FWRI INHOUSE REPORT IHR 2006-10

Florida Fish and Wildlife Conservation Commission
Fish & Wildlife Research Institute

Fisheries-Independent Monitoring Program 2005 Annual Data Summary Report

Compiled by the Fisheries-Independent Monitoring Program Staff
Fish & Wildlife Research Institute
100 8th Avenue SE
St. Petersburg, FL 33701
Telephone: (727) 896-8626
Suncom: 523-1011
Fax: (727) 823-0166

Data presented in this report are preliminary in nature and may not be used without the prior written consent of Robert McMichael. This research is funded in part by the Department of the Interior, U.S. Fish and Wildlife Service Federal Aid for Sport Fish Restoration, Project F-43 and by funds from Florida Saltwater Fishing License sales.

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Overview

This report provides a summary of the data collected in 2005 by the Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute's (FWRI) Fisheries-Independent Monitoring (FIM) program, which completed its seventeenth year of sampling in Florida waters. Monitoring was conducted monthly using 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 OV05-01).

There were 1,559,209 animals collected in 6,633 hauls from all study areas (Figure OV05-01). The majority of animals (n=1,178,023) were collected in 21.3-m seines, which constituted 75.6% of the total catch. The majority of hauls were completed with 21.3-m seines (n=3,347), followed by 6.1-m otter trawls (n=1,752) and 183-m haul seines (n=1,534). Total sampling effort in the study areas ranged from 190 to 1,716 samples and the total number of animals collected ranged from 13,000 to 409,837 (Table OV05-02).

In all study areas, samples were dominated by bait and forage fishes such as *Anchoa mitchilli*, *Lagodon rhomboides*, *Leiostomus xanthurus*, *Menidia* spp., and *Eucinostomus* spp. (Table OV05-03). Recreationally and commercially important animals (i.e., Selected Taxa; see Table FIM05-02) accounted for 16.0% (n=250,220) of the overall FIM catch and comprised between 6.0 and 39.0% of the total net catches from each study area (Table OV05-03). Selected Taxa were very common in some areas when compared to dominant taxa—they were also among the ten most abundant taxa in some areas: *Menticirrhus americanus* and *L. xanthurus* in Tampa Bay; *Farfantepenaeus duorarum* in Charlotte Harbor; *Mugil cephalus, Micropogonias undulatus, and L. xanthurus* in the northern Indian River Lagoon; *L. xanthurus* and *M. cephalus* in Cedar Key; *Mugil curema*, *M. cephalus*, *Archosargus probatocephalus, Centropomus undecimalis, and M. undulatus* in the southern Indian River Lagoon; *L. xanthurus*, *M. undulatus, M. cephalus, Cynoscion arenarius, and Litopenaeus setiferus* in Apalachicola Bay; and *L. xanthurus*, *M. undulatus, L. setiferus*, and *M*. *cephalus* in northeast Florida (Tables OV05-03 and –04).

Seasonal directed sampling targeted *M. cephalus* and was conducted during the winter (January through February) and fall (September through December) of 2005. Trammel nets were used to sample *M. cephalus* in Tampa Bay and Charlotte Harbor. During 2005, 4,063 *M. cephalus* were collected (59 net sets) in Tampa Bay and 2,123 *M. cephalus* were collected (41 net sets) in Charlotte Harbor (see Directed Sampling section).

For fish health monitoring, 204 fish and select invertebrates (≥ 75 mm SL) were culled for analysis of external abnormalities (including parasites). Numbers of reported abnormalities from each study area ranged from 8 (Cedar Key) to 92 (Charlotte Harbor; see Fish Health section).

Species profiles, including indices of relative abundance, were created for several species, including *Sciaenops ocellatus* (red drum) *Cynoscion nebulosus* (spotted seatrout), *A. probatocephalus* (sheepshead), *M. cephalus* (striped mullet), *L. rhomboides* (pinfish), *C. undecimalis* (common snook), and *Callinectes sapidus* (blue crabs). Abundances were variable from year to year but had generally stable long-term means (see Species Profile section).

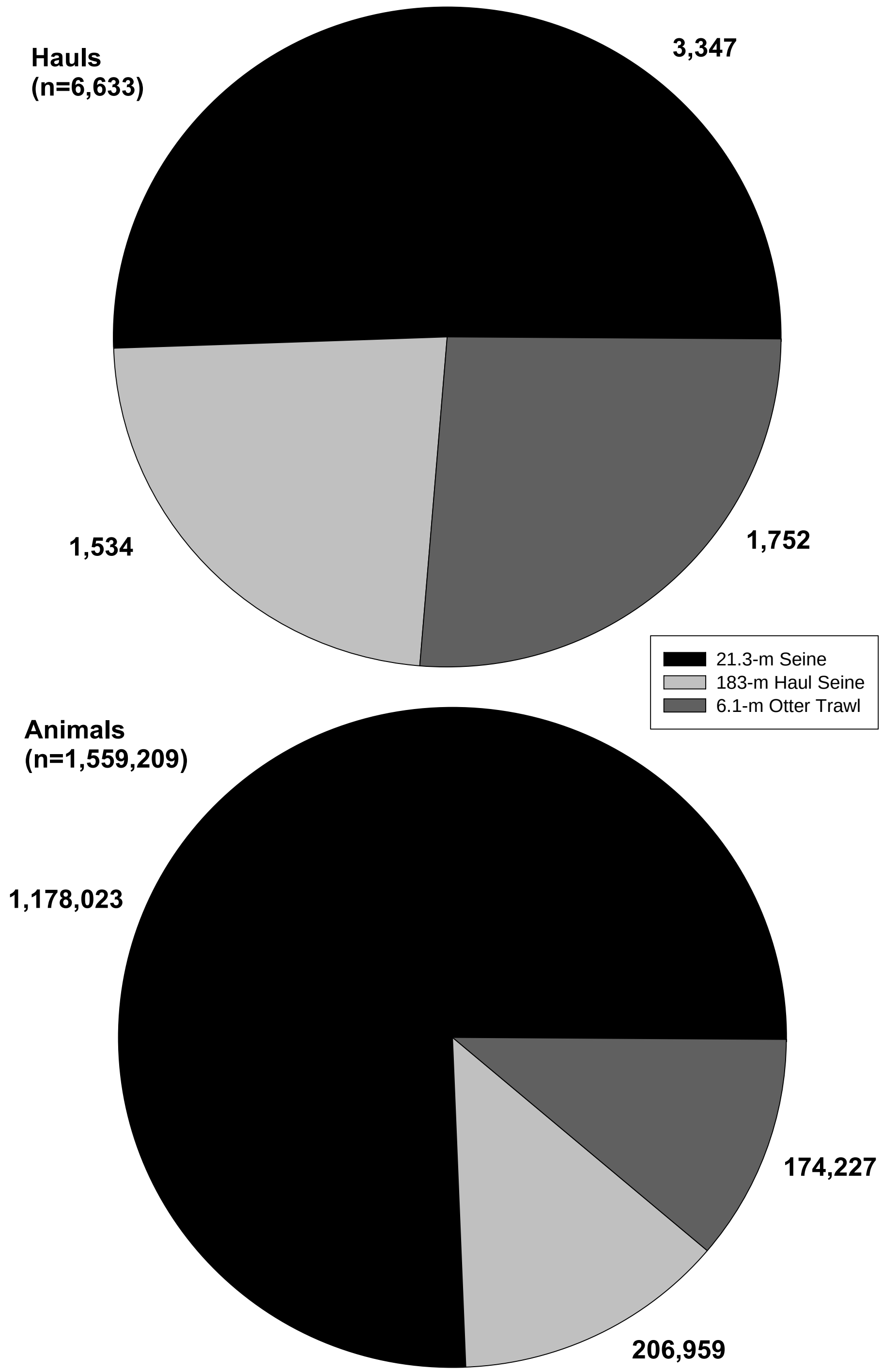

Figure OV05-01. Summary of catch and effort data during FIM program stratified-random sampling, 2005. 'Hauls' are the total number of deployments by gear and 'Animals' are the total number of animals collected by each sampling method.

Table OV05-01. Gear usage by field laboratories for FIM program stratified-random sampling, 2005.

Field Lab	21.3-m Seines		183-m	6.1-m
	Bay	River	Haul Seines	Otter Trawls
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 OV05-02. Summary of catch and effort data by area for FIM program stratified-random sampling, 2005. '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	672	271,233	924	342,263
183-m haul seine	240	32,226	276	31,172
6.1-m otter trawl	336	36,284	516	36,402
Totals	**1,248**	**339,743**	**1,716**	**409,837**

Gear	N. Indian River Lagoon		Cedar Key	
	Hauls	Animals	Hauls	Animals
21.3-m seine	551	307,811	420	68,511
183-m haul seine	228	39,721	192	27,280
6.1-m otter trawl	96	10,116	180	10,635
Totals	**875**	**357,648**	**792**	**106,426**

Gear	S. Indian River Lagoon		Apalachicola Bay	
	Hauls	Animals	Hauls	Animals
21.3-m seine	.	.	396	61,033
183-m haul seine	190	13,000	216	49,345
6.1-m otter trawl	.	.	228	36,057
Totals	**190**	**13,000**	**840**	**146,435**

Table OV05-02. Continued)

Gear	Northeast Florida	
	Hauls	**Animals**
21.3-m seine	384	127,172
183-m haul seine	192	14,215
6.1-m otter trawl	396	44,733
Totals	**972**	**186,120**

Table OV05-03. Top 10 numerically dominant taxa collected in FIM program stratified-random sample areas, 2005.

Tampa Bay		**Charlotte Harbor**	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	158,561	*Anchoa mitchilli*	198,785
Menidia spp.	55,873	*Lagodon rhomboides*	37,802
Lagodon rhomboides	23,129	*Menidia* spp.	37,639
Eucinostomus spp.	12,496	*Harengula jaguana*	21,890
Eucinostomus harengulus	12,088	*Eucinostomus* spp.	19,691
Lucania parva	8,958	*Lucania parva*	14,310
Menticirrhus americanus	5,709	*Farfantepenaeus duorarum*	7,418
Harengula jaguana	5,473	*Eucinostomus gula*	5,332
Floridichthys carpio	4,694	*Gambusia holbrooki*	5,079
Leiostomus xanthurus	4,434	*Microgobius gulosus*	4,661
Σ =	**291,415**		**352,607**
Total (Selected Taxa)	**21,687**		**26,683**
Grand Total of Animals Collected	**339,743**		**409,837**

N. Indian River Lagoon		**Cedar Key**	
Scientific Name	**Number**	**Scientific Name**	**Number**
Anchoa mitchilli	172,816	*Anchoa mitchilli*	47,103
Lucania parva	27,063	*Lagodon rhomboides*	8,555
Mugil cephalus	16,135	*Leiostomus xanthurus*	6,595
Eucinostomus spp.	15,689	*Bairdiella chrysoura*	6,328
Lagodon rhomboides	15,206	*Anchoa hepsetus*	4,560
Micropogonias undulatus	12,215	*Mugil cephalus*	2,901
Bairdiella chrysoura	10,708	*Menidia* spp.	2,679
Leiostomus xanthurus	8,298	*Ariopsis felis*	2,057
Microgobius gulosus	7,451	*Membras martinica*	1,840
Menidia spp.	6,944	*Harengula jaguana*	1,745
Σ =	**292,525**		**84,363**
Total (Selected Taxa)	**56,635**		**17,215**
Grand Total of Animals Collected	**357,648**		**106,426**

Table OV05-03. Continued)

S. Indian River Lagoon		Apalachicola Bay	
Scientific Name	**Number**	**Scientific Name**	**Number**
Diapterus auratus	2,788	*Brevoortia* spp.	27,381
Lagodon rhomboides	1,824	*Anchoa mitchilli*	20,460
Mugil curema	1,225	*Leiostomus xanthurus*	19,541
Mugil cephalus	1,154	*Lagodon rhomboides*	13,744
Archosargus probatocephalus	833	*Micropogonias undulatus*	9,171
Centropomus undecimalis	623	*Mugil cephalus*	6,934
Ariopsis felis	578	*Cynoscion arenarius*	3,299
Selene vomer	572	*Harengula jaguana*	3,162
Dasyatis sabina	530	*Notropis petersoni*	2,973
Micropogonias undulatus	308	*Litopenaeus setiferus*	2,916
Σ =	**10,435**		**109,581**
Total (Selected Taxa)	**4,877**		**49,775**
Grand Total of Animals Collected	**13,000**		**146,435**

Northeast Florida	
Scientific Name	**Number**
Anchoa mitchilli	58,716
Leiostomus xanthurus	28,419
Micropogonias undulatus	20,137
Fundulus heteroclitus	12,287
Litopenaeus setiferus	9,998
Brevoortia spp.	8,063
Mugil cephalus	7,455
Menidia menidia	6,383
Stellifer lanceolatus	4,771
Bairdiella chrysoura	2,967
Σ =	**159,196**
Total (Selected Taxa)	**73,348**
Grand Total of Animals Collected	**186,120**

Table OV05-04. Number of recreational or commercially important species (Selected Taxa) collected in the FIM program stratified-random sample areas, 2005.

Tampa Bay		Charlotte Harbor	
Scientific Name	**Number**	**Scientific Name**	**Number**
Menticirrhus americanus	5,709	*Farfantepenaeus duorarum*	7,418
Leiostomus xanthurus	4,434	*Leiostomus xanthurus*	4,572
Callinectes sapidus	1,835	*Cynoscion arenarius*	3,355
Mugil cephalus	1,795	*Mugil cephalus*	2,449
Cynoscion arenarius	1,282	*Callinectes sapidus*	1,725
Centropomus undecimalis	1,280	*Sciaenops ocellatus*	1,227
Sciaenops ocellatus	835	*Centropomus undecimalis*	1,030
Farfantepenaeus duorarum	735	*Menticirrhus americanus*	1,001
Elops saurus	682	*Archosargus probatocephalus*	939
Mugil gyrans	657	*Cynoscion nebulosus*	912
Archosargus probatocephalus	654	*Lutjanus griseus*	418
Cynoscion nebulosus	599	*Mugil gyrans*	371
Mugil curema	436	*Paralichthys albigutta*	285
Trachinotus falcatus	251	*Elops saurus*	177
Paralichthys albigutta	123	*Mycteroperca microlepis*	174
Menticirrhus saxatilis	84	*Menippe* spp.	161
Scomberomorus maculatus	67	*Lutjanus synagris*	104
Lutjanus griseus	54	*Trachinotus falcatus*	93
Micropogonias undulatus	37	*Mugil curema*	92
Pogonias cromis	37	*Micropogonias undulatus*	55
Menippe spp.	36	*Menticirrhus saxatilis*	41
Menticirrhus littoralis	31	*Pogonias cromis*	27
Mycteroperca microlepis	13	*Scomberomorus maculatus*	13
Trachinotus carolinus	10	*Epinephelus itajara*	13
Lutjanus synagris	7	*Trachinotus carolinus*	11
Albula vulpes	4	*Pomatomus saltatrix*	8
		Menticirrhus littoralis	6
		Megalops atlanticus	6
Total	**21,687**	**Total**	**26,683**

Table OV05-04. (Continued)

N. Indian River Lagoon		Cedar Key	
Scientific Name	**Number**	**Scientific Name**	**Number**
Mugil cephalus	16,135	*Leiostomus xanthurus*	6,595
Micropogonias undulatus	12,215	*Mugil cephalus*	2,901
Leiostomus xanthurus	8,298	*Cynoscion arenarius*	1,713
Farfantepenaeus spp.	5,386	*Callinectes sapidus*	1,164
Mugil curema	5,328	*Menticirrhus americanus*	1,109
Cynoscion nebulosus	1,517	*Sciaenops ocellatus*	737
Archosargus probatocephalus	1,482	*Elops saurus*	711
Sciaenops ocellatus	1,395	*Farfantepenaeus duorarum*	548
Callinectes sapidus	1,254	*Cynoscion nebulosus*	292
Centropomus undecimalis	950	*Paralichthys albigutta*	228
Elops saurus	676	*Micropogonias undulatus*	224
Lutjanus griseus	403	*Mugil curema*	211
Farfantepenaeus duorarum	394	*Pogonias cromis*	171
Menticirrhus americanus	296	*Trachinotus falcatus*	170
Trachinotus falcatus	258	*Menippe* spp.	157
Litopenaeus setiferus	244	*Archosargus probatocephalus*	104
Lutjanus analis	83	*Menticirrhus saxatilis*	50
Trachinotus carolinus	71	*Lutjanus griseus*	30
Lutjanus synagris	61	*Mugil gyrans*	28
Pogonias cromis	42	*Paralichthys lethostigma*	27
Paralichthys albigutta	35	*Scomberomorus maculatus*	24
Cynoscion spp.	26	*Lutjanus synagris*	14
Mycteroperca microlepis	18	*Mycteroperca microlepis*	3
Cynoscion arenarius	18	*Pomatomus saltatrix*	2
Megalops atlanticus	11	*Rachycentron canadum*	1
Menippe spp.	10	*Megalops atlanticus*	1
Scomberomorus maculatus	10		
Pomatomus saltatrix	8		
Albula vulpes	6		
Paralichthys lethostigma	3		
Epinephelus morio	1		
Farfantepenaeus aztecus	1		
Total	**56,635**	**Total**	**17,215**

Table OV05-04. (Continued)

S. Indian River Lagoon		Apalachicola Bay	
Scientific Name	**Number**	**Scientific Name**	**Number**
Mugil curema	1,225	*Leiostomus xanthurus*	19,541
Mugil cephalus	1,154	*Micropogonias undulatus*	9,171
Archosargus probatocephalus	833	*Mugil cephalus*	6,934
Centropomus undecimalis	623	*Cynoscion arenarius*	3,299
Micropogonias undulatus	308	*Litopenaeus setiferus*	2,916
Elops saurus	268	*Callinectes sapidus*	1,603
Callinectes sapidus	134	*Farfantepenaeus* spp.	1,116
Lutjanus griseus	99	*Menticirrhus americanus*	1,026
Lutjanus analis	52	*Mugil curema*	892
Sciaenops ocellatus	27	*Sciaenops ocellatus*	563
Leiostomus xanthurus	25	*Cynoscion nebulosus*	400
Pogonias cromis	22	*Paralichthys albigutta*	342
Paralichthys lethostigma	15	*Farfantepenaeus duorarum*	341
Pomatomus saltatrix	14	*Elops saurus*	251
Cynoscion nebulosus	13	*Farfantepenaeus aztecus*	209
Lutjanus synagris	13	*Trachinotus falcatus*	201
Paralichthys albigutta	8	*Archosargus probatocephalus*	188
Mycteroperca microlepis	8	*Paralichthys lethostigma*	161
Farfantepenaeus duorarum	7	*Lutjanus synagris*	160
Trachinotus carolinus	6	*Pogonias cromis*	136
Scomberomorus maculatus	6	*Menippe* spp.	65
Litopenaeus setiferus	6	*Trachinotus carolinus*	65
Menippe spp.	2	*Menticirrhus saxatilis*	49
Menticirrhus americanus	2	*Lutjanus griseus*	40
Megalops atlanticus	2	*Menticirrhus littoralis*	34
Scomberomorus regalis	1	*Pomatomus saltatrix*	30
Cynoscion sp.	1	*Paralichthys squamilentus*	15
Panulirus argus	1	*Cynoscion nothus*	12
Albula vulpes	1	*Mycteroperca microlepis*	9
Trachinotus falcatus	1	*Scomberomorus maculatus*	4
		Megalops atlanticus	1
		Rachycentron canadum	1
Total	**4,877**	**Total**	**49,775**

Table OV05-04. (Continued)

Northeast Florida	
Scientific Name	**Number**
Leiostomus xanthurus	28,419
Micropogonias undulatus	20,137
Litopenaeus setiferus	9,998
Mugil cephalus	7,455
Callinectes sapidus	1,662
Farfantepenaeus spp.	992
Mugil curema	962
Cynoscion regalis	925
Cynoscion nebulosus	422
Menticirrhus americanus	382
Paralichthys lethostigma	338
Elops saurus	327
Farfantepenaeus aztecus	318
Sciaenops ocellatus	184
Archosargus probatocephalus	158
Farfantepenaeus duorarum	131
Pogonias cromis	73
Trachinotus falcatus	73
Lutjanus griseus	60
Scomberomorus maculatus	58
Trachinotus carolinus	58
Paralichthys dentatus	51
Pomatomus saltatrix	44
Paralichthys albigutta	39
Lutjanus synagris	17
Menticirrhus littoralis	17
Centropomus undecimalis	14
Penaeidae spp.	13
Cynoscion nothus	5
Rachycentron canadum	5
Menticirrhus saxatilis	4
Mycteroperca microlepis	3
Menippe spp.	2
Scomberomorus cavalla	1
Farfantepenaeus brasiliensis	1
Total	**73,348**

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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 was also conducted in Choctawhatchee Bay/Santa Rosa Sound between 1992 and 1997, in Florida Bay between 1993 and 1997, and in the Florida Keys National Marine Sanctuary between 1998 and 2004 (Figure FIM05-01).

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 over 70% of the recreationally important species and over 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 for the relative abundance, recruitment, habitat use, and distribution of hundreds of estuarine and marine species. This approach provides a unique source of information for 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, gillnets) 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; discontinued in 2004). 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 at any sampling area after 2004. Through the use of visual surveys in the Florida Keys (1998 – 2004), fisheries-independent information was obtained in this unique area of Florida for the first time, representing an important expansion to the FIM program. The FIM program also implemented an ongoing seasonal directed sampling program for striped mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor in 1993. The directed sampling program utilized a 366-m trammel net. The entire suite of gears and efforts used by the FIM program capture 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 data collected during 2005. Results from the sampling efforts in each estuary are presented separately. This report also summarizes directed sampling data for striped mullet and presents 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 and 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. 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. A single sample was collected at each randomly selected site. Sampling grids were stratified by habitat and depth, thereby identifying the gear types that could be used in those areas.

The FIM program uses a multi-gear approach to collect data on fishes and selected invertebrates from a wide range of habitats and life history stages (Table FIM05-

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); and 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 on habitat, to stratify the samples collected with the various gears; however, all sampling was conducted during daytime hours (one hour after sunrise to one hour before sunset). 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 of the estuaries 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. Further sampling details are described in the FIM program's Procedure Manual.

Environmental data consisting of water chemistry, habitat characteristics, and physical parameters such as current and tidal conditions were recorded for each sample. The sample work-up technique was similar for all collected samples, regardless of gear type or sampling regime. All fish and selected invertebrate species captured in net collections were identified to the lowest practical taxonomic level, counted, and measured (standard length for teleosts, precaudal length for sharks, disc width for rays, carapace width for crabs, and post-orbital head length for shrimp). Animals were then released except for representative samples of each taxon (for laboratory confirmation of field identifications) and samples required for specific research projects. A detailed explanation of the standard sample work-up for data collection is described in the FIM program's Procedure Manual. The taxonomic nomenclature in this report follows the American Fisheries Society's Common and Scientific Names of Fishes (Nelson et al. 2004).

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. Data 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 FIM05-02). 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 northeast Florida and northern Indian River Lagoon sections, species accounts of *Cynoscion regalis* (weakfish) and *Cynoscion arenarius* (sand seatrout) will be referred to collectively as *Cynoscion* complex. Historically, it has been thought that *C. regalis* was found exclusively on the Atlantic coast of Florida. Recently, it was discovered that the ranges of *C. regalis* and *C. arenarius* overlap along the central and northern Atlantic coast of Florida and that an active zone of introgressive hybridization exists, centered in the Nassau and St. Johns rivers (Tringali et al. 2004). Genetic analysis has confirmed that pure *C. arenarius* occur quite commonly throughout the inshore waters of the Florida Atlantic coast, especially south of Volusia county, Florida. However, species affinity within this region can only be determined with certainty by genetic testing. The appendices for each study area describe the catch by month (Appendix 1), by gear and stratum (Appendix 2), and by zone (Appendix 3).

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, and northeast Florida (Figure FIM05-01). In all regions, 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 (Sebastian and St. Lucie river), the Cedar Key area (Suwannee River), Apalachicola Bay (Apalachicola River), and northeast Florida (St. Marys, Nassau, and St. Johns rivers) were sampled. Details of the study areas for Tampa Bay, Charlotte Harbor, and the northern Indian River Lagoon were described in the FIM Program 1994 Annual Data Summary Report. The Cedar Key study area was described in the FIM Program 1996 Annual Data Summary Report, while details of the southern Indian River Lagoon study area were described in the FIM Program 1997 Annual Data Summary Report. The Apalachicola Bay study area and changes to the southern Indian River Lagoon study area were described in the FIM Program 1999 Annual Data Summary Report. Details of the northeast Florida (Jacksonville) study area were described in the FIM Program 2001 Annual Data Summary Report.

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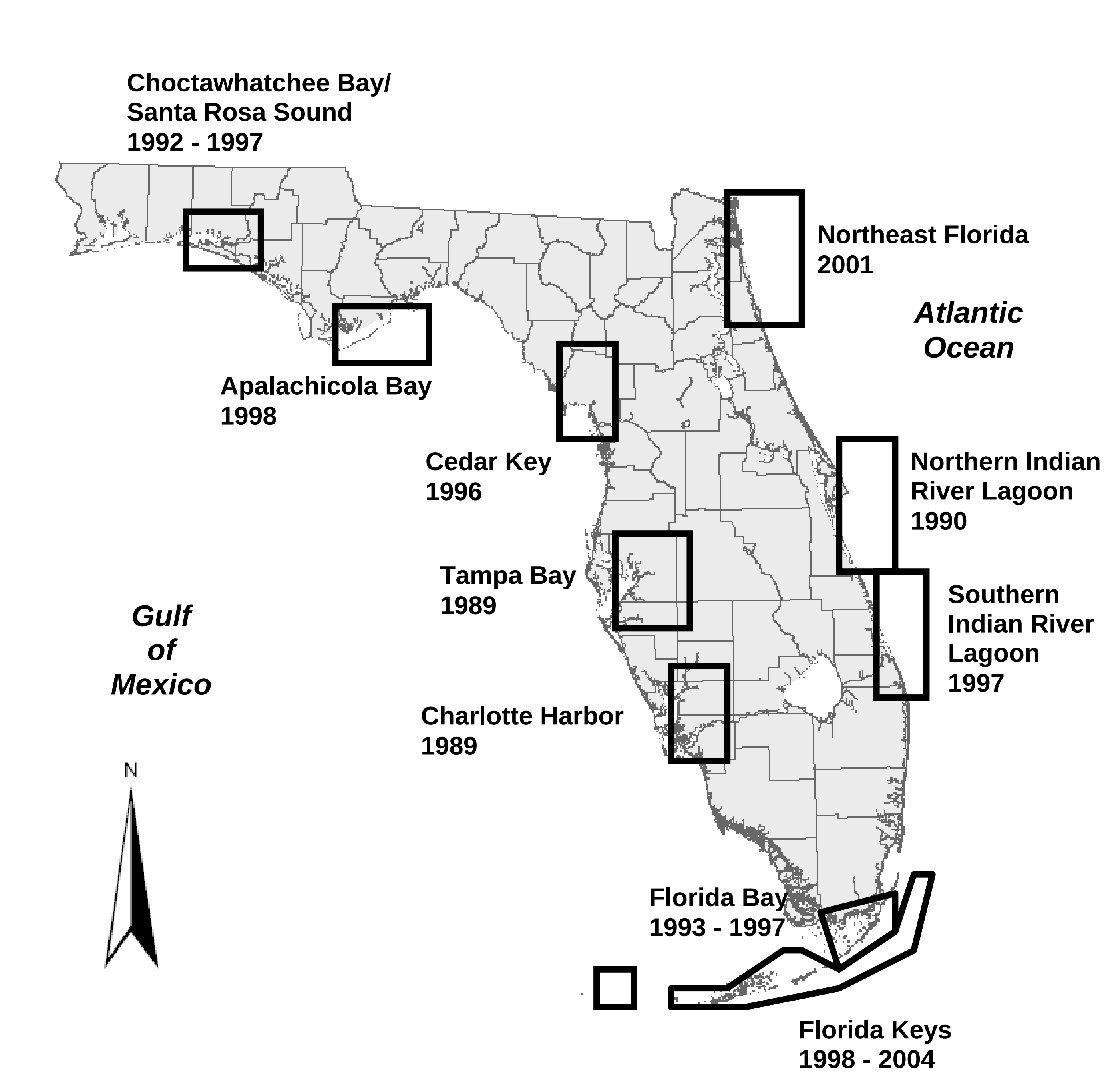

Figure FIM05-05. Locations of Fisheries-Independent Monitoring program field labs. Years indicate initiation of sampling. If sampling was discontinued at a field lab, the last year of sampling is also provided.

Table FIM05-01. Description of monthly monitoring sampling gears used in 2005. 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 1.8-m deep*

Table FIM05-02. Animals designated as Selected Taxa because of their commercial or recreational importance.

Scientific Name	Common Name
Albula vulpes	bonefish
Archosargus probatocephalus	sheepshead
Callinectes sapidus	blue crab
Centropomus undecimalis	common snook
Cynoscion arenarius	sand seatrout
Cynoscion nebulosus	spotted seatrout
Cynoscion nothus	silver seatrout
Cynoscion regalis	weakfish
Cynoscion complex	seatrout
Elops saurus	ladyfish
Epinephelus adscensionis	rock hind
Epinephelus afer	mutton hamlet
Epinephelus cruentatus	graysby
Epinephelus drummondhayi	speckled hind
Epinephelus flavolimbatus	yellowedge grouper
Epinephelus fulvus	coney
Epinephelus guttatus	red hind
Epinephelus inermis	marbled grouper
Epinephelus itajara	goliath grouper
Epinephelus morio	red grouper
Epinephelus mystacinus	misty grouper
Epinephelus nigritus	warsaw grouper
Epinephelus niveatus	snowy grouper
Epinephelus striatus	nassau grouper
Farfantepenaeus aztecus	brown shrimp
Farfantepenaeus duorarum	pink shrimp
Farfantepenaeus brasiliensis	pinkspotted shrimp
Farfantepenaeus spp.	penaeid shrimps
Leiostomus xanthurus	spot
Litopenaeus setiferus	white shrimp
Lutjanus analis	mutton snapper
Lutjanus apodus	schoolmaster
Lutjanus buccanella	blackfin snapper
Lutjanus campechanus	red snapper
Lutjanus cyanopterus	cubera snapper

Table FIM05-02. (Continued)

Scientific Name	Common Name
Lutjanus griseus	gray snapper
Lutjanus jocu	dog snapper
Lutjanus mahogoni	mahogany snapper
Lutjanus synagris	lane snapper
Lutjanus vivanus	silk snapper
Megalops atlanticus	tarpon
Menippe spp.	stone crab
Menticirrhus americanus	southern kingfish
Menticirrhus littoralis	Gulf kingfish
Menticirrhus saxatillis	northern kingfish
Micropogonias undulatus	atlantic croaker
Mugil cephalus	striped mullet
Mugil curema	white mullet
Mugil gaimardianus	redeye mullet
Mugil gyrans	whirligig mullet
Mugil liza	liza
Mycteroperca bonaci	black grouper
Mycteroperca microlepis	gag
Mycteroperca phenax	scamp
Mycteroperca tigris	tiger grouper
Mycteroperca venenosa	yellowfin grouper
Panulirus argus	spiny lobster
Paralichthys albigutta	Gulf flounder
Paralichthys dentatus	summer flounder
Paralichthys lethostigma	southern flounder
Paralichthys oblongus	fourspot flounder
Paralichthys squamilentus	broad flounder
Penaeidae spp.	shrimps
Pogonias cromis	black drum
Pomatomus saltatrix	bluefish
Rachycentron canadum	cobia
Sciaenops ocellatus	red drum
Scomberomorus cavalla	king mackerel
Scomberomorus maculatus	spanish mackerel
Scomberomorus regalis	cero
Trachinotus carolinus	pompano
Trachinotus falcatus	permit
Trachinotus goodei	palometa

Article I. Tampa Bay

Tampa Bay is the largest estuary in Florida, encompassing 1,030 square kilometers (Florida Department of Environmental Protection, Florida Marine Research Institute 1993). Over one hundred tributaries enter Tampa Bay, including the Hillsborough, Alafia, Manatee, and Little Manatee rivers (National Oceanic and Atmospheric Administration 1982), and the bay contains two of Florida's busiest ports. Barrier islands such as Long, Mullet, and Egmont Keys and Anna Maria Island are found at the mouth of Tampa Bay. Shoreline vegetation consists largely of mangroves and marsh grasses, and bottom substrates are typically characterized as sand, mud, oysters, or a combination thereof. Seagrass meadows of various sizes cover the substrate in numerous areas of the bay.

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling in Tampa Bay since 1989. The entire bay sampling area is divided into five geographically defined bay zones (A-E), which are each sampled monthly. The riverine sampling area is divided into four zones, defined by the following Tampa Bay rivers: Alafia (K), Little Manatee (L), Manatee (M), and Braden (N) (Figure TB05-01). Stratified-random sampling (SRS) was conducted using 21.3-m seines, 183-m haul seines, and 6.1-m otter trawls. Sampling with 21.3-m seines and 183-m haul seines was stratified by geographic zone, depth, and habitat, whereas sampling with 6.1-m otter trawls was stratified only by zone and depth. All gear deployment methods were the same as those described in the Methods section of this report. A fixed number of samples were collected each month with all gear types in all zones with the following exception: 183-m haul seines were not used in any of the river zones. This section summarizes data collected by the FIM program in 2005 in Tampa Bay and select tidally-influenced tributaries.

Stratified-Random Sampling

A total of 339,743 fishes (138 taxa) and selected invertebrates (5 taxa) were collected from 1,248 samples (Table TB05-01, Appendix TB05-01). The most fish were collected during October (n=78,993) and August (n=39,398). *Anchoa mitchilli* was by far the most numerous species sampled, representing 46.7% of the total catch (n=158,561). *Menidia* spp. was the second most abundant species sampled, representing 16.4% (n=55,873) of the total catch.

