar Key bay habitats have varied without trend since 1997, although periods of higher abundance were evident in 2000-2001, 2006, and 2008-2010.

Annual IOAs of YOY striped mullet in northeast Florida have varied without trend, with peaks in abundance in 2003, 2006, 2008, and 2010-2011. A dramatic decrease in abundance was seen in 2012. Annual IOAs of YOY striped mullet in the northern Indian

River Lagoon riverine habitats revealed strong year classes during 2001 and 2010 with low, but stable year classes otherwise (Figure SP12-07). Northern Indian River Lagoon bay habitats followed a similar pattern as observed in riverine habitats -- stable abundance along with exceptional year classes evident in 2001 and 2010.

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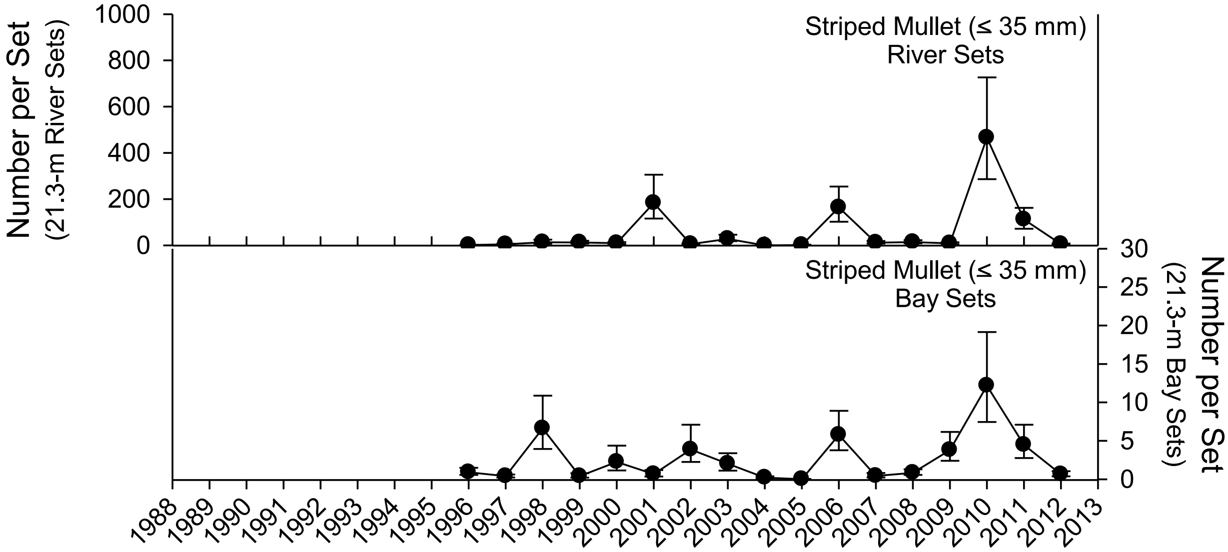
Tampa Bay



Charlotte Harbor

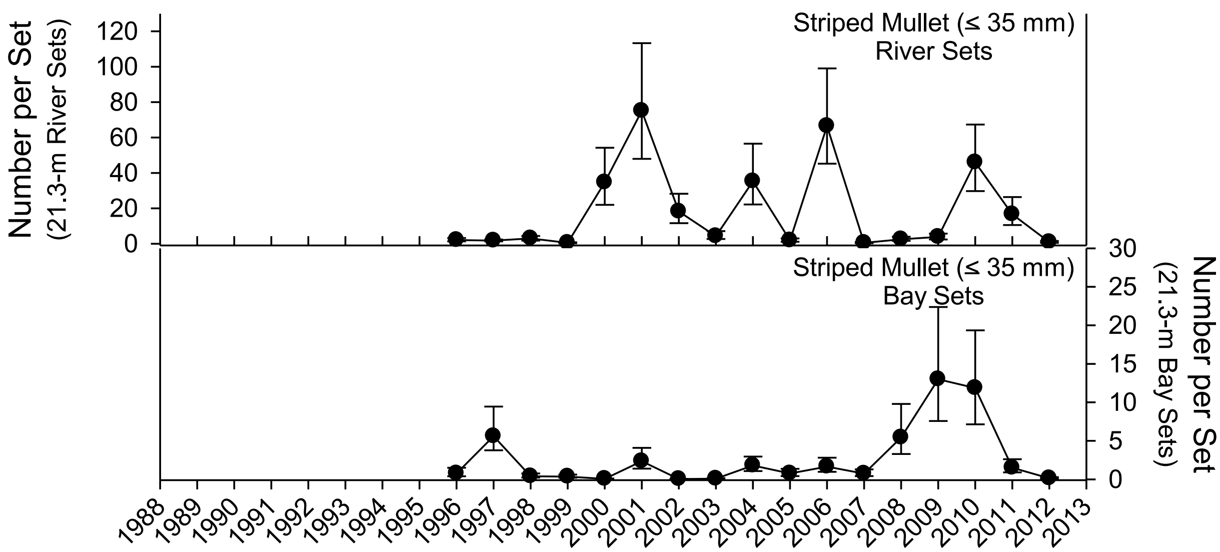
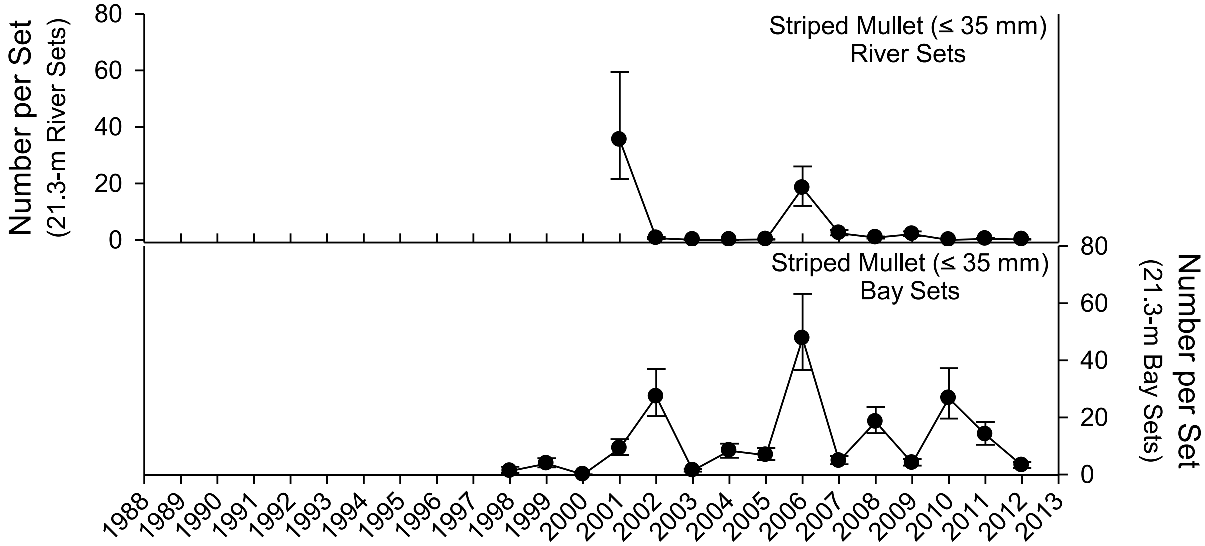


Figure SP12-07. Relative abundance of young-of-the-year striped mullet (≤ 35 mm SL) collected in 21.3-m seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for river and bay sets were created to examine differences in recruitment between the two habitats. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

Apalachicola Bay



Cedar Key

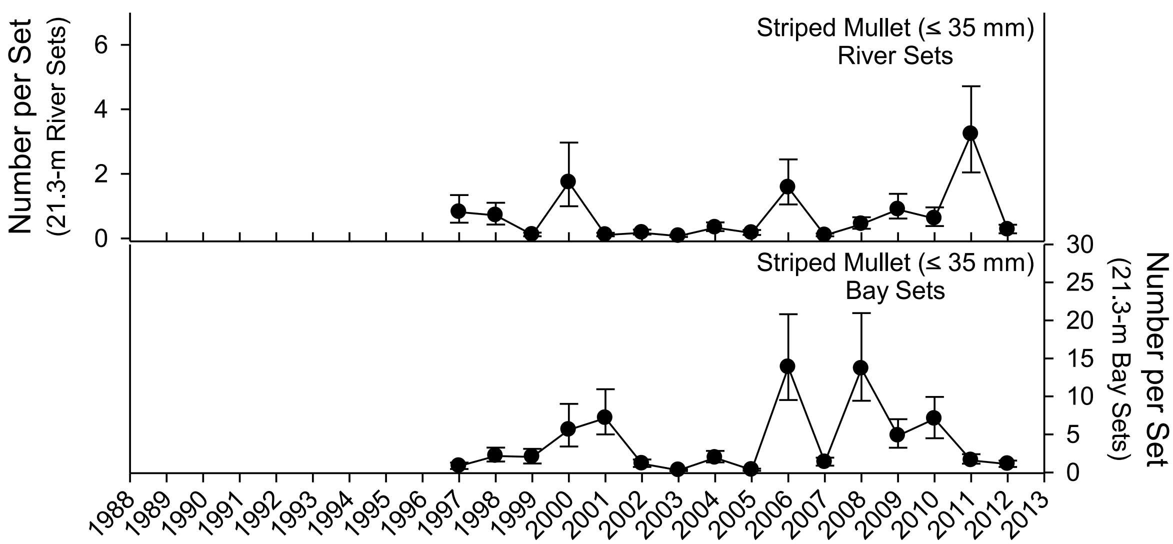
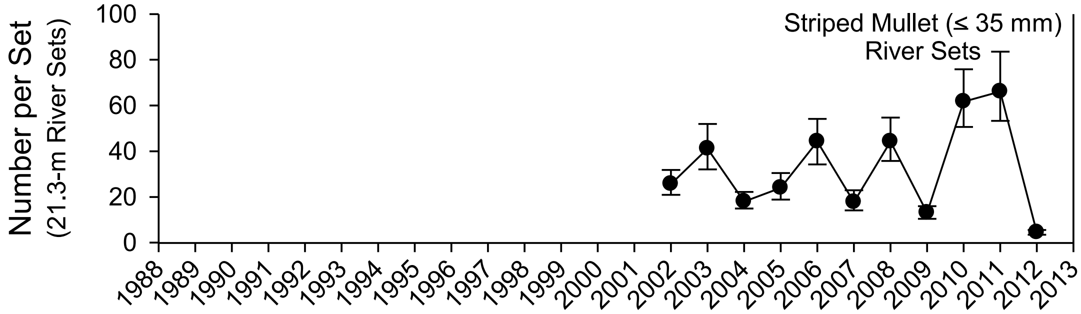


Figure SP12-07. (Continued) Relative abundance of young-of-the-year striped mullet (≤ 35 mm SL) collected in 21.3-m seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

Northeast Florida



Indian River Lagoon

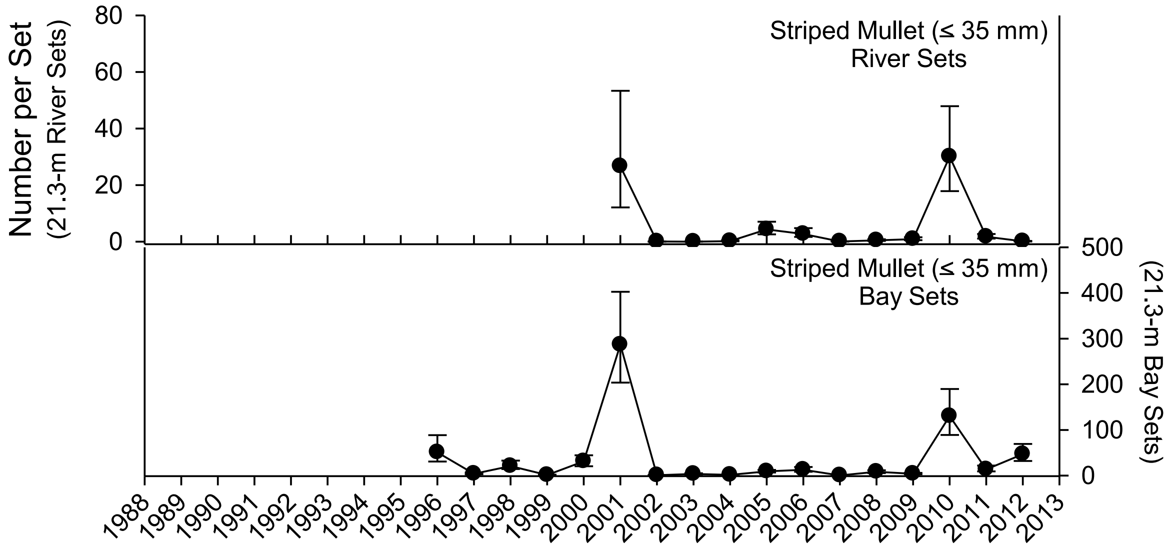


Figure SP12-07. (Continued) Relative abundance of young-of-the-year striped mullet (≤ 35 mm SL) collected in 21.3-m seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems.

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Pinfish, *Lagodon rhomboides*

The pinfish, *Lagodon rhomboides*, is an ecologically and recreationally important sparid found in marine and estuarine waters from Massachusetts to Texas (Bigelow and Schroeder 1953; Caldwell 1957). It is one of the most abundant resident species in estuaries of the northeastern Gulf of Mexico (Hoese and Jones 1963; Hansen 1970; Ogren and Brusher 1977). Densities of pinfish have been found to be positively correlated to seagrass and drift algae cover (Rydene and Matheson 2003). Studies have shown that predation by pinfish plays a role in the organization of seagrass macro benthic faunal assemblages (Young et al. 1976; Young and Young 1977). The pinfish is also a major link between primary and secondary production as individuals >60 mm standard length (SL) consume and digest seagrasses and encrusting epiphytes (Stoner 1980; Weinstein et al. 1982; Montgomery and Targett 1992). Pinfish of all sizes are commonly targeted by anglers for use as bait when fishing for recreationally important species such as sailfish (*Istiophorus platypterus*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), southern flounder (*Paralichthys lethostigma*), common snook (*Centropomus undecimalis*), and gag grouper (*Mycteroperca microlepis*).

To monitor year-class strength and improve the ability to predict future pinfish abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) pinfish recruitment into selected Florida estuaries. Abundance data for YOY pinfish ≤ 80 mm SL that were collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of sampling inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. Young-of-the-year pinfish recruited to habitats sampled with our 21.3-m seines primarily from January through June, coinciding with the published recruitment period for this species (Nelson 1998). The maximum size that individuals of YOY cohorts attain by June is 80 mm SL (Nelson 1998). Indices of abundance for YOY pinfish were not calculated for the southern Indian River Lagoon where 21.3-m seines were not included as a sampling gear. Due to historical changes in sampling design, only consistently-sampled zones in each estuary were included to generate annual IOAs. The FIM program also monitored the abundance of larger pinfish within these same Florida estuarine systems (including the southern Indian River Lagoon). Data from stratified-random 183-m haul seines were used to develop IOAs for fish ≥100 mm SL. Those IOAs were derived by including all pinfish ≥100 mm SL collected between January and December from 1996 – 2012.

Annual IOAs of YOY pinfish in Tampa Bay and Charlotte Harbor generally had similar trends, although relative abundance was much higher in Charlotte Harbor (Figure SP12-08). In Tampa Bay, IOAs of YOY pinfish indicated stronger year classes occurred in 1997, 2000, 2001, 2004, and 2010 in riverine habitats and in 1989, 1991, 1992, 1995, 2001, and an exceptional year class in 2010 in bay habitats. In Charlotte Harbor bay habitats, stronger year classes were evident in 1994, 1995, 2001, 2004, 2010, and 2011. Sub-adult and adult pinfish IOAs typically did not track very well with abundance of YOY pinfish in either estuary. The strongest year classes for sub-adult and adult pinfish were observed in 2010-2012 in Tampa Bay. In Charlotte Harbor, a general increase in IOAs of sub-adult and adult pinfish was observed from 2008-2012.

Annual IOAs of pinfish on the northwest coast of Florida (Apalachicola Bay and Cedar Key) have had similar trends over time (Figure SP12-08). Annual IOAs of YOY pinfish in bay habitats in Apalachicola Bay were low between 1998 and 1999 and have remained at higher but variable levels since. Stronger year classes were evident in 2001, 2002, 2007, and 2009. In Cedar Key, strong year classes were evident in 2000-2002, 2004, 2007, and 2011 in riverine habitats and in 2000-2002, 2004, and 2007-2008 in bay habitats. Annual IOAs of sub-adult and adult pinfish in Apalachicola Bay remained stable from 1997-2012 with peaks occurring in 2003, 2007, and 2010. In Cedar Key, annual IOAs for sub-adult and adult pinfish indicated an overall declining trend from 1997 through 2006 with peaks in 2002 and 2004.

Annual IOAs on the east coast of Florida were quite disparate by estuary (Figure SP12-08). Annual IOAs of YOY pinfish in northeast Florida varied without trend from 2001-2009 with exceptional year classes in 2010 and 2011. Annual IOAs of sub-adult and adult pinfish in northeast Florida have tracked well with YOY abundances since 2004. Annual IOAs of YOY pinfish in the northern Indian River Lagoon have remained stable at low levels with the exception of strong year classes in 1998, 2004, and 2010.

Annual IOAs of sub-adult and adult pinfish in the northern Indian River Lagoon varied without trend throughout most of the time period with the exception of extremely high abundance in 2004 and 2011. Annual IOAs of sub-adult and adult pinfish in the southern Indian River Lagoon have remained stable at lower levels.

Length-frequency data collected across all years sampled with 183-m haul seines suggested that this gear provides valuable information on sub-adult and adult pinfish (Figure SP12-09). Length-frequency distributions were generally unimodal in Tampa Bay, Charlotte Harbor, northeast Florida, and the northern Indian River Lagoon, while in Apalachicola Bay, southern Indian River Lagoon, and Cedar Key, distributions were bimodal. Sub-adult and adult pinfish began to become susceptible to capture in 183-m haul seines at 50-55 mm SL. The peak size in most of the length frequency histograms was ~75mm SL, except in northern Indian River Lagoon where the largest proportion of fish captured were ~120-125 mm SL.