There were 26 Selected Taxa captured in Tampa Bay SRS during 2005, representing 6.4% (n=21,687) of the annual catch. *Menticirrhus americanus* (n=5,709) was the most abundant Selected Taxon, representing 1.7% of the annual catch. The majority (68.6%, n=3,918) of the *M. americanus* catch occurred during July in a single 21.3-m shoreline bay seine in Zone C (Appendix TB05-01). *Leiostomus xanthurus* was the second most abundant Selected Taxon with 4,434 individuals comprising 1.3% of the total catch. Many members of the family Sciaenidae are Selected Taxa (i.e., *Cynoscion arenarius*, *Cynoscion nebulosus*, *L. xanthurus*, *M. americanus*, *Menticirrhus littoralis*, *Menticirrhus saxatilis*, *Micropogonias undulatus*, *Pogonias cromis*, and *Sciaenops ocellatus*). These fishes are important components of the recreational fishery in Tampa Bay. The 2005 catch of selected sciaenids (n=13,048) represented 60.2% of the total Selected Taxa caught and 3.8% of the total catch.

Bay Sampling

21.3-m Bay Seines. A total of 137,087 animals were collected in 21.3-m bay seines (n=408 hauls), representing 40.4% of the total annual catch (Table TB05-01). The most abundant species collected in the 21.3-m bay seine *were A. mitchilli* (n=60,227) and *Menidia* spp. (n=29,459), which accounted for 65.4% of the bay seine catch. The two taxa most frequently caught in bay seines were *Menidia* spp. (30.6% occurrence) and *Lagodon rhomboides* (30.1% occurrence; Table TB05-02).

A total of 9,213 animals from 23 Selected Taxa were collected in 21.3-m bay seines, accounting for 6.7% of the total bay seine catch (Table TB05-03). *Menticirrhus americanus* (n=3,965) and *L. xanthurus* (n=3,776) were the most abundant Selected Taxa, representing 84.0% of the Selected Taxa collected. The Selected Taxon most frequently caught in bay seines was *Callinectes sapidus* (18.9% occurrence).

183-m Haul Seines. A total of 32,226 animals were collected in 183-m haul seines (n=240 hauls), representing 9.5% of the total annual catch (Table TB05-01). The most abundant species collected in the 183-m haul seine were *L. rhomboides* (n=14,375) and *Eucinostomus harengulus* (n=6,256), which accounted for 64.0% of the haul seine catch. The two taxa most frequently caught in the haul seine were *L.* rhomboides (53.3% occurrence) and *Centropomus undecimalis* (48.8% occurrence; Table TB05-04).

A total of 5,880 animals from 24 Selected Taxa were collected in the 183-m haul seine, accounting for 18.3% of the total haul seine catch. *Centropomus undecimalis* (n=1,121) and *Mugil cephalus* (n=1,018) were the most frequently caught Selected Taxa. *Centropomus undecimalis* and *M. cephalus* were also the most consistently-occurring Selected Taxa in haul seines, occurring in 48.8% and 47.9% of the samples, respectively (Table TB05-05). Several recreationally important taxa were caught in higher numbers in this gear than in any other gear type. These Selected Taxa included *Archosargus probatocephalus* (n=558), *C. undecimalis* (n=1,121), *Elops saurus* (n=662), and *Trachinotus falcatus* (n=85; Appendix TB05-02).

6.1-m Bay Otter Trawls. A total of 20,842 animals were collected in bay 6.1-m otter trawls (n=180), representing 6.1% of the total annual catch (Table TB05-01). The most abundant species collected in the 6.1-m bay otter trawl were *Anchoa mitchilli* (n=9,691), *Eugerres plumieri* (n=2,096), and *Prionotus scitulus* (n=1,530), accounting for 63.9% of the bay trawl catch. The three taxa most frequently caught in bay trawls were *P. scitulus* (67.2% occurrence), *C. sapidus* (41.7% occurrence) and *L. rhomboides* (27.8% occurrence; Table TB05-06).

A total of 3,132 animals from 14 Selected Taxa were collected in 6.1-m bay otter trawls, accounting for 15.0% of the total bay trawl catch (Table TB05-07). *Menticirrhus americanus* (n=1,369), *C. arenarius* (n=821), and *C. sapidus* (n=553) were the most abundant Selected Taxa. The most consistently-occurring Selected Taxa catch in bay trawls was *C. sapidus* (41.7% occurrence).

River Sampling

21.3-m River Seines. A total of 134,146 animals were collected in 21.3-m river seines (n=264 hauls), representing 39.5% of the total annual catch and 89.7% of the annual catch from river sampling (Tables TB05-01). As in 21.3-m bay seine collections, the most abundant species collected in the 21.3-m river seine was *A. mitchilli* (n=78,974), which accounted for 58.9% of the river seine catch. The two most consistently-occurring taxa in river seines were *Menidia* spp. (83.0% occurrence) and *Microgobius gulosus* (54.9% occurrence; Table TB05-08).

A total of 1,900 animals from 17 Selected Taxa were collected in 21.3-m river seines, accounting for 1.4% of the total river seine catch. *Mugil cephalus* (n=658) was the most abundant Selected Taxon (Table TB05-09). S*ciaenops ocellatus* (n=467) was the second-most abundant Selected Taxa in river seines. The Fish and Wildlife Research Institute’s FIM program and Stock Enhancement Research Facility (SERF) worked closely on a cooperative *S. ocellatus* enhancement project. This project targeted the Alafia River (Zone K; Figure TB05-01) as the primary release site for the hatchery-reared fish (FWC 2002). A total of 349 *S. ocellatus* were caught in the Alafia River; however the genetic origin for some of those *S. ocellatus* are yet to be determined (i.e., wild- or hatchery-reared; Appendix TB05-3). The most frequently occurring Selected Taxon in river seines was *Callinectes sapidus* (26.9% occurrence).

6.1-m River Otter Trawls. A total of 15,442 animals were collected in 6.1-m river otter trawls (n=156), representing 4.5% of the total annual catch and 10.3% of the annual catch from river sampling (Table TB05-01). The most abundant species collected in the river 6.1-m otter trawl were *Anchoa mitchilli* (n=9,669) and *Trinectes maculatus* (n=1,766), which accounted for 74.0% of the river trawl catch. The most frequently occurring taxon in river trawls was *C. sapidus* (66.7% occurrence; Table TB05-10).

A total of 1,562 animals from 13 Selected Taxa were collected in 6.1-m river otter trawls, accounting for 10.1% of the total river catch (Table TB05-11). *Callinectes sapidus* (n=509) and *C. arenarius* (n=402) were the most abundant Selected Taxa. The most consistently-occurring Selected Taxon in river seines was *C. sapidus* (66.7% occurrence).

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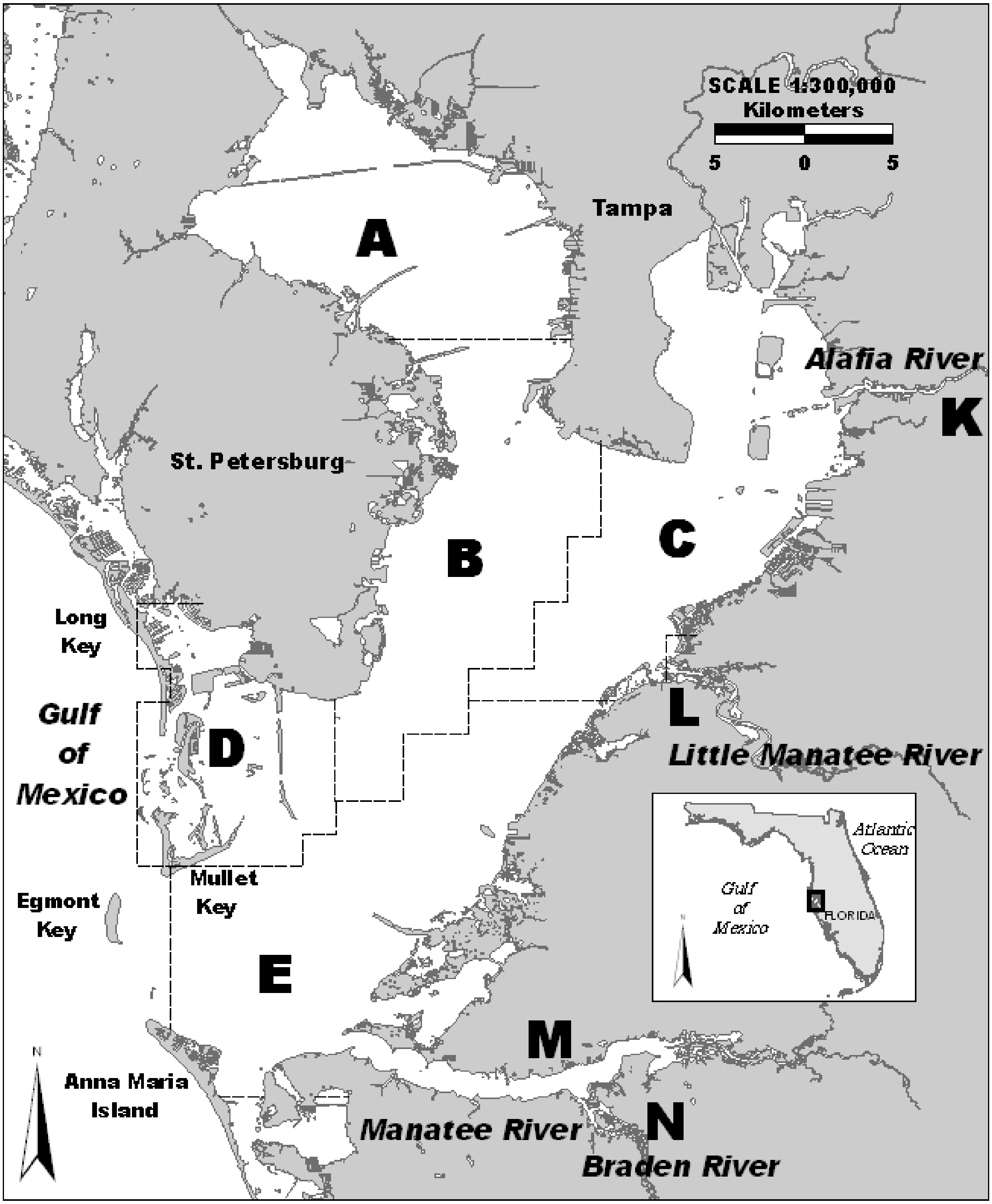

Figure TB05-01. Map of Tampa Bay sampling area. Zones are labeled A-E and K-N.

Table TB05-01. Summary of catch and effort data for Tampa Bay stratified-random sampling, 2005.

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	71,160	84	.	.	6,352	48	6,398	36	83,910	168
B	17,392	72	.	.	5,234	48	1,278	36	23,904	156
C	18,888	108	.	.	3,564	48	10,743	48	33,195	204
D	13,624	60	.	.	6,249	36	1,484	24	21,357	120
E	16,023	84	.	.	10,827	60	939	36	27,789	180
K	.	.	29,580	48	.	.	10,397	24	39,977	72
L	.	.	36,243	96	.	.	3,698	72	39,941	168
M	.	.	46,399	72	.	.	660	36	47,059	108
N	.	.	21,924	48	.	.	687	24	22,611	72
Totals	**137,087**	**408**	**134,146**	**264**	**32,226**	**240**	**36,284**	**336**	**339,743**	**1,248**

Table TB05-02. Catch statistics for 10 dominant taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2005. 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	60,227	43.9	15.0	105.44	64.85	1,242.24	25,899.29	32	0.03	17	64
Menidia spp.	29,459	21.5	30.6	51.57	20.97	821.22	8,231.43	42	0.06	13	91
Lagodon rhomboides	6,813	5.0	30.1	11.93	2.66	450.51	578.57	33	0.20	12	150
Lucania parva	6,338	4.6	18.4	11.10	2.98	542.29	781.43	24	0.06	10	39
Harengula jaguana	5,318	3.9	5.6	9.31	4.27	926.81	1,236.43	39	0.14	21	92
Floridichthys carpio	4,463	3.3	18.9	7.81	2.19	566.47	565.71	30	0.15	11	65
Menticirrhus americanus	3,965	2.9	6.6	6.94	6.64	1,932.75	2,710.00	20	0.11	6	63
Leiostomus xanthurus	3,776	2.8	9.1	6.61	3.25	993.07	1,017.14	24	0.14	13	94
Fundulus similis	2,553	1.9	9.1	4.47	2.55	1,153.01	870.00	28	0.23	16	113
Cyprinodon variegatus	2,411	1.8	8.6	4.22	1.67	797.20	493.57	27	0.21	11	53
Subtotal	125,323	91.6	.	.	.	.	.	.	.	6	150
Totals	**137,087**	**100.0**	**.**	**240.00**	**70.07**	**589.70**	**26,002.86**	**.**	**.**	**3**	**720**

Table TB05-03. Catch statistics for Selected Taxa collected in 408 21.3-m bay seine samples during Tampa Bay stratified-random sampling, 2005. 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	3,965	2.9	6.6	6.94	6.64	1,932.75	2,710.00	20	0.11	6	63
Leiostomus xanthurus	3,776	2.8	9.1	6.61	3.25	993.07	1,017.14	24	0.14	13	94
Cynoscion nebulosus	363	0.3	11.5	0.64	0.18	582.51	57.14	33	0.92	12	153
Farfantepenaeus duorarum	205	0.1	13.2	0.36	0.09	496.41	25.71	11	0.37	3	28
Callinectes sapidus	194	0.1	18.9	0.34	0.06	376.41	13.57	41	2.88	6	184
Trachinotus falcatus	166	0.1	2.0	0.29	0.21	1,469.78	83.57	37	1.17	17	137
Mugil cephalus	119	0.1	3.4	0.21	0.14	1,345.52	55.71	35	3.88	17	301
Sciaenops ocellatus	93	0.1	5.4	0.16	0.07	808.94	23.57	37	3.14	16	258
Mugil gyrans	84	0.1	1.5	0.15	0.13	1,783.36	52.86	24	2.53	14	167
Menticirrhus saxatilis	77	0.1	4.4	0.13	0.09	1,280.38	34.29	27	1.41	12	72
Scomberomorus maculatus	65	0.0	0.2	0.11	0.11	2,019.90	46.43	50	0.05	47	50
Cynoscion arenarius	31	0.0	1.2	0.05	0.04	1,522.50	16.43	25	0.86	17	36
Archosargus probatocephalus	21	0.0	2.2	0.04	0.01	757.80	2.86	42	5.05	22	97
Paralichthys albigutta	19	0.0	4.2	0.03	0.01	500.56	1.43	91	17.12	21	275
Lutjanus griseus	9	0.0	2.0	0.02	0.01	738.52	1.43	34	4.83	15	62
Menticirrhus littoralis	9	0.0	0.2	0.02	0.02	2,019.90	6.43	75	2.77	64	88
Trachinotus carolinus	6	0.0	0.2	0.01	0.01	2,019.90	4.29	29	2.18	20	33
Centropomus undecimalis	4	0.0	0.7	0.01	0.00	1,234.40	1.43	406	48.79	285	491

Table TB05-03. (Continued)

Species	Number No.	Number %	% Occur	Density Estimate (animals/100m^2) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Elops saurus	2	0.0	0.5	0.00	0.00	1,426.53	0.71	176	131.00	45	307
Albula vulpes	2	0.0	0.5	0.00	0.00	1,426.53	0.71	35	8.00	27	43
Lutjanus synagris	1	0.0	0.2	0.00	0.00	2,019.90	0.71	47	.	47	47
Pogonias cromis	1	0.0	0.2	0.00	0.00	2,019.90	0.71	144	.	144	144
Mugil curema	1	0.0	0.2	0.00	0.00	2,019.90	0.71	27	.	27	27
Totals	**9,213**	**6.7**	**54.7**	**16.13**	**7.44**	**932.14**	**2,732.14**	**.**	**.**	**3**	**491**

Table TB05-04. Catch statistics for 10 dominant taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2005. 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	14,375	44.6	53.3	59.90	9.04	233.89	1,115.00	95	0.18	32	215
Eucinostomus harengulus	6,256	19.4	34.2	26.07	11.99	712.44	2,738.00	94	0.10	50	149
Eucinostomus gula	2,091	6.5	33.8	8.71	2.33	414.27	426.00	83	0.27	46	134
Centropomus undecimalis	1,121	3.5	48.8	4.67	0.84	278.95	117.00	452	2.70	121	905
Mugil cephalus	1,018	3.2	47.9	4.24	0.78	285.14	125.00	299	2.53	101	470
Strongylura notata	791	2.5	36.7	3.30	0.64	302.09	73.00	357	0.83	267	492
Ariopsis felis	739	2.3	27.1	3.08	0.67	338.41	118.00	301	1.33	132	380
Elops saurus	662	2.1	21.3	2.76	1.25	700.02	285.00	279	3.07	162	470
Archosargus probatocephalus	558	1.7	38.8	2.33	0.36	237.94	49.00	224	3.74	33	457
Mugil gyrans	535	1.7	30.8	2.23	0.41	282.39	43.00	180	1.51	89	290
Subtotal	28,146	87.5	.	.	.	.	.	.	.	32	905
Totals	**32,226**	**100.0**	**.**	**134.28**	**16.96**	**195.68**	**3,160.00**	**.**	**.**	**11**	**905**

Table TB05-05. Catch statistics for Selected Taxa collected in 240 183-m haul seine samples during Tampa Bay stratified-random sampling, 2005. Percent (%) is the percent of the total catch represented by that taxon; percent occurrence (% Occur) is the percentage of samples in which that taxon was collected; CV is the coefficient of variation of the mean. Taxa are ranked in order of decreasing mean catch-per-unit-effort.

Species	Number		%	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Centropomus undecimalis	1,121	3.5	48.8	4.67	0.84	278.95	117.00	452	2.70	121	905
Mugil cephalus	1,018	3.2	47.9	4.24	0.78	285.14	125.00	299	2.53	101	470
Elops saurus	662	2.1	21.3	2.76	1.25	700.02	285.00	279	3.07	162	470
Archosargus probatocephalus	558	1.7	38.8	2.33	0.36	237.94	49.00	224	3.74	33	457
Mugil gyrans	535	1.7	30.8	2.23	0.41	282.39	43.00	180	1.51	89	290
Leiostomus xanthurus	469	1.5	16.7	1.95	0.63	502.31	98.00	103	1.25	47	224
Mugil curema	424	1.3	13.8	1.77	0.69	605.84	137.00	204	2.33	112	310
Callinectes sapidus	402	1.2	36.7	1.68	0.29	264.03	42.00	100	1.79	23	192
Sciaenops ocellatus	273	0.8	30.0	1.14	0.18	240.08	18.00	312	9.81	61	731
Cynoscion nebulosus	88	0.3	13.8	0.37	0.14	609.51	33.00	166	8.78	64	382
Trachinotus falcatus	85	0.3	5.4	0.35	0.13	569.67	22.00	95	5.58	38	182
Farfantepenaeus duorarum	64	0.2	10.0	0.27	0.08	442.60	14.00	25	0.76	11	38
Paralichthys albigutta	55	0.2	12.9	0.23	0.05	343.84	8.00	191	12.87	46	354
Pogonias cromis	34	0.1	5.8	0.14	0.05	502.64	6.00	215	21.74	72	808
Lutjanus griseus	25	0.1	5.8	0.10	0.03	457.99	4.00	143	9.49	88	249
Menticirrhus littoralis	22	0.1	0.4	0.09	0.09	1,549.19	22.00	216	8.39	155	327
Menticirrhus americanus	16	0.0	0.8	0.07	0.06	1,368.50	14.00	229	8.17	174	288
Mycteroperca microlepis	11	0.0	0.8	0.05	0.04	1,201.64	8.00	158	9.49	103	198

Table TB05-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus carolinus	4	0.0	0.8	0.02	0.01	1,223.21	3.00	343	7.82	324	360
Micropogonias undulatus	4	0.0	0.4	0.02	0.02	1,549.19	4.00	151	24.42	84	201
Cynoscion arenarius	3	0.0	1.3	0.01	0.01	890.68	1.00	261	2.60	257	266
Lutjanus synagris	3	0.0	0.4	0.01	0.01	1,549.19	3.00	127	5.70	116	134
Scomberomorus maculatus	2	0.0	0.8	0.01	0.01	1,093.15	1.00	262	41.50	220	303
Albula vulpes	2	0.0	0.4	0.01	0.01	1,549.19	2.00	178	0.50	177	178
Totals	**5,880**	**18.3**	**93.3**	**24.50**	**2.20**	**139.08**	**289.00**	**.**	**.**	**11**	**905**

Table TB05-06. Catch statistics for 10 dominant taxa collected in 180 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2005. 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	9,691	46.5	18.3	3.54	1.31	495.83	133.38	42	0.09	18	61
Eugerres plumieri	2,096	10.1	0.6	0.79	0.79	1,341.64	141.39	14	0.04	10	16
Prionotus scitulus	1,530	7.3	67.2	0.58	0.09	204.09	7.83	77	0.76	18	185
Menticirrhus americanus	1,369	6.6	23.9	0.52	0.20	527.91	30.96	38	0.90	7	229
Lagodon rhomboides	1,119	5.4	27.8	0.43	0.12	364.90	14.27	81	0.63	12	146
Cynoscion arenarius	821	3.9	11.1	0.31	0.22	938.90	37.78	23	0.52	12	215
Callinectes sapidus	553	2.7	41.7	0.22	0.04	248.02	4.29	85	1.59	11	213
Eucinostomus gula	539	2.6	21.1	0.20	0.07	446.28	9.11	81	0.47	55	120
Anchoa cubana	282	1.4	1.1	0.11	0.11	1,336.34	18.96	50	0.18	42	55
Orthopristis chrysoptera	231	1.1	11.7	0.09	0.03	500.34	4.18	105	0.97	32	144
Subtotal	18,231	87.6	.	.	.	.	.	.	.	7	229
Totals	**20,842**	**100.0**	**.**	**7.78**	**1.74**	**300.37**	**177.62**	**.**	**.**	**3**	**589**

Table TB05-07. Catch statistics for Selected Taxa collected in 180 6.1-m bay otter trawl samples during Tampa Bay stratified-random sampling, 2005. 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	1,369	6.6	23.9	0.52	0.20	527.91	30.96	38	0.90	7	229
Cynoscion arenarius	821	3.9	11.1	0.31	0.22	938.90	37.78	23	0.52	12	215
Callinectes sapidus	553	2.7	41.7	0.22	0.04	248.02	4.29	85	1.59	11	213
Farfantepenaeus duorarum	207	1.0	30.6	0.08	0.01	244.65	1.21	22	0.65	4	46
Cynoscion nebulosus	54	0.3	7.2	0.02	0.01	647.23	1.48	29	4.46	11	196
Paralichthys albigutta	39	0.2	12.2	0.01	0.00	342.31	0.47	198	12.78	100	422
Menippe spp.	36	0.2	9.4	0.01	0.00	479.95	0.71	26	3.31	4	89
Micropogonias undulatus	23	0.1	2.8	0.01	0.00	727.83	0.67	41	5.16	13	102
Leiostomus xanthurus	14	0.1	2.8	0.01	0.00	891.32	0.61	106	12.11	20	142
Elops saurus	5	0.0	0.6	0.00	0.00	1,341.64	0.34	39	0.75	38	42
Lutjanus griseus	4	0.0	1.1	0.00	0.00	1,074.97	0.21	113	13.94	78	143
Lutjanus synagris	3	0.0	1.7	0.00	0.00	771.16	0.07	107	4.93	98	115
Mycteroperca microlepis	2	0.0	0.6	0.00	0.00	1,341.64	0.14	131	0.50	130	131
Archosargus probatocephalus	2	0.0	1.1	0.00	0.00	946.31	0.07	97	11.00	86	108
Totals	**3,132**	**15.0**	**70.6**	**1.19**	**0.41**	**468.01**	**70.22**	**.**	**.**	**4**	**422**

Table TB05-08. Catch statistics for 10 dominant taxa collected in 264 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2005. 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	78,974	58.9	51.1	439.92	122.74	453.33	20,705.88	32	0.02	18	56
Menidia spp.	26,410	19.7	83.0	147.11	19.58	216.23	2,139.71	34	0.07	11	92
Eucinostomus spp.	10,011	7.5	42.0	55.77	9.09	264.71	952.94	29	0.06	12	42
Eucinostomus harengulus	5,262	3.9	48.9	29.31	4.93	273.52	683.82	58	0.15	40	95
Lucania parva	2,528	1.9	28.0	14.08	3.79	436.83	548.53	23	0.10	10	39
Microgobius gulosus	1,607	1.2	54.9	8.95	1.60	290.63	219.12	27	0.17	13	57
Eugerres plumieri	1,225	0.9	29.9	6.82	1.37	325.90	166.18	45	0.70	11	234
Trinectes maculatus	1,034	0.8	41.3	5.76	1.77	498.13	426.47	21	0.24	8	68
Gambusia holbrooki	967	0.7	9.8	5.39	1.88	566.96	252.94	24	0.18	12	38
Lagodon rhomboides	676	0.5	35.6	3.77	0.81	347.51	145.59	37	0.67	13	105
Subtotal	128,694	96.0	.	.	.	.	.	.	.	8	234
Totals	**134,146**	**100.0**	**.**	**747.25**	**124.78**	**271.33**	**20,761.76**	**.**	**.**	**2**	**715**

Table TB05-09. Catch statistics for Selected Taxa collected in 264 21.3-m river seine samples during Tampa Bay stratified-random sampling, 2005. 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	658	0.5	7.2	3.67	2.71	1,200.67	704.41	33	0.86	19	340
Sciaenops ocellatus	467	0.3	17.4	2.60	0.67	419.07	104.41	55	1.95	19	545
Callinectes sapidus	177	0.1	26.9	0.99	0.14	237.77	14.71	28	2.14	6	159
Centropomus undecimalis	155	0.1	15.5	0.86	0.27	505.65	61.76	146	9.02	26	493
Leiostomus xanthurus	126	0.1	9.1	0.70	0.35	813.01	89.71	34	1.80	15	109
Farfantepenaeus duorarum	71	0.1	12.1	0.40	0.10	390.39	17.65	10	0.55	2	22
Cynoscion nebulosus	66	0.0	12.5	0.37	0.08	373.66	13.24	44	3.25	16	129
Archosargus probatocephalus	40	0.0	10.2	0.22	0.05	381.64	8.82	86	10.71	17	268
Mugil gyrans	38	0.0	3.4	0.21	0.12	884.74	27.94	57	3.81	22	151
Menticirrhus americanus	36	0.0	4.9	0.20	0.09	750.00	20.59	32	2.18	17	57
Cynoscion arenarius	25	0.0	2.7	0.14	0.06	732.75	11.76	41	4.54	12	76
Lutjanus griseus	13	0.0	4.2	0.07	0.02	506.49	2.94	106	16.29	34	227
Mugil curema	11	0.0	2.3	0.06	0.03	762.43	5.88	98	21.70	27	257
Elops saurus	8	0.0	1.5	0.04	0.03	949.16	5.88	84	14.46	34	164
Menticirrhus saxatilis	7	0.0	1.1	0.04	0.03	1,204.24	7.35	49	6.29	28	75
Micropogonias undulatus	1	0.0	0.4	0.01	0.01	1,624.81	1.47	49	.	49	49
Paralichthys albigutta	1	0.0	0.4	0.01	0.01	1,624.81	1.47	31	.	31	31
Totals	**1,900**	**1.4**	**68.2**	**10.58**	**2.90**	**444.88**	**726.47**	**.**	**.**	**2**	**545**

Table TB05-10. Catch statistics for 10 dominant taxa collected in 156 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2005. 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	9,669	62.6	28.2	8.45	7.17	1,058.95	1,118.19	28	0.05	18	56
Trinectes maculatus	1,766	11.4	42.3	1.62	0.37	281.48	35.68	23	0.30	6	78
Bairdiella chrysoura	788	5.1	5.8	0.71	0.46	810.58	65.57	39	0.46	12	156
Callinectes sapidus	509	3.3	66.7	0.46	0.08	211.07	7.83	97	2.00	9	193
Cynoscion arenarius	402	2.6	16.7	0.38	0.26	850.21	39.43	41	0.62	10	72
Microgobius gulosus	380	2.5	36.5	0.34	0.09	346.31	10.39	25	0.38	14	53
Menticirrhus americanus	323	2.1	27.6	0.28	0.06	280.26	5.53	32	1.44	11	300
Eucinostomus spp.	295	1.9	9.6	0.28	0.19	873.75	29.38	18	0.22	14	39
Farfantepenaeus duorarum	188	1.2	30.8	0.17	0.03	233.43	2.36	14	0.43	3	37
Lagodon rhomboides	146	0.9	17.3	0.14	0.06	541.84	9.11	32	1.44	9	85
Subtotal	14,466	93.6	.	.	.	.	.	.	.	3	300
Totals	**15,442**	**100.0**	**.**	**13.71**	**7.30**	**664.99**	**1,136.94**	**.**	**.**	**3**	**1228**

Table TB05-11. Catch statistics for Selected Taxa collected in 156 6.1-m river otter trawl samples during Tampa Bay stratified-random sampling, 2005. 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	509	3.3	66.7	0.46	0.08	211.07	7.83	97	2.00	9	193
Cynoscion arenarius	402	2.6	16.7	0.38	0.26	850.21	39.43	41	0.62	10	72
Menticirrhus americanus	323	2.1	27.6	0.28	0.06	280.26	5.53	32	1.44	11	300
Farfantepenaeus duorarum	188	1.2	30.8	0.17	0.03	233.43	2.36	14	0.43	3	37
Leiostomus xanthurus	49	0.3	5.8	0.05	0.03	811.31	4.35	98	4.13	15	156
Archosargus probatocephalus	33	0.2	14.7	0.03	0.01	268.77	0.45	135	17.39	9	385
Cynoscion nebulosus	28	0.2	8.3	0.02	0.01	418.34	0.81	40	11.14	17	253
Micropogonias undulatus	9	0.1	3.8	0.01	0.00	647.77	0.60	86	11.82	29	131
Paralichthys albigutta	9	0.1	5.8	0.01	0.00	406.00	0.15	219	19.94	96	292
Elops saurus	5	0.0	0.6	0.00	0.00	1,249.00	0.61	282	22.21	230	340
Lutjanus griseus	3	0.0	1.9	0.00	0.00	717.20	0.13	144	50.85	44	210
Pogonias cromis	2	0.0	0.6	0.00	0.00	1,249.00	0.34	268	2.50	265	270
Sciaenops ocellatus	2	0.0	1.3	0.00	0.00	880.32	0.13	117	79.50	37	196
Totals	**1,562**	**10.1**	**82.1**	**1.42**	**0.31**	**270.19**	**43.62**	**.**	**.**	**3**	**385**

Appendix TB05-01. Monthly summary of species collected during Tampa Bay stratified-random sampling, 2005. 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=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Acanthostracion quadricornis	11	13	15	8	15	6	4	8	3	.	22	13	118
Achirus lineatus	5	3	5	6	3	5	22	40	46	39	27	25	226
Adinia xenica	.	7	1	1	.	.	.	.	.	.	3	3	15
Albula vulpes	.	.	2	2	.	.	.	.	.	.	.	.	4
Aluterus schoepfii	1	1	2	.	2	2	3	3	.	.	.	.	14
Ameiurus catus	.	.	.	.	.	1	.	4	.	1	.	.	6
Anarchopterus criniger	.	.	.	.	.	.	.	.	.	.	1	.	1
Anchoa cubana	.	.	.	1	281	.	.	34	.	.	.	.	316
Anchoa hepsetus	1	.	.	17	12	83	13	148	.	.	.	.	274
Anchoa mitchilli	8,237	3,229	1,800	20,304	10,833	3,982	2,573	7,282	10,031	69,434	8,976	11,880	158,561
Anchoa spp.	.	.	.	.	.	.	.	2	.	.	.	.	2
Ancylopsetta quadrocellata	.	.	2	2	1	3	1	.	.	.	.	.	9
Archosargus probatocephalus	40	74	43	71	31	58	45	84	51	37	88	32	654
Ariopsis felis	17	28	69	61	70	120	239	121	67	15	120	28	955
Astroscopus y-graecum	1	.	.	.	.	.	.	.	.	.	.	.	1
Bagre marinus	.	.	.	4	.	18	5	.	10	5	6	3	51
Bairdiella chrysoura	20	5	6	6	42	937	63	101	19	2	6	.	1,207
Bathygobius soporator	6	2	4	.	1	.	2	2	8	7	8	12	52
Belonesox belizanus	.	.	.	.	.	1	.	1	10	1	3	.	16
Brevoortia spp.	2	.	24	10	6	2	5	1	.	9	.	.	59
Calamus arctifrons	.	.	.	.	.	2	.	.	.	.	6	1	9
Callinectes ornatus	.	.	.	.	.	1	.	.	.	.	.	1	2
Callinectes sapidus	160	272	216	202	114	104	141	141	125	150	125	85	1,835
Caranx hippos	.	.	.	.	8	1	2	7	1	1	5	.	25
Centropomus undecimalis	68	69	83	131	49	287	72	175	105	37	107	97	1,280
Centropristis striata	.	5	1	.	.	.	.	.	.	.	.	.	6

Appendix TB05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Chaetodipterus faber	.	2	3	14	19	201	57	114	29	63	31	.	533
Chasmodes saburrae	4	.	.	1	.	2	8	7	8	6	44	3	83
Chilomycterus schoepfii	35	40	19	23	17	21	14	18	16	.	30	29	262
Chloroscombrus chrysurus	.	.	2	.	5	2	3	2	6	.	3	.	23
Citharichthys macrops	4	4	9	6	2	6	.	3	7	1	.	.	42
Ctenogobius smaragdus	.	.	.	.	.	.	.	.	.	.	3	.	3
Cynoscion arenarius	1	2	3	31	23	31	351	662	135	35	7	1	1,282
Cynoscion nebulosus	6	3	8	4	9	45	110	203	123	27	55	6	599
Cyprinodon variegatus	13	55	12	184	445	298	4	6	10	12	455	961	2,455
Dactyloscopus moorei	.	.	.	.	.	.	.	.	.	.	.	1	1
Dasyatis americana	.	.	.	.	1	2	.	.	7	.	.	.	10
Dasyatis sabina	24	26	40	25	28	39	23	30	55	20	27	12	349
Dasyatis say	.	.	1	1	2	4	2	4	2	3	1	3	23
Diapterus auratus	.	.	.	.	.	.	.	.	.	6	13	.	19
Diodon sp.	.	1	.	.	.	.	.	.	.	.	.	.	1
Diplectrum formosum	3	12	7	2	2	2	.	.	.	1	1	2	32
Diplodus holbrookii	.	16	.	8	.	.	.	1	.	.	30	.	55
Dorosoma petenense	.	.	.	.	.	9	.	.	.	.	.	.	9
Echeneis neucratoides	1	.	.	.	.	.	.	.	1	.	1	.	3
Echeneis sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
Elops saurus	51	6	101	36	12	15	20	328	26	9	55	23	682
Etropus crossotus	3	9	4	.	2	.	.	1	1	.	.	.	20
Eucinostomus gula	631	454	745	121	315	231	153	367	354	367	140	10	3,888
Eucinostomus harengulus	1,585	1,389	1,289	1,441	709	3,708	770	336	738	116	5	2	12,088
Eucinostomus spp.	4,747	3,179	2,589	673	263	271	670	58	8	15	7	16	12,496
Eugerres plumieri	80	8	17	8	42	76	243	2,259	368	222	203	199	3,725
Farfantepenaeus duorarum	125	193	64	48	26	26	55	19	31	64	49	35	735