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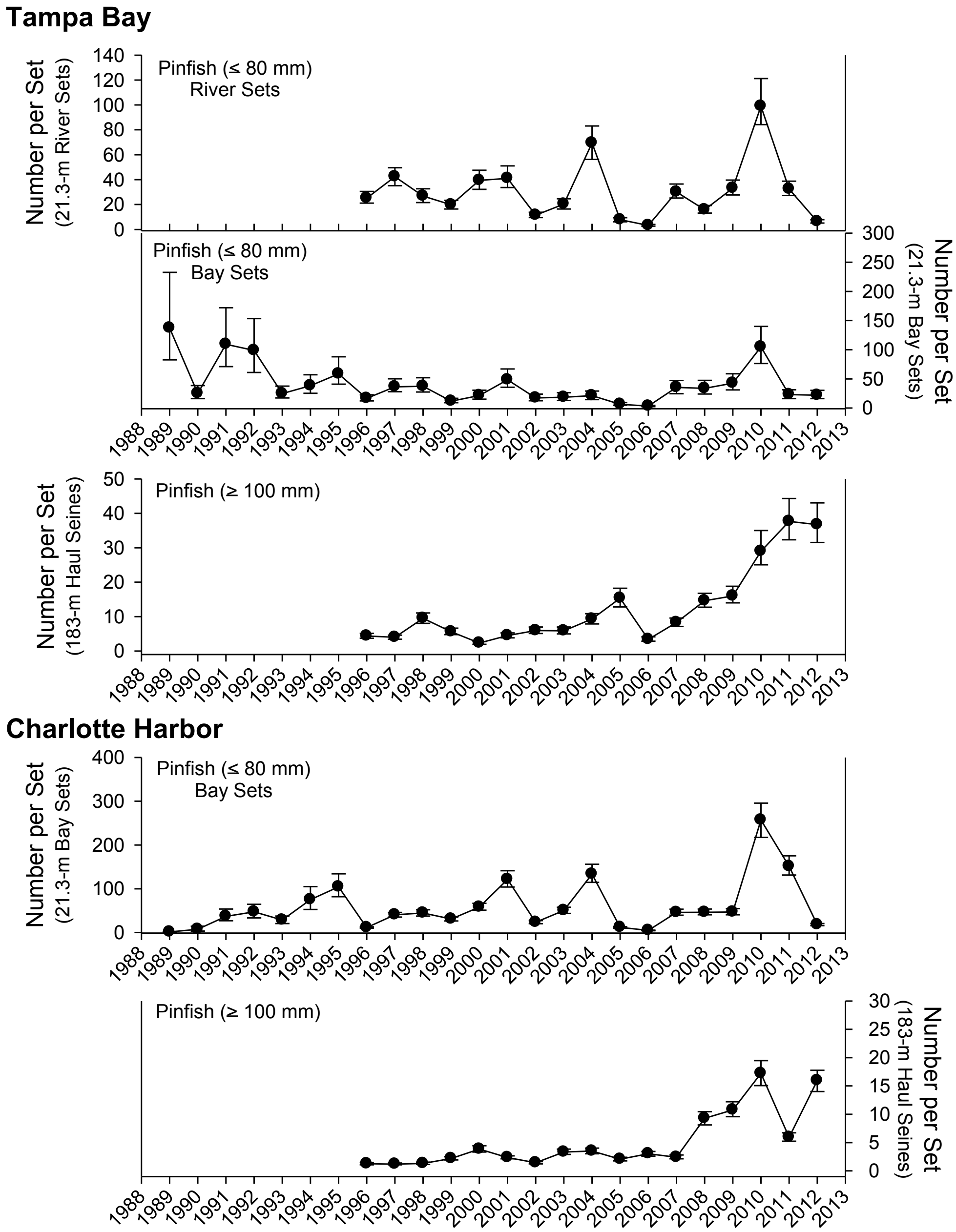

Figure SP12-08. Relative abundance of young-of-the-year pinfish (≤ 80 mm SL) collected in 21.3-m seines between 1989 and 2012 and of sub-adult/adult pinfish (≥ 100 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for riverine and bay habitats were created to examine differences in recruitment. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

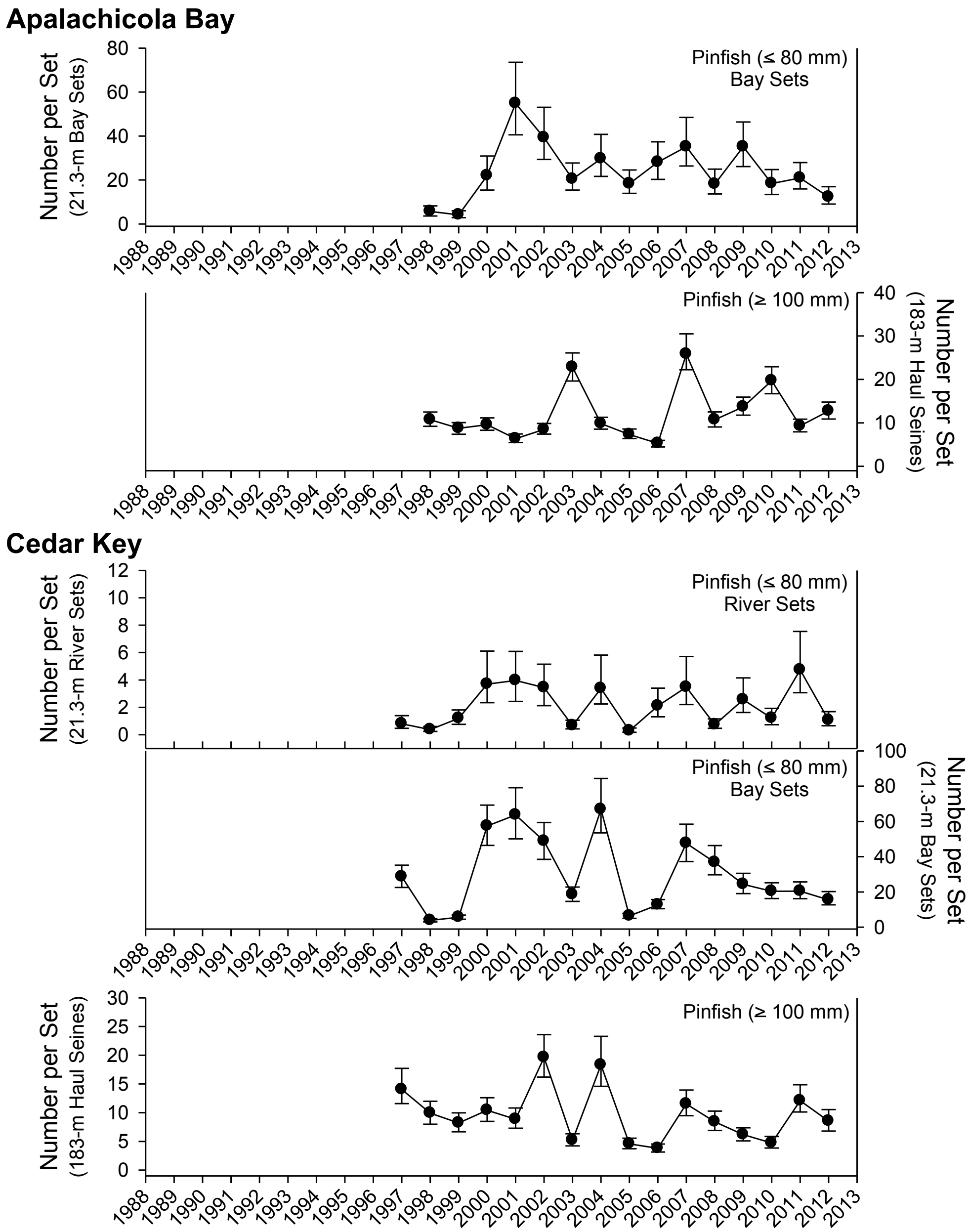

Figure SP12-08. (Continued) Relative abundance of young-of-the-year pinfish (≤ 80 mm SL) collected in 21.3-m seines between 1997 and 2012 and of sub-adult/adult pinfish (≥ 100 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

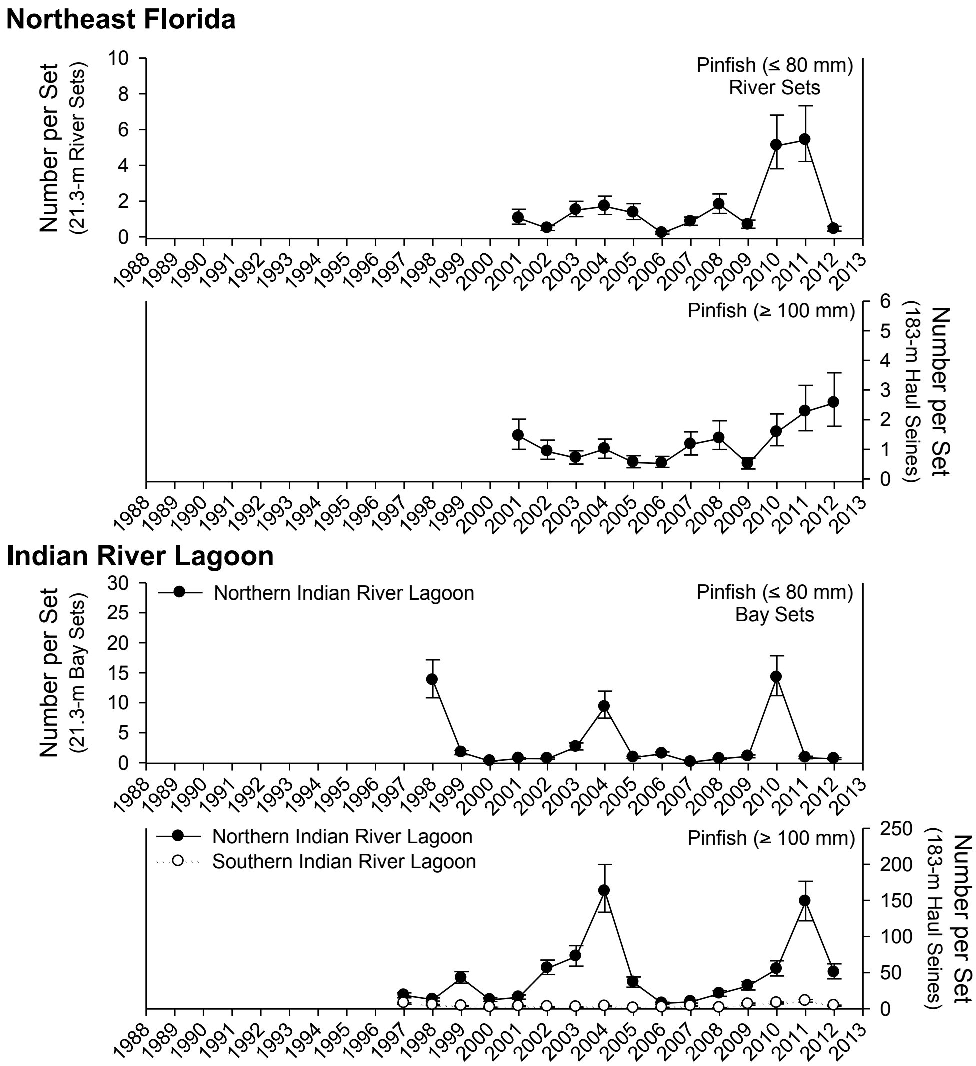

Figure SP12-08. (Continued) Relative abundance of young-of-the-year pinfish (≤ 80 mm SL) collected in 21.3-m seines between 1998 and 2012 and of sub-adult/adult pinfish (≥ 100 mm SL) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

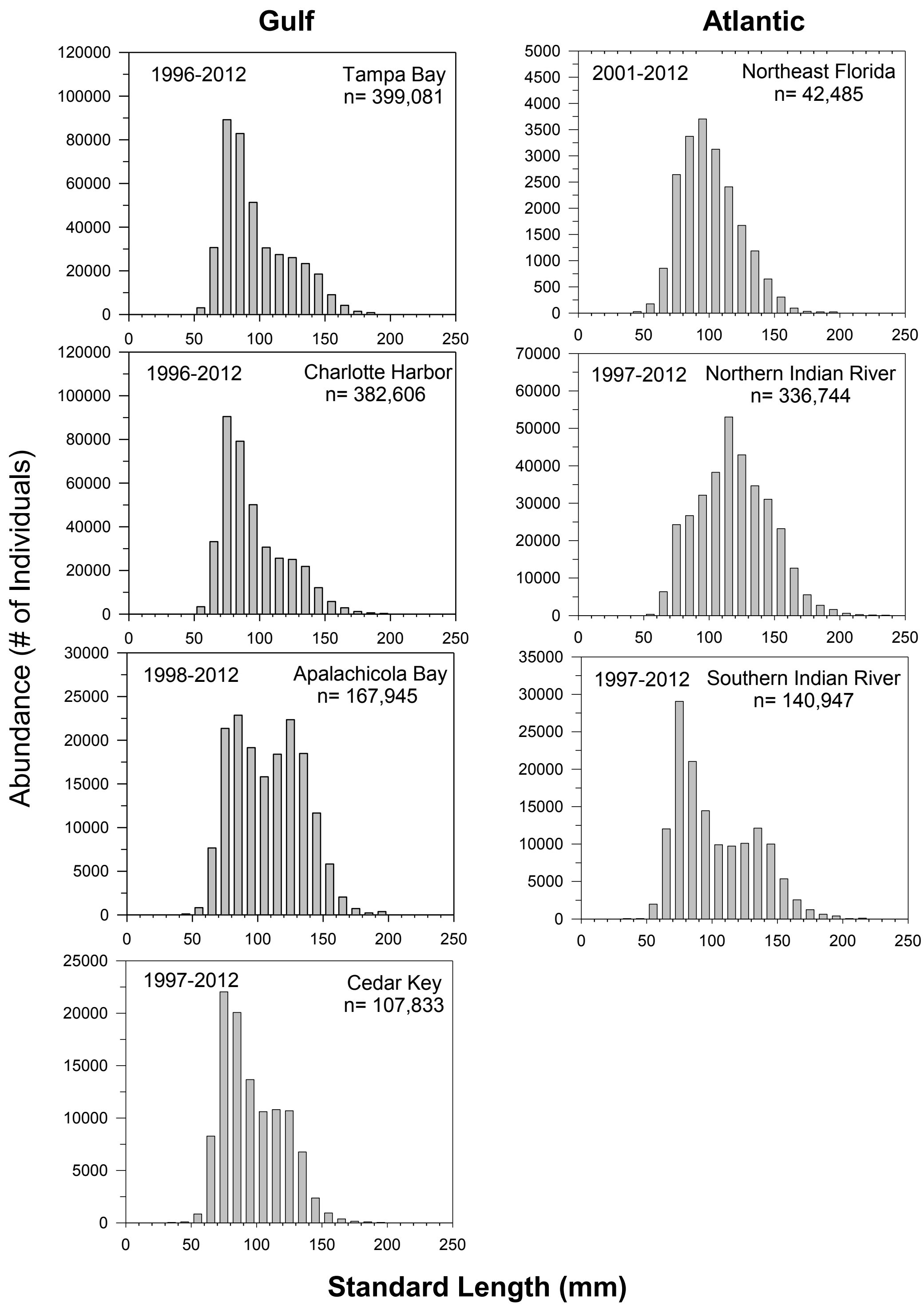

Figure SP12-09. Length frequency diagrams of pinfish collected using 183-m haul seines. All lengths are standard length (SL). Note different scales and years of collection.

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Common Snook, *Centropomus undecimalis*

Common snook, *Centropomus undecimalis*, are found in estuaries, adjacent rivers, and in nearshore waters of the tropical and subtropical western Atlantic and Gulf of Mexico (Gilmore et al. 1983; Rivas 1986; Winner et al. 2010). This species supports an important recreational fishery in Florida and is one of the most popular gamefish in state waters. There has been no legal commercial harvest of common snook in Florida since the State Legislature declared it a gamefish in 1957 and prohibited its sale. The median total common snook harvest on the Atlantic and Gulf of Mexico (Gulf) coasts during the past 20 years has been variable, but generally increasing (Muller and Taylor 2006). Recent estimates of transitional spawning potential ratios were below 40% on both coasts, and common snook are therefore considered overfished; if current fishing mortality rates continue, this species will remain overfished (Muller and Taylor 2006). In response to cold-weather fish kills that occurred statewide during 2010, the FWC issued executive orders that prohibited the harvest of common snook through August 31, 2010, and subsequent executive orders extended the closure through August 31, 2011 (State of Florida Executive Order No. E0 10-45). At the June 2011 Florida Fish and Wildlife Conservation Commission Meeting, Commissioners concluded that the Atlantic coast stock was less severely impacted by cold weather than the Gulf coast. Based on this information, the Commissioners ruled to reopen common snook harvest on September 1, 2011 in Atlantic waters, but Gulf coast waters remain closed through August 31, 2013.

In Florida, common snook populations from the Atlantic and Gulf coasts have been genetically identified as separate stocks and are managed separately (Tringali and Bert 1996; Taylor et al. 1993). Histological evidence shows that common snook are protandric hermaphrodites, i.e., they begin life as males and some become females after maturation (Taylor et al. 2000). Males typically become sexually mature at ~200 mm standard length (SL) and females at ~680 mm SL (Taylor et al. 2000). The reproductive season for common snook extends at least six months; April through September on the Gulf coast and April through October on the Atlantic coast (Taylor et al. 1998).