Appendix TB05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Floridichthys carpio	216	32	38	113	173	93	96	430	527	828	938	1,210	4,694
Fundulus confluentus	.	.	1	.	3	.	.	.	.	.	.	1	5
Fundulus grandis	13	63	12	49	20	78	1	27	33	62	155	189	702
Fundulus seminolis	3	.	.	.	1	53	33	31	22	1	3	15	162
Fundulus similis	50	257	40	2,207	91	3	46	12	81	24	53	101	2,965
Fundulus sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Gambusia holbrooki	112	159	234	4	23	5	.	186	.	141	15	88	967
Gobiesox strumosus	3	2	1	1	3	1	.	2	3	1	2	1	20
Gobiidae sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
Gobiosoma bosc	30	9	26	6	3	2	24	114	79	79	207	56	635
Gobiosoma longipala	.	1	.	.	.	.	.	2	.	.	.	1	4
Gobiosoma robustum	40	17	27	55	5	13	50	11	17	51	161	81	528
Gobiosoma spp.	17	3	8	1	.	12	168	113	201	123	176	83	905
Gymnura micrura	2	2	.	.	5	.	2	1	5	.	.	.	17
Haemulon plumierii	.	1	1	.	.	.	.	.	.	.	.	.	2
Harengula jaguana	1	53	.	11	28	17	40	3,353	1,609	227	58	76	5,473
Hemichromis letourneuxi	.	.	.	.	.	.	.	.	.	.	1	.	1
Heterandria formosa	3	.	.	.	.	.	.	.	.	3	.	.	6
Hippocampus erectus	.	4	1	3	1	4	2	1	.	2	1	2	21
Hippocampus zosterae	2	1	.	.	.	6	2	1	.	1	4	3	20
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	.	.	1	.	.	1
Hyporhamphus meeki	.	25	.	.	.	.	.	.	2	8	.	.	35
Hyporhamphus spp.	.	.	.	.	.	1	1	.	1	.	.	.	3
Hypsoblennius hentz	.	.	2	.	.	1	2	.	1	.	2	1	9
Ictalurus punctatus	.	.	.	.	.	.	1	.	.	.	.	.	1
Labidesthes sicculus	.	13	.	.	.	.	.	15	16	.	.	.	44
Lagodon rhomboides	1,033	3,298	3,418	2,039	2,153	3,345	1,732	1,644	2,470	1,060	735	202	23,129

Appendix TB05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Leiostomus xanthurus	419	2,744	612	125	235	150	107	9	33	.	.	.	4,434
Lepisosteus osseus	2	.	1	2	2	.	1	2	8	32	1	1	52
Lepisosteus platyrhincus	2	.	1	.	.	.	.	.	.	.	.	.	3
Lepomis macrochirus	2	.	.	.	.	.	1	2	3	.	.	.	8
Lepomis microlophus	.	.	.	.	.	.	.	2	.	.	.	.	2
Lepomis punctatus	.	1	.	.	.	.	.	1	.	.	.	.	2
Lepomis spp.	.	.	.	.	.	.	1	8	.	.	.	.	9
Limulus polyphemus	6	10	10	13	6	10	5	6	7	5	2	2	82
Lucania goodei	.	.	.	.	.	4	.	18	1	.	.	.	23
Lucania parva	73	76	28	84	1,109	2,113	523	1,409	640	698	1,098	1,107	8,958
Lutjanus griseus	2	.	4	4	1	1	7	16	9	4	6	.	54
Lutjanus synagris	5	.	.	2	.	.	.	.	.	.	.	.	7
Malaclemys terrapin	.	.	.	1	.	.	.	.	1	.	.	.	2
Membras martinica	.	.	.	.	3	62	7	.	.	2	.	.	74
Menidia spp.	725	703	2,290	3,798	6,520	6,159	4,751	16,216	6,183	2,516	2,772	3,240	55,873
Menippe spp.	.	1	.	.	3	1	.	4	8	10	2	7	36
Menticirrhus americanus	3	22	15	32	45	18	3,918	1,090	109	170	238	49	5,709
Menticirrhus littoralis	.	.	.	.	.	22	.	.	.	9	.	.	31
Menticirrhus saxatilis	.	.	1	65	10	1	2	3	.	2	.	.	84
Menticirrhus spp.	.	.	.	.	1	.	.	.	2	.	.	.	3
Microgobius gulosus	44	53	88	54	10	423	465	298	228	1,115	1,029	583	4,390
Microgobius thalassinus	37	2	.	2	3	.	3	11	5	1	9	2	75
Micropogonias undulatus	9	12	4	4	8	.	.	.	.	.	.	.	37
Micropterus salmoides	.	.	.	.	.	3	1	4	1	.	.	.	9
Misgurnus anguillicaudatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Mugil cephalus	717	112	232	207	120	90	45	44	72	26	97	33	1,795
Mugil curema	5	2	160	6	7	7	33	6	3	87	57	63	436

Appendix TB05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Mugil gyrans	118	12	76	32	61	42	21	4	22	50	58	161	657
Mugil sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
Mycteroperca microlepis	.	.	.	.	.	.	.	5	8	.	.	.	13
Myrophis punctatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Nicholsina usta	5	.	5	.	5	.	.	.	.	.	.	.	15
Notropis petersoni	.	.	.	.	.	.	.	.	5	.	.	.	5
Ogcocephalus cubifrons	.	.	.	1	.	.	.	.	.	.	.	.	1
Oligoplites saurus	.	.	.	.	9	23	115	467	110	58	4	.	786
Opisthonema oglinum	.	.	.	49	4	8	28	11	159	2	3	5	269
Opsanus beta	1	.	5	12	1	12	26	6	5	2	16	6	92
Orthopristis chrysoptera	209	135	366	38	14	50	2	26	.	1	.	.	841
Ostraciidae sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Paralichthys albigutta	2	14	19	12	15	15	14	13	12	2	4	1	123
Peprilus burti	.	1	.	.	.	.	.	.	.	.	.	.	1
Peprilus paru	.	.	.	.	1	2	.	.	.	.	.	.	3
Poecilia latipinna	15	.	52	4	5	93	.	6	7	5	41	128	356
Pogonias cromis	1	2	1	.	6	2	4	1	5	2	6	7	37
Prionotus scitulus	63	80	119	120	26	78	109	411	159	113	247	43	1,568
Prionotus tribulus	39	56	8	6	10	4	4	1	.	44	13	15	200
Pterygoplichthys disjunctivus	.	.	.	.	.	.	.	.	.	.	.	1	1
Pterygoplichthys spp.	.	.	.	.	.	.	1	.	.	.	2	.	3
Rhinoptera bonasus	.	1	5	8	9	31	37	10	2	3	7	.	113
Rimapenaeus constrictus	.	.	.	.	.	.	16	31	.	1	2	.	50
Sarotherodon melanotheron	.	.	.	.	.	.	.	16	1	5	7	2	31
Sciaenidae sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Sciaenops ocellatus	217	156	96	47	51	38	27	12	7	15	59	110	835
Scomberomorus maculatus	.	.	1	.	.	1	.	65	.	.	.	.	67

Appendix TB05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=104	E=1,248
Scorpaena brasiliensis	.	1	.	1	.	1	1	.	.	.	.	.	4
Selene vomer	.	1	.	.	1	1	4	.	.	1	3	.	11
Serraniculus pumilio	.	1	.	.	.	.	.	.	.	.	.	.	1
Sicyonia brevirostris	.	.	.	6	.	.	.	.	.	.	.	.	6
Sicyonia laevigata	.	.	.	.	.	.	.	.	.	.	3	.	3
Sphoeroides nephelus	24	25	9	15	20	50	17	24	13	10	71	98	376
Sphoeroides spengleri	.	1	.	.	.	.	.	.	.	.	.	.	1
Sphyraena borealis	.	.	.	.	.	2	.	.	.	.	.	.	2
Sphyrna tiburo	1	.	.	.	.	3	.	.	1	.	.	.	5
Stephanolepis hispidus	4	3	1	5	7	15	1	.	.	.	5	28	69
Strongylura marina	7	29	1	5	6	15	17	1	2	10	.	2	95
Strongylura notata	95	84	89	95	117	95	86	148	48	122	31	2	1,012
Strongylura spp.	.	.	.	4	13	7	6	2	.	1	.	1	34
Strongylura timucu	6	3	.	1	.	.	.	.	1	.	.	.	11
Symphurus plagiusa	9	15	5	17	49	8	27	19	23	26	24	21	243
Syngnathus floridae	2	2	4	.	4	.	.	.	.	.	1	.	13
Syngnathus louisianae	2	3	1	.	4	10	22	23	17	9	25	6	122
Syngnathus scovelli	31	19	15	23	40	41	19	33	53	18	69	33	394
Synodus foetens	47	45	21	25	37	25	37	11	3	33	68	44	396
Tilapia spp.	.	.	.	.	.	23	.	53	8	.	1	3	88
Trachinotus carolinus	.	.	.	.	.	3	.	.	1	6	.	.	10
Trachinotus falcatus	.	.	22	.	.	.	.	.	2	151	50	26	251
Trinectes maculatus	433	154	129	31	38	192	676	332	114	308	278	180	2,865
Urophycis floridana	.	1	2	.	.	.	.	.	.	.	.	.	3
Totals	**20,789**	**17,629**	**15,493**	**32,899**	**24,535**	**24,190**	**19,060**	**39,398**	**25,569**	**78,993**	**19,585**	**21,603**	**339,743**

Appendix TB05-02. Summary by gear, stratum, and zone of species collected during Tampa Bay stratified-random sampling, 2005. 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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Acanthostracion quadricornis	17	2	1	.	.	18	22	58	118
Achirus lineatus	3	15	55	19	22	2	1	109	226
Adinia xenica	.	.	5	6	4	.	.	.	15
Albula vulpes	.	.	2	.	.	.	2	.	4
Aluterus schoepfii	1	.	.	.	.	2	1	10	14
Ameiurus catus	.	.	.	4	.	.	.	2	6
Anarchopterus criniger	.	.	1	.	.	.	.	.	1
Anchoa cubana	34	.	.	.	.	.	.	282	316
Anchoa hepsetus	1	14	174	16	27	.	.	42	274
Anchoa mitchilli	5,469	5,636	49,122	38,153	40,821	.	.	19,360	158,561
Anchoa spp.	.	.	.	.	.	.	.	2	2
Ancylopsetta quadrocellata	1	.	.	.	.	.	.	8	9
Archosargus probatocephalus	9	.	12	15	25	429	129	35	654
Ariopsis felis	11	25	1	.	.	631	108	179	955
Astroscopus y-graecum	.	.	1	.	.	.	.	.	1
Bagre marinus	.	1	.	.	.	17	20	13	51
Bairdiella chrysoura	159	1	41	29	64	13	23	877	1,207
Bathygobius soporator	.	.	8	20	20	.	.	4	52
Belonesox belizanus	.	.	.	10	6	.	.	.	16
Brevoortia spp.	.	.	.	16	22	16	5	.	59
Calamus arctifrons	3	.	.	.	.	.	6	.	9

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Callinectes ornatus	.	.	1	.	.	.	.	1	2
Callinectes sapidus	48	35	111	95	79	252	150	1,062	1,835
Caranx hippos	.	.	1	.	1	22	1	.	25
Centropomus undecimalis	.	.	4	114	41	938	183	.	1,280
Centropristis striata	.	.	.	.	.	1	.	5	6
Chaetodipterus faber	4	1	7	.	.	78	211	232	533
Chasmodes saburrae	17	.	55	.	1	1	1	8	83
Chilomycterus schoepfii	10	1	1	.	.	31	61	158	262
Chloroscombrus chrysurus	1	.	1	.	.	.	2	19	23
Citharichthys macrops	.	2	.	.	.	2	5	33	42
Ctenogobius smaragdus	.	.	3	.	.	.	.	.	3
Cynoscion arenarius	.	1	30	18	7	3	.	1,223	1,282
Cynoscion nebulosus	218	33	112	24	42	79	9	82	599
Cyprinodon variegatus	442	.	1,969	16	23	4	1	.	2,455
Dactyloscopus moorei	.	1	.	.	.	.	.	.	1
Dasyatis americana	.	.	.	.	.	8	1	1	10
Dasyatis sabina	2	7	5	.	1	170	58	106	349
Dasyatis say	.	.	.	.	.	17	2	4	23
Diapterus auratus	.	.	.	6	.	13	.	.	19
Diodon sp.	.	.	.	.	.	.	1	.	1
Diplectrum formosum	.	.	.	.	.	.	1	31	32
Diplodus holbrookii	.	.	8	.	.	.	30	17	55
Dorosoma petenense	.	.	9	.	.	.	.	.	9
Echeneis neucratoides	.	.	.	.	.	2	.	1	3
Echeneis sp.	.	.	.	.	.	1	.	.	1

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Elops saurus	1	.	1	5	3	547	115	10	682
Etropus crossotus	.	.	.	.	.	.	1	19	20
Eucinostomus gula	263	77	426	195	275	1,467	624	561	3,888
Eucinostomus harengulus	20	1	471	2,629	2,633	5,257	999	78	12,088
Eucinostomus spp.	504	197	1,468	4,326	5,662	1	.	315	12,496
Eugerres plumieri	18	39	113	612	613	107	12	2,211	3,725
Farfantepenaeus duorarum	88	9	108	21	47	38	26	395	735
Floridichthys carpio	519	15	3,929	31	197	2	1	.	4,694
Fundulus confluentus	.	.	3	2	.	.	.	.	5
Fundulus grandis	4	.	349	171	125	26	27	.	702
Fundulus seminolis	.	.	.	36	125	.	.	1	162
Fundulus similis	1	36	2,516	21	314	26	51	.	2,965
Fundulus sp.	.	.	.	1	.	.	.	.	1
Gambusia holbrooki	.	.	.	700	267	.	.	.	967
Gobiesox strumosus	2	.	2	7	5	.	.	4	20
Gobiidae sp.	.	.	.	.	.	.	.	1	1
Gobiosoma bosc	6	1	34	264	300	.	.	30	635
Gobiosoma longipala	.	.	.	.	.	.	.	4	4
Gobiosoma robustum	137	22	235	11	3	.	.	120	528
Gobiosoma spp.	57	118	178	181	235	.	.	136	905
Gymnura micrura	.	.	.	.	.	13	.	4	17
Haemulon plumierii	.	.	.	.	.	1	.	1	2
Harengula jaguana	273	1,708	3,337	13	.	114	14	14	5,473
Hemichromis letourneuxi	.	.	.	.	1	.	.	.	1
Heterandria formosa	.	.	.	3	3	.	.	.	6

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Hippocampus erectus	.	.	4	.	.	.	1	16	21
Hippocampus zosterae	13	2	5	.	.	.	.	.	20
Hypleurochilus caudovittatus	.	.	.	.	.	.	.	1	1
Hyporhamphus meeki	2	.	.	.	.	.	33	.	35
Hyporhamphus spp.	1	1	1	.	.	.	.	.	3
Hypsoblennius hentz	5	.	1	.	.	.	.	3	9
Ictalurus punctatus	.	.	.	.	.	.	.	1	1
Labidesthes sicculus	.	.	.	37	7	.	.	.	44
Lagodon rhomboides	4,598	90	2,125	357	318	11,632	2,743	1,265	23,129
Leiostomus xanthurus	2,439	70	1,267	25	101	345	124	63	4,434
Lepisosteus osseus	.	.	.	1	.	40	.	11	52
Lepisosteus platyrhincus	.	.	.	3	.	.	.	.	3
Lepomis macrochirus	.	.	.	5	3	.	.	.	8
Lepomis microlophus	.	.	.	2	.	.	.	.	2
Lepomis punctatus	.	.	.	2	.	.	.	.	2
Lepomis spp.	.	.	.	9	.	.	.	.	9
Limulus polyphemus	.	.	1	.	.	15	9	57	82
Lucania goodei	.	.	.	18	5	.	.	.	23
Lucania parva	2,890	22	3,426	883	1,645	.	.	92	8,958
Lutjanus griseus	6	.	3	8	5	13	12	7	54
Lutjanus synagris	.	1	.	.	.	.	3	3	7
Malaclemys terrapin	.	.	.	.	.	2	.	.	2
Membras martinica	1	61	11	.	1	.	.	.	74
Menidia spp.	1,560	1,083	26,816	8,798	17,612	.	.	4	55,873
Menippe spp.	.	.	.	.	.	.	.	36	36

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Menticirrhus americanus	1	45	3,919	15	21	16	.	1,692	5,709
Menticirrhus littoralis	.	.	9	.	.	.	22	.	31
Menticirrhus saxatilis	9	6	62	6	1	.	.	.	84
Menticirrhus spp.	.	1	.	.	.	.	.	2	3
Microgobius gulosus	373	333	1,547	711	896	.	.	530	4,390
Microgobius thalassinus	.	.	.	.	.	.	.	75	75
Micropogonias undulatus	.	.	.	1	.	4	.	32	37
Micropterus salmoides	.	.	.	4	5	.	.	.	9
Misgurnus anguillicaudatus	.	.	.	1	.	.	.	.	1
Mugil cephalus	.	.	119	23	635	900	118	.	1,795
Mugil curema	.	.	1	3	8	270	154	.	436
Mugil gyrans	.	.	84	6	32	488	47	.	657
Mugil sp.	.	.	1	.	.	.	.	.	1
Mycteroperca microlepis	.	.	.	.	.	8	3	2	13
Myrophis punctatus	.	.	.	.	.	.	.	1	1
Nicholsina usta	5	.	.	.	.	5	5	.	15
Notropis petersoni	.	.	.	5	.	.	.	.	5
Ogcocephalus cubifrons	.	.	.	.	.	.	.	1	1
Oligoplites saurus	30	33	597	31	47	34	13	1	786
Opisthonema oglinum	37	.	22	.	31	146	18	15	269
Opsanus beta	4	.	14	3	.	24	3	44	92
Orthopristis chrysoptera	410	28	38	.	.	41	91	233	841
Ostraciidae sp.	.	.	.	.	.	.	.	1	1
Paralichthys albigutta	7	6	6	1	.	35	20	48	123
Peprilus burti	.	.	.	.	.	.	.	1	1

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Peprilus paru	.	.	.	.	.	.	.	3	3
Poecilia latipinna	.	1	119	59	177	.	.	.	356
Pogonias cromis	.	.	1	.	.	23	11	2	37
Prionotus scitulus	3	12	5	.	2	1	2	1,543	1,568
Prionotus tribulus	2	6	8	2	5	6	2	169	200
Pterygoplichthys disjunctivus	.	.	.	.	.	.	.	1	1
Pterygoplichthys spp.	.	.	.	.	.	.	.	3	3
Rhinoptera bonasus	.	1	1	.	.	77	32	2	113
Rimapenaeus constrictus	.	.	.	.	.	.	.	50	50
Sarotherodon melanotheron	.	.	.	1	2	22	6	.	31
Sciaenidae sp.	.	.	.	.	1	.	.	.	1
Sciaenops ocellatus	45	2	46	302	165	246	27	2	835
Scomberomorus maculatus	.	.	65	.	.	1	1	.	67
Scorpaena brasiliensis	.	.	.	.	.	.	.	4	4
Selene vomer	.	.	.	.	.	9	2	.	11
Serraniculus pumilio	.	.	.	.	.	.	.	1	1
Sicyonia brevirostris	.	.	.	.	.	.	.	6	6
Sicyonia laevigata	.	.	.	.	.	.	.	3	3
Sphoeroides nephelus	76	27	103	13	8	53	38	57	376
Sphoeroides spengleri	.	.	.	.	.	.	.	1	1
Sphyraena borealis	2	.	.	.	.	.	.	.	2
Sphyrna tiburo	.	.	.	.	.	2	3	.	5
Stephanolepis hispidus	11	5	6	.	.	.	15	32	69
Strongylura marina	2	.	9	17	13	22	32	.	95
Strongylura notata	14	13	162	17	15	706	85	.	1,012

Appendix TB05-02. (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=107	E=133	E=168	E=133	E=130	E=183	E=57	E=336	E=1,248
Strongylura spp.	.	1	9	12	12	.	.	.	34
Strongylura timucu	.	.	1	3	5	1	1	.	11
Symphurus plagiusa	3	9	9	3	.	.	1	218	243
Syngnathus floridae	11	1	.	.	.	.	.	1	13
Syngnathus louisianae	45	7	16	.	2	.	.	52	122
Syngnathus scovelli	176	29	113	8	9	.	1	58	394
Synodus foetens	68	71	78	9	14	7	5	144	396
Tilapia spp.	3	.	5	36	34	6	.	4	88
Trachinotus carolinus	.	.	6	.	.	1	3	.	10
Trachinotus falcatus	.	1	165	.	.	50	35	.	251
Trinectes maculatus	.	3	7	641	393	.	.	1,821	2,865
Urophycis floridana	.	.	.	.	.	1	.	2	3
Totals	**21,195**	**9,969**	**105,923**	**59,871**	**74,244**	**25,601**	**6,625**	**36,284**	**339,743**

Appendix TB05-03. Summary by zone of species collected during Tampa Bay stratified-random sampling, 2005. 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=72	E=168	E=108	E=72	E=1,248
Acanthostracion quadricornis	21	12	6	34	44	.	1	.	.	118
Achirus lineatus	43	31	57	9	21	18	16	21	10	226
Adinia xenica	3	.	.	.	2	.	1	.	9	15
Albula vulpes	.	.	1	2	1	.	.	.	.	4
Aluterus schoepfii	4	6	.	3	1	.	.	.	.	14
Ameiurus catus	.	.	.	.	.	.	6	.	.	6
Anarchopterus criniger	1	.	.	.	.	.	.	.	.	1
Anchoa cubana	.	.	282	.	34	.	.	.	.	316
Anchoa hepsetus	10	14	150	39	14	.	12	26	9	274
Anchoa mitchilli	48,580	5,231	13,542	216	2,349	24,265	13,482	33,736	17,160	158,561
Anchoa spp.	.	.	.	.	2	.	.	.	.	2
Ancylopsetta quadrocellata	.	2	1	4	2	.	.	.	.	9
Archosargus probatocephalus	14	112	44	104	307	10	44	10	9	654
Ariopsis felis	108	300	233	28	167	16	60	35	8	955
Astroscopus y-graecum	.	.	1	.	.	.	.	.	.	1
Bagre marinus	13	3	29	.	.	1	4	1	.	51
Bairdiella chrysoura	177	75	14	18	42	70	801	3	7	1,207
Bathygobius soporator	.	.	2	.	7	3	19	16	5	52
Belonesox belizanus	.	.	.	.	.	5	11	.	.	16
Brevoortia spp.	10	.	2	9	.	16	2	11	9	59
Calamus arctifrons	.	.	.	7	2	.	.	.	.	9
Callinectes ornatus	.	.	.	.	2	.	.	.	.	2

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Callinectes sapidus	311	186	422	112	118	291	196	93	106	1,835
Caranx hippos	5	5	3	.	11	.	.	1	.	25
Centropomus undecimalis	90	279	103	147	506	30	102	12	11	1,280
Centropristis striata	.	.	.	.	6	.	.	.	.	6
Chaetodipterus faber	69	253	149	8	44	3	6	1	.	533
Chasmodes saburrae	66	6	2	2	4	.	1	1	1	83
Chilomycterus schoepfii	24	54	48	67	66	.	.	3	.	262
Chloroscombrus chrysurus	2	3	15	.	1	1	.	1	.	23
Citharichthys macrops	.	2	.	17	23	.	.	.	.	42
Ctenogobius smaragdus	.	.	3	.	.	.	.	.	.	3
Cynoscion arenarius	718	1	131	4	1	367	39	5	16	1,282
Cynoscion nebulosus	216	78	140	18	53	8	34	29	23	599
Cyprinodon variegatus	562	642	66	1,131	15	20	5	2	12	2,455
Dactyloscopus moorei	.	.	.	.	1	.	.	.	.	1
Dasyatis americana	1	7	1	1	.	.	.	.	.	10
Dasyatis sabina	87	89	112	6	23	5	10	15	2	349
Dasyatis say	6	4	7	3	3	.	.	.	.	23
Diapterus auratus	.	.	.	.	13	.	1	5	.	19
Diodon sp.	.	.	.	.	1	.	.	.	.	1
Diplectrum formosum	.	6	3	1	22	.	.	.	.	32
Diplodus holbrookii	.	.	.	39	16	.	.	.	.	55
Dorosoma petenense	.	.	.	.	9	.	.	.	.	9
Echeneis neucratoides	1	.	.	.	2	.	.	.	.	3
Echeneis sp.	.	.	1	.	.	.	.	.	.	1
Elops saurus	127	54	432	8	48	4	8	1	.	682

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Etropus crossotus	.	5	7	4	4	.	.	.	.	20
Eucinostomus gula	329	937	393	797	940	51	222	208	11	3,888
Eucinostomus harengulus	3,942	1,331	866	136	484	2,169	1,486	1,138	536	12,088
Eucinostomus spp.	91	993	52	709	345	3,190	3,687	2,414	1,015	12,496
Eugerres plumieri	38	77	2,202	.	68	260	936	69	75	3,725
Farfantepenaeus duorarum	51	52	147	87	139	58	89	81	31	735
Floridichthys carpio	1,808	824	518	85	1,231	34	194	.	.	4,694
Fundulus confluentus	.	.	.	3	.	.	.	1	1	5
Fundulus grandis	104	128	40	39	95	85	95	11	105	702
Fundulus seminolis	.	.	.	.	.	6	156	.	.	162
Fundulus similis	446	837	1,280	47	20	242	6	86	1	2,965
Fundulus sp.	.	.	.	.	.	.	1	.	.	1
Gambusia holbrooki	.	.	.	.	.	1	936	6	24	967
Gobiesox strumosus	2	1	3	.	1	4	5	3	1	20
Gobiidae sp.	.	.	1	.	.	.	.	.	.	1
Gobiosoma bosc	3	1	5	.	32	65	225	121	183	635
Gobiosoma longipala	.	.	.	2	2	.	.	.	.	4
Gobiosoma robustum	226	36	34	97	118	9	5	3	.	528
Gobiosoma spp.	216	31	58	48	67	16	176	94	199	905
Gymnura micrura	6	6	4	.	.	1	.	.	.	17
Haemulon plumierii	.	.	.	.	2	.	.	.	.	2
Harengula jaguana	2,318	2,804	186	111	41	13	.	.	.	5,473
Hemichromis letourneuxi	.	.	.	.	.	1	.	.	.	1
Heterandria formosa	.	.	.	.	.	.	6	.	.	6
Hippocampus erectus	1	2	7	6	4	.	1	.	.	21

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Hippocampus zosterae	5	4	.	5	6	.	.	.	.	20
Hypleurochilus caudovittatus	.	.	1	.	.	.	.	.	.	1
Hyporhamphus meeki	7	28	.	.	.	.	.	.	.	35
Hyporhamphus spp.	2	.	.	1	.	.	.	.	.	3
Hypsoblennius hentz	2	.	2	2	3	.	.	.	.	9
Ictalurus punctatus	.	.	.	.	.	.	1	.	.	1
Labidesthes sicculus	.	.	.	.	.	.	44	.	.	44
Lagodon rhomboides	591	1,896	1,035	8,861	9,924	93	209	399	121	23,129
Leiostomus xanthurus	322	304	25	3,102	506	10	68	76	21	4,434
Lepisosteus osseus	.	.	40	.	.	2	7	2	1	52
Lepisosteus platyrhincus	.	.	.	.	.	.	2	1	.	3
Lepomis macrochirus	.	.	.	.	.	1	5	.	2	8
Lepomis microlophus	.	.	.	.	.	.	2	.	.	2
Lepomis punctatus	.	.	.	.	.	.	2	.	.	2
Lepomis spp.	.	.	.	.	.	.	8	.	1	9
Limulus polyphemus	44	9	13	11	3	2	.	.	.	82
Lucania goodei	.	.	.	.	.	.	23	.	.	23
Lucania parva	997	1,869	715	1,551	1,208	437	1,960	31	190	8,958
Lutjanus griseus	1	7	2	14	14	.	9	4	3	54
Lutjanus synagris	.	.	.	7	.	.	.	.	.	7
Malaclemys terrapin	.	.	2	.	.	.	.	.	.	2
Membras martinica	3	.	70	.	.	.	1	.	.	74
Menidia spp.	17,588	1,737	2,714	1,410	6,010	5,930	11,325	7,612	1,547	55,873
Menippe spp.	6	8	13	3	6	.	.	.	.	36
Menticirrhus americanus	743	165	4,380	.	62	72	123	157	7	5,709

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Menticirrhus littoralis	.	.	.	22	9	.	.	.	.	31
Menticirrhus saxatilis	2	8	10	4	53	6	.	1	.	84
Menticirrhus spp.	2	.	1	.	.	.	.	.	.	3
Microgobius gulosus	538	423	385	750	307	353	761	153	720	4,390
Microgobius thalassinus	51	.	8	.	.	1	.	13	2	75
Micropogonias undulatus	12	.	15	.	.	3	6	.	1	37
Micropterus salmoides	.	.	.	.	.	3	2	.	4	9
Misgurnus anguillicaudatus	.	.	.	.	.	.	1	.	.	1
Mugil cephalus	318	72	325	73	349	483	143	27	5	1,795
Mugil curema	144	186	8	20	67	.	2	9	.	436
Mugil gyrans	26	284	39	128	142	2	7	25	4	657
Mugil sp.	.	1	.	.	.	.	.	.	.	1
Mycteroperca microlepis	.	.	.	5	8	.	.	.	.	13
Myrophis punctatus	.	.	.	1	.	.	.	.	.	1
Nicholsina usta	.	5	.	.	10	.	.	.	.	15
Notropis petersoni	.	.	.	.	.	.	5	.	.	5
Ogcocephalus cubifrons	.	.	1	.	.	.	.	.	.	1
Oligoplites saurus	450	56	136	7	59	20	13	39	6	786
Opisthonema oglinum	43	8	39	129	19	.	.	31	.	269
Opsanus beta	20	11	20	6	26	1	7	.	1	92
Orthopristis chrysoptera	10	138	15	523	153	2	.	.	.	841
Ostraciidae sp.	.	.	.	.	1	.	.	.	.	1
Paralichthys albigutta	13	26	22	10	42	.	3	5	2	123
Peprilus burti	.	1	.	.	.	.	.	.	.	1
Peprilus paru	.	.	1	2	.	.	.	.	.	3

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Poecilia latipinna	10	93	2	1	14	12	154	11	59	356
Pogonias cromis	7	2	10	8	8	.	.	.	2	37
Prionotus scitulus	81	399	607	122	344	3	4	8	.	1,568
Prionotus tribulus	18	21	62	6	8	39	9	34	3	200
Pterygoplichthys disjunctivus	.	.	.	.	.	.	1	.	.	1
Pterygoplichthys spp.	.	.	.	.	.	1	2	.	.	3
Rhinoptera bonasus	14	24	69	2	3	1	.	.	.	113
Rimapenaeus constrictus	.	20	28	.	2	.	.	.	.	50
Sarotherodon melanotheron	7	.	.	.	21	.	3	.	.	31
Sciaenidae sp.	.	.	.	.	.	.	.	1	.	1
Sciaenops ocellatus	94	46	60	60	106	349	104	10	6	835
Scomberomorus maculatus	65	.	1	.	1	.	.	.	.	67
Scorpaena brasiliensis	.	1	.	3	.	.	.	.	.	4
Selene vomer	.	1	.	.	10	.	.	.	.	11
Serraniculus pumilio	.	1	.	.	.	.	.	.	.	1
Sicyonia brevirostris	.	.	.	.	6	.	.	.	.	6
Sicyonia laevigata	.	.	.	3	.	.	.	.	.	3
Sphoeroides nephelus	55	70	52	83	76	12	12	14	2	376
Sphoeroides spengleri	.	.	.	1	.	.	.	.	.	1
Sphyraena borealis	.	.	.	.	2	.	.	.	.	2
Sphyrna tiburo	.	2	2	1	.	.	.	.	.	5
Stephanolepis hispidus	3	3	6	37	19	.	1	.	.	69
Strongylura marina	1	30	12	4	18	16	3	4	7	95
Strongylura notata	438	253	60	27	202	20	4	8	.	1,012
Strongylura spp.	5	.	.	2	3	10	7	7	.	34

Appendix TB05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	K	L	M	N	
	E=168	E=156	E=204	E=120	E=180	E=72	E=168	E=108	E=72	E=1,248
Strongylura timucu	.	1	.	1	1	.	.	8	.	11
Symphurus plagiusa	63	11	136	6	4	13	3	6	1	243
Syngnathus floridae	.	2	.	8	3	.	.	.	.	13
Syngnathus louisianae	45	26	15	5	24	.	4	3	.	122
Syngnathus scovelli	147	51	52	18	89	9	22	4	2	394
Synodus foetens	51	62	91	70	76	5	13	26	2	396
Tilapia spp.	.	2	6	4	2	.	74	.	.	88
Trachinotus carolinus	.	.	1	3	6	.	.	.	.	10
Trachinotus falcatus	.	17	36	25	173	.	.	.	.	251
Trinectes maculatus	16	.	44	1	4	728	1,695	67	310	2,865
Urophycis floridana	.	.	1	1	1	.	.	.	.	3
Totals	**83,910**	**23,904**	**33,195**	**21,357**	**27,789**	**39,977**	**39,941**	**47,059**	**22,611**	**339,743**

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Charlotte Harbor

Charlotte Harbor is one of the most pristine bay systems in the state (Florida Department of Natural Resources 1983), and approximately 90% of its waters are designated aquatic preserves. Charlotte Harbor is connected to the Gulf of Mexico by Boca Grande Pass, San Carlos Bay, and several smaller inlets and receives freshwater inflow from the Peace, Caloosahatchee, and Myakka rivers. The only substantial urban developments occur at the mouths of the Peace (Port Charlotte and Punta Gorda) and Caloosahatchee (Fort Myers and Cape Coral) rivers; however, rapid population growth and development in the Charlotte Harbor area and watershed have resulted in increased stress on this estuarine system (Hammett 1990; Charlotte Harbor National Estuary Program 2000). It has been estimated that between 1945 and 1982, 29% of Charlotte Harbor's seagrass beds were lost (Harris et al. 1983), although overall seagrass coverage appears to have remained stable in more recent years (Tomasko 2003). Portions of Charlotte Harbor were severely impacted during August 2004 by Hurricane Charley, which made landfall in this area as a Category 4 storm.