In an effort to monitor year-class strength and to improve the ability to predict future adult common snook abundances, the FIM program developed relative indices of abundance (IOAs) of YOY common snook recruitment into selected Florida estuaries. Indices were not calculated for estuaries where 21.3-m seines were not deployed or where limited data were available. Abundance data for YOY common snook ≤ 50 mm SL collected in stratified-random 21.3-m seine samples were examined to assess recruitment into two Florida estuaries: Tampa Bay on the Gulf coast and the northern Indian River Lagoon on the Atlantic coast. Although collected in limited numbers throughout the year, YOY common snook were primarily captured in riverine habitats sampled with 21.3-m seines from August through November in Tampa Bay and July to February in the northern Indian River Lagoon. Only data from this habitat and these primary time periods were used in developing IOAs for YOY common snook.

The FIM program also monitored the relative abundances of large juvenile and adult common snook in Florida estuaries within the range of this species. Individuals between 200 mm and 609 mm SL were included in the IOA since they are considered reproductively mature males and serve as a "pre-recruitment" indicator to the fishery. The upper limit of 609 mm SL used in this IOA corresponds to the lower regulatory minimum size of 711 mm total length (TL). Data from stratified-random 183-m haul seines were used to develop IOAs for reproductively mature common snook within Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, and southern Indian River Lagoon. These IOAs were derived by including all common snook between 200 - 609 mm SL collected between January and December from 1996 – 2012.

Annual IOAs of YOY common snook in Tampa Bay have been fairly stable, albeit low, between 1996 and 2012 with strong year classes evident in 1999 and 2012 (Figure SP12-10). Annual IOAs of pre-fishery adult common snook (200 - 609 mm SL) on Florida's west coast varied by estuary. The trend in Tampa Bay increased from 1996 through 2003, decreased in 2004, and remained fairly stable through 2008. In 2009 and 2010, abundance decreased substantially, remained low through 2011, and increased slightly in 2012. Annual IOAs of pre-fishery adult common snook in Charlotte Harbor increased from 1996 through 2002, decreased in 2003, and remained relatively stable through 2009. After a sharp decline in the IOAs of pre-fishery adult common snook in 2010, abundances increased in 2011 and 2012 (Figure SP12-10).

Annual IOAs of YOY common snook in northern Indian River Lagoon have fluctuated substantially since 2001 (Figure SP12-10). Abundance peaked in 2002 followed by a sharp decline through 2004, substantially lower than any years prior or since. This year of extremely low recruitment may have resulted from displacement due to multiple hurricanes and not an actual decrease in abundance in this estuarine system. Young-of-the-year recruitment increased after 2004 with a strong recruitment peak in 2007, followed by another sharp decline through 2010 and a slight recovery in 2011 and 2012. Annual IOAs of pre-fishery adult common snook (200-609 mm SL) remained stable from 1997 through 2008 in the northern Indian River Lagoon with an additional small peak in 2004. Abundance in the northern IRL declined sharply from 2009 through 2011 and increased slightly in 2012. Annual IOAs of pre-fishery adult common snook in the southern Indian River Lagoon were high from 1997-1999, declined in 2000, and remained fairly stable through 2009; however, as was observed in the other estuaries analyzed, abundance decreased substantially in 2010 (e.g., cold kill event), remained low through 2011, and increased slightly in 2012 (Figure SP12-10).

Length-frequency data collected with 183-m haul seines suggested that this gear provides valuable information on larger juvenile and adult common snook (Figure SP12-11). Length-frequency distributions were unimodal with a peak in distribution at 380 - 500 mm SL. There was no indication that the number of individuals declined rapidly upon entering the legal slot-limit (609 - 699 mm SL on the Gulf coast and 609 - 677 mm SL on the Atlantic coast).

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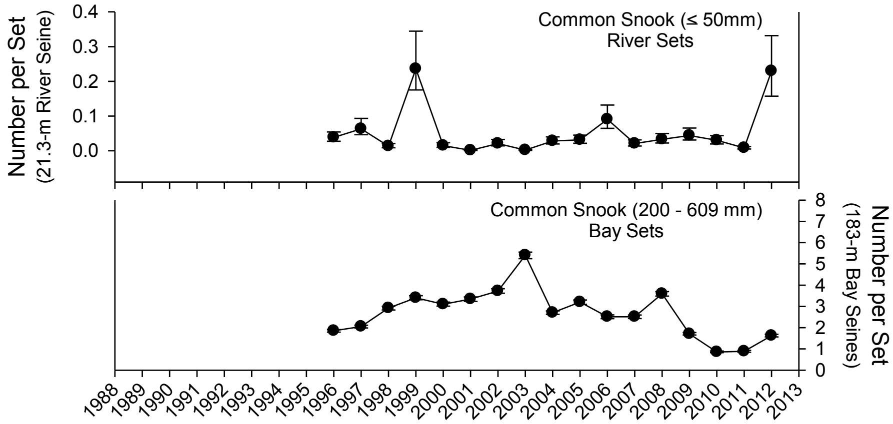
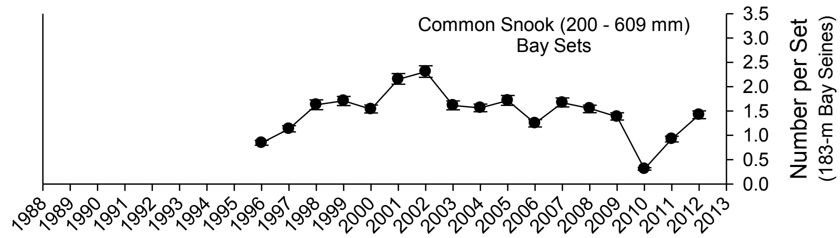
Tampa Bay



Charlotte Harbor



Indian River Lagoon

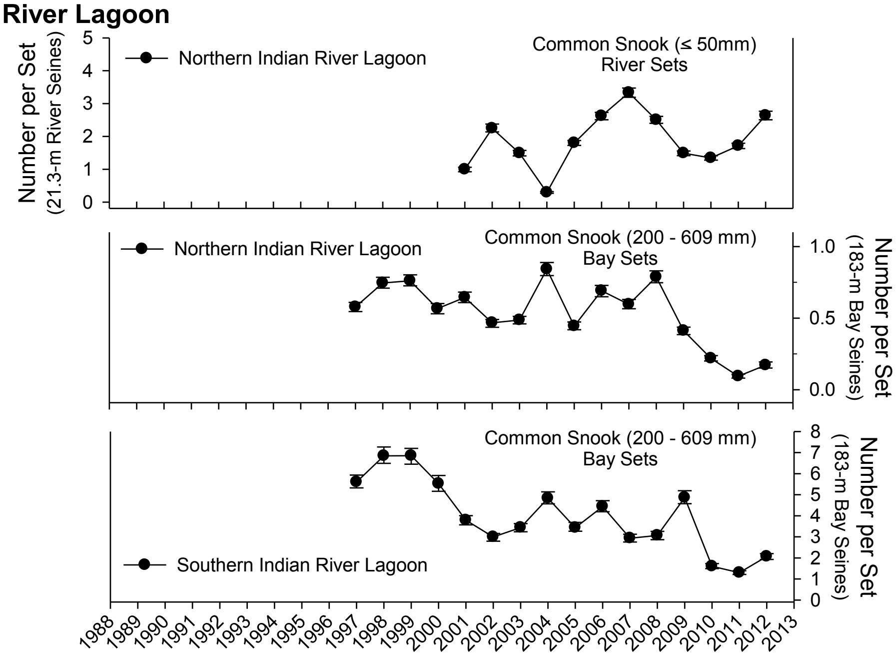


Figure SP12-11. Relative abundance of young-of-the-year common snook (≤ 50 mm SL) collected in 21.3-m seines and pre-fishery adult common snook (200 - 609 mm SL) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from three Florida estuarine systems. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