The Fisheries-Independent Monitoring (FIM) program has conducted intensive sampling of the fish and selected invertebrate fauna in Charlotte Harbor since 1989. The area sampled was divided into six bay zones (A-E and G) and three riverine zones (H, M, and P; Figure CH05-01). Monthly stratified-random sampling (SRS), stratified by depth, was conducted year-round using 21.3-m seines, 183-m haul seines, and 6.1-m otter trawls. The 21.3-m and 183-m haul seine samples were also stratified by habitat type. All methods used were the same as those described in the Methods section of this report. This section summarizes FIM program data collected in Charlotte Harbor during 2005.

Stratified-Random Sampling

A total of 409,837 fish and selected invertebrates were collected during Charlotte Harbor SRS in 2005 (Table CH05-01; Appendices CH05-01, -02, and -03). Over 163 species were represented in 1,716 samples. As in all previous years, *Anchoa mitchilli* (n=198,785), *Lagodon rhomboides* (n=37,802), *Menidia* spp. (n=37,639), *Harengula* *jaguana* (n=21,890), *Eucinostomus* spp. (n=19,691), and *Lucania parva* (n=14,310) were among the most numerous fishes collected. Together they comprised 80.5% of the year's total catch. Monthly catch totals were lowest during March (n=14,461) and highest in August (n=83,965). The total yearly catch was largest in the Gasparilla Sound area (Zone B ; n=95,609 animals; 216 samples) and smallest in the Peace river (Zone P; n=16,067; 84 samples). Selected Taxa (26,683 individuals; 28 species) accounted for 6.5% of the total catch. The most abundant Selected Taxa were *Farfantepenaeus duorarum* (n=7,418), *Leiostomus xanthurus* (n=4,572), *Cynoscion arenarius* (n=3,355), *Mugil cephalus* (n=2,449), *Callinectes sapidus* (n=1,725), *Sciaenops ocellatus* (n=1,227), *Centropomus undecimalis* (n=1,030), and *Menticirrhus americanus* (n=1,001). A species new to Charlotte Harbor SRS collections, *Ctenopharyngodon idella* (grass carp), was collected in the Caloosahatchee river.

Bay Sampling

21.3-m Bay Seines. A total of 256,421 animals were collected in 21.3-m bay seines (552 samples), representing 62.6% of the total SRS catch (Table CH05-02). *Anchoa mitchilli* (n=131,462) accounted for over half (51.3%) of the bay seine catch. *Menidia* spp. (n=23,977), *H. jaguana* (n=21,618), *Eucinostomus* spp. (n=16,242), *L. parva* (n=14,015), and *L. rhomboides* (n=12,448) together accounted for an additional 34.4% of the bay seine catch.

A total of 11,592 animals (23 taxa) designated as Selected Taxa were collected in 21.3-m bay seines, accounting for 4.5% of the total bay seine catch (Table CH05-03). The most numerous were *F. duorarum* (n=4,456) and *L. xanthurus* (n=4,095), followed by *Cynoscion nebulosus* (n=772) and *M. cephalus* (n=761). Together these species comprised 87.0% of the Selected Taxa collected in 21.3-m bay seines. *Farfantepenaeus duorarum* was the most frequently collected species in these samples (50.7% occurrence).

183-m Haul Seines. A total of 31,172 animals were collected in 183-m haul seines (276 samples), representing 7.6% of the total SRS catch (Table CH05-04). *Lagodon rhomboides* was the most numerous (n=20,991) and most frequently collected species (57.6% occurrence), accounting for 67.3% of the total 183-m haul seine catch. The next most numerous species were *Ariopsis felis* (n=954) and *Eucinostomus gula* (n=882).

A total of 3,760 animals (26 taxa) designated as Selected Taxa were collected in 183-m haul seines, accounting for 12.1% of the total 183-m haul seine catch (Table CH05-05). *Centropomus undecimalis* (n=852), *Archosargus probatocephalus* (n=659), *M. cephalus* (n=398), *Lutjanus griseus* (n=321), and *C. sapidus* (n=282) accounted for the majority (66.8%) of the Selected Taxa collected in the 183-m haul seine. *Scomberomorus maculatus* (n=13), *Trachinotus carolinus* (n=11), *Pomatomus saltatrix* (n=8), and *Megalops atlanticus* (n=6) were collected exclusively in this gear.

6.1-m Bay Otter Trawls. A total of 21,241 animals were collected in the 6.1-m bay otter trawl samples (360 hauls), accounting for 5.2% of the total SRS collection (Table CH05-06). *Anchoa mitchilli* (n=4,235) was the most numerous, despite being collected in only 11.4% of these samples. *Lagodon rhomboides* (n=3,998) was the next most abundant species in the bay otter trawls.

Approximately one-third (n=6,927; 32.6%) of the total catch in the 6.1-m bay otter trawls were Selected Taxa (Table CH05-07). *Farfantepenaeus duorarum* (n=2,655) and *C. arenarius* (n=2,651) accounted for 76.6% of the Selected Taxa collected in the 6.1-m bay otter trawls. *Callinectes sapidus* (n=694) and *M. americanus* (n=457) were also well-represented in these samples.

River Sampling

21.3-m River Seines. A total of 85,842 animals, accounting for 20.9% of the total yearly SRS catch, were collected in 21.3-m river seines (372 hauls; Table CH05-08). *Anchoa mitchilli* (n=52,985) and *Menidia* spp. (n=13,660) dominated these collections, comprising 77.6% of river seine catch. *Gambusia holbrooki* (n=5,077) and *Eucinostomus* spp. (n=3,130) were also collected in large numbers in the 21.3-m river seines. *Menidia* spp. was collected most frequently (80.9% occurrence).

A total of 3,102 animals (17 taxa), accounting for 3.6% of the 21.3-m river seine catch, were Selected Taxa (Table CH05-09). The most numerous were *M. cephalus* (n=1,290), *S. ocellatus* (n=872), and *Leiostomus xanthurus* (n=356).

6.1-m River Otter Trawls. A total of 15,161 animals were collected in 6.1-m river otter trawl samples (156 hauls; Table CH05-10). *Anchoa mitchilli* (n=10,103) accounted for two-thirds (66.6%) of the catch taken in this gear type. *Trinectes maculatus* (n=2,753) ranked next in abundance, contributing an additional 18.2% of the catch, and was the most frequently taken species in these samples (70.5% occurrence).

A total of 1,302 animals (15 taxa), accounting for 8.6% of the 6.1-m river otter trawl catch, were designated as Selected Taxa (Table CH05-11). *Cynoscion arenarius* (n=542), *C. sapidus* (n=385), *F. duorarum* (n=162), and *M. americanus* (n=122) were the most abundant; together, these species comprised 93.0% of the Selected Taxa collected in this gear type. *Callinectes sapidus* was the most frequently collected of the Selected Taxa, occurring in 62.2% of the 6.1-m river otter trawl collections.

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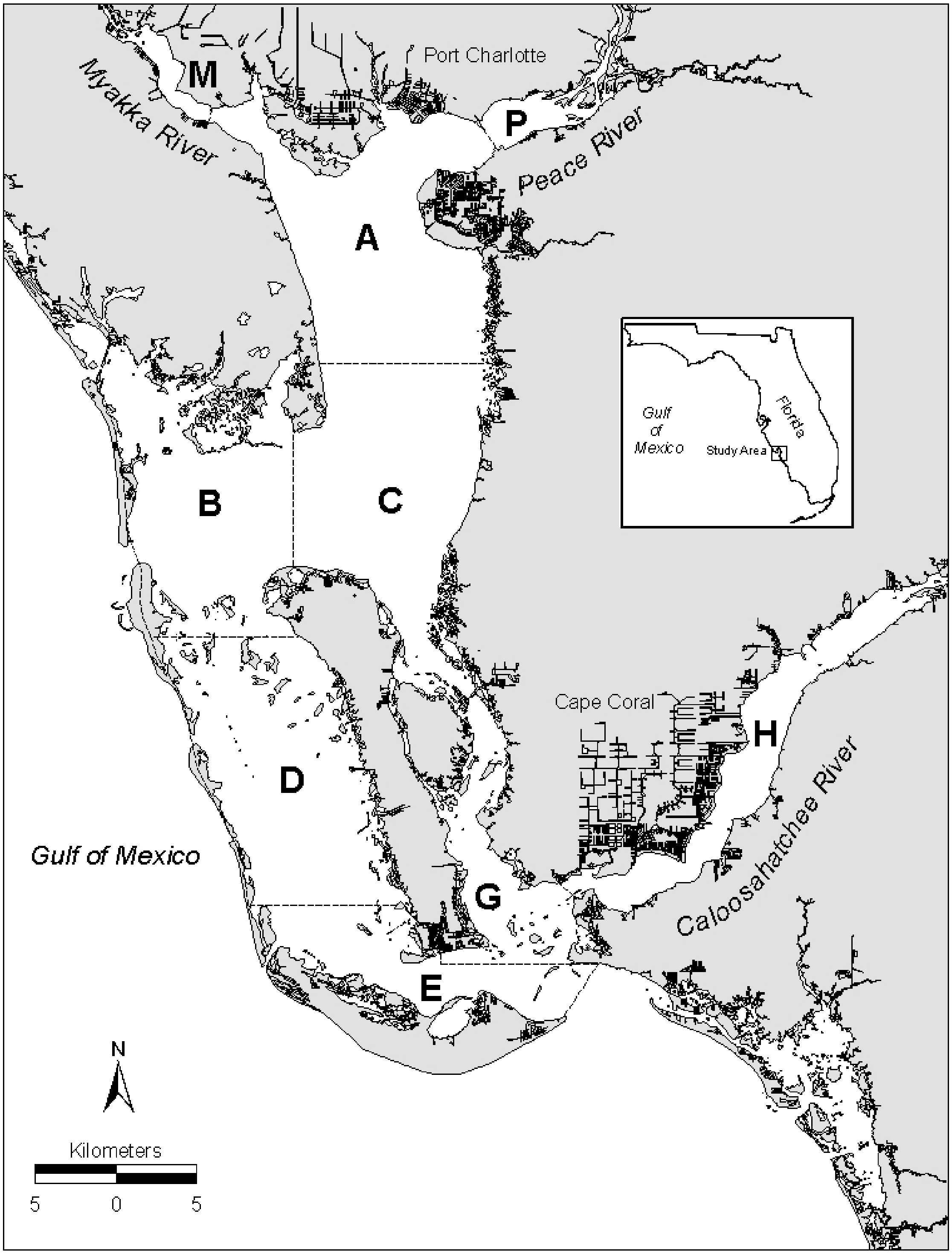

Figure CH05-01. Map of Charlotte Harbor sampling area. Zones are labeled A-E, G, H, M and P.

Table CH05-01. Summary of catch and effort data for Charlotte Harbor stratified-random sampling, 2005.

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	9,213	120	.	.	744	60	7,265	84	17,222	264
B	84,679	96	.	.	8,117	48	2,813	72	95,609	216
C	29,975	96	.	.	3,069	48	3,708	72	36,752	216
D	57,032	96	.	.	9,095	48	3,792	60	69,919	204
E	47,287	72	.	.	8,754	36	2,267	36	58,308	144
G	28,235	72	.	.	1,393	36	1,396	36	31,024	144
H	.	.	50,496	276	.	.	3,217	84	53,713	360
M	.	.	26,281	48	.	.	4,942	36	31,223	84
P	.	.	9,065	48	.	.	7,002	36	16,067	84
Totals	**256,421**	**552**	**85,842**	**372**	**31,172**	**276**	**36,402**	**516**	**409,837**	**1,716**

Table CH05-02. Catch statistics for 10 dominant taxa collected in 552 21.3-m bay seine samples during Charlotte Harbor stratified-random sampling, 2005. 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	131,462	51.3	24.5	170.11	63.46	876.47	29,097.14	29	0.02	15	75
Menidia spp.	23,977	9.4	26.1	31.03	15.78	1,194.74	8,280.00	33	0.07	11	88
Harengula jaguana	21,618	8.4	4.7	27.97	26.71	2,243.29	14,742.86	26	0.04	22	82
Eucinostomus spp.	16,242	6.3	54.9	21.02	2.03	226.50	449.29	28	0.05	8	42
Lucania parva	14,015	5.5	27.4	18.14	4.28	553.90	1,591.43	26	0.04	9	41
Lagodon rhomboides	12,448	4.9	45.5	16.11	1.92	279.40	377.14	41	0.15	7	153
Farfantepenaeus duorarum	4,456	1.7	50.7	5.77	1.05	428.06	396.43	11	0.07	3	35
Microgobius gulosus	4,290	1.7	48.2	5.55	0.82	346.10	321.43	28	0.10	11	58
Leiostomus xanthurus	4,095	1.6	8.5	5.30	2.79	1,235.92	1,397.86	31	0.17	6	97
Eucinostomus gula	3,206	1.3	36.6	4.15	0.47	268.02	73.57	51	0.16	38	88
Subtotal	235,809	92.1	.	.	.	.	.	.	.	3	153
Totals	**256,421**	**100.0**	**.**	**331.81**	**72.80**	**515.51**	**29,642.14**	**.**	**.**	**3**	**455**

Table CH05-03. Catch statistics for Selected Taxa collected in 552 21.3-m bay seine samples during stratified-random sampling, 2005. 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	4,456	1.7	50.7	5.77	1.05	428.06	396.43	11	0.07	3	35
Leiostomus xanthurus	4,095	1.6	8.5	5.30	2.79	1,235.92	1,397.86	31	0.17	6	97
Cynoscion nebulosus	772	0.3	21.6	1.00	0.15	349.79	37.14	37	0.65	12	215
Mugil cephalus	761	0.3	2.4	0.98	0.87	2,082.63	480.71	26	0.73	17	420
Menticirrhus americanus	389	0.2	6.9	0.50	0.21	966.99	100.71	33	0.61	12	128
Archosargus probatocephalus	227	0.1	11.4	0.29	0.08	647.09	34.29	46	3.37	11	305
Callinectes sapidus	210	0.1	19.4	0.27	0.03	295.87	9.29	52	3.57	6	220
Sciaenops ocellatus	169	0.1	8.2	0.22	0.06	618.11	25.00	63	5.91	9	418
Cynoscion arenarius	129	0.1	2.4	0.17	0.13	1,849.45	72.14	28	0.63	17	58
Mugil gyrans	104	0.0	2.4	0.13	0.10	1,674.54	52.14	35	3.62	15	208
Lutjanus griseus	68	0.0	6.5	0.09	0.02	483.69	4.29	56	5.83	8	220
Paralichthys albigutta	46	0.0	6.0	0.06	0.01	457.72	3.57	82	11.25	16	310
Trachinotus falcatus	45	0.0	2.4	0.06	0.03	1,134.52	14.29	36	2.85	16	113
Menticirrhus saxatilis	38	0.0	2.5	0.05	0.02	1,112.86	11.43	47	2.57	15	71
Centropomus undecimalis	34	0.0	2.4	0.04	0.02	1,006.83	9.29	181	22.12	16	455
Lutjanus synagris	26	0.0	1.8	0.03	0.02	1,050.01	5.71	48	5.24	18	168
Mugil curema	8	0.0	0.7	0.01	0.01	1,243.10	2.14	26	1.14	22	32

Table CH05-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Mycteroperca microlepis	5	0.0	0.9	0.01	0.00	1,046.89	0.71	129	28.53	41	220
Epinephelus itajara	4	0.0	0.2	0.01	0.01	2,349.47	2.86	34	2.92	26	40
Elops saurus	3	0.0	0.5	0.00	0.00	1,354.00	0.71	260	18.35	235	296
Menippe sp.	1	0.0	0.2	0.00	0.00	2,349.47	0.71	8	.	8	8
Menticirrhus littoralis	1	0.0	0.2	0.00	0.00	2,349.47	0.71	42	.	42	42
Pogonias cromis	1	0.0	0.2	0.00	0.00	2,349.47	0.71	184	.	184	184
Totals	**11,592**	**4.5**	**77.0**	**15.00**	**3.17**	**496.83**	**1,436.43**	**.**	**.**	**3**	**455**

Table CH05-04. Catch statistics for 10 dominant taxa collected in 276 183-m haul seine samples during Charlotte Harbor stratified-random sampling, 2005. 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	20,991	67.3	57.6	76.05	12.41	271.17	1,926.00	100	0.18	35	222
Ariopsis felis	954	3.1	26.8	3.46	0.94	452.29	200.00	247	1.68	83	415
Eucinostomus gula	882	2.8	29.3	3.20	0.77	398.68	155.00	75	0.33	45	105
Centropomus undecimalis	852	2.7	43.5	3.09	0.45	244.45	56.00	474	4.48	150	930
Opisthonema oglinum	693	2.2	8.3	2.51	1.27	842.29	273.00	127	0.86	75	171
Archosargus probatocephalus	659	2.1	40.6	2.39	0.34	236.16	40.00	216	3.08	24	430
Chaetodipterus faber	549	1.8	15.2	1.99	0.79	662.75	155.00	188	1.83	93	365
Bairdiella chrysoura	420	1.3	12.0	1.52	0.78	851.91	196.00	118	0.70	49	175
Mugil cephalus	398	1.3	39.9	1.44	0.18	205.72	20.00	295	3.40	96	444
Chilomycterus schoepfii	383	1.2	33.3	1.39	0.19	226.62	19.00	122	2.33	33	305
Subtotal	26,781	85.8	.	.	.	.	.	.	.	24	930
Totals	**31,172**	**100.0**	**.**	**112.94**	**13.85**	**203.78**	**2,037.00**	**.**	**.**	**9**	**1010**

Table CH05-05. Catch statistics for Selected Taxa collected in 276 183-m haul seine samples during stratified-random sampling, 2005. 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
Centropomus undecimalis	852	2.7	43.5	3.09	0.45	244.45	56.00	474	4.48	150	930
Archosargus probatocephalus	659	2.1	40.6	2.39	0.34	236.16	40.00	216	3.08	24	430
Mugil cephalus	398	1.3	39.9	1.44	0.18	205.72	20.00	295	3.40	96	444
Lutjanus griseus	321	1.0	23.9	1.16	0.28	405.40	54.00	159	2.39	45	275
Callinectes sapidus	282	0.9	29.3	1.02	0.15	243.76	17.00	111	2.24	35	190
Mugil gyrans	266	0.9	18.8	0.96	0.20	350.70	28.00	156	2.11	79	333
Sciaenops ocellatus	182	0.6	29.7	0.66	0.08	202.01	9.00	381	10.95	57	710
Elops saurus	154	0.5	18.1	0.56	0.11	315.10	17.00	302	4.63	155	510
Mycteroperca microlepis	146	0.5	10.5	0.53	0.13	413.35	20.00	163	4.19	80	452
Paralichthys albigutta	104	0.3	21.7	0.38	0.05	241.01	6.00	196	7.55	45	425
Cynoscion nebulosus	87	0.3	15.9	0.32	0.07	355.63	12.00	271	11.54	47	510
Mugil curema	83	0.3	6.5	0.30	0.12	642.94	18.00	207	4.48	110	295
Leiostomus xanthurus	57	0.2	7.6	0.21	0.06	475.53	10.00	97	3.76	55	185
Trachinotus falcatus	48	0.2	6.2	0.17	0.06	581.91	11.00	239	12.26	49	382
Farfantepenaeus duorarum	28	0.1	4.7	0.10	0.03	528.85	5.00	23	1.38	9	39
Pogonias cromis	16	0.1	3.3	0.06	0.02	633.36	4.00	248	20.71	174	525
Scomberomorus maculatus	13	0.0	3.3	0.05	0.02	605.76	3.00	283	26.01	175	480

Table CH05-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Menticirrhus americanus	13	0.0	1.4	0.05	0.04	1,295.46	10.00	217	7.90	192	303
Trachinotus carolinus	11	0.0	2.9	0.04	0.01	615.75	2.00	308	6.19	282	351
Lutjanus synagris	10	0.0	1.8	0.04	0.02	809.18	3.00	90	3.54	75	110
Pomatomus saltatrix	8	0.0	1.1	0.03	0.02	1,014.26	4.00	407	14.03	365	461
Megalops atlanticus	6	0.0	0.7	0.02	0.02	1,410.87	5.00	634	29.64	540	690
Epinephelus itajara	5	0.0	1.8	0.02	0.01	737.54	1.00	211	27.15	110	270
Menippe spp.	5	0.0	0.7	0.02	0.01	1,368.79	4.00	49	4.93	35	61
Menticirrhus littoralis	5	0.0	0.4	0.02	0.02	1,661.32	5.00	271	9.67	250	305
Cynoscion arenarius	1	0.0	0.4	0.00	0.00	1,661.32	1.00	120	.	120	120
Totals	**3,760**	**12.1**	**91.7**	**13.62**	**0.99**	**120.58**	**135.00**	**.**	**.**	**9**	**930**

Table CH05-06. Catch statistics for 10 dominant taxa collected in 360 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2005. 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	4,235	19.9	11.4	0.79	0.27	658.29	68.74	50	0.19	15	69
Lagodon rhomboides	3,998	18.8	34.2	0.75	0.15	384.22	26.24	82	0.37	12	149
Farfantepenaeus duorarum	2,655	12.5	50.0	0.50	0.15	566.65	46.28	26	0.20	4	47
Cynoscion arenarius	2,651	12.5	12.5	0.50	0.17	645.06	37.24	29	0.38	7	196
Eucinostomus gula	979	4.6	28.1	0.18	0.03	314.74	4.65	68	0.41	40	111
Callinectes sapidus	694	3.3	43.6	0.13	0.02	252.81	3.24	96	1.39	7	184
Prionotus scitulus	668	3.1	45.6	0.13	0.01	201.42	2.29	89	1.16	14	175
Trinectes maculatus	526	2.5	23.3	0.10	0.02	392.48	5.60	66	0.56	25	105
Orthopristis chrysoptera	501	2.4	13.1	0.09	0.02	488.14	5.33	82	1.39	7	167
Menticirrhus americanus	457	2.2	17.8	0.09	0.02	377.96	4.32	61	2.06	11	256
Subtotal	17,364	81.8	.	.	.	.	.	.	.	4	256
Totals	**21,241**	**100.0**	**.**	**3.98**	**0.42**	**201.26**	**70.90**	**.**	**.**	**3**	**945**

Table CH05-07. Catch statistics for Selected Taxa collected in 360 6.1-m bay otter trawl samples during Charlotte Harbor stratified-random sampling, 2005. 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	2,655	12.5	50.0	0.50	0.15	566.65	46.28	26	0.20	4	47
Cynoscion arenarius	2,651	12.5	12.5	0.50	0.17	645.06	37.24	29	0.38	7	196
Callinectes sapidus	694	3.3	43.6	0.13	0.02	252.81	3.24	96	1.39	7	184
Menticirrhus americanus	457	2.2	17.8	0.09	0.02	377.96	4.32	61	2.06	11	256
Menippe spp.	155	0.7	14.7	0.03	0.01	399.67	1.48	24	1.19	5	116
Paralichthys albigutta	129	0.6	23.1	0.02	0.00	242.53	0.47	179	4.81	76	325
Lutjanus synagris	67	0.3	10.0	0.01	0.00	379.04	0.40	61	3.61	15	127
Leiostomus xanthurus	39	0.2	2.8	0.01	0.00	885.22	0.94	124	3.12	95	181
Mycteroperca microlepis	23	0.1	3.3	0.00	0.00	615.59	0.27	136	7.96	36	200
Archosargus probatocephalus	18	0.1	2.2	0.00	0.00	940.76	0.54	37	6.79	13	130
Micropogonias undulatus	14	0.1	1.9	0.00	0.00	826.53	0.27	100	6.60	67	138
Cynoscion nebulosus	13	0.1	1.9	0.00	0.00	752.81	0.20	132	27.58	12	253
Lutjanus griseus	6	0.0	1.4	0.00	0.00	907.42	0.15	145	30.81	25	215
Epinephelus itajara	3	0.0	0.8	0.00	0.00	1,092.39	0.07	147	80.88	25	300
Menticirrhus saxatilis	3	0.0	0.6	0.00	0.00	1,412.64	0.13	58	16.01	26	75
Totals	**6,927**	**32.6**	**83.1**	**1.30**	**0.24**	**355.20**	**46.34**	**.**	**.**	**4**	**325**

Table CH05-08. Catch statistics for 10 dominant taxa collected in 372 21.3-m river seine samples during Charlotte Harbor stratified-random sampling, 2005. 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	52,985	61.7	51.9	209.46	63.39	583.71	19,811.76	29	0.03	15	62
Menidia spp.	13,660	15.9	80.9	54.00	5.61	200.46	832.35	35	0.08	9	82
Gambusia holbrooki	5,077	5.9	25.0	20.07	8.42	809.58	2,848.53	23	0.06	11	46
Eucinostomus spp.	3,130	3.6	44.9	12.37	2.59	403.12	754.41	27	0.13	9	43
Eucinostomus harengulus	1,422	1.7	34.9	5.62	1.20	412.21	335.29	52	0.24	32	100
Mugil cephalus	1,290	1.5	11.8	5.10	2.71	1,024.80	960.29	29	0.48	18	382
Sciaenops ocellatus	872	1.0	8.6	3.45	2.80	1,564.67	1,038.24	41	0.75	14	485
Notropis petersoni	855	1.0	3.0	3.38	2.15	1,225.33	755.88	28	0.19	19	42
Brevoortia spp.	748	0.9	4.8	2.96	1.61	1,050.88	522.06	30	0.21	16	57
Trinectes maculatus	583	0.7	25.8	2.30	0.47	396.66	113.24	22	0.31	8	55
Subtotal	80,622	93.9	.	.	.	.	.	.	.	8	485
Totals	**85,842**	**100.0**	**.**	**339.35**	**65.10**	**370.02**	**20,058.82**	**.**	**.**	**3**	**950**

Table CH05-09. Catch statistics for Selected Taxa collected in 372 21.3-m river seine samples during stratified-random sampling, 2005. 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	1,290	1.5	11.8	5.10	2.71	1,024.80	960.29	29	0.48	18	382
Sciaenops ocellatus	872	1.0	8.6	3.45	2.80	1,564.67	1,038.24	41	0.75	14	485
Leiostomus xanthurus	356	0.4	8.6	1.41	0.67	921.04	220.59	26	0.58	10	94
Callinectes sapidus	154	0.2	18.5	0.61	0.10	317.33	17.65	25	1.91	5	175
Centropomus undecimalis	143	0.2	11.8	0.57	0.11	384.86	20.59	104	10.73	16	660
Farfantepenaeus duorarum	117	0.1	9.7	0.46	0.11	469.86	26.47	9	0.28	3	19
Cynoscion nebulosus	39	0.0	4.6	0.15	0.05	639.79	14.71	47	3.81	17	140
Archosargus probatocephalus	33	0.0	4.8	0.13	0.04	567.64	10.29	175	14.33	64	396
Cynoscion arenarius	32	0.0	2.4	0.13	0.06	897.73	17.65	39	2.00	13	78
Menticirrhus americanus	20	0.0	1.3	0.08	0.04	1,053.08	13.24	47	2.18	29	71
Elops saurus	19	0.0	2.4	0.08	0.03	850.63	8.82	54	11.32	32	245
Lutjanus griseus	14	0.0	3.0	0.06	0.02	639.26	4.41	148	14.60	42	210
Pogonias cromis	8	0.0	0.5	0.03	0.02	1,361.98	5.88	24	1.28	19	30
Paralichthys albigutta	2	0.0	0.5	0.01	0.01	1,361.98	1.47	62	20.50	41	82
Lutjanus synagris	1	0.0	0.3	0.00	0.00	1,928.73	1.47	142	.	142	142
Mugil curema	1	0.0	0.3	0.00	0.00	1,928.73	1.47	26	.	26	26
Mugil gyrans	1	0.0	0.3	0.00	0.00	1,928.73	1.47	29	.	29	29
Totals	**3,102**	**3.6**	**54.3**	**12.26**	**3.98**	**625.42**	**1,042.65**	**.**	**.**	**3**	**660**

Table CH05-10. Catch statistics for 10 dominant taxa collected in 156 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2005. 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	10,103	66.6	35.9	8.73	3.67	524.52	408.93	34	0.11	15	66
Trinectes maculatus	2,753	18.2	70.5	2.38	0.64	334.99	75.01	38	0.37	9	160
Cynoscion arenarius	542	3.6	35.9	0.47	0.12	332.15	12.28	44	1.29	14	210
Callinectes sapidus	385	2.5	62.2	0.33	0.04	156.30	3.10	96	2.47	6	195
Bairdiella chrysoura	276	1.8	22.4	0.24	0.12	602.50	14.84	96	1.63	14	165
Ariopsis felis	225	1.5	28.8	0.19	0.06	395.84	5.94	120	6.23	42	330
Anchoa hepsetus	165	1.1	0.6	0.14	0.14	1,249.00	22.26	32	0.06	30	33
Farfantepenaeus duorarum	162	1.1	27.6	0.14	0.03	265.27	2.70	20	0.61	4	37
Menticirrhus americanus	122	0.8	12.8	0.10	0.03	391.60	3.24	69	4.26	17	291
Bagre marinus	54	0.4	12.8	0.05	0.02	478.54	2.43	353	8.04	151	454
Subtotal	14,787	97.6	.	.	.	.	.	.	.	4	454
Totals	**15,161**	**100.0**	**.**	**13.11**	**3.73**	**355.42**	**413.25**	**.**	**.**	**4**	**980**

Table CH05-11. Catch statistics for Selected Taxa collected in 156 6.1-m river otter trawl samples during Charlotte Harbor stratified-random sampling, 2005. 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	542	3.6	35.9	0.47	0.12	332.15	12.28	44	1.29	14	210
Callinectes sapidus	385	2.5	62.2	0.33	0.04	156.30	3.10	96	2.47	6	195
Farfantepenaeus duorarum	162	1.1	27.6	0.14	0.03	265.27	2.70	20	0.61	4	37
Menticirrhus americanus	122	0.8	12.8	0.10	0.03	391.60	3.24	69	4.26	17	291
Micropogonias undulatus	41	0.3	7.1	0.04	0.02	527.40	1.89	78	4.82	32	133
Leiostomus xanthurus	25	0.2	5.1	0.02	0.01	626.75	1.48	95	3.81	47	132
Lutjanus griseus	9	0.1	5.1	0.01	0.00	450.73	0.27	107	14.00	22	158
Sciaenops ocellatus	4	0.0	1.9	0.00	0.00	754.39	0.27	93	13.20	71	125
Paralichthys albigutta	4	0.0	2.6	0.00	0.00	618.94	0.13	172	48.68	93	300
Archosargus probatocephalus	2	0.0	1.3	0.00	0.00	880.32	0.13	93	20.50	72	113
Pogonias cromis	2	0.0	0.6	0.00	0.00	1,249.00	0.27	143	30.50	112	173
Elops saurus	1	0.0	0.6	0.00	0.00	1,249.00	0.13	25	.	25	25
Centropomus undecimalis	1	0.0	0.6	0.00	0.00	1,249.00	0.13	340	.	340	340
Epinephelus itajara	1	0.0	0.6	0.00	0.00	1,249.00	0.13	87	.	87	87
Cynoscion nebulosus	1	0.0	0.6	0.00	0.00	1,249.00	0.13	15	.	15	15
Totals	**1,302**	**8.6**	**76.3**	**1.12**	**0.16**	**181.62**	**13.36**	**.**	**.**	**4**	**340**

Appendix CH05-01. Monthly summary of species collected during Charlotte Harbor stratified-random sampling, 2005. 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=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Acanthostracion quadricornis	16	17	11	10	6	18	10	7	17	46	7	14	179
Achirus lineatus	19	3	8	5	5	13	47	22	26	36	16	5	205
Adinia xenica	.	8	.	1	.	.	.	.	.	.	.	5	14
Aetobatus narinari	.	.	1	.	.	.	.	2	.	.	.	.	3
Aluterus schoepfii	2	2	.	.	.	5	6	3	3	.	.	2	23
Ameiurus catus	.	.	.	.	8	.	9	.	.	.	.	1	18
Anarchopterus criniger	3	.	.	.	.	.	2	.	1	.	.	1	7
Anchoa hepsetus	2	.	.	11	398	131	2	90	96	.	.	.	730
Anchoa mitchilli	2,516	2,294	2,291	1,513	2,623	1,027	6,793	68,262	27,749	42,154	16,280	25,283	198,785
Ancylopsetta quadrocellata	.	1	2	2	1	1	1	1	.	.	.	.	9
Apalone ferox	.	1	.	.	.	.	.	.	.	.	1	.	2
Archosargus probatocephalus	112	36	33	19	47	167	69	54	140	110	68	84	939
Ariopsis felis	41	12	86	45	21	197	192	236	120	300	158	17	1,425
Astroscopus y-graecum	.	.	.	.	.	.	.	.	1	.	.	1	2
Bagre marinus	.	.	.	10	9	28	11	21	74	107	12	4	276
Bairdiella chrysoura	106	50	27	149	901	1,101	849	652	82	13	30	10	3,970
Bathygobius soporator	1	.	.	.	.	1	.	26	.	.	.	2	30
Brevoortia spp.	.	47	36	378	57	59	1	51	188	.	3	.	820
Calamus arctifrons	.	.	2	1	.	.	1	.	.	.	.	1	5
Callinectes ornatus	1	.	.	.	5	2	1	.	.	5	.	.	14
Callinectes sapidus	169	153	136	82	151	238	204	122	91	109	141	129	1,725
Caranx crysos	.	.	1	1	.	.	.	.	.	.	.	.	2
Caranx hippos	.	.	2	11	12	10	3	4	7	20	7	16	92
Carcharhinus limbatus	.	.	.	.	1	.	.	.	.	.	.	1	2