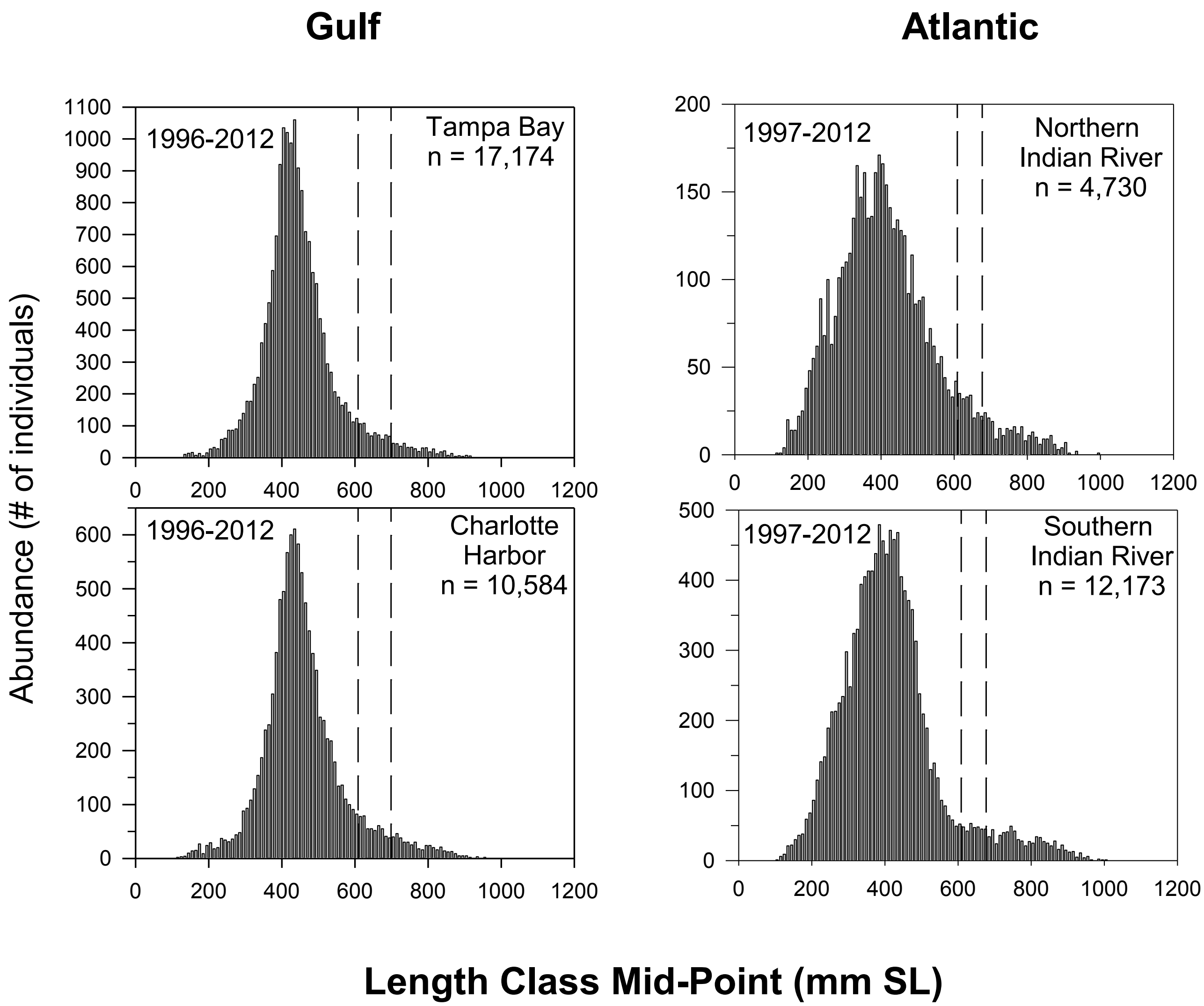


Figure SP12-12. Length frequency diagrams of sub-adult and adult common snook collected using 183-m haul seines. All lengths are standard length (SL). Vertical dashed lines denote the recreational slot limit for this species (609 to 699 mm SL on the Gulf coast and 609 to 677 mm SL on the Atlantic coast). Note different scales and years of collection.

Blue Crab, *Callinectes sapidus*

Blue crabs, *Callinectes sapidus*, support valuable commercial and recreational fisheries along the Gulf of Mexico (Gulf) and Atlantic coasts of Florida. Commercial landings on Florida's Gulf coast averaged 8.7 million pounds per year from 1996 to 2004 and were worth an estimated 6.9 million dollars annually (NMFS 2004). Florida legislation banned entanglement nets in 1995, raising the concern that blue crab populations might experience increased fishing pressure from former net fishers. Even though annual commercial landings in the Gulf peaked in 1998 at almost 13 million pounds, catch-per-unit effort was already beginning to decline (Steele and Bert 1998). The lowest commercial landings of blue crab occurred in 2001 for the Gulf coast and 2002 for the Atlantic coast. Commercial fishing effort for blue crab has been limited in recent years by restricted species permits, although there are no quotas for blue crab landings. The annual recreational harvest of blue crab is not currently known or surveyed, so the total catch may be much higher than the recorded commercial landings. The most recent blue crab stock assessment for Florida shows an increase in blue crab abundance in recent years (2003-2005), indicating resiliency to fishing pressure (Murphy et al. 2007).

Blue crabs are an integral part of estuarine ecosystems, scavenging carrion and preying upon young-of-the-year (YOY) fishes, mollusks, and crustaceans. They play a valuable role in controlling populations of other estuarine species. In areas with depleted blue crab populations, mollusks that graze on *Spartina alterniflora* can become overpopulated and contribute to salt marsh die-offs (Sillman and Bertness 2002). Blue crab are prey for important sportfish species such as black drum (Simmons and Breuer 1962), red drum (Gunter 1945; Scharf and Schlicht 2000), common snook (Blewett et al. 2006), and cobia (Meyer and Franks 1996). In addition to predation and harvest by humans, blue crab populations are affected by a myriad of other factors such as freshwater inflows (Wilber 1994), pesticides, disease, and habitat alteration. Spawning in Florida generally occurs from March through October with some limited spawning reported during winter months (Steele and Bert 1994).

To monitor year-class strength and improve the ability to predict future adult blue crab abundances, relative indices of abundance (IOAs) were developed for young-of-the-year (YOY) blue crab recruitment into selected Florida estuaries. Abundance data for YOY blue crab (≤ 80 mm carapace width [CW]; Archambault et al. 1990; Steele and Bert 1994) collected in stratified-random 21.3-m seine samples were examined to assess recruitment into six Florida estuaries: (in order of inception) Tampa Bay, Charlotte Harbor, northern Indian River Lagoon (IRL), Cedar Key, Apalachicola Bay, and northeast Florida. Young-of-the-year blue crab were collected with stratified-random 21.3-m seines during all months, but length-frequency histograms indicated they were primarily collected from August through March. These months were therefore used to define the respective recruitment seasons for each estuary in subsequent analyses. Data collected from August through December of each year were combined with data from January through March of the following year to create a biological year of data. The IOAs for 2012 therefore only included data from August through December 2012. Indices of abundance of YOY blue crab were not calculated for southern IRL where 21.3-m seines were not included as a sampling gear. Although sampling with 21.3-m seines began in northern IRL in 1990, YOY blue crab IOAs were only calculated for data after 1997 for bay seines and 2000 for river seines, at which time Zones H and F were added, respectively, and yielded adequate numbers of YOY blue crabs for analyses.

The FIM program also monitored the abundance of adult blue crab (>80 mm CW) within these same Florida estuaries (including southern IRL) using stratified-random 183-m haul seines. Note, however, that some individuals classified as adults (>80 mm CW) may still have been reproductively immature as a result of individual variation in growth rates (Archambault et al. 1990; Steele and Bert 1994). Due to the time lag in the calculation of YOY IOAs (August through March of the following year), adult crabs from a given year likely were the parents of the YOYs in that year's IOAs.

Annual IOAs of YOY blue crab in riverine and bay habitats of Tampa Bay have been relatively stable since 1989 with a few pronounced strong year classes (Figure SP12-12). In Tampa Bay riverine habitats, increases in abundance were evident from 1998-2001, 2006, and 2010. Within bay habitats of Tampa Bay, IOAs of YOY blue crab were greatest in 1998, 2003, and 2010. Annual IOAs of YOY blue crab in Charlotte

Harbor indicated an exceptional year class in 1998 for riverine habitats and strong year classes in 1991, 1998, and 2003 in bay habitats. Annual IOAs of adult blue crab in Tampa Bay peaked in 1996 and 1998 with increased abundance also evident in 2005-2006 and 2010-2011. Adult blue crab abundance in Charlotte Harbor followed a similar pattern with a large peak in 1998-1999 and, in general, increased abundance from 2004 through 2006 and in 2010.

The trends in annual IOAs of blue crab on Florida’s northwest coast varied between estuaries (Figure SP12-12). Annual IOAs of YOY blue crab in riverine habitats of Apalachicola Bay have been relatively stable with a peak in abundance in 2006. Young-of-the-year indices from bay habitats indicated higher abundances during the periods of 2003-2006 and 2009-2010. Annual IOAs of adult blue crab in Apalachicola Bay decreased from 1998 through 2004, and have remained relatively stable since with the exception of increased abundance seen in 2006 and 2009-2010. In Cedar Key, IOAs of YOY blue crabs in riverine habitats increased through 1999 and have remained at relatively low but stable levels through 2012. In Cedar Key bay habitats, YOY IOAs increased through 1998, declined steadily through 2005, increased again in 2006, and have returned to lower but stable levels. Annual IOAs of adult blue crab in Cedar Key were generally low and stable with peaks in abundance in 1998, 2004-2007, and 2010-2011.

Annual IOAs of blue crab on Florida’s Atlantic coast were varied (Figure SP12-12). Annual IOAs of YOY blue crab in northeast Florida increased in 2003, declined steadily through 2009, and then increased to a peak in 2011. Annual IOAs of adult blue crab were also variable with a peak in abundance in 2007-2008. Trends in YOY IOAs do not appear to correlate well with adult abundance in northeast Florida. Annual IOAs of YOY blue crab in riverine portions of the northern IRL increased throughout the time series, but relatively weak year classes were evident in 2001, 2004, 2009, and 2012. Young-of-the-year IOAs from northern IRL bay habitats were relatively stable throughout the time series with high abundances in 1999 and 2007. Trends in adult IOAs for the southern and northern IRL followed similar patterns. In both instances abundance was relatively low but stable with increases in abundance in 1998, 2000, and 2005 in the northern IRL and in 2006 and 2010 in the southern IRL. Trends in YOY abundance do not appear to be correlated well with adult abundance in the northern IRL.