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Caretta caretta	.	.	.	1	1	.	.	.	.	.	.	.	2
Centropomus undecimalis	37	19	15	66	96	73	74	55	109	144	142	200	1,030
Centropristis striata	1	.	.	.	.	1	.	.	.	.	.	.	2
Chaetodipterus faber	2	.	11	13	33	33	32	183	188	96	11	23	625
Chasmodes saburrae	3	.	3	4	5	15	23	13	6	4	19	6	101
Chilomycterus schoepfii	148	30	56	53	39	68	48	31	92	72	68	86	791
Chloroscombrus chrysurus	40	.	2	7	9	3	1	30	28	2	.	1	123
Cichlasoma urophthalmus	14	2	.	2	3	1	.	1	3	10	21	1	58
Cichlidae sp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Citharichthys macrops	2	1	3	1	10	1	6	3	2	.	1	.	30
Ctenogobius boleosoma	.	.	.	.	.	.	.	.	.	3	.	.	3
Ctenogobius smaragdus	.	.	.	.	.	.	.	.	.	3	.	.	3
Ctenopharyngodon idella	.	.	.	.	.	1	.	.	.	.	.	.	1
Cynoscion arenarius	104	7	15	8	39	1,463	1,274	306	55	39	27	18	3,355
Cynoscion nebulosus	21	3	18	8	42	196	109	221	181	64	37	12	912
Cyprinodon variegatus	10	45	54	21	327	2	.	.	6	2	.	24	491
Dasyatis americana	.	.	.	7	3	3	.	.	1	.	.	.	14
Dasyatis sabina	16	4	12	30	16	33	23	13	18	3	37	3	208
Dasyatis say	.	.	.	1	6	5	7	1	1	.	.	.	21
Diplectrum formosum	36	10	8	5	1	4	9	.	3	3	1	1	81
Diplodus holbrookii	.	.	.	.	.	.	1	1	.	.	.	.	2
Dorosoma cepedianum	.	.	.	.	.	3	1	.	.	.	1	.	5
Dorosoma petenense	.	.	.	.	.	4	1	.	.	1	.	5	11
Echeneis neucratoides	1	.	.	1	1	.	1	.	.	.	.	.	4
Elops saurus	6	2	32	16	9	21	19	25	6	23	5	13	177

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Epinephelus itajara	.	.	1	1	.	1	.	2	1	1	1	5	13
Etheostoma fusiforme	.	4	.	.	.	.	.	.	.	.	.	.	4
Etropus crossotus	26	1	1	1	.	2	7	6	28	52	45	16	185
Eucinostomus gula	650	70	432	102	118	93	377	636	973	841	529	511	5,332
Eucinostomus harengulus	901	144	120	277	440	296	264	499	309	202	189	130	3,771
Eucinostomus spp.	2,296	573	610	196	60	3,093	2,253	2,567	3,991	2,509	932	611	19,691
Eugerres plumieri	48	5	2	2	16	30	38	42	23	5	64	15	290
Farfantepenaeus duorarum	738	236	124	53	30	350	541	2,004	991	956	438	957	7,418
Floridichthys carpio	50	88	135	10	35	44	141	33	26	32	3	39	636
Fundulus chrysotus	.	.	.	2	.	.	1	.	.	.	.	1	4
Fundulus confluentus	4	41	3	.	.	.	.	.	.	.	1	.	49
Fundulus grandis	5	13	1	43	5	.	14	.	21	28	5	93	228
Fundulus seminolis	12	44	.	4	5	7	2	2	13	11	32	58	190
Fundulus similis	1	12	4	1	145	65	2	30	.	4	6	4	274
Gambusia holbrooki	2,397	158	409	102	299	64	695	53	36	219	449	198	5,079
Gerres cinereus	.	.	.	.	.	.	.	.	1	.	.	.	1
Gobiesox strumosus	3	.	.	.	2	3	1	1	.	.	1	.	11
Gobionellus oceanicus	.	.	.	.	.	2	.	.	.	.	.	.	2
Gobiosoma bosc	4	8	7	2	1	3	1	1	.	.	7	3	37
Gobiosoma robustum	295	50	52	17	30	137	53	148	57	94	98	155	1,186
Gobiosoma spp.	38	8	.	.	12	67	226	152	124	368	120	132	1,247
Gymnura micrura	.	.	.	.	.	.	.	1	.	3	.	.	4
Haemulon plumierii	3	.	.	.	2	6	1	11	9	109	3	.	144
Halichoeres bivittatus	.	.	.	.	.	.	.	5	.	.	.	.	5

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Harengula jaguana	3	.	103	54	131	34	116	274	20,969	205	1	.	21,890
Hemichromis letourneuxi	.	.	.	.	.	.	3	.	.	.	6	.	9
Heterandria formosa	.	.	.	.	.	.	1	.	.	.	.	.	1
Hippocampus erectus	4	2	2	1	2	5	1	1	4	2	6	14	44
Hippocampus zosterae	5	7	1	3	2	2	13	5	3	2	6	10	59
Hoplosternum littorale	.	.	.	.	.	.	1	.	.	.	.	.	1
Hyporhamphus meeki	1	.	.	.	.	5	9	4	.	12	.	.	31
Hyporhamphus spp.	.	.	.	.	3	.	.	.	.	.	.	.	3
Hypsoblennius hentz	.	.	1	.	1	.	.	.	.	.	.	2	4
Ictalurus punctatus	.	.	.	.	.	.	15	.	.	.	.	.	15
Jordanella floridae	.	.	.	.	.	1	.	.	.	.	6	.	7
Labidesthes sicculus	40	120	2	3	.	23	4	.	17	6	41	1	257
Lachnolaimus maximus	.	.	.	.	.	.	.	.	1	.	.	.	1
Lagodon rhomboides	2,414	2,641	5,730	3,873	3,290	4,334	5,758	1,411	5,242	1,507	1,197	405	37,802
Leiostomus xanthurus	581	3,158	669	47	65	11	36	3	2	.	.	.	4,572
Lepisosteus osseus	1	.	1	.	.	4	2	1	.	1	6	2	18
Lepisosteus platyrhincus	.	.	.	.	.	2	.	1	2	2	1	1	9
Lepomis gulosus	.	.	.	.	.	.	.	.	.	.	.	1	1
Lepomis macrochirus	15	16	1	2	6	4	33	21	3	9	39	89	238
Lepomis microlophus	.	.	.	.	.	.	3	.	.	12	.	1	16
Lepomis spp.	.	.	.	.	6	38	29	3	5	.	2	.	83
Limulus polyphemus	.	.	.	5	4	3	3	1	4	4	1	.	25
Lophogobius cyprinoides	38	3	5	16	2	4	.	.	.	.	2	.	70
Lucania goodei	37	152	.	5	13	1	.	.	.	.	10	1	219

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Lucania parva	123	600	395	285	524	3,073	4,233	2,074	1,831	307	336	529	14,310
Lutjanus griseus	19	3	5	1	13	91	66	54	47	89	22	8	418
Lutjanus synagris	2	.	1	.	3	1	11	21	26	16	12	11	104
Megalops atlanticus	.	.	.	.	.	.	.	.	.	1	.	5	6
Membras martinica	.	.	.	.	484	.	16	112	.	45	.	.	657
Menidia spp.	849	1,486	1,504	14,510	2,854	4,614	4,362	1,558	1,210	1,731	973	1,988	37,639
Menippe spp.	19	3	4	1	1	4	9	8	32	32	11	37	161
Menticirrhus americanus	65	15	10	2	92	197	57	36	94	279	134	20	1,001
Menticirrhus littoralis	.	.	.	.	.	.	.	.	.	5	.	1	6
Menticirrhus saxatilis	1	1	2	19	.	1	.	.	.	1	3	13	41
Microgobius gulosus	190	213	99	53	148	586	586	431	405	1,111	364	475	4,661
Microgobius thalassinus	.	.	1	.	.	.	1	1	1	.	3	.	7
Micropogonias undulatus	8	1	21	9	12	2	2	.	.	.	.	.	55
Micropterus salmoides	.	2	.	2	1	2	3	.	.	1	.	.	11
Mugil cephalus	1,495	282	169	202	39	45	31	24	42	42	45	33	2,449
Mugil curema	5	8	24	2	6	4	.	.	21	.	2	20	92
Mugil gyrans	38	22	54	27	30	8	14	12	37	6	33	90	371
Mycteroperca microlepis	.	.	.	.	1	24	41	28	35	40	1	4	174
Myrophis punctatus	.	1	.	.	1	2	.	.	9	.	.	.	13
Nicholsina usta	13	1	2	1	6	7	7	.	.	.	.	2	39
Notemigonus crysoleucas	.	.	.	.	.	1	.	.	.	.	.	.	1
Notropis petersoni	86	561	142	48	5	.	.	.	.	1	1	11	855
Ogcocephalus cubifrons	6	.	3	2	1	3	3	1	2	.	.	.	21
Oligoplites saurus	.	.	23	11	11	30	48	71	19	12	1	.	226

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Opisthonema oglinum	1	.	64	69	234	2	275	466	2,458	6	.	2	3,577
Opistognathus robinsi	.	.	.	.	.	.	.	1	.	.	.	.	1
Opsanus beta	4	3	5	1	1	15	20	4	5	6	5	1	70
Oreochromis aureus	1	.	1	4	22	.	.	4	1	.	4	1	38
Orthopristis chrysoptera	119	525	62	87	305	422	213	32	30	1	.	1	1,797
Paraclinus marmoratus	.	.	.	.	.	.	3	1	1	2	.	1	8
Paralichthys albigutta	15	35	20	25	29	33	17	27	35	27	18	4	285
Peprilus paru	.	.	1	.	.	.	.	1	.	1	1	.	4
Poecilia latipinna	41	342	25	16	12	1	8	.	16	29	156	19	665
Pogonias cromis	1	.	8	.	.	.	.	3	1	7	3	4	27
Pomatomus saltatrix	.	.	.	.	.	.	.	2	4	2	.	.	8
Prionotus scitulus	70	22	26	21	53	60	88	39	93	107	105	32	716
Prionotus tribulus	124	23	14	9	10	13	10	11	3	14	28	42	301
Pseudemys nelsoni	.	.	.	.	.	1	.	.	.	.	1	.	2
Pseudemys peninsularis	.	.	.	.	.	.	.	.	.	.	.	1	1
Pseudemys spp.	.	.	2	.	.	.	.	.	.	.	.	.	2
Pterygoplichthys spp.	.	.	.	.	.	.	1	1	.	1	2	.	5
Raja eglanteria	.	.	.	.	.	.	.	.	.	.	.	1	1
Rhinoptera bonasus	.	3	4	1	1	20	.	.	.	.	.	9	38
Rimapenaeus constrictus	.	.	.	.	10	.	.	.	.	.	.	3	13
Sardinella aurita	.	.	.	.	.	.	614	1	5	.	.	.	620
Sciaenops ocellatus	836	74	24	24	10	15	15	24	29	32	64	80	1,227
Scomberomorus maculatus	.	.	2	3	2	4	.	2	.	.	.	.	13
Scorpaena brasiliensis	4	.	.	.	.	1	.	.	.	.	.	.	5

Appendix CH05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=143	E=1,716
Selene vomer	.	.	.	7	5	2	2	1	.	.	.	.	17
Serraniculus pumilio	2	.	1	1	.	.	.	.	1	2	2	.	9
Serranus subligarius	3	.	.	.	1	1	.	1	2	2	.	.	10
Sphoeroides nephelus	57	28	46	53	60	52	39	32	47	82	60	80	636
Sphoeroides spengleri	.	1	1	.	.	.	1	1	.	.	.	.	4
Sphyraena barracuda	.	.	.	.	.	.	1	.	1	1	.	.	3
Sphyraena borealis	.	.	.	7	6	.	.	.	.	.	.	.	13
Sphyraena guachancho	.	.	.	.	.	.	.	.	.	.	2	.	2
Sphyrna tiburo	.	.	1	1	2	1	2	.	.	.	6	.	13
Stephanolepis hispidus	25	1	2	9	26	13	9	5	4	4	60	104	262
Strongylura marina	21	24	12	4	.	2	1	1	.	.	.	1	66
Strongylura notata	15	52	65	66	31	147	118	45	23	21	20	7	610
Strongylura spp.	.	.	.	5	15	27	6	2	.	6	6	2	69
Strongylura timucu	.	.	4	3	3	2	3	1	.	2	.	12	30
Symphurus plagiusa	78	13	25	7	26	41	57	27	20	15	30	8	347
Syngnathus floridae	10	4	3	1	7	10	17	5	3	3	34	20	117
Syngnathus louisianae	3	6	4	6	6	15	7	6	5	13	19	17	107
Syngnathus scovelli	130	66	92	93	97	306	232	104	30	41	164	118	1,473
Synodus foetens	42	30	23	92	50	29	23	33	89	55	45	86	597
Tilapia mariae	12	10	.	.	28	4	93	.	.	6	32	20	205
Trachinotus carolinus	.	.	1	.	.	.	1	3	.	4	.	2	11
Trachinotus falcatus	8	5	3	1	1	6	11	11	24	6	5	12	93
Trinectes maculatus	672	54	180	106	217	385	628	283	321	248	286	512	3,892
Tylosurus crocodilus	.	.	.	.	.	.	.	.	.	1	.	.	1
Urophycis floridana	3	1	.	.	.	.	.	.	.	.	.	.	4
Totals	**19,255**	**14,822**	**14,461**	**23,201**	**15,113**	**23,987**	**32,479**	**83,965**	**69,211**	**55,031**	**24,439**	**33,873**	**409,837**

Appendix CH05-02. Summary by gear, stratum, and zone of species collected during Charlotte Harbor stratified-random sampling, 2005. 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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Acanthostracion quadricornis	4	.	1	.	.	16	57	101	179
Achirus lineatus	62	13	50	1	3	.	.	76	205
Adinia xenica	.	.	4	2	8	.	.	.	14
Aetobatus narinari	.	.	.	.	.	2	1	.	3
Aluterus schoepfii	2	.	.	.	.	.	2	19	23
Ameiurus catus	.	.	.	.	.	.	.	18	18
Anarchopterus criniger	1	1	1	.	.	.	.	4	7
Anchoa hepsetus	72	.	231	214	35	.	.	178	730
Anchoa mitchilli	23,902	1,515	106,045	34,904	18,081	.	.	14,338	198,785
Ancylopsetta quadrocellata	.	.	.	.	.	1	2	6	9
Apalone ferox	.	.	.	.	1	.	.	1	2
Archosargus probatocephalus	56	3	168	21	12	573	86	20	939
Ariopsis felis	29	24	12	4	4	755	199	398	1,425
Astroscopus y-graecum	.	.	.	.	.	.	.	2	2
Bagre marinus	.	2	.	.	.	115	19	140	276
Bairdiella chrysoura	2,240	41	793	8	42	341	79	426	3,970
Bathygobius soporator	.	.	28	1	.	.	.	1	30
Brevoortia spp.	50	.	18	305	443	2	2	.	820
Calamus arctifrons	3	.	.	.	.	2	.	.	5
Callinectes ornatus	1	.	7	.	.	.	.	6	14
Callinectes sapidus	64	33	113	72	82	171	111	1,079	1,725
Caranx crysos	.	.	.	.	.	.	2	.	2
Caranx hippos	.	.	.	.	.	70	22	.	92
Carcharhinus limbatus	.	.	.	.	.	1	.	1	2
Caretta caretta	.	.	.	.	.	.	.	2	2
Centropomus undecimalis	4	.	30	99	44	692	160	1	1,030
Centropristis striata	.	.	.	.	.	.	.	2	2
Chaetodipterus faber	2	.	2	.	.	494	55	72	625
Chasmodes saburrae	24	2	71	1	.	.	.	3	101

Appendix CH05-02. (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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Chilomycterus schoepfii	29	7	3	.	.	167	216	369	791
Chloroscombrus chrysurus	.	.	2	.	.	8	7	106	123
Cichlasoma urophthalmus	.	.	.	13	44	1	.	.	58
Cichlidae sp.	.	.	1	.	.	.	.	.	1
Citharichthys macrops	.	.	.	.	.	.	.	30	30
Ctenogobius boleosoma	1	.	2	.	.	.	.	.	3
Ctenogobius smaragdus	.	2	1	.	.	.	.	.	3
Ctenopharyngodon idella	.	.	.	1	.	.	.	.	1
Cynoscion arenarius	8	6	115	9	23	.	1	3,193	3,355
Cynoscion nebulosus	438	26	308	11	28	54	33	14	912
Cyprinodon variegatus	5	1	449	6	30	.	.	.	491
Dasyatis americana	.	.	1	.	.	8	3	2	14
Dasyatis sabina	9	5	6	4	.	128	16	40	208
Dasyatis say	.	.	1	.	.	11	5	4	21
Diplectrum formosum	.	.	.	.	.	.	1	80	81
Diplodus holbrookii	.	.	.	.	.	1	1	.	2
Dorosoma cepedianum	.	.	.	4	.	.	.	1	5
Dorosoma petenense	.	.	.	9	1	.	.	1	11
Echeneis neucratoides	.	.	.	.	.	1	.	3	4
Elops saurus	2	1	.	5	14	105	49	1	177
Epinephelus itajara	.	.	4	.	.	5	.	4	13
Etheostoma fusiforme	.	.	.	.	4	.	.	.	4
Etropus crossotus	.	.	.	.	.	6	1	178	185
Eucinostomus gula	1,244	179	1,783	240	5	387	495	999	5,332
Eucinostomus harengulus	140	155	1,652	1,009	413	167	112	123	3,771
Eucinostomus spp.	5,611	768	9,863	2,357	773	.	.	319	19,691
Eugerres plumieri	.	.	22	103	32	120	7	6	290
Farfantepenaeus duorarum	2,492	322	1,642	62	55	19	9	2,817	7,418
Floridichthys carpio	21	1	608	2	2	2	.	.	636
Fundulus chrysotus	.	.	.	1	3	.	.	.	4
Fundulus confluentus	3	.	39	5	2	.	.	.	49
Fundulus grandis	.	4	143	64	16	1	.	.	228
Fundulus seminolis	.	.	.	27	163	.	.	.	190
Fundulus similis	2	10	153	.	102	3	4	.	274

Appendix CH05-02. (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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Gambusia holbrooki	2	.	.	2,684	2,393	.	.	.	5,079
Gerres cinereus	.	.	.	.	.	1	.	.	1
Gobiesox strumosus	2	.	9	.	.	.	.	.	11
Gobionellus oceanicus	.	.	.	1	.	.	.	1	2
Gobiosoma bosc	.	.	.	26	8	.	.	3	37
Gobiosoma robustum	521	238	390	1	2	.	.	34	1,186
Gobiosoma spp.	708	79	402	23	13	.	.	22	1,247
Gymnura micrura	.	.	.	.	.	3	.	1	4
Haemulon plumierii	19	.	1	.	.	17	106	1	144
Halichoeres bivittatus	5	.	.	.	.	.	.	.	5
Harengula jaguana	518	.	21,100	.	.	81	161	30	21,890
Hemichromis letourneuxi	.	.	.	.	9	.	.	.	9
Heterandria formosa	.	.	.	.	1	.	.	.	1
Hippocampus erectus	1	.	.	.	.	.	1	42	44
Hippocampus zosterae	32	4	20	.	.	.	.	3	59
Hoplosternum littorale	.	.	.	.	.	1	.	.	1
Hyporhamphus meeki	.	1	.	.	.	4	26	.	31
Hyporhamphus spp.	.	2	.	1	.	.	.	.	3
Hypsoblennius hentz	1	1	1	.	.	.	.	1	4
Ictalurus punctatus	.	.	.	.	.	.	.	15	15
Jordanella floridae	.	.	.	1	6	.	.	.	7
Labidesthes sicculus	.	.	.	51	206	.	.	.	257
Lachnolaimus maximus	.	.	.	.	.	1	.	.	1
Lagodon rhomboides	7,348	67	5,033	231	120	11,667	9,324	4,012	37,802
Leiostomus xanthurus	31	.	4,064	53	303	46	11	64	4,572
Lepisosteus osseus	.	.	.	7	7	1	.	3	18
Lepisosteus platyrhincus	.	.	.	9	.	.	.	.	9
Lepomis gulosus	.	.	.	1	.	.	.	.	1
Lepomis macrochirus	.	.	.	71	165	.	.	2	238
Lepomis microlophus	.	.	.	.	16	.	.	.	16
Lepomis spp.	.	.	.	61	21	.	.	1	83
Limulus polyphemus	1	.	5	.	.	12	1	6	25
Lophogobius cyprinoides	.	.	1	12	56	.	.	1	70
Lucania goodei	.	.	.	1	218	.	.	.	219

Appendix CH05-02. (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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Lucania parva	6,543	28	7,444	145	150	.	.	.	14,310
Lutjanus griseus	22	.	46	12	2	200	121	15	418
Lutjanus synagris	12	1	13	1	.	7	3	67	104
Megalops atlanticus	.	.	.	.	.	6	.	.	6
Membras martinica	109	16	200	290	42	.	.	.	657
Menidia spp.	1,408	35	22,534	5,304	8,356	.	.	2	37,639
Menippe spp.	1	.	.	.	.	1	4	155	161
Menticirrhus americanus	50	31	308	3	17	10	3	579	1,001
Menticirrhus littoralis	.	.	1	.	.	5	.	.	6
Menticirrhus saxatilis	.	5	33	.	.	.	.	3	41
Microgobius gulosus	2,116	452	1,722	207	130	.	.	34	4,661
Microgobius thalassinus	.	.	.	.	.	.	.	7	7
Micropogonias undulatus	.	.	.	.	.	.	.	55	55
Micropterus salmoides	.	.	.	1	10	.	.	.	11
Mugil cephalus	.	.	761	784	506	295	103	.	2,449
Mugil curema	.	.	8	1	.	74	9	.	92
Mugil gyrans	.	1	103	.	1	200	66	.	371
Mycteroperca microlepis	5	.	.	.	.	96	50	23	174
Myrophis punctatus	.	.	1	.	.	.	.	12	13
Nicholsina usta	6	.	6	.	.	2	4	21	39
Notemigonus crysoleucas	.	.	.	.	1	.	.	.	1
Notropis petersoni	.	.	.	3	852	.	.	.	855
Ogcocephalus cubifrons	.	.	.	.	.	6	3	12	21
Oligoplites saurus	25	6	108	7	12	36	31	1	226
Opisthonema oglinum	430	.	2,442	.	4	334	359	8	3,577
Opistognathus robinsi	1	.	.	.	.	.	.	.	1
Opsanus beta	5	2	11	.	.	18	11	23	70
Oreochromis aureus	.	.	.	9	26	3	.	.	38
Orthopristis chrysoptera	855	5	162	1	.	155	118	501	1,797
Paraclinus marmoratus	5	.	2	.	.	.	.	1	8
Paralichthys albigutta	13	6	27	1	1	69	35	133	285
Peprilus paru	.	.	.	.	.	1	.	3	4
Poecilia latipinna	1	.	264	185	215	.	.	.	665
Pogonias cromis	.	.	1	4	4	16	.	2	27

Appendix CH05-02. (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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Pomatomus saltatrix	.	.	.	.	.	2	6	.	8
Prionotus scitulus	7	12	12	.	.	11	4	670	716
Prionotus tribulus	5	14	8	.	.	2	2	270	301
Pseudemys nelsoni	.	.	.	1	1	.	.	.	2
Pseudemys peninsularis	.	.	.	1	.	.	.	.	1
Pseudemys spp.	.	.	.	2	.	.	.	.	2
Pterygoplichthys spp.	.	.	.	1	.	.	1	3	5
Raja eglanteria	.	.	.	.	.	.	.	1	1
Rhinoptera bonasus	.	.	.	.	.	10	22	6	38
Rimapenaeus constrictus	.	.	.	.	.	.	.	13	13
Sardinella aurita	615	.	5	.	.	.	.	.	620
Sciaenops ocellatus	16	8	145	800	72	156	26	4	1,227
Scomberomorus maculatus	.	.	.	.	.	8	5	.	13
Scorpaena brasiliensis	1	.	.	.	.	.	.	4	5
Selene vomer	.	.	.	.	.	11	5	1	17
Serraniculus pumilio	.	.	.	.	.	.	.	9	9
Serranus subligarius	3	.	.	.	.	.	2	5	10
Sphoeroides nephelus	113	42	113	1	1	146	112	108	636
Sphoeroides spengleri	2	.	.	.	.	1	.	1	4
Sphyraena barracuda	.	.	1	.	.	2	.	.	3
Sphyraena borealis	6	.	.	.	.	.	.	7	13
Sphyraena guachancho	.	.	2	.	.	.	.	.	2
Sphyrna tiburo	.	2	.	.	.	4	7	.	13
Stephanolepis hispidus	71	2	19	.	.	36	17	117	262
Strongylura marina	.	1	1	2	.	11	51	.	66
Strongylura notata	25	8	258	18	4	265	32	.	610
Strongylura spp.	.	.	37	17	15	.	.	.	69
Strongylura timucu	2	2	6	7	.	7	6	.	30
Symphurus plagiusa	26	39	20	1	1	2	1	257	347
Syngnathus floridae	52	1	17	.	.	.	1	46	117
Syngnathus louisianae	10	.	26	.	.	.	.	71	107
Syngnathus scovelli	760	72	527	8	6	.	.	100	1,473
Synodus foetens	61	39	123	1	.	21	9	343	597
Tilapia mariae	.	.	.	33	172	.	.	.	205

Appendix CH05-02. (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=181	E=95	E=276	E=221	E=151	E=205	E=71	E=516	E=1,716
Trachinotus carolinus	.	.	.	.	.	6	5	.	11
Trachinotus falcatus	3	2	40	.	.	42	6	.	93
Trinectes maculatus	7	7	12	318	265	1	3	3,279	3,892
Tylosurus crocodilus	.	.	.	.	.	.	1	.	1
Urophycis floridana	.	.	.	.	.	.	.	4	4
Totals	**59,102**	**4,352**	**192,967**	**50,967**	**34,875**	**18,541**	**12,631**	**36,402**	**409,837**

Appendix CH05-03. Summary by zone of species collected during Charlotte Harbor stratified-random sampling, 2005. Zones A-E and G were located in Charlotte Harbor, while Zones H (Caloosahatchee River), 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**	**E**	**G**	**H**	**M**	**P**	
	E=264	**E=216**	**E=216**	**E=204**	**E=144**	**E=144**	**E=360**	**E=84**	**E=84**	**E=1,716**
Acanthostracion quadricornis	2	45	15	80	29	8	.	.	.	179
Achirus lineatus	13	19	66	27	43	31	2	3	1	205
Adinia xenica	.	.	.	4	.	.	.	1	9	14
Aetobatus narinari	.	.	.	1	2	.	.	.	.	3
Aluterus schoepfii	.	12	7	3	1	.	.	.	.	23
Ameiurus catus	.	.	.	.	.	.	18	.	.	18
Anarchopterus criniger	.	.	.	5	1	1	.	.	.	7
Anchoa hepsetus	29	82	5	96	96	8	275	80	59	730
Anchoa mitchilli	5,284	62,191	13,424	20,716	14,858	19,224	26,015	25,270	11,803	198,785
Ancylopsetta quadrocellata	.	3	.	1	4	1	.	.	.	9
Apalone ferox	.	.	.	.	.	.	2	.	.	2
Archosargus probatocephalus	58	216	87	170	252	121	29	4	2	939
Ariopsis felis	173	115	474	73	204	153	170	12	51	1,425
Astroscopus y-graecum	.	.	.	.	2	.	.	.	.	2
Bagre marinus	51	2	153	1	1	14	14	16	24	276
Bairdiella chrysoura	360	706	638	605	965	370	66	151	109	3,970
Bathygobius soporator	.	2	26	.	.	.	1	1	.	30
Brevoortia spp.	.	10	.	1	52	9	689	1	58	820
Calamus arctifrons	.	1	2	1	1	.	.	.	.	5
Callinectes ornatus	.	7	.	2	3	2	.	.	.	14
Callinectes sapidus	291	248	242	34	109	262	217	184	138	1,725

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Caranx crysos	.	.	.	.	2	.	.	.	.	2
Caranx hippos	6	10	21	10	26	19	.	.	.	92
Carcharhinus limbatus	.	.	.	1	1	.	.	.	.	2
Caretta caretta	.	.	.	1	.	1	.	.	.	2
Centropomus undecimalis	78	325	127	170	136	50	133	2	9	1,030
Centropristis striata	.	.	.	2	.	.	.	.	.	2
Chaetodipterus faber	27	53	339	47	131	27	.	1	.	625
Chasmodes saburrae	2	36	21	26	13	2	1	.	.	101
Chilomycterus schoepfii	16	237	102	259	130	47	.	.	.	791
Chloroscombrus chrysurus	18	42	38	19	5	.	.	.	1	123
Cichlasoma urophthalmus	.	.	.	1	.	.	57	.	.	58
Cichlidae sp.	1	.	.	.	.	.	.	.	.	1
Citharichthys macrops	1	14	4	10	1	.	.	.	.	30
Ctenogobius boleosoma	.	.	.	.	3	.	.	.	.	3
Ctenogobius smaragdus	.	.	.	.	3	.	.	.	.	3
Ctenopharyngodon idella	.	.	.	.	.	.	1	.	.	1
Cynoscion arenarius	1,811	5	898	3	3	61	200	200	174	3,355
Cynoscion nebulosus	95	173	190	169	138	107	14	10	16	912
Cyprinodon variegatus	.	4	22	384	.	45	29	.	7	491
Dasyatis americana	1	2	1	4	6	.	.	.	.	14
Dasyatis sabina	45	7	76	10	30	17	12	7	4	208
Dasyatis say	.	5	1	8	5	2	.	.	.	21
Diplectrum formosum	3	27	41	5	4	1	.	.	.	81
Diplodus holbrookii	.	1	.	1	.	.	.	.	.	2

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Dorosoma cepedianum	.	.	.	.	.	.	5	.	.	5
Dorosoma petenense	.	.	.	.	.	.	10	.	1	11
Echeneis neucratoides	.	2	.	1	.	1	.	.	.	4
Elops saurus	37	14	7	21	44	34	19	.	1	177
Epinephelus itajara	2	6	3	1	.	.	.	1	.	13
Etheostoma fusiforme	.	.	.	.	.	.	4	.	.	4
Etropus crossotus	36	47	87	4	7	3	1	.	.	185
Eucinostomus gula	203	1,240	718	1,616	949	341	253	7	5	5,332
Eucinostomus harengulus	331	288	891	339	135	328	1,025	279	155	3,771
Eucinostomus spp.	1,260	5,114	1,995	4,917	1,559	1,711	2,509	459	167	19,691
Eugerres plumieri	30	5	24	75	1	17	121	3	14	290
Farfantepenaeus duorarum	1,642	440	1,099	381	1,965	1,612	77	109	93	7,418
Floridichthys carpio	9	79	111	351	42	40	3	1	.	636
Fundulus chrysotus	.	.	.	.	.	.	3	.	1	4
Fundulus confluentus	.	.	1	41	.	.	7	.	.	49
Fundulus grandis	28	84	.	30	4	2	.	58	22	228
Fundulus seminolis	.	.	.	.	.	.	172	.	18	190
Fundulus similis	5	14	71	80	.	2	.	97	5	274
Gambusia holbrooki	.	.	2	.	.	.	4,952	113	12	5,079
Gerres cinereus	.	.	.	.	.	1	.	.	.	1
Gobiesox strumosus	8	1	2	.	.	.	.	.	.	11
Gobionellus oceanicus	1	.	.	.	.	.	1	.	.	2
Gobiosoma bosc	.	.	.	1	1	.	27	7	1	37
Gobiosoma robustum	75	170	177	214	80	467	2	1	.	1,186

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	**E=216**	**E=216**	**E=204**	**E=144**	**E=144**	**E=360**	**E=84**	**E=84**	**E=1,716**
Gobiosoma spp.	45	169	165	132	250	449	29	4	4	1,247
Gymnura micrura	.	.	.	3	1	.	.	.	.	4
Haemulon plumierii	.	31	1	112	.	.	.	.	.	144
Halichoeres bivittatus	.	5	.	.	.	.	.	.	.	5
Harengula jaguana	3	290	88	497	21,007	4	.	.	1	21,890
Hemichromis letourneuxi	.	.	.	.	.	.	9	.	.	9
Heterandria formosa	.	.	.	.	.	.	.	1	.	1
Hippocampus erectus	6	12	1	18	6	1	.	.	.	44
Hippocampus zosterae	.	18	10	25	3	3	.	.	.	59
Hoplosternum littorale	.	1	.	.	.	.	.	.	.	1
Hyporhamphus meeki	.	1	.	20	10	.	.	.	.	31
Hyporhamphus spp.	.	2	.	.	.	.	1	.	.	3
Hypsoblennius hentz	.	3	.	1	.	.	.	.	.	4
Ictalurus punctatus	.	.	.	.	.	.	15	.	.	15
Jordanella floridae	.	.	.	.	.	.	7	.	.	7
Labidesthes sicculus	.	.	.	.	.	.	257	.	.	257
Lachnolaimus maximus	.	1	.	.	.	.	.	.	.	1
Lagodon rhomboides	748	11,360	3,267	12,697	8,041	1,324	323	37	5	37,802
Leiostomus xanthurus	38	1,623	364	2,047	5	114	213	152	16	4,572
Lepisosteus osseus	2	.	1	.	.	.	12	.	3	18
Lepisosteus platyrhincus	.	.	.	.	.	.	4	5	.	9
Lepomis gulosus	.	.	.	.	.	.	1	.	.	1
Lepomis macrochirus	.	.	.	.	.	.	238	.	.	238
Lepomis microlophus	.	.	.	.	.	.	16	.	.	16

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Lepomis spp.	.	.	.	.	.	.	82	1	.	83
Limulus polyphemus	2	6	2	6	7	1	.	1	.	25
Lophogobius cyprinoides	.	.	1	.	.	.	69	.	.	70
Lucania goodei	.	.	.	.	.	.	219	.	.	219
Lucania parva	143	3,349	1,647	7,049	1,010	817	237	25	33	14,310
Lutjanus griseus	8	82	81	124	80	20	19	2	2	418
Lutjanus synagris	6	36	13	28	12	8	1	.	.	104
Megalops atlanticus	.	.	1	.	.	5	.	.	.	6
Membras martinica	216	1	.	.	108	.	15	316	1	657
Menidia spp.	1,191	3,216	5,172	12,953	366	1,079	8,586	2,970	2,106	37,639
Menippe spp.	.	72	10	65	6	8	.	.	.	161
Menticirrhus americanus	694	5	60	34	35	31	2	54	86	1,001
Menticirrhus littoralis	.	6	.	.	.	.	.	.	.	6
Menticirrhus saxatilis	4	3	21	1	12	.	.	.	.	41
Microgobius gulosus	612	599	841	655	758	829	232	107	28	4,661
Microgobius thalassinus	3	.	1	.	.	1	1	1	.	7
Micropogonias undulatus	13	.	1	.	.	.	5	4	32	55
Micropterus salmoides	.	.	.	.	.	.	11	.	.	11
Mugil cephalus	212	66	715	76	44	46	1,156	66	68	2,449
Mugil curema	6	5	32	1	18	29	1	.	.	92
Mugil gyrans	1	79	45	71	107	67	1	.	.	371
Mycteroperca microlepis	.	81	2	81	9	1	.	.	.	174
Myrophis punctatus	1	1	.	2	9	.	.	.	.	13
Nicholsina usta	.	17	1	20	1	.	.	.	.	39