Length-frequency data collected with 183-m haul seines suggested that this gear provides valuable information on adult blue crab in Florida estuaries (Figure SP12-13). Length-frequency distributions for Tampa Bay, Charlotte Harbor, and northern IRL were unimodal with a peak in distribution at ~70-150 mm CW. The distributions for Apalachicola Bay, Cedar Key, northeast Florida, and southern IRL were bimodal with peaks occurring at ~50-70 mm CW and ~120-150 mm CW.

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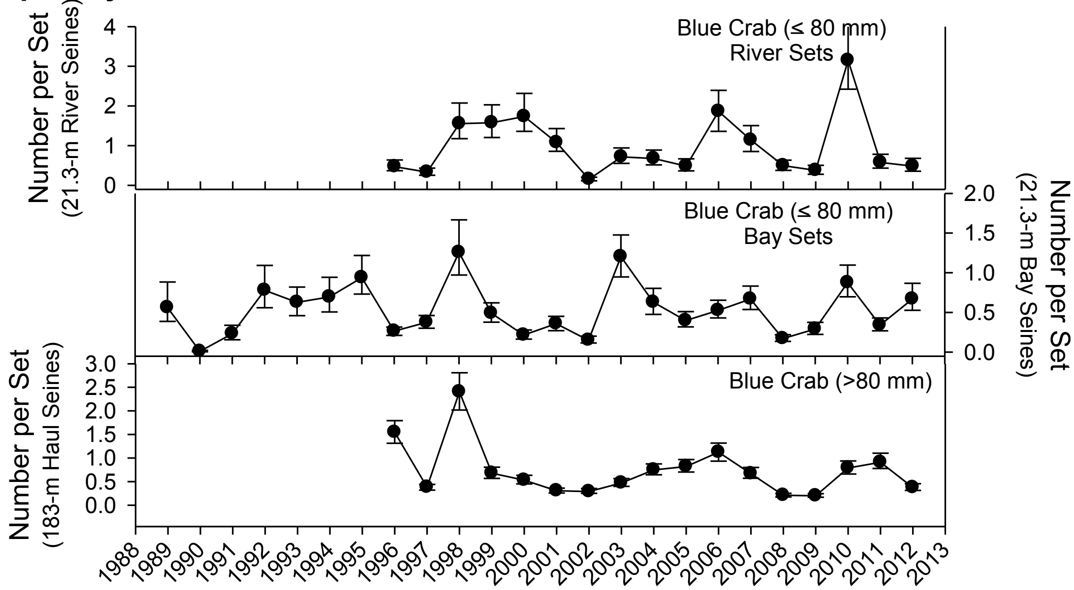
A) Tampa Bay



B) Charlotte Harbor

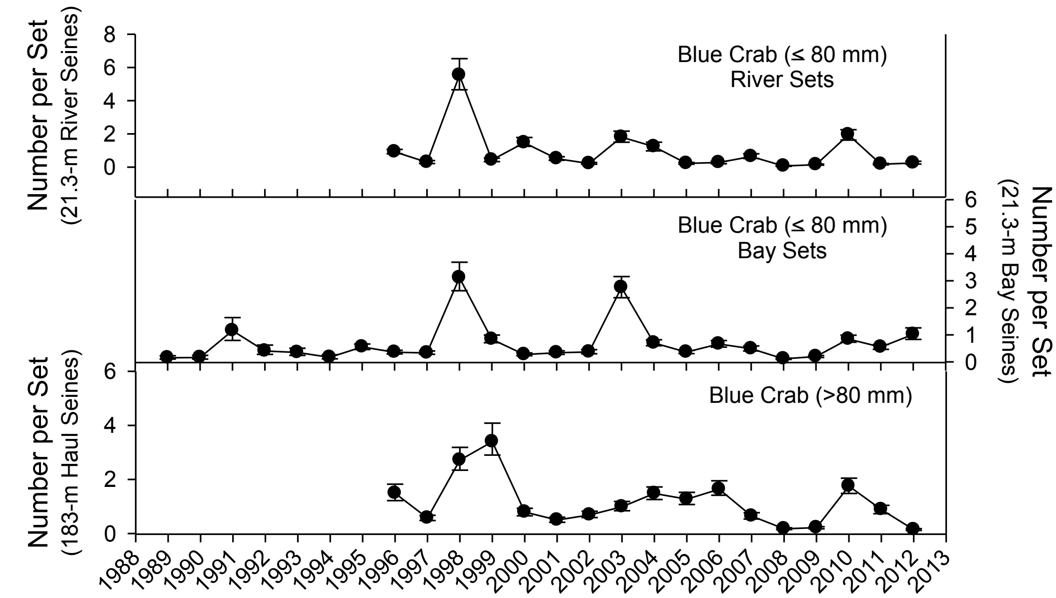
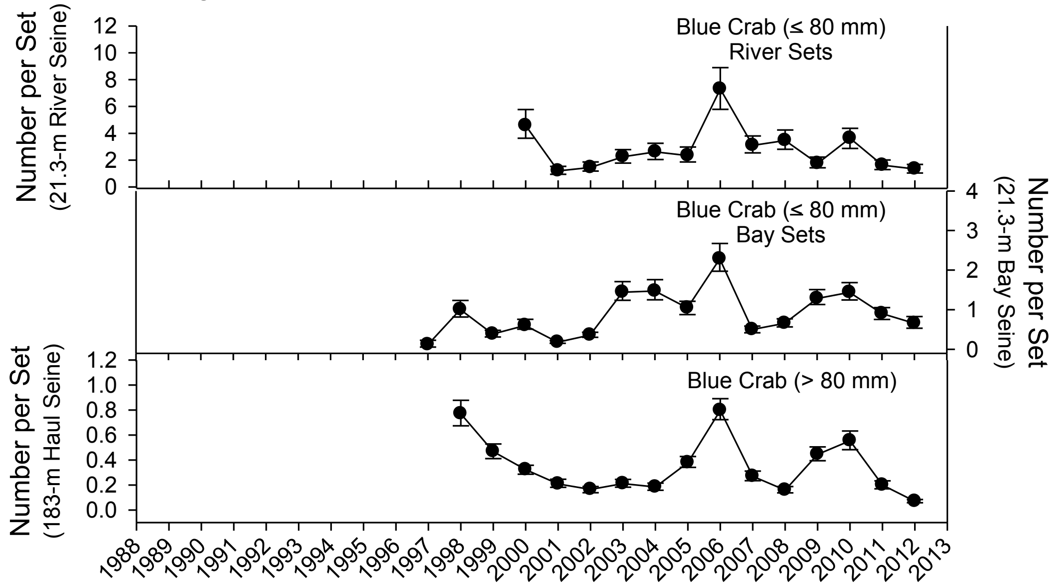


Figure SP12-13. Relative abundance of young-of-the-year blue crab (≤ 80 mm CW) collected in 21.3-m seines between 1989 and 2012 and of adult blue crab (> 80 mm CW) collected in 183-m haul seines between 1996 and 2012 during stratified-random sampling from six Florida estuarine systems. In some instances, where sufficient numbers of individuals were captured, separate plots for river and bay sets were created to examine differences in recruitment between the two habitats. Points represent the median estimate while the vertical bars represent the 25th – 75th percentiles. Note different scales of abundance among plots for different gears and estuaries.

C) Apalachicola Bay



D) Cedar Key

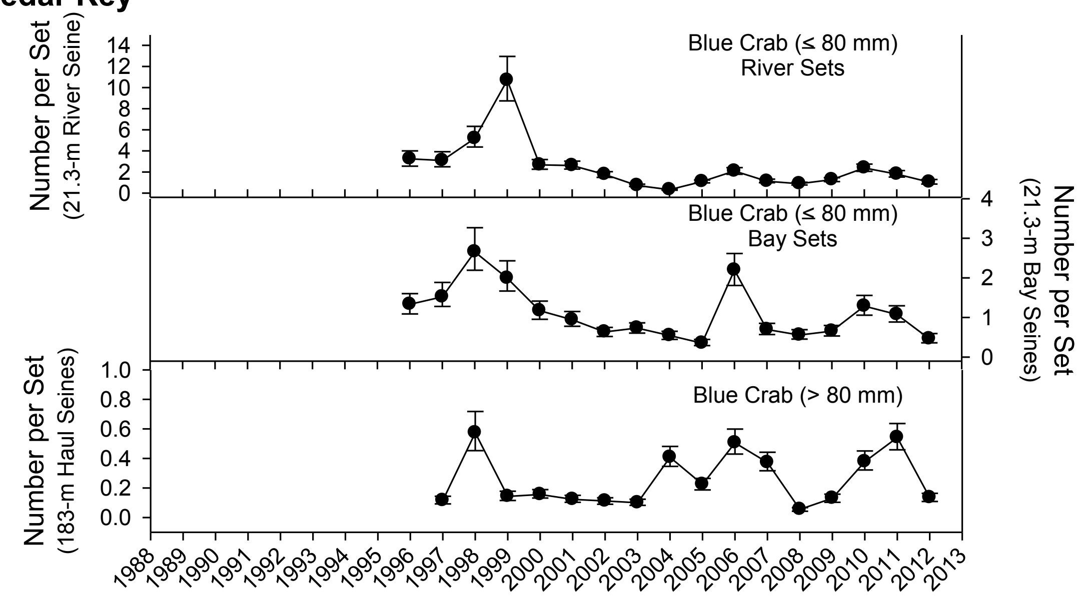
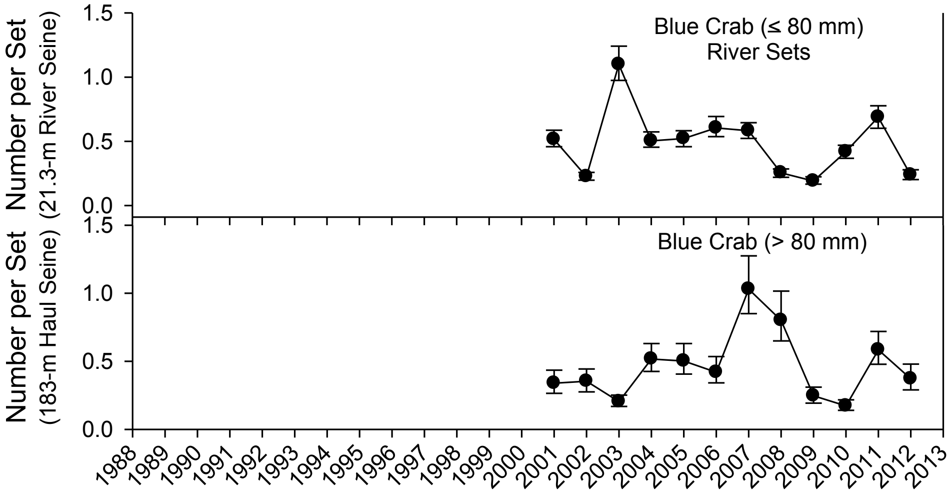


Figure SP12-13. (Continued) Relative abundance of young-of-the-year blue crab (≤ 80 mm CW) collected in 21.3-m seines between 1996 and 2012 and of adult blue crab (> 80 mm CW) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

E) Northeast Florida



F) Indian River Lagoon

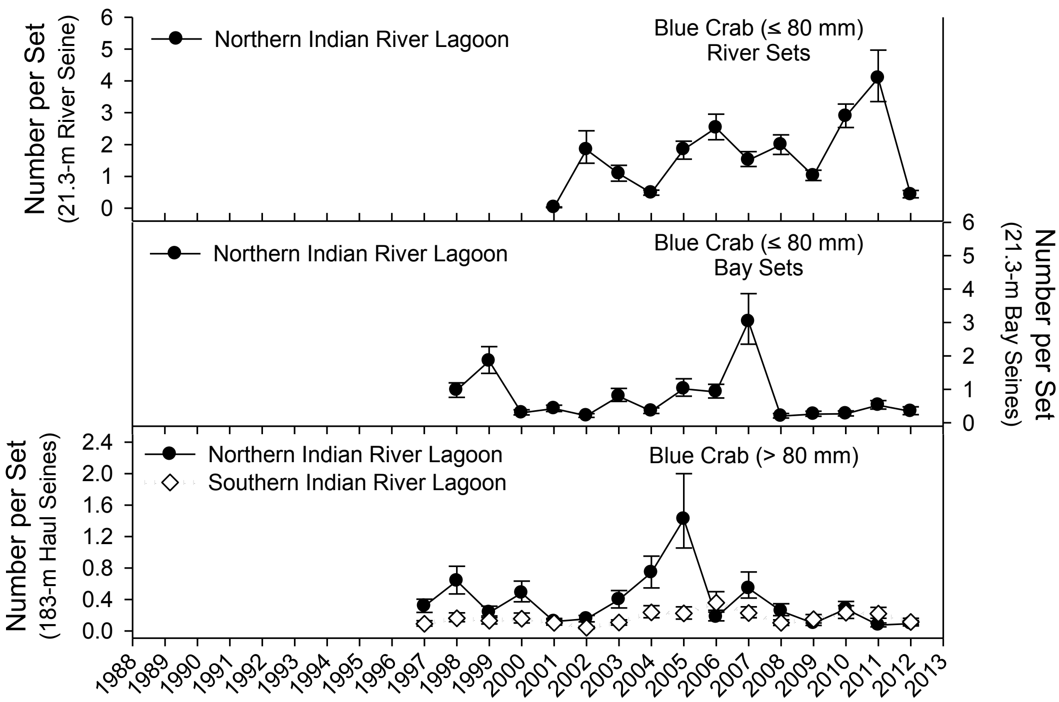


Figure SP12-13. (Continued) Relative abundance of young-of-the-year blue crab (≤ 80 mm CW) collected in 21.3-m seines between 1998 and 2012 and of adult blue crab (> 80 mm CW) collected in 183-m haul seines between 1997 and 2012 during stratified-random sampling from six Florida estuarine systems.

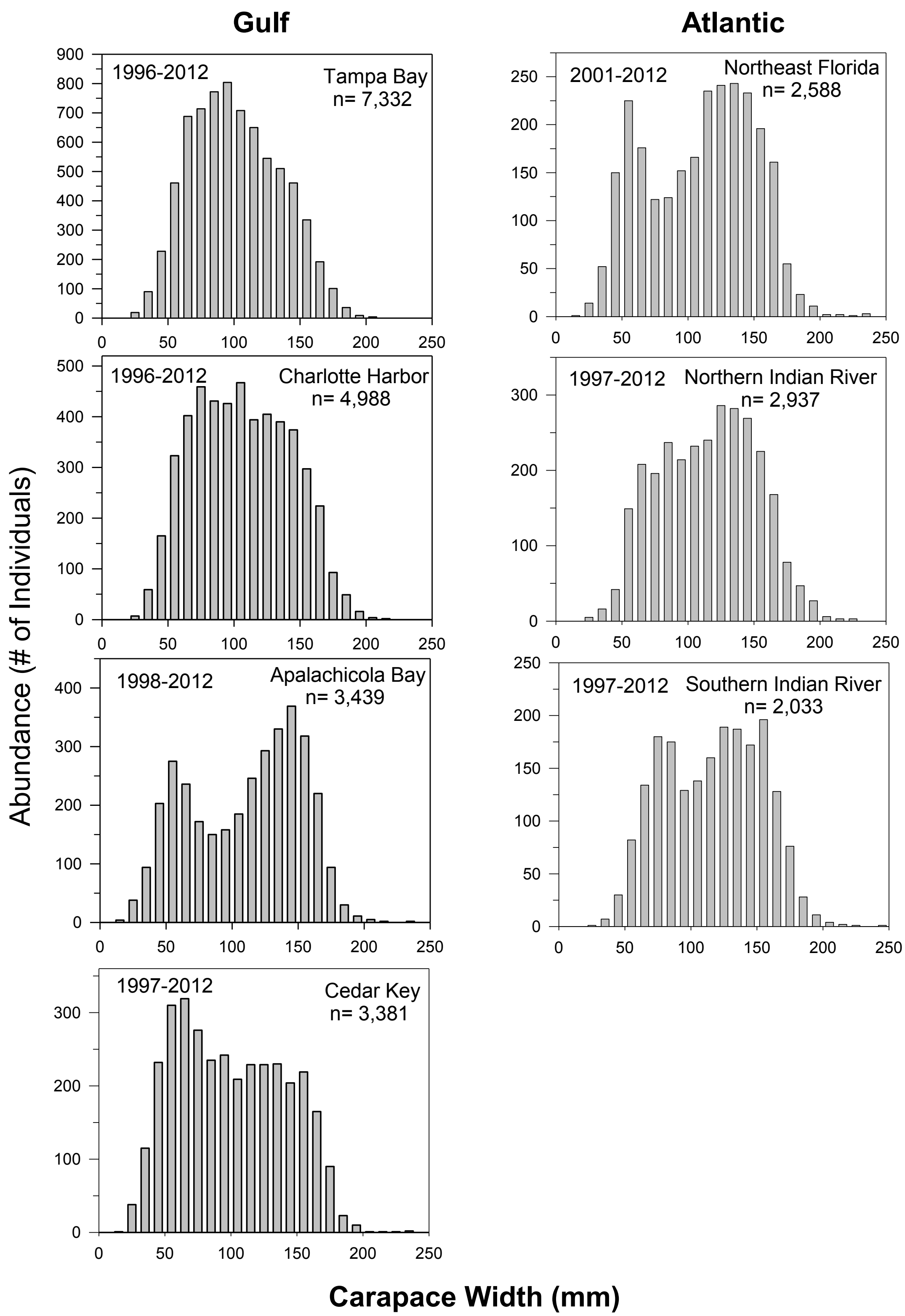


Figure SP12-14. Length frequency diagrams of blue crab collected using 183-m haul seines. All lengths are carapace width (CW). Note different scales and years of collection.