Appendix CH05-03. (Continued)

Species	Zone A	Zone B	Zone C	Zone D	Zone E	Zone G	Zone H	Zone M	Zone P	Totals
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Notemigonus crysoleucas	.	.	.	.	.	.	1	.	.	1
Notropis petersoni	.	.	.	.	.	.	855	.	.	855
Ogcocephalus cubifrons	.	5	.	2	8	6	.	.	.	21
Oligoplites saurus	33	44	36	43	40	11	12	3	4	226
Opisthonema oglinum	10	68	1	365	2,784	344	1	.	4	3,577
Opistognathus robinsi	.	.	.	.	.	1	.	.	.	1
Opsanus beta	.	11	12	29	15	2	1	.	.	70
Oreochromis aureus	2	.	1	.	.	.	35	.	.	38
Orthopristis chrysoptera	118	384	492	427	246	129	1	.	.	1,797
Paraclinus marmoratus	.	3	.	5	.	.	.	.	.	8
Paralichthys albigutta	38	65	54	62	34	26	5	1	.	285
Peprilus paru	1	1	.	2	.	.	.	.	.	4
Poecilia latipinna	.	5	.	257	.	3	255	140	5	665
Pogonias cromis	6	1	5	1	2	2	.	.	10	27
Pomatomus saltatrix	.	4	2	2	.	.	.	.	.	8
Prionotus scitulus	95	245	198	109	52	15	2	.	.	716
Prionotus tribulus	141	23	48	15	12	23	9	21	9	301
Pseudemys nelsoni	.	.	.	.	.	.	2	.	.	2
Pseudemys peninsularis	.	.	.	.	.	.	1	.	.	1
Pseudemys spp.	.	.	.	.	.	.	2	.	.	2
Pterygoplichthys spp.	.	.	.	.	.	1	3	.	1	5
Raja eglanteria	.	1	.	.	.	.	.	.	.	1
Rhinoptera bonasus	22	.	2	.	7	7	.	.	.	38
Rimapenaeus constrictus	.	.	3	.	.	10	.	.	.	13

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Sardinella aurita	.	1	.	5	614	.	.	.	.	620
Sciaenops ocellatus	50	65	58	87	52	39	820	34	22	1,227
Scomberomorus maculatus	1	3	.	1	7	1	.	.	.	13
Scorpaena brasiliensis	.	1	.	4	.	.	.	.	.	5
Selene vomer	.	9	.	2	1	5	.	.	.	17
Serraniculus pumilio	1	3	.	4	1	.	.	.	.	9
Serranus subligarius	.	8	.	2	.	.	.	.	.	10
Sphoeroides nephelus	30	154	119	147	109	74	2	1	.	636
Sphoeroides spengleri	.	1	1	1	1	.	.	.	.	4
Sphyraena barracuda	.	2	1	.	.	.	.	.	.	3
Sphyraena borealis	.	7	5	1	.	.	.	.	.	13
Sphyraena guachancho	.	2	.	.	.	.	.	.	.	2
Sphyrna tiburo	.	5	6	.	2	.	.	.	.	13
Stephanolepis hispidus	5	102	53	74	27	1	.	.	.	262
Strongylura marina	2	17	2	35	6	2	2	.	.	66
Strongylura notata	34	229	117	145	24	39	6	3	13	610
Strongylura spp.	4	24	2	5	.	2	18	7	7	69
Strongylura timucu	6	3	6	6	1	1	3	4	.	30
Symphurus plagiusa	143	33	70	4	19	32	1	8	37	347
Syngnathus floridae	4	43	21	44	5	.	.	.	.	117
Syngnathus louisianae	9	21	30	23	16	4	2	.	2	107
Syngnathus scovelli	56	512	363	183	136	206	9	2	6	1,473
Synodus foetens	68	189	132	80	74	51	1	2	.	597
Tilapia mariae	.	.	.	.	.	.	205	.	.	205

Appendix CH05-03. (Continued)

Species	Zone									Totals
	A	B	C	D	E	G	H	M	P	
	E=264	E=216	E=216	E=204	E=144	E=144	E=360	E=84	E=84	E=1,716
Trachinotus carolinus	.	4	3	.	2	2	.	.	.	11
Trachinotus falcatus	7	27	2	3	53	1	.	.	.	93
Trinectes maculatus	348	40	153	4	6	5	2,561	173	602	3,892
Tylosurus crocodilus	.	.	1	.	.	.	.	.	.	1
Urophycis floridana	2	.	2	.	.	.	.	.	.	4
Totals	**17,222**	**95,609**	**36,752**	**69,919**	**58,308**	**31,024**	**53,713**	**31,223**	**16,067**	**409,837**

Northern Indian River Lagoon

The Indian River Lagoon (IRL) system is a narrow estuarine lagoon extending approximately 260 km along the east central coast of Florida from Ponce de Leon Inlet south to Jupiter Inlet. The IRL system consists of three distinct basins: Mosquito Lagoon, Indian River Lagoon proper, and Banana River. Freshwater inflow comes from creeks and rivers located mainly along the western shoreline, while five permanent inlets connect the IRL to the ocean. In addition, one intermittently open connection via the Canaveral Locks connects the Banana River to the Atlantic Ocean just south of Cape Canaveral. Sampling was conducted by the Fisheries-Independent Monitoring (FIM) program in the northern Indian River Lagoon (NIRL) region of the IRL system from Turnbull Creek south to Vero Beach (Figure IR05-01). This area included the Indian River Lagoon proper and Banana River.

The FIM program has monitored populations of fish and selected invertebrates in the NIRL region since 1990. Stratified-random sampling (SRS) was conducted throughout 2005 and included six bay zones (A-E, and H) and one riverine zone (F) (Figure IR05-01). Zones A-C and H were located in the Indian River Lagoon, Zones D and E were located in the Banana River, and Zone F encompassed the St. Sebastian River. Zones C, D, and H were sampled monthly with 21.3-m bay and 183-m haul seines. Zone E was sampled monthly with only 183-m haul seines. In addition to using 21.3-m bay and 183-m haul seines, Zone H was sampled monthly with 6.1-m bay otter trawls. Zone F was 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. Sampling protocols were the same as those described in the Methods section of this report.

During 2005, deviation from the prescribed number of monthly deployments (+2 21.3-m bay seines, +1 21.3-m river seine) resulted from inadvertently sampling the incorrect stratum or grid, and in one case, a water quality instrument failure. In each case, the correct stratum or grid was subsequently sampled within the appropriate month.

As noted in the Methods section of this report, genetic analyses have recently confirmed that *Cynoscion arenarius, Cynoscion regalis,* and hybrid specimens exist in the IRL. The geographic and reproductive ranges of *C. arenarius* and *C. regalis* populations overlap on the Atlantic coast of north and central Florida. Species affinity within this region can only be determined with certainty by genetic testing (Tringali et al. 2004). Species accounts of *C. arenarius* and fishes of the genus *Cynoscion* that either were meristically indistinguishable or exhibited morphological traits of hybrids were recorded as *Cynoscion* complex. The following section summarizes FIM program data collected in the NIRL region during 2005.

Stratified-Random Sampling

Stratified-random sampling consisted of 551 21.3-m bay and river seines, 228 183-m haul seines, and 96 6.1-m bay trawl samples and captured a total of 357,648 animals representing 146 taxa (Table IR05-01; Appendices IR05-01 and -02). Five taxa, *Anchoa mitchilli*, *Lucania parva*, *Mugil cephalus*, *Eucinostomus* spp., and *Lagodon rhomboides*, dominated the collections (n=246,909, 69.0% of the total SRS catch). Thirty Selected Taxa (n=56,635 animals) composed 15.8% of the total SRS catch. No taxa new to NIRL FIM collections were collected during 2005.

Bay Sampling

21.3-m Bay Seines. A total of 151,179 animals were collected in 382 21.3-m bay seine samples and accounted for 42.3% of the total annual SRS collections (Table IR05-01 and -02; Appendix IR05-02). The overall mean density estimate for animals captured in this gear was 283 animals/100 m^2. The 10 most abundant species (n=125,320 animals) accounted for 82.9% of the total 21.3-m bay seine collections. *Anchoa mitchilli* (n=57,275) and *L. parva* (n=26,940) were the most abundant species (n=84,215 animals), accounting for 55.7% of the total 21.3-m bay seine catch. *Microgobius gulosus* (n=7,379), *Eucinostomus* spp. (n=5,913) and *M. cephalus* (n=5,901) were the next three most abundant species collected.

Collections included 20,309 animals (24 taxa) classified as Selected Taxa, which represented 13.4% of the total 21.3-m bay seine catch (Table IR05-03). *Mugil cephalus* (n=5,901), *Leiostomus xanthurus* (n=4,256), *Micropogonias undulatus* (n=3,917), *Farfantepenaeus* spp. (n=3,128), and *Cynoscion nebulosus* (n=1,250) were the most abundant Selected Taxa and accounted for 90.9% of the total Selected Taxa collected in this gear.

183-m Haul seines. A total of 39,721 animals were collected in 228 183-m haul seine samples and accounted for 11.1% of the total annual SRS collections (Tables IR05-01 and –04). The overall mean catch-per-unit-effort (CPUE) was 174 animals/set. The ten most abundant species (n=32,715) accounted for 82.4% of the total 183-m haul seine collections. *Lagodon rhomboides* (n=10,021) and *Bairdiella chrysoura* (n=8,207) were the most abundant species, accounting for 45.9% of the total 183-m haul seine catch. *Mugil curema* (n=4,743), *M. cephalus* (n=3,130) and *Ariopsis felis* (n=1,837) were the next three most abundant species collected.

Twenty-eight Selected Taxa (n=11,916) were collected in 183-m haul seine samples and accounted for 30.0% of the total 183-m haul seine catch (Table IR05-05). *Mugil curema* (n=4,743), *M. cephalus* (n=3,130), and *Archosargus probatocephalus* (n=1,092) were the most abundant Selected Taxa and composed 75.2% of the Selected Taxa collected in this gear. *Elops saurus* (n=541) and *Callinectes sapidus* (n=458) were the next most abundant species collected.

6.1-m Bay Otter Trawls. A total of 10,116 animals were collected in 96 6.1-m bay otter trawl samples and accounted for 2.8% of the total annual SRS collections (Tables IR05-01 and –06). The overall mean density estimate for animals collected in this gear was 22 animals/100 m^2. The ten most abundant species (n=8,465) accounted for 83.7% of the total 6.1-m bay otter trawl collections. *Anchoa mitchilli* (n=3,982) and *Eucinostomus* spp. (n=1,646) were the most abundant species accounting for 55.6% of the total 6.1-m bay otter trawl catch. *Lagodon rhomboides* (n=632), *M. undulatus* (n=387), and *Gobiosoma* spp. (n=346) were the next three most abundant species collected.

Eighteen Selected Taxa (n=1,801) were collected in 6.1-m bay otter trawl samples and accounted for 17.8% of the total 6.1-m bay otter trawl catch (Table IR05-07). *Micropogonias undulatus* (n=387), *C. sapidus* (n=318), *Farfantepenaeus* spp. (n=275), *L. xanthurus* (n=172), and *C. nebulosus* (n=120) were the most abundant Selected Taxa and composed 70.6% of the total Selected Taxa collected.

River Sampling

21.3-m River Seines. A total of 156,632 animals were collected in 169 21.3-m river seine samples and accounted for 43.8% of the total annual SRS collections (Tables IR05-01 and -08; Appendix IR05-02). The overall mean density estimate for animals collected in this gear was 1,363 animals/100 m^2. The 10 most abundant species (n=150,873 animals) accounted for 96.3% of the total river seine collections. *Anchoa mitchilli* (n=111,559) was the most abundant species and accounted for 71.2% of the total 21.3-m river seine catch. *Eucinostomus* spp. (n=8,130), *M. undulatus* (n=7,834), *M. cephalus* (n=7,103), and *Diapterus auratus* (n=4,202) were the next most abundant species collected.

Nineteen Selected Taxa (n=22,609) were collected in 21.3-m river seines and accounted for 14.4% of the total 21.3-m river seine catch (Table IR05-09). *Micropogonias undulatus* (n=7,834) and *M. cephalus* (n=7,103) were the most abundant Selected Taxa and composed 66.1% of the total Selected Taxa collected. *Leiostomus xanthurus* (n=3,454), *Farfantepenaeus* spp. (n=1,982), and *Centropomus undecimalis* (n=580) were the next three most abundant species collected.

References

Tringali, M.D., S. Seyoum, E. Wallace, and M. Higham. 2004. The Distribution of weakfish (*Cynoscion regalis*), sand seatrout (*C. arenarius*), and their hybrids in Florida Atlantic Waters. A special report to the Florida Fish and Wildlife Conservation Commission. June 2004. Florida Fish and Wildlife Research Institute. Report Number IHR2004-018.

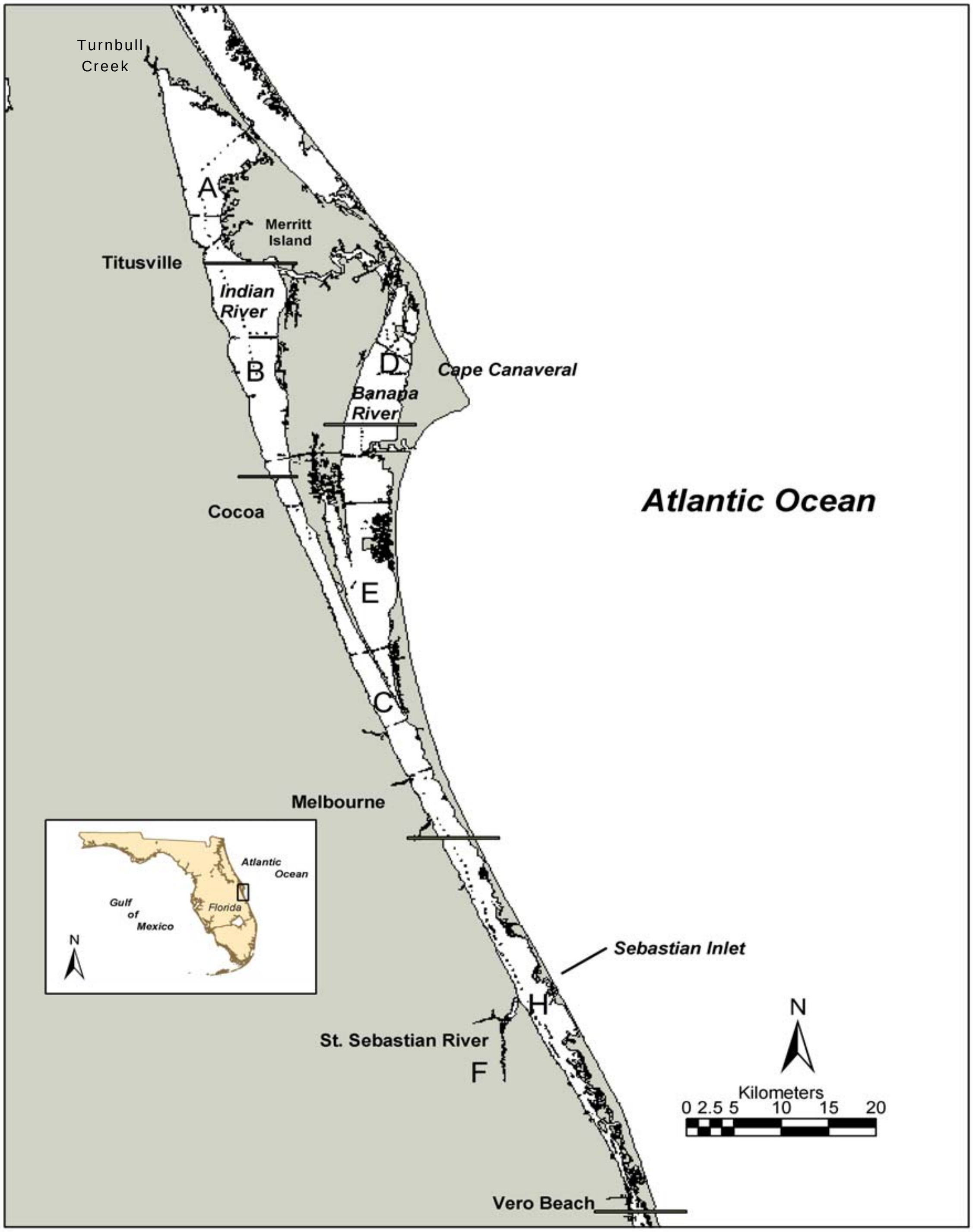

Figure IR05-01. Map of the Northern Indian River Lagoon sampling area. Zones are labeled A-F and H.

Table IR05-01. Summary of catch and effort data for northern Indian River Lagoon stratified-random sampling, 2005.

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	1,960	16	.	.	.	.	.	.	1,960	16
B	2,067	14	.	.	.	.	.	.	2,067	14
C	41,225	121	.	.	11,489	48	.	.	52,714	169
D	37,192	96	.	.	10,033	72	.	.	47,225	168
E	15,667	14	.	.	5,353	48	.	.	21,020	62
F	.	.	156,632	169	.	.	.	.	156,632	169
H	53,068	121	.	.	12,846	60	10,116	96	76,030	277
Totals	**151,179**	**382**	**156,632**	**169**	**39,721**	**228**	**10,116**	**96**	**357,648**	**875**

Table IR05-02. Catch statistics for 10 dominant taxa collected in 382 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	57,275	37.9	48.7	107.10	24.02	438.34	7,083.57	32	0.03	18	76
Lucania parva	26,940	17.8	43.2	50.37	18.98	736.36	6,272.14	23	0.03	9	62
Microgobius gulosus	7,379	4.9	54.2	13.80	2.64	374.48	504.29	28	0.08	9	60
Eucinostomus spp.	5,913	3.9	41.4	11.06	1.64	290.07	257.86	26	0.09	10	39
Mugil cephalus	5,901	3.9	19.6	11.03	4.94	875.76	1,605.71	23	0.18	15	330
Menidia spp.	5,429	3.6	36.1	10.15	1.97	380.20	342.14	40	0.18	12	89
Leiostomus xanthurus	4,256	2.8	11.8	7.96	3.38	830.85	1,147.14	29	0.13	11	88
Lagodon rhomboides	4,250	2.8	20.9	7.95	3.93	965.67	1,362.86	31	0.26	11	189
Floridichthys carpio	4,060	2.7	24.1	7.59	2.43	624.84	807.86	30	0.14	9	96
Micropogonias undulatus	3,917	2.6	12.6	7.32	4.25	1,133.19	1,548.57	25	0.10	7	112
Subtotal	125,320	82.9	.	.	.	.	.	.	.	7	330
Totals	**151,179**	**100.0**	**.**	**282.68**	**34.96**	**241.68**	**7,245.00**	**.**	**.**	**3**	**545**

Table IR05-03. Catch statistics for Selected Taxa collected in 382 21.3-m bay seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	5,901	3.9	19.6	11.03	4.94	875.76	1,605.71	23	0.18	15	330
Leiostomus xanthurus	4,256	2.8	11.8	7.96	3.38	830.85	1,147.14	29	0.13	11	88
Micropogonias undulatus	3,917	2.6	12.6	7.32	4.25	1,133.19	1,548.57	25	0.10	7	112
Farfantepenaeus spp.	3,128	2.1	32.2	5.85	1.22	409.30	272.14	9	0.05	3	15
Cynoscion nebulosus	1,250	0.8	28.5	2.34	0.86	717.90	315.71	31	0.39	12	145
Sciaenops ocellatus	679	0.4	21.7	1.27	0.26	407.51	42.14	34	1.25	11	415
Menticirrhus americanus	188	0.1	10.5	0.35	0.07	408.97	10.00	29	0.88	7	68
Farfantepenaeus duorarum	173	0.1	12.8	0.32	0.07	445.18	17.14	18	0.24	15	33
Lutjanus griseus	160	0.1	7.6	0.30	0.09	613.89	19.29	35	2.36	11	225
Archosargus probatocephalus	139	0.1	13.1	0.26	0.06	415.86	12.86	56	6.25	10	416
Centropomus undecimalis	125	0.1	2.9	0.23	0.21	1,752.40	80.00	58	9.05	22	545
Mugil curema	118	0.1	10.7	0.22	0.05	441.16	10.71	77	4.49	18	195
Callinectes sapidus	101	0.1	14.9	0.19	0.03	338.01	6.43	67	5.65	7	177
Trachinotus falcatus	71	0.0	3.7	0.13	0.06	859.27	19.29	32	1.43	12	72
Elops saurus	30	0.0	4.5	0.06	0.02	610.72	5.00	82	9.67	34	226
Litopenaeus setiferus	23	0.0	3.7	0.04	0.01	611.31	3.57	11	1.07	5	28
Lutjanus analis	20	0.0	1.8	0.04	0.02	943.41	5.71	43	2.85	27	73

Table IR05-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Lutjanus synagris	11	0.0	1.6	0.02	0.01	919.03	2.86	37	2.58	22	46
Cynoscion complex	9	0.0	1.6	0.02	0.01	991.44	2.86	30	2.58	20	43
Albula vulpes	3	0.0	0.8	0.01	0.00	1,125.46	0.71	43	6.89	35	57
Paralichthys albigutta	2	0.0	0.5	0.00	0.00	1,380.21	0.71	52	19.50	32	71
Trachinotus carolinus	2	0.0	0.3	0.00	0.00	1,954.48	1.43	15	0.50	14	15
Farfantepenaeus aztecus	1	0.0	0.3	0.00	0.00	1,954.48	0.71	17	.	17	17
Mycteroperca microlepis	1	0.0	0.3	0.00	0.00	1,954.48	0.71	83	.	83	83
Pogonias cromis	1	0.0	0.3	0.00	0.00	1,954.48	0.71	216	.	216	216
Totals	**20,309**	**13.4**	**74.9**	**37.97**	**9.29**	**478.28**	**2,754.29**	**.**	**.**	**3**	**545**

Table IR05-04. Catch statistics for 10 dominant taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	10,021	25.2	59.2	43.95	7.30	250.63	1,015.00	136	0.32	36	259
Bairdiella chrysoura	8,207	20.7	22.8	36.00	18.91	793.24	3,099.00	112	0.16	65	221
Mugil curema	4,743	11.9	80.3	20.80	3.67	266.41	529.00	157	0.57	65	346
Mugil cephalus	3,130	7.9	84.2	13.73	2.49	273.39	523.00	260	0.89	92	448
Ariopsis felis	1,837	4.6	57.9	8.06	1.24	231.49	185.00	296	0.98	60	398
Eucinostomus harengulus	1,193	3.0	38.2	5.23	1.96	564.37	380.00	108	0.42	50	140
Archosargus probatocephalus	1,092	2.7	54.8	4.79	0.82	257.95	109.00	226	2.84	36	482
Diapterus auratus	870	2.2	25.4	3.82	1.03	408.89	192.00	101	1.02	50	200
Opisthonema oglinum	853	2.1	10.1	3.74	2.68	1,081.05	601.00	111	0.86	79	177
Harengula jaguana	769	1.9	7.5	3.37	1.93	863.55	314.00	107	0.32	87	138
Subtotal	32,715	82.2	.	.	.	.	.	.	.	36	482
Totals	**39,721**	**100.0**	**.**	**174.21**	**23.31**	**202.00**	**3,163.00**	**.**	**.**	**11**	**1008**

Table IR05-05. Catch statistics for Selected Taxa collected in 228 183-m haul seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	4,743	11.9	80.3	20.80	3.67	266.41	529.00	157	0.57	65	346
Mugil cephalus	3,130	7.9	84.2	13.73	2.49	273.39	523.00	260	0.89	92	448
Archosargus probatocephalus	1,092	2.7	54.8	4.79	0.82	257.95	109.00	226	2.84	36	482
Elops saurus	541	1.4	32.0	2.37	0.58	368.67	102.00	289	3.61	27	610
Callinectes sapidus	458	1.2	38.2	2.01	0.40	300.58	47.00	129	1.60	44	271
Leiostomus xanthurus	416	1.0	25.4	1.82	0.46	377.85	71.00	118	1.88	43	314
Sciaenops ocellatus	406	1.0	56.1	1.78	0.20	170.69	25.00	343	8.31	63	998
Centropomus undecimalis	245	0.6	30.7	1.07	0.19	263.05	22.00	425	8.92	146	938
Trachinotus falcatus	179	0.5	8.8	0.79	0.41	791.92	88.00	142	4.18	42	221
Cynoscion nebulosus	145	0.4	27.6	0.64	0.12	282.13	17.00	245	9.37	54	614
Lutjanus griseus	106	0.3	19.3	0.46	0.10	314.31	16.00	184	5.69	95	366
Menticirrhus americanus	98	0.2	10.1	0.43	0.16	571.53	33.00	196	3.15	138	290
Micropogonias undulatus	77	0.2	7.0	0.34	0.14	627.98	27.00	143	4.28	66	254
Trachinotus carolinus	69	0.2	5.7	0.30	0.15	764.82	29.00	292	6.04	138	420
Farfantepenaeus duorarum	45	0.1	9.6	0.20	0.05	380.64	7.00	29	0.86	15	41
Pogonias cromis	35	0.1	7.0	0.15	0.05	444.37	7.00	309	28.10	112	756
Paralichthys albigutta	29	0.1	7.5	0.13	0.03	415.21	5.00	186	14.38	65	331

Table IR05-05. (Continued)

Species	Number No.	Number %	% Occur	Catch-per-unit-effort (animals/set) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Cynoscion complex	25	0.1	3.5	0.11	0.05	647.03	7.00	242	7.86	194	317
Lutjanus analis	21	0.1	1.8	0.09	0.05	805.88	7.00	137	6.70	81	191
Mycteroperca microlepis	16	0.0	2.6	0.07	0.04	840.00	8.00	166	11.09	73	208
Megalops atlanticus	10	0.0	1.8	0.04	0.03	975.59	6.00	814	44.21	554	1008
Scomberomorus maculatus	10	0.0	0.9	0.04	0.04	1,366.67	9.00	288	24.89	163	378
Lutjanus synagris	7	0.0	2.2	0.03	0.01	709.96	2.00	126	17.36	89	205
Pomatomus saltatrix	4	0.0	1.8	0.02	0.01	749.98	1.00	265	73.77	131	429
Litopenaeus setiferus	3	0.0	0.9	0.01	0.01	1,123.48	2.00	23	1.45	20	25
Menippe spp.	2	0.0	0.9	0.01	0.01	1,065.35	1.00	52	15.00	37	67
Paralichthys lethostigma	2	0.0	0.9	0.01	0.01	1,065.35	1.00	322	6.50	315	328
Farfantepenaeus sp.	1	0.0	0.4	0.00	0.00	1,509.97	1.00	11	.	11	11
Albula vulpes	1	0.0	0.4	0.00	0.00	1,509.97	1.00	210	.	210	210
Totals	**11,916**	**30.0**	**99.6**	**52.26**	**4.81**	**139.04**	**535.00**	**.**	**.**	**11**	**1008**

Table IR05-06. Catch statistics for 10 dominant taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	3,982	39.4	29.2	7.41	3.01	397.60	264.63	31	0.17	17	64
Eucinostomus spp.	1,646	16.3	56.3	3.87	1.93	489.32	182.36	21	0.15	10	39
Lagodon rhomboides	632	6.2	27.1	1.44	0.61	417.89	51.27	31	0.78	11	113
Orthopristis chrysoptera	327	3.2	39.6	0.86	0.37	418.38	33.39	50	2.14	11	158
Syngnathus scovelli	336	3.3	56.3	0.85	0.19	223.54	14.17	67	0.66	21	108
Gobiosoma spp.	346	3.4	40.6	0.81	0.20	247.67	12.37	16	0.13	8	19
Micropogonias undulatus	387	3.8	27.1	0.77	0.33	419.17	26.60	19	0.34	9	60
Callinectes sapidus	318	3.1	63.5	0.69	0.12	174.05	8.32	74	2.82	7	174
Farfantepenaeus spp.	275	2.7	63.5	0.60	0.12	194.45	9.89	10	0.15	3	15
Gobiosoma robustum	216	2.1	42.7	0.52	0.11	200.12	6.52	25	0.24	20	37
Subtotal	8,465	83.5	.	.	.	.	.	.	.	3	174
Totals	**10,116**	**100.0**	**.**	**21.52**	**3.98**	**180.97**	**297.78**	**.**	**.**	**3**	**394**

Table IR05-07. Catch statistics for Selected Taxa collected in 96 6.1-m bay otter trawl samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	387	3.8	27.1	0.77	0.33	419.17	26.60	19	0.34	9	60
Callinectes sapidus	318	3.1	63.5	0.69	0.12	174.05	8.32	74	2.82	7	174
Farfantepenaeus spp.	275	2.7	63.5	0.60	0.12	194.45	9.89	10	0.15	3	15
Leiostomus xanthurus	172	1.7	12.5	0.35	0.20	561.69	16.00	19	1.34	12	164
Cynoscion nebulosus	120	1.2	17.7	0.26	0.10	374.95	6.07	28	1.05	16	92
Farfantepenaeus duorarum	111	1.1	40.6	0.25	0.08	323.58	7.20	19	0.43	15	37
Archosargus probatocephalus	98	1.0	25.0	0.23	0.06	274.98	3.71	41	5.29	11	252
Elops saurus	89	0.9	10.4	0.21	0.14	649.24	12.68	39	0.30	33	48
Lutjanus griseus	97	1.0	19.8	0.21	0.06	289.34	4.05	35	3.80	12	213
Lutjanus analis	42	0.4	9.4	0.09	0.04	482.46	3.66	59	4.20	16	157
Lutjanus synagris	43	0.4	10.4	0.08	0.03	407.59	2.53	36	3.57	19	130
Sciaenops ocellatus	18	0.2	6.3	0.04	0.02	478.99	1.35	24	2.05	12	50
Menticirrhus americanus	10	0.1	5.2	0.02	0.01	559.19	1.12	62	18.66	26	205
Menippe spp.	8	0.1	6.3	0.02	0.01	415.77	0.45	47	11.11	9	100
Cynoscion complex	4	0.0	3.1	0.01	0.00	594.71	0.39	116	55.05	15	213
Paralichthys albigutta	4	0.0	4.2	0.01	0.00	487.02	0.22	196	20.72	141	241
Albula vulpes	2	0.0	2.1	0.00	0.00	691.24	0.22	47	13.00	34	60
Mycteroperca microlepis	1	0.0	1.0	0.00	0.00	979.80	0.19	164	.	164	164
Mugil cephalus	1	0.0	1.0	0.00	0.00	979.80	0.19	21	.	21	21
Litopenaeus setiferus	1	0.0	1.0	0.00	0.00	979.80	0.17	18	.	18	18
Totals	**1,801**	**17.8**	**96.9**	**3.83**	**0.54**	**137.14**	**27.21**	**.**	**.**	**3**	**252**

Table IR05-08. Catch statistics for 10 dominant taxa collected in 169 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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	111,559	71.2	72.2	970.75	262.30	351.27	29,589.71	30	0.02	18	67
Eucinostomus spp.	8,130	5.2	88.8	70.74	10.48	192.49	1,285.29	25	0.08	10	62
Micropogonias undulatus	7,834	5.0	23.7	68.17	36.22	690.63	4,905.88	28	0.07	12	68
Mugil cephalus	7,103	4.5	33.7	61.81	23.00	483.71	2,792.65	25	0.24	13	349
Diapterus auratus	4,202	2.7	69.2	36.56	9.37	333.03	1,073.53	33	0.29	11	158
Brevoortia spp.	3,703	2.4	23.1	32.22	10.46	422.08	997.06	30	0.15	17	67
Leiostomus xanthurus	3,454	2.2	27.8	30.06	9.65	417.52	1,011.76	29	0.17	12	84
Farfantepenaeus spp.	1,982	1.3	51.5	17.25	5.65	426.15	744.12	7	0.06	2	14
Menidia spp.	1,515	1.0	57.4	13.18	2.54	250.86	226.47	33	0.23	14	71
Eucinostomus harengulus	1,391	0.9	70.4	12.10	1.36	146.02	126.47	53	0.29	40	98
Subtotal	150,873	96.4	.	.	.	.	.	.	.	2	349
Totals	**156,632**	**100.0**	**.**	**1,362.97**	**275.68**	**262.95**	**29,691.18**	**.**	**.**	**2**	**555**

Table IR05-09. Catch statistics for Selected Taxa collected in 169 21.3-m river seine samples during northern Indian River Lagoon stratified-random sampling, 2005. 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		%	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%	Occur	Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Micropogonias undulatus	7,834	5.0	23.7	68.17	36.22	690.63	4,905.88	28	0.07	12	68
Mugil cephalus	7,103	4.5	33.7	61.81	23.00	483.71	2,792.65	25	0.24	13	349
Leiostomus xanthurus	3,454	2.2	27.8	30.06	9.65	417.52	1,011.76	29	0.17	12	84
Farfantepenaeus spp.	1,982	1.3	51.5	17.25	5.65	426.15	744.12	7	0.06	2	14
Centropomus undecimalis	580	0.4	53.3	5.05	1.22	313.50	180.88	63	3.11	9	555
Mugil curema	467	0.3	16.0	4.06	1.93	618.13	269.12	31	1.02	17	157
Callinectes sapidus	377	0.2	42.0	3.28	1.11	438.54	164.71	21	1.32	6	205
Sciaenops ocellatus	292	0.2	17.8	2.54	1.10	560.52	173.53	43	1.45	11	258
Litopenaeus setiferus	217	0.1	17.8	1.89	0.74	506.09	108.82	7	0.25	3	18
Archosargus probatocephalus	153	0.1	40.8	1.33	0.26	252.87	36.76	51	3.96	14	350
Farfantepenaeus duorarum	65	0.0	10.7	0.57	0.26	602.45	32.35	15	0.09	15	18
Lutjanus griseus	40	0.0	14.8	0.35	0.08	310.15	7.35	104	9.24	27	225
Elops saurus	16	0.0	4.7	0.14	0.06	590.38	8.82	40	4.68	17	88
Trachinotus falcatus	8	0.0	3.0	0.07	0.03	601.52	2.94	39	6.20	11	70
Cynoscion complex	6	0.0	2.4	0.05	0.03	679.84	2.94	25	3.26	16	35
Pogonias cromis	6	0.0	1.8	0.05	0.04	916.50	5.88	46	5.87	21	61
Pomatomus saltatrix	4	0.0	0.6	0.03	0.03	1,300.00	5.88	40	2.14	37	46
Cynoscion nebulosus	2	0.0	1.2	0.02	0.01	916.50	1.47	70	45.00	25	115
Megalops atlanticus	1	0.0	0.6	0.01	0.01	1,300.00	1.47	471	.	471	471
Epinephelus morio	1	0.0	0.6	0.01	0.01	1,300.00	1.47	17	.	17	17
Paralichthys lethostigma	1	0.0	0.6	0.01	0.01	1,300.00	1.47	286	.	286	286
Totals	**22,609**	**14.4**	**95.3**	**196.74**	**54.95**	**363.08**	**6,070.59**	**.**	**.**	**2**	**555**

Appendix IR05-01. Monthly summary of species collected during northern Indian River Lagoon stratified-random sampling, 2005. 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=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Acanthostracion quadricornis	.	.	.	1	.	.	.	.	.	.	2	.	3
Achirus lineatus	6	8	9	8	3	5	13	10	32	22	15	27	158
Agonostomus monticola	.	.	.	.	.	.	.	.	.	5	1	4	10
Albula vulpes	1	.	.	.	.	1	1	2	1	.	.	.	6
Aluterus schoepfii	.	.	.	.	.	.	1	.	1	.	.	.	2
Ameiurus nebulosus	.	.	1	.	1	.	.	.	.	.	.	.	2
Amia calva	.	.	.	.	.	.	.	.	.	.	.	1	1
Anchoa hepsetus	5	.	.	30	785	313	41	24	34	1	8	.	1,241
Anchoa mitchilli	23,162	19,631	21,533	29,105	3,309	1,912	4,475	13,194	21,847	23,407	8,757	2,484	172,816
Anchoa spp.	.	.	.	.	10	.	.	.	.	.	.	.	10
Anguilla rostrata	.	.	2	.	.	.	.	.	.	.	.	.	2
Apalone ferox	.	.	.	.	.	.	.	.	.	.	1	.	1
Archosargus probatocephalus	33	63	24	87	150	163	141	246	354	86	106	29	1,482
Archosargus rhomboidalis	175	.	10	.	.	.	.	.	3	.	.	.	188
Ariopsis felis	95	230	188	88	354	155	103	121	379	274	126	38	2,151
Bagre marinus	.	.	.	.	1	4	.	.	.	1	2	.	8
Bairdiella chrysoura	151	1,941	5,591	63	873	248	176	1,048	79	136	240	162	10,708
Bathygobius soporator	.	.	1	2	.	.	.	1	1	.	1	.	6
Brevoortia spp.	733	626	1,323	934	920	585	44	2	73	5	31	1	5,277
Calamus arctifrons	.	.	.	1	.	.	.	.	.	.	.	1	2
Callinectes ornatus	7	.	.	.	.	.	.	.	.	.	.	.	7
Callinectes sapidus	46	33	85	110	131	148	90	282	61	78	50	140	1,254
Callinectes similis	4	10	30	24	32	45	3	3	3	11	6	1	172
Caranx hippos	26	4	11	10	4	26	7	9	6	8	4	9	124
Caranx latus	.	.	.	.	.	1	2	.	.	.	1	.	4

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Caranx sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Centropomus parallelus	.	1	.	.	.	.	.	.	.	.	.	.	1
Centropomus pectinatus	.	.	.	.	.	.	.	.	.	10	1	8	19
Centropomus undecimalis	30	19	8	47	29	68	50	74	393	60	69	103	950
Chaetodipterus faber	.	.	.	1	1	4	3	31	3	21	23	69	156
Chasmodes saburrae	9	3	5	3	4	18	14	23	6	8	6	5	104
Chilomycterus schoepfii	8	5	16	21	13	25	36	29	24	15	26	17	235
Citharichthys spilopterus	6	51	19	20	21	16	43	10	6	5	8	6	211
Clupeidae sp.	.	.	.	.	1	.	.	.	.	.	.	.	1
Ctenogobius boleosoma	33	24	35	4	.	.	12	10	4	12	27	23	184
Ctenogobius pseudofasciatus	.	.	1	3	1	1	.	.	.	.	.	2	8
Ctenogobius shufeldti	1	6	3	24	.	2	1	2	.	.	.	21	60
Ctenogobius smaragdus	.	.	.	.	.	.	.	1	.	.	.	1	2
Cynoscion nebulosus	6	19	6	8	41	32	52	260	691	292	86	24	1,517
Cynoscion complex	.	1	3	1	8	2	5	2	2	8	1	11	44
Cyprinidae spp.	.	.	.	.	.	3	.	.	.	.	.	.	3
Cyprinodon variegatus	6	21	.	10	101	420	16	31	349	.	15	.	969
Dasyatis sabina	57	65	73	60	102	95	78	79	61	46	59	41	816
Dasyatis say	9	15	7	17	15	8	8	5	11	1	3	5	104
Diapterus auratus	229	60	10	124	53	144	491	1,738	1,833	476	352	722	6,232
Diapterus spp.	.	.	.	.	.	3	.	.	.	.	.	.	3
Diplodus holbrookii	.	.	15	.	.	.	.	.	.	.	.	.	15
Dormitator maculatus	.	1	76	1	.	70	.	1	.	.	2	.	151
Eleotris amblyopsis	.	.	.	.	1	.	.	.	.	.	.	.	1
Elops saurus	36	5	101	98	22	42	29	70	48	50	137	38	676
Epinephelus morio	.	.	.	.	.	.	.	.	.	1	.	.	1

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Epinephelus sp.	.	.	.	.	.	.	.	.	.	.	.	1	1
Erimyzon sucetta	.	.	.	.	.	.	.	.	.	.	1	.	1
Esox niger	.	.	.	.	.	1	.	.	.	.	.	.	1
Etropus crossotus	.	.	1	.	.	.	.	.	.	.	.	.	1
Eucinostomus gula	110	18	22	4	18	67	686	1,088	208	97	73	34	2,425
Eucinostomus harengulus	562	145	161	253	346	417	942	401	114	81	90	88	3,600
Eucinostomus jonesii	4	.	1	.	1	2	1	.	1	15	13	1	39
Eucinostomus spp.	2,519	2,057	1,006	679	332	3,396	1,078	875	827	1,068	806	1,046	15,689
Eugerres plumieri	15	3	1	5	2	10	2	46	19	7	5	5	120
Evorthodus lyricus	14	53	44	7	14	155	127	32	14	18	3	18	499
Farfantepenaeus aztecus	.	.	.	.	.	.	.	1	.	.	.	.	1
Farfantepenaeus duorarum	11	57	52	90	41	18	28	24	17	13	15	28	394
Farfantepenaeus spp.	252	1,476	568	792	484	112	70	86	743	128	149	526	5,386
Floridichthys carpio	75	29	5	4	102	547	1,483	778	117	379	529	12	4,060
Fundulus grandis	1	.	.	.	4	13	9	7	.	.	3	.	37
Fundulus seminolis	1	.	.	.	.	.	.	.	.	.	.	.	1
Gambusia holbrooki	22	170	178	6	232	11	41	7	.	1	46	53	767
Gerres cinereus	.	.	.	.	.	14	1	1	3	7	.	2	28
Gobiesox strumosus	.	.	.	.	.	.	1	.	.	.	.	.	1
Gobiomorus dormitor	.	.	.	1	.	11	1	.	.	2	.	2	17
Gobionellus oceanicus	8	4	6	6	.	6	17	.	.	2	.	16	65
Gobiosoma bosc	1	.	.	1	2	13	5	38	2	3	5	2	72
Gobiosoma robustum	52	46	84	57	51	144	48	96	44	27	27	29	705
Gobiosoma spp.	103	19	25	4	6	141	70	99	108	138	209	100	1,022
Gymnura micrura	7	.	1	.	.	.	.	.	1	.	.	.	9
Haemulon parra	1	.	.	.	.	.	.	.	.	.	2	3	6

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Haemulon plumierii	.	.	.	.	.	.	.	.	.	.	1	.	1
Halichoeres sp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Harengula jaguana	.	22	315	1	.	198	44	10	844	290	1,828	25	3,577
Hippocampus erectus	1	1	1	.	1	1	3	1	.	1	1	2	13
Hippocampus zosterae	3	.	.	1	.	.	1	1	2	3	1	.	12
Hyporhamphus meeki	4	.	.	1	3	6	30	18	.	.	.	.	62
Labidesthes sicculus	.	.	.	.	.	8	4	3	6	22	23	12	78
Labrisomus nuchipinnis	.	1	.	.	.	.	.	.	.	.	.	.	1
Lactophrys trigonus	.	.	.	.	.	.	.	1	2	1	.	.	4
Lagodon rhomboides	243	1,068	1,440	2,919	425	1,541	1,264	2,192	2,749	965	122	278	15,206
Leiostomus xanthurus	29	3,983	3,314	556	163	117	27	38	13	13	31	14	8,298
Lepisosteus platyrhincus	.	1	4	.	2	2	1	.	.	1	3	4	18
Lepomis auritus	.	.	.	.	.	.	1	.	.	.	.	.	1
Lepomis gulosus	.	.	.	.	.	.	3	.	.	.	.	.	3
Lepomis macrochirus	11	3	4	1	1	5	5	.	.	.	4	7	41
Lepomis microlophus	2	.	.	1	3	1	2	3	.	1	.	.	13
Lepomis spp.	.	.	.	.	.	29	1	32	1	1	6	1	71
Limulus polyphemus	.	3	6	16	4	3	1	2	.	1	1	.	37
Litopenaeus setiferus	1	.	2	.	.	31	18	64	95	13	6	14	244
Lobotes surinamensis	.	.	.	.	.	.	.	.	.	.	1	.	1
Lophogobius cyprinoides	.	5	.	2	.	.	.	.	1	.	2	.	10
Lucania parva	252	786	276	230	759	13,641	2,317	1,548	4,872	1,286	1,026	70	27,063
Lutjanus analis	.	.	.	.	.	.	.	1	23	29	12	18	83
Lutjanus griseus	4	6	3	2	6	16	17	121	146	37	41	4	403
Lutjanus synagris	.	.	.	.	.	1	15	1	5	20	10	9	61
Malaclemys terrapin	.	.	.	.	.	.	1	.	2	.	.	.	3

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Megalops atlanticus	6	.	.	.	1	1	2	.	1	.	.	.	11
Membras martinica	4	.	.	.	41	25	34	.	20	.	6	2	132
Menidia spp.	54	91	527	583	1,481	1,209	458	391	650	469	789	242	6,944
Menippe spp.	.	.	1	.	.	.	3	.	1	1	2	2	10
Menticirrhus americanus	2	11	9	6	31	15	49	11	15	45	35	67	296
Microgobius gulosus	56	14	48	36	238	1,565	1,365	605	471	1,984	984	85	7,451
Microgobius thalassinus	.	.	.	.	.	.	.	1	.	.	3	1	5
Microphis brachyurus	1	.	.	.	.	.	2	1	.	.	1	3	8
Micropogonias undulatus	482	7,946	3,207	202	149	15	5	.	31	8	43	127	12,215
Micropterus salmoides	.	.	.	2	1	4	5	.	.	.	.	3	15
Mugil cephalus	407	9,262	1,529	473	409	550	201	131	209	108	195	2,661	16,135
Mugil curema	771	389	347	866	240	598	268	201	216	290	187	955	5,328
Mycteroperca microlepis	.	.	.	.	.	3	1	4	9	.	1	.	18
Nicholsina usta	.	.	.	.	.	.	.	.	.	.	.	1	1
Notemigonus crysoleucas	.	.	.	.	.	1	.	.	.	.	.	.	1
Ocyurus chrysurus	.	.	.	.	.	.	1	.	.	.	.	.	1
Oligoplites saurus	.	19	13	31	11	35	39	40	39	52	16	10	305
Opisthonema oglinum	.	629	32	55	97	59	1	19	6	2	.	2	902
Opsanus tau	.	.	5	.	.	10	1	1	1	.	.	1	19
Orthopristis chrysoptera	3	36	47	2,493	512	168	217	20	89	71	15	112	3,783
Paralichthys albigutta	5	2	5	2	2	5	2	3	2	5	2	.	35
Paralichthys lethostigma	.	.	.	2	.	.	1	.	.	.	.	.	3
Poecilia latipinna	1	30	6	7	25	535	143	58	56	.	64	2	927
Pogonias cromis	2	2	.	3	1	8	4	2	6	2	5	7	42
Pomadasys crocro	1	.	.	.	.	.	.	.	.	.	.	.	1
Pomatomus saltatrix	.	.	2	5	.	.	.	1	.	.	.	.	8

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Prionotus scitulus	.	.	.	1	.	1	5	4	.	.	1	.	12
Prionotus sp.	.	.	.	.	.	.	.	1	.	.	.	.	1
Prionotus tribulus	1	1	3	.	1	1	1	.	1	.	.	.	9
Pseudemys sp.	.	.	.	.	.	.	.	.	.	1	.	.	1
Pterygoplichthys spp.	.	.	.	.	2	1	.	.	.	.	.	.	3
Sardinella aurita	.	1	.	.	.	.	.	.	.	.	.	.	1
Sarotherodon melanotheron	.	.	.	.	.	.	5	4	49	1	1	2	62
Sciaenops ocellatus	333	151	245	42	67	37	21	19	82	84	126	188	1,395
Scomberomorus maculatus	.	.	1	9	.	.	.	.	.	.	.	.	10
Scorpaena brasiliensis	.	.	.	1	.	.	.	1	.	.	.	.	2
Scorpaena plumieri	1	.	.	1	.	.	.	.	.	.	1	1	4
Selene vomer	11	17	14	.	37	30	4	.	5	5	34	1	158
Sphoeroides nephelus	48	54	56	52	46	61	34	22	66	28	42	28	537
Sphoeroides spengleri	.	3	1	1	3	.	2	2	1	.	2	6	21
Sphoeroides testudineus	26	16	11	11	12	20	41	13	36	12	21	5	224
Sphyraena barracuda	1	.	.	1	.	2	2	10	12	4	2	.	34
Stephanolepis hispidus	.	1	.	1	3	2	2	.	3	1	.	2	15
Strongylura marina	11	9	3	4	2	11	.	1	1	3	.	3	48
Strongylura notata	14	20	9	9	20	147	93	135	35	36	21	45	584
Strongylura spp.	.	1	.	17	13	20	.	1	1	9	1	.	63
Strongylura timucu	.	.	.	.	4	.	.	.	.	2	7	1	14
Symphurus plagiusa	.	.	.	.	.	1	.	1	1	.	.	.	3
Syngnathus louisianae	5	2	2	1	5	14	15	5	.	10	23	14	96
Syngnathus scovelli	79	35	52	93	122	214	152	46	40	52	58	48	991
Synodus foetens	.	.	.	1	12	1	3	4	2	2	.	2	27
Tilapia mariae	.	.	.	.	.	.	.	.	.	.	.	1	1

Appendix IR05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=69	E=69	E=69	E=69	E=69	E=70	E=70	E=69	E=69	E=92	E=91	E=69	E=875
Tilapia spp.	.	.	.	.	.	19	4	.	.	.	.	.	23
Trachinotus carolinus	.	29	5	2	1	.	1	.	3	.	18	12	71
Trachinotus falcatus	3	1	1	.	1	19	52	38	8	10	91	34	258
Trinectes maculatus	10	4	1	.	.	3	5	.	.	4	.	6	33
Totals	**31,520**	**51,574**	**42,888**	**41,557**	**13,578**	**30,647**	**17,544**	**26,719**	**39,453**	**33,010**	**18,058**	**11,100**	**357,648**

Appendix IR05-02. Summary by gear, stratum, and zone of species collected during northern Indian River Lagoon stratified-random sampling, 2005. 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 the 21.3-m river seine and the 183-m haul seine were post-stratified by the presence or absence of overhanging vegetation ('Over' or 'Nonover'). Zones A-C and H were located in the Indian River; Zones D-E encompassed the Banana River; and Zone F encompassed the lower Sebastian 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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Acanthostracion quadricornis	.	.	.	.	.	2	.	1	.	.	.	.	.	.	3	3
Achirus lineatus	16	2	39	31	3	41	18	8	2	2	33	28	29	34	30	158
Agonostomus monticola	.	.	.	4	6	.	.	.	.	.	.	.	.	10	.	10
Albula vulpes	.	.	3	.	.	.	1	2	.	.	1	.	.	.	5	6
Aluterus schoepfii	.	.	.	.	.	.	.	2	.	.	.	.	.	.	2	2
Ameiurus nebulosus	.	.	.	2	.	.	.	.	.	.	.	.	.	2	.	2
Amia calva	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Anchoa hepsetus	69	216	524	376	2	.	.	54	.	.	154	2	1	378	706	1,241
Anchoa mitchilli	19,199	4,237	33,839	53,183	58,376	.	.	3,982	321	587	22,772	4,201	12,171	111,559	21,205	172,816
Anchoa spp.	.	.	10	.	.	.	.	.	.	.	10	.	.	.	.	10
Anguilla rostrata	.	.	.	2	.	.	.	.	.	.	.	.	.	2	.	2
Apalone ferox	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Archosargus probatocephalus	31	1	107	84	69	789	303	98	.	.	380	347	19	153	583	1,482
Archosargus rhomboidalis	.	.	.	.	.	187	1	.	.	.	2	.	.	.	186	188
Ariopsis felis	39	10	236	2	1	1,569	268	26	4	55	961	248	295	3	585	2,151
Bagre marinus	.	.	.	.	.	7	1	.	.	.	1	.	3	.	4	8
Bairdiella chrysoura	1,506	1	854	27	17	4,963	3,244	96	83	47	6,569	838	404	44	2,723	10,708
Bathygobius soporator	.	.	2	.	4	.	.	.	.	.	.	.	.	4	2	6

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Brevoortia spp.	128	14	795	1,479	2,224	596	39	2	.	.	1,161	88	45	3,703	280	5,277
Calamus arctifrons	.	.	.	.	.	.	.	2	.	.	.	.	.	.	2	2
Callinectes ornatus	.	.	7	.	.	.	.	.	.	.	.	.	.	.	7	7
Callinectes sapidus	30	.	71	162	215	325	133	318	1	1	68	154	100	377	553	1,254
Callinectes similis	6	1	23	.	9	10	.	123	.	.	.	.	1	9	162	172
Caranx hippos	.	.	1	7	5	64	46	1	.	.	4	23	1	12	84	124
Caranx latus	.	.	1	.	1	2	.	.	.	.	.	.	.	1	3	4
Caranx sp.	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Centropomus parallelus	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Centropomus pectinatus	.	.	.	8	11	.	.	.	.	.	.	.	.	19	.	19
Centropomus undecimalis	.	.	125	327	253	175	70	.	.	1	71	31	9	580	258	950
Chaetodipterus faber	1	.	2	.	.	36	116	1	.	.	15	4	15	.	122	156
Chasmodes saburrae	35	2	56	1	.	1	.	9	2	1	48	19	4	1	29	104
Chilomycterus schoepfii	3	1	2	.	.	70	64	95	3	.	43	25	14	.	150	235
Citharichthys spilopterus	9	.	21	37	60	16	31	37	.	.	34	.	.	97	80	211
Clupeidae sp.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Ctenogobius boleosoma	55	1	78	35	4	.	.	11	.	.	.	.	.	39	145	184
Ctenogobius pseudofasciatus	.	.	.	5	3	.	.	.	.	.	.	.	.	8	.	8
Ctenogobius shufeldti	.	.	.	36	24	.	.	.	.	.	.	.	.	60	.	60
Ctenogobius smaragdus	.	.	2	.	.	.	.	.	.	.	.	.	.	.	2	2
Cynoscion nebulosus	355	19	876	1	1	117	28	120	28	112	196	654	118	2	407	1,517
Cynoscion complex	2	.	7	3	3	12	13	4	.	.	15	.	5	6	18	44

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Cyprinidae spp.	.	.	.	3	.	.	.	.	.	.	.	.	.	3	.	3
Cyprinodon variegatus	.	.	968	.	1	.	.	.	.	6	107	496	9	1	350	969
Dasyatis sabina	14	3	22	2	.	501	251	23	2	6	248	222	156	2	180	816
Dasyatis say	1	2	.	.	.	73	28	.	.	.	19	22	26	.	37	104
Diapterus auratus	168	54	913	2,271	1,931	662	208	25	3	4	736	8	163	4,202	1,116	6,232
Diapterus spp.	.	.	.	3	.	.	.	.	.	.	.	.	.	3	.	3
Diplodus holbrookii	.	.	15	.	.	.	.	.	.	.	.	.	.	.	15	15
Dormitator maculatus	.	.	1	145	5	.	.	.	.	.	.	1	.	150	.	151
Eleotris amblyopsis	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Elops saurus	3	.	27	16	.	465	76	89	1	1	124	195	64	16	275	676
Epinephelus morio	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Epinephelus sp.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	1
Erimyzon sucetta	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Esox niger	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Etropus crossotus	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Eucinostomus gula	215	.	1,701	4	39	294	79	93	1	.	89	109	76	43	2,107	2,425
Eucinostomus harengulus	93	9	902	773	618	961	232	12	18	1	307	282	767	1,391	834	3,600
Eucinostomus jonesii	2	14	22	.	.	.	.	1	.	.	1	.	.	.	38	39
Eucinostomus spp.	1,525	137	4,251	5,871	2,259	.	.	1,646	36	2	629	87	9	8,130	6,796	15,689
Eugerres plumieri	.	1	5	78	32	2	2	.	.	.	7	.	.	110	3	120
Evorthodus lyricus	1	.	3	418	77	.	.	.	.	.	.	.	1	495	3	499
Farfantepenaeus aztecus	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1
Farfantepenaeus duorarum	47	1	125	9	56	20	25	111	10	.	17	23	15	65	264	394

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Farfantepenaeus spp.	777	9	2,342	617	1,365	.	1	275	9	.	95	5	.	1,982	3,295	5,386
Floridichthys carpio	314	11	3,735	.	.	.	.	.	56	109	254	3,300	310	.	31	4,060
Fundulus grandis	1	.	31	.	1	2	2	.	3	.	1	31	.	1	1	37
Fundulus seminolis	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Gambusia holbrooki	.	.	29	664	74	.	.	.	.	.	12	16	1	738	.	767
Gerres cinereus	.	.	1	10	.	3	14	.	.	.	1	.	.	10	17	28
Gobiesox strumosus	.	.	1	.	.	.	.	.	.	.	1	.	.	.	.	1
Gobiomorus dormitor	.	.	.	15	2	.	.	.	.	.	.	.	.	17	.	17
Gobionellus oceanicus	.	.	.	57	6	.	.	2	.	.	.	.	.	63	2	65
Gobiosoma bosc	.	.	9	55	5	.	.	3	.	.	1	3	.	60	8	72
Gobiosoma robustum	221	7	243	7	11	.	.	216	12	3	151	103	7	18	411	705
Gobiosoma spp.	263	17	348	40	8	.	.	346	41	34	69	104	83	48	643	1,022
Gymnura micrura	.	.	.	.	.	8	1	.	.	.	.	.	.	.	9	9
Haemulon parra	1	.	1	.	.	1	2	1	.	.	.	.	.	.	6	6
Haemulon plumierii	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	1
Halichoeres sp.	.	.	1	.	.	.	.	.	.	.	.	.	.	.	1	1
Harengula jaguana	297	.	2,487	17	5	720	49	2	.	.	335	375	9	22	2,836	3,577
Hippocampus erectus	4	.	2	.	.	.	3	4	.	.	5	1	1	.	6	13
Hippocampus zosterae	6	2	3	.	.	.	.	1	2	.	2	1	1	.	6	12
Hyporhamphus meeki	23	18	15	.	.	5	1	.	.	.	13	27	.	.	22	62
Labidesthes sicculus	.	.	.	60	18	.	.	.	.	.	.	.	.	78	.	78
Labrisomus nuchipinnis	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	1
Lactophrys trigonus	.	.	.	.	.	.	.	4	.	.	.	.	.	.	4	4

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Lagodon rhomboides	2,618	1	1,631	44	259	6,720	3,301	632	4	.	950	4,109	1,435	303	8,405	15,206
Leiostomus xanthurus	645	4	3,607	1,996	1,458	325	91	172	.	.	2,343	21	72	3,454	2,408	8,298
Lepisosteus platyrhincus	.	.	.	15	1	1	1	.	.	.	1	1	.	16	.	18
Lepomis auritus	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Lepomis gulosus	.	.	.	3	.	.	.	.	.	.	.	.	.	3	.	3
Lepomis macrochirus	.	.	.	38	3	.	.	.	.	.	.	.	.	41	.	41
Lepomis microlophus	.	.	.	13	.	.	.	.	.	.	.	.	.	13	.	13
Lepomis spp.	.	.	.	67	4	.	.	.	.	.	.	.	.	71	.	71
Limulus polyphemus	.	.	4	.	.	22	11	.	1	.	9	5	21	.	1	37
Litopenaeus setiferus	.	1	22	176	41	2	1	1	1	.	13	.	.	217	13	244
Lobotes surinamensis	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Lophogobius cyprinoides	.	.	.	7	3	.	.	.	.	.	.	.	.	10	.	10
Lucania parva	4,236	63	22,641	116	6	.	.	1	144	463	1,770	18,459	1,463	122	4,642	27,063
Lutjanus analis	8	.	12	.	.	9	12	42	.	.	.	.	.	.	83	83
Lutjanus griseus	70	.	90	18	22	72	34	97	.	.	42	11	9	40	301	403
Lutjanus synagris	7	4	.	.	.	6	1	43	.	.	2	.	.	.	59	61
Malaclemys terrapin	.	.	.	.	.	2	1	.	.	.	1	.	2	.	.	3
Megalops atlanticus	.	.	.	1	.	7	3	.	.	.	3	7	.	1	.	11
Membras martinica	46	.	86	.	.	.	.	.	.	.	100	31	.	.	1	132
Menidia spp.	442	114	4,873	1,172	343	.	.	.	304	126	1,555	2,846	270	1,515	328	6,944
Menippe spp.	.	.	.	.	.	1	1	8	.	.	2	.	.	.	8	10
Menticirrhus americanus	46	15	127	.	.	73	25	10	.	8	199	13	41	.	35	296
Microgobius gulosus	3,477	58	3,844	52	.	.	.	20	833	418	369	4,017	1,075	52	687	7,451

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Microgobius thalassinus	1	1	3	.	.	.	.	.	.	.	1	.	1	.	3	5
Microphis brachyurus	.	.	.	8	.	.	.	.	.	.	.	.	.	8	.	8
Micropogonias undulatus	257	2	3,658	1,314	6,520	67	10	387	.	.	2,480	1	2	7,834	1,898	12,215
Micropterus salmoides	.	.	2	11	2	.	.	.	.	.	.	.	.	13	2	15
Mugil cephalus	38	64	5,799	2,857	4,246	1,685	1,445	1	4	.	5,290	1,990	256	7,103	1,492	16,135
Mugil curema	13	.	105	429	38	2,897	1,846	.	2	6	569	1,671	1,163	467	1,450	5,328
Mycteroperca microlepis	1	.	.	.	.	11	5	1	.	.	.	.	.	.	18	18
Nicholsina usta	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Notemigonus crysoleucas	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Ocyurus chrysurus	1	.	.	.	.	.	.	.	.	.	.	.	.	.	1	1
Oligoplites saurus	20	28	122	14	6	97	18	.	1	1	127	61	19	20	76	305
Opisthonema oglinum	.	.	49	.	.	839	14	.	.	.	107	17	33	.	745	902
Opsanus tau	1	.	1	.	.	8	5	4	.	.	2	4	3	.	10	19
Orthopristis chrysoptera	2,673	8	322	13	60	197	183	327	.	.	93	7	7	73	3,603	3,783
Paralichthys albigutta	.	.	2	.	.	19	10	4	.	.	2	.	.	.	33	35
Paralichthys lethostigma	.	.	.	.	1	2	.	.	.	.	.	.	.	1	2	3
Poecilia latipinna	103	.	777	36	11	.	.	.	2	49	38	728	2	47	61	927
Pogonias cromis	.	.	1	4	2	19	16	.	.	.	2	7	.	6	27	42
Pomadasys crocro	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Pomatomus saltatrix	.	.	.	.	4	3	1	.	.	.	2	1	.	4	1	8
Prionotus scitulus	.	1	.	.	.	7	4	.	.	.	2	5	5	.	.	12
Prionotus sp.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	1	1
Prionotus tribulus	.	.	1	.	1	3	2	2	.	.	1	.	.	1	7	9

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Pseudemys sp.	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1
Pterygoplichthys spp.	.	.	.	3	.	.	.	.	.	.	.	.	.	3	.	3
Sardinella aurita	.	.	.	.	.	.	1	.	.	.	.	1	.	.	.	1
Sarotherodon melanotheron	.	.	55	.	.	2	5	.	.	.	1	9	.	.	52	62
Sciaenops ocellatus	139	6	534	192	100	322	84	18	5	10	323	167	76	292	522	1,395
Scomberomorus maculatus	.	.	.	.	.	9	1	.	.	.	10	.	.	.	.	10
Scorpaena brasiliensis	.	.	.	.	.	.	1	1	.	.	.	.	.	.	2	2
Scorpaena plumieri	.	.	.	.	.	2	1	1	.	.	1	.	.	.	3	4
Selene vomer	.	.	3	1	.	95	57	2	.	.	12	.	2	1	143	158
Sphoeroides nephelus	22	13	23	.	1	251	171	56	5	.	160	150	58	1	163	537
Sphoeroides spengleri	.	1	2	.	.	5	3	10	.	.	.	1	.	.	20	21
Sphoeroides testudineus	11	1	20	.	7	104	56	25	.	.	3	.	.	7	214	224
Sphyraena barracuda	5	.	7	1	1	15	2	3	.	.	2	1	.	2	29	34
Stephanolepis hispidus	1	.	1	.	.	1	2	10	.	.	.	1	.	.	14	15
Strongylura marina	.	1	11	2	.	11	23	.	.	.	13	15	1	2	17	48
Strongylura notata	28	19	454	12	17	47	7	.	6	2	97	360	22	29	68	584
Strongylura spp.	3	.	33	20	7	.	.	.	.	1	8	21	2	27	4	63
Strongylura timucu	.	.	2	.	12	.	.	.	.	1	.	1	.	12	.	14
Symphurus plagiusa	.	.	.	.	.	.	.	3	.	.	.	.	.	.	3	3
Syngnathus louisianae	32	8	19	.	.	.	.	37	2	1	12	18	13	.	50	96
Syngnathus scovelli	347	7	282	4	15	.	.	336	8	9	188	240	31	19	496	991
Synodus foetens	3	1	8	.	.	1	3	11	.	.	.	.	.	.	27	27
Tilapia mariae	.	.	.	1	.	.	.	.	.	.	.	.	.	1	.	1

Appendix IR05-02. (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	Over	Nonover	Over	Nonover		A	B	C	D	E	F	H	
	E=119	E=45	E=218	E=117	E=52	E=162	E=66	E=96	E=16	E=14	E=169	E=168	E=62	E=169	E=277	E=875
Tilapia spp.	.	.	20	.	.	.	3	.	.	.	4	19	.	.	.	23
Trachinotus carolinus	.	.	2	.	.	51	18	.	.	.	20	3	2	.	46	71
Trachinotus falcatus	1	.	70	1	7	140	39	.	.	.	20	132	2	8	96	258
Trinectes maculatus	.	.	2	26	3	1	1	.	.	.	3	1	.	29	.	33
Totals	**40,756**	**5,211**	**105,212**	**75,625**	**81,007**	**26,852**	**12,869**	**10,116**	**1,960**	**2,067**	**52,714**	**47,225**	**21,020**	**156,632**	**76,030**	**357,648**

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Cedar Key

Cedar Key is located along the Gulf Coast of Florida within the area known as the Big Bend. Characteristics of the area include relatively undeveloped shorelines and the absence of an enclosed estuary. The Suwannee River empties directly into the Gulf of Mexico forming an open estuary that extends northward 13 km from the river mouth, southeastward to the islands comprising the Cedar Keys, and approximately 8 km offshore (Suwannee River Water Management District 1979). The area is characterized by large expanses of saltmarsh, tidal creeks, oyster bars, mud flats, and seagrasses. Details of the sampling area are provided in the 1996 Fisheries-Independent Monitoring (FIM) Program Annual Data Summary.

The FIM program has conducted intensive sampling in the Cedar Key area since 1996. The sampling universe (731 km^2) was divided into three zones (Figure CK05-01). Zone B encompassed the northern portion of the sampling universe and included the Gulf of Mexico north of the Cedar Keys, the mouth of the Suwannee River, and all tidal creeks. Zone C encompassed the southern portion of the sampling universe and included the Gulf of Mexico surrounding the Cedar Keys. Zone F included the lower Suwannee River from the mouth upstream to the vicinity of Monden Creek. Several grids had portions both in the Gulf of Mexico (Zone B) and the lower Suwannee River (Zone F) and are indicated on the map as Zone BF. Without a shoreline surrounding an enclosed bay, the seaward demarcation for sampling was the 3-nm line on NOAA Chart 11408. Monthly stratified-random sampling (SRS) was conducted year-round using 21.3-m river seines, 21.3-m bay seines, 183-m haul seines, and 6.1-m otter trawls. The 21.3-m river seine was used in tidal creeks (Zone B) and the lower Suwannee River (Zone F) where other gears and deployment methods could not be used effectively. All methods were identical to those described in the Methods section of this report. This section summarizes FIM data collected in the Cedar Key area during 2005.

Stratified-Random Sampling

A total of 106,426 fishes (132 taxa) and selected invertebrates (6 taxa) were collected in 2005 (Table CK05-01; Appendices CK05-01 and -02). The highest monthly catch occurred in October (n=19,278) and the lowest catch occurred in May (n=3,836). *Anchoa mitchilli* (n=47,103), *Lagodon rhomboides* (n=8,555), *Leiostomus xanthurus* (n=6,595), and *Bairdiella chrysoura* (n=6,328) dominated the collections, accounting for 64.4% of the total catch. A total of 17,215 animals from 26 Selected Taxa were captured in Cedar Key, accounting for 16.2% of the total catch. *Leiostomus xanthurus* (n=6,595) accounted for 38.3% of the Selected Taxa collected. Collections in 2005 included three species new to the Cedar Key FIM collection: *Ameiurus serracanthus* (spotted bullhead), *Diapterus auratus* (Irish pompano), and *Sphyraena barracuda* (great barracuda).

Bay Sampling

21.3-m Bay Seine. A total of 31,239 animals were collected in 252 21.3-m bay seine samples (Tables CK05-01 and -02). The mean density estimate for animals captured in this gear was 89 animals/100 m^2. *Anchoa mitchilli* (n=15,783) was the most abundant species collected and accounted for 50.5% of the total 21.3-m bay seine catch. *Anchoa hepsetus* (n=4,361), *L. xanthurus* (n=2,422), and *Ariopsis felis* (n=1,376) were the next three most abundant species collected.

A total of 4,219 animals from 20 Selected Taxa were collected in 21.3-m bay seines, accounting for 13.5% of the total 21.3-m bay seine catch (Table CK05-03). *Leiostomus xanthurus* (n=2,422) was the most abundant Selected Taxon, accounting for 57.4% of the Selected Taxa captured. *Menticirrhus americanus* (n=496), *Cynoscion arenarius* (n=425), and *Sciaenops ocellatus* (n=215) were the next three most abundant Selected Taxa.

183-m Haul Seine. A total of 27,280 animals were collected in 192 183-m haul seine samples (Tables CK05-01 and -04). The mean catch-per-unit-effort for animals captured in this gear was 142 animals/set. *Lagodon rhomboides* (n=7,212) was the most abundant species collected, followed by *B. chrysoura* (n=4,874) and *Mugil cephalus* (n=2,757). Together, these three species accounted for 54.4% of the total 183-m haul seine catch.

A total of 8,016 animals from 25 Selected Taxa were collected in 183-m haul seines, accounting for 29.4% of the total 183-m haul seine catch (Table CK05-05).

Mugil cephalus (n=2,757) and *L. xanthurus* (n=2,647) were the most abundant Selected Taxa, accounting for 67.4% of the Selected Taxa captured. *Elops saurus* (n=709), *S. ocellatus* (n=377), and *Callinectes sapidus* (n=196) were the next three most abundant Selected Taxa.

6.1-m Bay Otter Trawl. A total of 7,734 animals were collected in 120 6.1-m otter trawl samples (Tables CK05-01 and -06). The mean density estimate for animals captured in this gear was 4 animals/100 m^2. *Anchoa mitchilli* (n=1,976) was the most abundant species collected, followed by *B. chrysoura* (n=785) and *M. americanus* (n=440). Together, these three species accounted for 41.4% of the total catch with this gear.

A total of 1,571 animals from 12 Selected Taxa were collected in 6.1-m bay otter trawls, accounting for 20.3% of the total 6.1-m bay otter trawl catch (Table CK05-07). *Menticirrhus americanus* (n=440) was the most abundant Selected Taxon, accounting for 28.0% of the Selected Taxa captured. *Cynoscion arenarius* (n=355), *Farfantepenaeus duorarum* (n=241), and *C. sapidus* (n=196) were the next three most abundant Selected Taxa.

River Sampling

River Sampling occurred in tidal creeks (Zone B) with the deployment of 108 21.3-m river seines and in the lower Suwannee River (LSR; Zone F) with the deployment of 60 21.3-m river seines and 60 6.1-m river otter trawls.

Tidal Creeks

21.3-m River Seines. A total of 32,008 animals were collected in 108 21.3-m river seine samples conducted in Zone B tidal creeks (Tables CK05-01 and -08). The mean density estimate for animals captured in this gear was 436 animals/100 m^2. *Anchoa mitchilli* (n=23,606) was the most abundant species collected and accounted for 73.8% of the total 21.3-m river seine catch. *Menidia* spp. (n=1,555), *L. xanthurus.* (n=1,332), and *Brevoortia* spp. (n=892) were the next three most abundant species collected.

A total of 2,730 animals from 16 Selected Taxa were collected in 21.3-m river seines, accounting for 8.5% of the total 21.3-m river seine catch in tidal creeks (Table

CK05-09). *Leiostomus xanthurus* (n=1,332) was the most abundant Selected Taxon, accounting for 48.8% of the Selected Taxa captured. C*ynoscion arenarius* (n=749), *C. sapidus* (n=273), and *S. ocellatus* (n=92) were the next three most abundant Selected Taxa.

Lower Suwannee River

21.3-m River Seines. A total of 5,264 animals were collected in 60 21.3-m river seine samples and accounted for 64.5% of the total number of individuals captured in the LSR (Tables CK05-01 and -10). The mean density estimate for animals captured in this gear was 129 animals/100 m^2. *Anchoa mitchilli* (n=3,755) was the most abundant species collected and accounted for 71.3% of the total 21.3-m river seine catch. *Notropis petersoni* (n=498), *Menidia* spp. (n=192), and *Gambusia holbrooki* (n=140) were the next three most abundant species collected.

A total of 235 animals from 10 Selected Taxa were collected in 21.3-m river seines, accounting for 4.5% of the total 21.3-m river seine catch in the LSR (Table CK05-11). *Callinectes sapidus* (n=137) was the most abundant Selected Taxon, accounting for 58.3% of the Selected Taxa captured. *Leiostomus xanthurus* (n=54), *S. ocellatus* (n=25), and *C. arenarius* (n=7) were the next three most abundant Selected Taxa. Mean densities were less than 1.0 animal/100 m^2 for 8 of the 10 Selected Taxa collected.

6.1-m River Otter Trawl. A total of 2,901 animals were collected in 60 6.1-m river otter trawl samples and accounted for 35.5% of the total number of individuals captured in the LSR (Tables CK05-01 and -12). The mean density estimate for animals captured in this gear was 7 animals/100 m^2. *Anchoa mitchilli* (n=1,982) was the most abundant species and accounted for 68.3% of the total 6.1-m otter trawl catch. *Ameiurus catus* (n=215), *C. sapidus* (n=154), and *C. arenarius* (n=154) were the next three most abundant species collected.

A total of 444 animals from 11 Selected Taxa were collected in 6.1-m river otter trawls, accounting for 15.3% of the total 6.1-m river otter trawl catch (Table CK05-13). *Callinectes sapidus* (n=154) and *C. arenarius* (n=154) were the most abundant Selected Taxa, accounting for 69.4% of the Selected Taxa captured. *Leiostomus xanthurus* (n=45), *F. duorarum* (n=29), and *S. ocellatus* (n=28) were the next three most abundant Selected Taxa. Mean densities were less than 0.4 animals/100m^2 for all 11 Selected Taxa collected.

References

Florida Department of Environmental Protection, Florida Marine Research Institute, Fisheries Independent Monitoring Program. 1996. Annual Data Summary. In-house report, Florida Department of Environmental Protection, Florida Marine Research Institute, St. Petersburg, Florida.

Suwannee River Water Management District. 1979. Environmental effects of river flows and levels in the Suwannee River subbasin below Wilcox and the Suwannee River estuary, Florida. Suwannee River Water Management District Interim report, Live Oak, Florida.

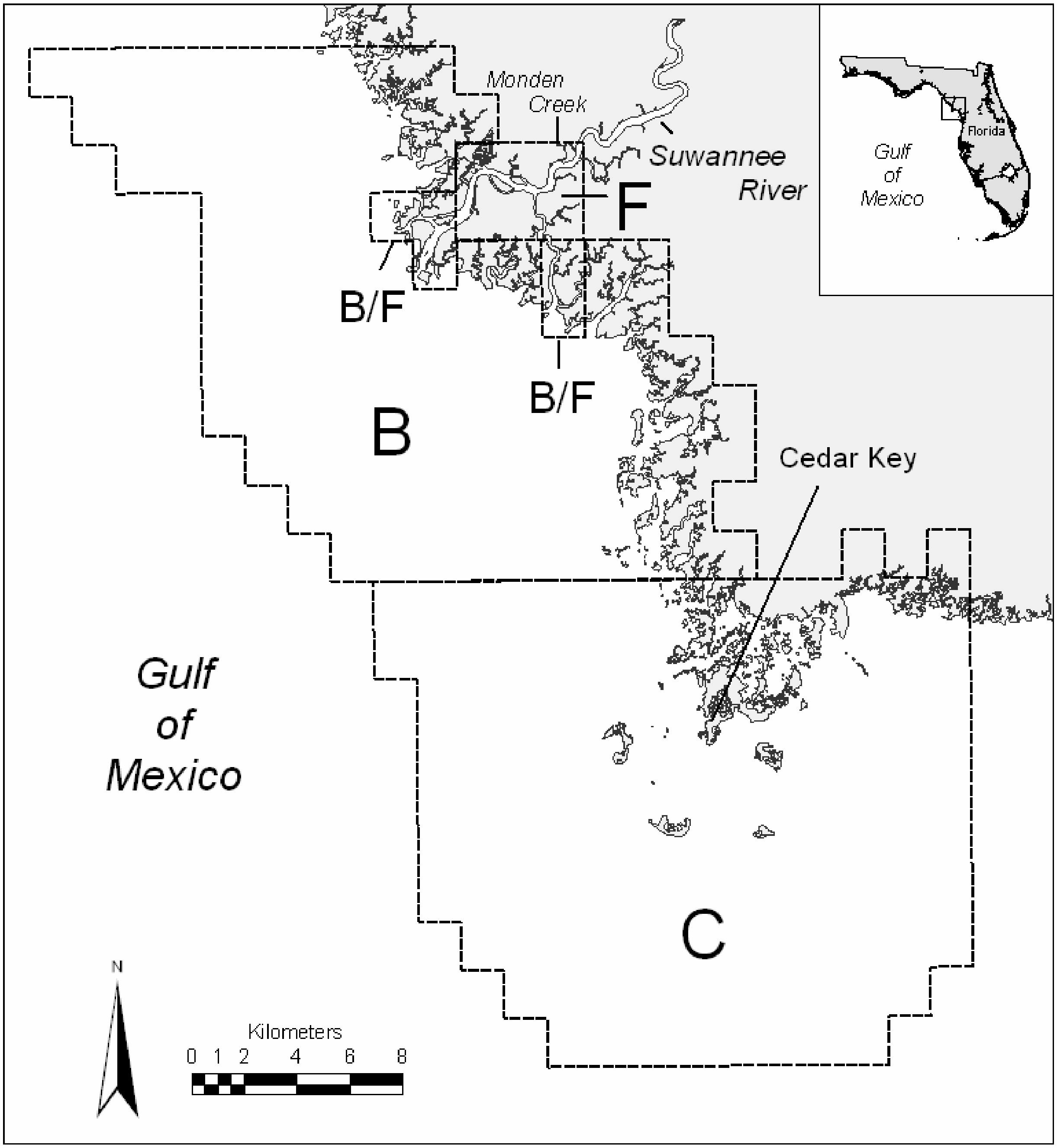

Figure CK05-01. Map of Cedar Key sampling area. Zones are labeled B, C, and F. Grids containing portions of Zones B and F and labeled B/F.

Table CK05-01. Summary of catch and effort data for Cedar Key stratified-random sampling, 2005.

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	14,038	120	32,008	108	9,521	96	4,585	60	60,167	384
C	17,201	132	.	.	17,759	96	3,149	60	38,109	288
F	.	.	5,264	60	.	.	2,901	60	8,165	120
Totals	**31,239**	**252**	**37,272**	**168**	**27,280**	**192**	**10,635**	**180**	**106,426**	**792**

Table CK05-02. Catch statistics for 10 dominant taxa collected in 252 21.3-m bay seine samples during Cedar Key stratified-random sampling, 2005. 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	15,783	50.5	50.4	44.74	8.02	284.47	970.71	33	0.07	15	80
Anchoa hepsetus	4,361	14.0	14.7	12.36	10.97	1,408.18	2,755.00	45	0.11	18	105
Leiostomus xanthurus	2,422	7.8	26.6	6.87	2.70	623.60	592.86	25	0.32	10	184
Ariopsis felis	1,376	4.4	11.1	3.90	1.91	777.01	425.71	71	0.93	44	297
Membras martinica	1,040	3.3	22.2	2.95	0.94	507.01	200.71	60	0.71	17	100
Menidia spp.	931	3.0	33.3	2.64	0.63	378.50	88.57	67	0.46	18	98
Lagodon rhomboides	688	2.2	32.9	1.95	0.66	538.92	140.71	49	1.13	12	148
Orthopristis chrysoptera	521	1.7	5.6	1.48	0.77	826.52	137.14	31	0.59	14	171
Menticirrhus americanus	496	1.6	19.8	1.41	0.40	449.60	76.43	40	1.23	14	151
Eucinostomus spp.	444	1.4	15.1	1.26	0.34	426.74	54.29	26	0.34	5	43
Subtotal	28,062	89.9	.	.	.	.	.	.	.	5	297
Totals	**31,239**	**100.0**	**.**	**88.55**	**14.47**	**259.40**	**2,895.71**	**.**	**.**	**3**	**411**

Table CK05-03. Catch statistics for Selected Taxa collected in 252 21.3-m bay seine samples during stratified-random sampling, 2005. 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	2,422	7.8	26.6	6.87	2.70	623.60	592.86	25	0.32	10	184
Menticirrhus americanus	496	1.6	19.8	1.41	0.40	449.60	76.43	40	1.23	14	151
Cynoscion arenarius	425	1.4	14.3	1.20	0.36	475.68	63.57	30	0.65	11	84
Sciaenops ocellatus	215	0.7	8.3	0.61	0.36	932.86	82.86	53	2.95	11	290
Callinectes sapidus	208	0.7	23.0	0.59	0.12	321.03	20.71	21	1.59	6	148
Farfantepenaeus duorarum	155	0.5	17.9	0.44	0.09	332.79	11.43	10	0.36	3	33
Mugil cephalus	92	0.3	7.5	0.26	0.17	1,047.74	42.86	39	5.33	20	274
Cynoscion nebulosus	51	0.2	7.9	0.14	0.05	497.73	9.29	41	4.27	15	148
Menticirrhus saxatilis	38	0.1	3.6	0.11	0.05	700.76	8.57	26	1.99	13	77
Trachinotus falcatus	32	0.1	2.8	0.09	0.05	837.58	8.57	52	2.91	20	84
Paralichthys albigutta	23	0.1	6.3	0.07	0.02	420.10	2.14	63	8.78	11	166
Micropogonias undulatus	21	0.1	1.2	0.06	0.04	1,116.41	9.29	38	3.35	19	95
Mugil curema	15	0.0	1.6	0.04	0.03	1,190.81	7.86	30	5.44	15	81
Pogonias cromis	13	0.0	2.0	0.04	0.02	950.35	5.00	159	15.74	100	283
Lutjanus griseus	4	0.0	1.6	0.01	0.01	788.97	0.71	86	33.95	14	177
Mugil gyrans	4	0.0	0.8	0.01	0.01	1,253.49	2.14	63	2.75	56	68
Scomberomorus maculatus	2	0.0	0.8	0.01	0.00	1,120.26	0.71	40	12.50	27	52
Elops saurus	1	0.0	0.4	0.00	0.00	1,587.45	0.71	210	.	210	210
Pomatomus saltatrix	1	0.0	0.4	0.00	0.00	1,587.45	0.71	65	.	65	65
Archosargus probatocephalus	1	0.0	0.4	0.00	0.00	1,587.45	0.71	284	.	284	284
Totals	**4,219**	**13.5**	**66.7**	**11.96**	**2.79**	**369.79**	**592.86**	**.**	**.**	**3**	**290**

Table CK05-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during Cedar Key stratified-random sampling, 2005. 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	7,212	26.4	83.3	37.56	4.90	180.69	417.00	88	0.25	45	189
Bairdiella chrysoura	4,874	17.9	35.9	25.39	6.38	348.25	980.00	124	0.22	47	173
Mugil cephalus	2,757	10.1	64.1	14.36	3.74	361.26	642.00	230	1.18	86	402
Leiostomus xanthurus	2,647	9.7	49.5	13.79	2.37	237.95	224.00	121	0.60	55	243
Dasyatis sabina	1,488	5.5	67.2	7.75	1.45	258.61	225.00	234	1.03	87	435
Opisthonema oglinum	927	3.4	11.5	4.83	2.81	807.08	496.00	87	0.77	33	163
Harengula jaguana	891	3.3	18.8	4.64	1.44	429.90	171.00	105	0.38	75	175
Elops saurus	709	2.6	32.3	3.69	2.29	859.42	436.00	251	1.26	157	467
Eucinostomus gula	547	2.0	21.9	2.85	1.49	724.15	246.00	74	0.45	43	97
Ariopsis felis	424	1.6	34.4	2.21	0.38	240.23	32.00	243	3.03	62	372
Subtotal	22,476	82.5	.	.	.	.	.	.	.	33	467
Totals	**27,280**	**100.0**	**.**	**142.08**	**11.94**	**116.48**	**1,167.00**	**.**	**.**	**15**	**1400**

Table CK05-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during stratified-random sampling, 2005. 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	2,757	10.1	64.1	14.36	3.74	361.26	642.00	230	1.18	86	402
Leiostomus xanthurus	2,647	9.7	49.5	13.79	2.37	237.95	224.00	121	0.60	55	243
Elops saurus	709	2.6	32.3	3.69	2.29	859.42	436.00	251	1.26	157	467
Sciaenops ocellatus	377	1.4	42.7	1.96	0.45	320.81	61.00	286	6.81	53	790
Callinectes sapidus	196	0.7	33.3	1.02	0.18	242.03	19.00	87	3.15	22	173
Mugil curema	195	0.7	20.8	1.02	0.24	326.87	28.00	175	3.48	68	300
Micropogonias undulatus	179	0.7	15.1	0.93	0.26	392.24	29.00	152	1.84	78	206
Pogonias cromis	157	0.6	27.1	0.82	0.15	261.99	15.00	391	24.05	82	892
Cynoscion nebulosus	150	0.5	29.2	0.78	0.23	401.45	41.00	235	7.13	110	485
Paralichthys albigutta	141	0.5	33.3	0.73	0.11	199.86	8.00	137	5.35	42	448
Trachinotus falcatus	138	0.5	6.3	0.72	0.53	1,023.72	100.00	68	2.60	42	155
Menticirrhus americanus	124	0.5	21.9	0.65	0.14	297.67	11.00	146	4.10	71	282
Archosargus probatocephalus	98	0.4	21.4	0.51	0.10	259.07	8.00	349	5.63	173	458
Farfantepenaeus duorarum	45	0.2	9.9	0.23	0.07	398.31	9.00	24	0.60	15	34
Mugil gyrans	24	0.1	6.8	0.13	0.04	413.39	3.00	144	7.15	104	232
Cynoscion arenarius	23	0.1	5.7	0.12	0.04	506.25	6.00	146	10.42	85	255
Scomberomorus maculatus	19	0.1	5.2	0.10	0.03	480.14	4.00	242	31.78	125	484

Table CK05-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Paralichthys lethostigma	12	0.0	4.7	0.06	0.03	558.23	4.00	207	29.77	85	409
Menticirrhus saxatilis	11	0.0	1.6	0.06	0.04	1,044.30	8.00	105	2.49	82	113
Lutjanus griseus	7	0.0	3.1	0.04	0.02	586.90	2.00	135	19.15	46	184
Mycteroperca microlepis	3	0.0	0.5	0.02	0.02	1,385.64	3.00	178	5.00	173	188
Megalops atlanticus	1	0.0	0.5	0.01	0.01	1,385.64	1.00	780	.	780	780
Pomatomus saltatrix	1	0.0	0.5	0.01	0.01	1,385.64	1.00	386	.	386	386
Rachycentron canadum	1	0.0	0.5	0.01	0.01	1,385.64	1.00	167	.	167	167
Lutjanus synagris	1	0.0	0.5	0.01	0.01	1,385.64	1.00	82	.	82	82
Totals	**8,016**	**29.4**	**95.8**	**41.75**	**5.11**	**169.64**	**672.00**	**.**	**.**	**15**	**892**

Table CK05-06. Catch statistics for 10 dominant taxa collected in 120 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2005. 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	1,976	25.5	35.8	1.13	0.42	406.53	46.95	40	0.32	17	81
Bairdiella chrysoura	785	10.1	30.8	0.45	0.13	327.32	10.73	113	0.57	28	185
Menticirrhus americanus	440	5.7	33.3	0.25	0.08	362.91	8.90	74	2.36	5	270
Prionotus scitulus	434	5.6	61.7	0.25	0.05	221.04	4.87	92	1.45	19	165
Etropus crossotus	426	5.5	58.3	0.24	0.05	221.07	4.52	92	1.00	32	139
Lagodon rhomboides	378	4.9	32.5	0.21	0.07	337.31	4.79	93	0.80	16	126
Symphurus plagiusa	377	4.9	30.0	0.21	0.08	397.53	8.30	121	0.96	28	162
Cynoscion arenarius	355	4.6	19.2	0.20	0.08	427.64	6.14	44	2.24	11	231
Ariopsis felis	250	3.2	19.2	0.15	0.08	561.90	8.17	101	2.26	74	263
Farfantepenaeus duorarum	241	3.1	39.2	0.14	0.03	274.32	2.90	27	0.53	4	55
Subtotal	5,662	73.1	.	.	.	.	.	.	.	4	270
Totals	**7,734**	**100.0**	**.**	**4.42**	**0.62**	**152.80**	**50.53**	**.**	**.**	**2**	**1300**

Table CK05-07. Catch statistics for Selected Taxa collected in 120 bay 6.1-m otter trawl samples during Cedar Key stratified-random sampling, 2005. 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	440	5.7	33.3	0.25	0.08	362.91	8.90	74	2.36	5	270
Cynoscion arenarius	355	4.6	19.2	0.20	0.08	427.64	6.14	44	2.24	11	231
Farfantepenaeus duorarum	241	3.1	39.2	0.14	0.03	274.32	2.90	27	0.53	4	55
Callinectes sapidus	196	2.5	22.5	0.12	0.06	544.08	6.67	65	3.33	8	184
Menippe spp.	157	2.0	40.8	0.09	0.02	214.58	1.28	18	0.90	2	62
Leiostomus xanthurus	95	1.2	16.7	0.05	0.02	360.05	1.15	85	5.89	15	166
Paralichthys albigutta	60	0.8	31.7	0.03	0.01	205.14	0.47	164	7.32	44	314
Lutjanus synagris	13	0.2	5.0	0.01	0.00	635.75	0.50	83	5.98	37	108
Micropogonias undulatus	9	0.1	5.0	0.01	0.00	460.40	0.13	135	2.60	118	142
Cynoscion nebulosus	2	0.0	1.7	0.00	0.00	771.34	0.07	129	53.00	76	182
Paralichthys lethostigma	2	0.0	1.7	0.00	0.00	771.34	0.07	208	77.50	130	285
Menticirrhus saxatilis	1	0.0	0.8	0.00	0.00	1,095.45	0.07	30	.	30	30
Totals	**1,571**	**20.3**	**80.8**	**0.90**	**0.17**	**204.01**	**11.32**	**.**	**.**	**2**	**314**

Table CK05-08. Catch statistics for 10 dominant taxa collected in 108 21.3-m river seine samples in tidal creeks during Cedar Key stratified-random sampling, 2005. 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	23,606	73.8	72.2	321.43	96.14	310.82	9,270.59	30	0.06	14	93
Menidia spp.	1,555	4.9	65.7	21.17	4.88	239.32	301.47	49	0.32	15	84
Leiostomus xanthurus	1,332	4.2	37.0	18.14	5.59	320.05	347.06	22	0.39	12	167
Brevoortia spp.	892	2.8	13.9	12.15	9.90	846.82	1,067.65	26	0.15	19	81
Membras martinica	793	2.5	16.7	10.80	4.50	433.54	352.94	47	0.57	15	96
Cynoscion arenarius	749	2.3	24.1	10.20	4.01	408.76	350.00	30	0.42	14	107
Harengula jaguana	728	2.3	3.7	9.91	9.80	1,027.74	1,058.82	51	0.35	28	70
Callinectes sapidus	273	0.9	46.3	3.72	1.03	288.51	100.00	19	1.12	4	127
Lagodon rhomboides	271	0.8	46.3	3.69	0.92	260.08	73.53	38	1.92	10	130
Chloroscombrus chrysurus	226	0.7	2.8	3.08	3.05	1,029.97	329.41	30	0.25	15	35
Subtotal	30,425	95.1	.	.	.	.	.	.	.	4	167
Totals	**32,008**	**100.0**	**.**	**436.04**	**116.62**	**277.94**	**11,529.41**	**.**	**.**	**4**	**503**

Table CK05-09. Catch statistics for Selected Taxa collected in 108 21.3-m river seine samples in tidal creeks during Cedar Key stratified-random sampling, 2005. 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	1,332	4.2	37.0	18.14	5.59	320.05	347.06	22	0.39	12	167
Cynoscion arenarius	749	2.3	24.1	10.20	4.01	408.76	350.00	30	0.42	14	107
Callinectes sapidus	273	0.9	46.3	3.72	1.03	288.51	100.00	19	1.12	4	127
Sciaenops ocellatus	92	0.3	23.1	1.25	0.38	313.20	32.35	55	6.99	13	461
Cynoscion nebulosus	84	0.3	19.4	1.14	0.46	421.63	47.06	38	2.70	16	123
Farfantepenaeus duorarum	77	0.2	13.9	1.05	0.39	384.98	32.35	10	0.37	4	20
Mugil cephalus	51	0.2	13.9	0.69	0.25	373.53	17.65	42	7.71	19	254
Menticirrhus americanus	48	0.1	5.6	0.65	0.38	611.63	36.76	41	2.59	22	100
Lutjanus griseus	10	0.0	4.6	0.14	0.09	652.64	8.82	64	10.17	17	132
Archosargus probatocephalus	3	0.0	2.8	0.04	0.02	594.37	1.47	369	7.94	354	381
Scomberomorus maculatus	3	0.0	1.9	0.04	0.03	771.70	2.94	31	1.33	30	34
Paralichthys albigutta	3	0.0	1.9	0.04	0.03	771.70	2.94	45	15.28	15	65
Paralichthys lethostigma	2	0.0	1.9	0.03	0.02	731.40	1.47	251	70.00	181	321
Elops saurus	1	0.0	0.9	0.01	0.01	1,039.23	1.47	237	0.00	237	237
Pogonias cromis	1	0.0	0.9	0.01	0.01	1,039.23	1.47	85	.	85	85
Mugil curema	1	0.0	0.9	0.01	0.01	1,039.23	1.47	51	.	51	51
Totals	**2,730**	**8.6**	**85.2**	**37.38**	**7.31**	**203.28**	**423.53**	**.**	**.**	**4**	**461**

Table CK05-10. Catch statistics for 10 dominant taxa collected in 60 21.3-m river seine samples in the lower Suwannee River during Cedar Key stratified-random sampling, 2005. 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	3,755	71.3	35.0	92.03	40.45	340.47	1,869.12	25	0.07	16	47
Notropis petersoni	498	9.5	25.0	12.21	5.24	332.28	216.18	27	0.38	11	95
Menidia spp.	192	3.6	33.3	4.71	1.56	256.65	64.71	56	1.13	20	94
Gambusia holbrooki	140	2.7	16.7	3.43	2.13	480.85	125.00	25	0.42	12	34
Callinectes sapidus	137	2.6	43.3	3.36	0.96	220.84	44.12	20	1.11	6	100
Trinectes maculatus	112	2.1	41.7	2.75	0.88	249.22	45.59	19	0.74	8	53
Fundulus seminolis	78	1.5	16.7	1.91	1.07	433.13	57.35	54	1.77	16	89
Leiostomus xanthurus	54	1.0	11.7	1.32	0.69	403.84	29.41	20	1.46	13	93
Eucinostomus spp.	37	0.7	5.0	0.91	0.83	712.25	50.00	30	0.73	23	37
Sciaenops ocellatus	25	0.5	5.0	0.61	0.36	457.70	14.71	36	2.14	12	54
Subtotal	5,028	95.5	.	.	.	.	.	.	.	6	100
Totals	**5,264**	**100.0**	**.**	**129.02**	**41.65**	**250.07**	**1,920.59**	**.**	**.**	**6**	**454**

Table CK05-11. Catch statistics for Selected Taxa collected in 60 21.3-m river seine samples in the lower Suwannee River during Cedar Key stratified-random sampling, 2005. 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	137	2.6	43.3	3.36	0.96	220.84	44.12	20	1.11	6	100
Leiostomus xanthurus	54	1.0	11.7	1.32	0.69	403.84	29.41	20	1.46	13	93
Sciaenops ocellatus	25	0.5	5.0	0.61	0.36	457.70	14.71	36	2.14	12	54
Cynoscion arenarius	7	0.1	3.3	0.17	0.15	671.25	8.82	30	5.64	20	62
Lutjanus griseus	4	0.1	6.7	0.10	0.05	377.32	1.47	78	31.48	23	154
Paralichthys lethostigma	4	0.1	6.7	0.10	0.05	377.32	1.47	133	41.08	72	254
Farfantepenaeus duorarum	1	0.0	1.7	0.02	0.02	774.60	1.47	8	.	8	8
Cynoscion nebulosus	1	0.0	1.7	0.02	0.02	774.60	1.47	35	.	35	35
Mugil cephalus	1	0.0	1.7	0.02	0.02	774.60	1.47	71	.	71	71
Paralichthys albigutta	1	0.0	1.7	0.02	0.02	774.60	1.47	102	.	102	102
Totals	**235**	**4.5**	**53.3**	**5.76**	**1.33**	**179.02**	**45.59**	**.**	**.**	**6**	**254**

Table CK05-12. Catch statistics for 10 dominant taxa collected in 60 6.1-m river otter trawl samples during Cedar Key stratified-random sampling, 2005. 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	1,982	68.3	25.0	4.47	2.99	518.08	162.84	33	0.18	18	62
Ameiurus catus	215	7.4	43.3	0.51	0.17	258.65	7.96	85	2.49	20	176
Callinectes sapidus	154	5.3	38.3	0.35	0.13	289.25	6.48	40	3.43	6	184
Cynoscion arenarius	154	5.3	16.7	0.35	0.19	432.51	10.66	47	1.18	20	85
Ictalurus punctatus	99	3.4	35.0	0.23	0.08	266.71	3.78	76	4.17	25	254
Trinectes maculatus	59	2.0	35.0	0.13	0.05	286.34	2.29	38	2.77	7	69
Bairdiella chrysoura	57	2.0	10.0	0.13	0.09	518.02	4.99	134	3.22	75	165
Leiostomus xanthurus	45	1.6	13.3	0.10	0.05	368.08	2.29	38	6.11	16	150
Farfantepenaeus duorarum	29	1.0	8.3	0.07	0.05	546.06	2.70	11	0.52	6	16
Sciaenops ocellatus	28	1.0	13.3	0.06	0.03	315.83	1.08	38	2.19	22	61
Subtotal	2,822	97.3	.	.	.	.	.	.	.	6	254
Totals	**2,901**	**100.0**	**.**	**6.56**	**3.04**	**359.08**	**166.22**	**.**	**.**	**6**	**930**

Table CK05-13. Catch statistics for Selected Taxa collected in 60 6.1-m river otter trawl samples during Cedar Key stratified-random sampling, 2005. 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	154	5.3	38.3	0.35	0.13	289.25	6.48	40	3.43	6	184
Cynoscion arenarius	154	5.3	16.7	0.35	0.19	432.51	10.66	47	1.18	20	85
Leiostomus xanthurus	45	1.6	13.3	0.10	0.05	368.08	2.29	38	6.11	16	150
Farfantepenaeus duorarum	29	1.0	8.3	0.07	0.05	546.06	2.70	11	0.52	6	16
Sciaenops ocellatus	28	1.0	13.3	0.06	0.03	315.83	1.08	38	2.19	22	61
Micropogonias undulatus	15	0.5	3.3	0.03	0.03	723.93	1.89	65	11.28	30	214
Paralichthys lethostigma	7	0.2	10.0	0.02	0.01	318.76	0.27	241	36.30	145	365
Lutjanus griseus	5	0.2	8.3	0.01	0.00	334.46	0.13	76	10.57	49	114
Cynoscion nebulosus	4	0.1	3.3	0.01	0.01	609.25	0.40	135	21.55	70	160
Archosargus probatocephalus	2	0.1	3.3	0.00	0.00	543.06	0.13	83	2.50	80	85
Menticirrhus americanus	1	0.0	1.7	0.00	0.00	774.60	0.13	48	.	48	48
Totals	**444**	**15.3**	**53.3**	**1.00**	**0.28**	**214.45**	**10.66**	**.**	**.**	**6**	**365**

Appendix CK05-01. Monthly summary of species collected during Cedar Key stratified-random sampling, 2005. 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	5	2	4	15	6	.	1	4	4	5	2	8	56
Achirus lineatus	.	.	.	.	.	1	.	.	2	2	.	1	6
Acipenser oxyrinchus	1	.	1	2	2	3	.	.	.	.	2	.	11
Adinia xenica	.	1	.	1	.	.	2	.	.	1	.	1	6
Aetobatus narinari	.	.	.	.	.	.	.	1	.	.	.	.	1
Aluterus schoepfii	.	1	.	1	2	.	11	.	.	.	.	.	15
Ameiurus catus	36	.	44	13	2	4	13	89	18	.	.	.	219
Ameiurus serracanthus	.	.	.	.	.	.	1	.	.	.	.	.	1
Anchoa hepsetus	1	.	.	5	20	4,341	48	32	6	106	1	.	4,560
Anchoa mitchilli	2,398	943	939	244	381	3,390	6,205	7,798	4,860	13,158	4,696	2,091	47,103
Ancylopsetta quadrocellata	2	2	.	14	2	1	1	1	2	2	.	.	27
Archosargus probatocephalus	5	19	12	2	13	8	7	6	5	8	9	10	104
Ariopsis felis	5	7	10	50	36	60	56	434	982	65	165	187	2,057
Astroscopus y-graecum	.	.	.	2	.	.	.	.	.	.	.	1	3
Bagre marinus	.	.	.	.	1	18	11	110	100	133	5	5	383
Bairdiella chrysoura	246	202	120	394	533	1,489	330	876	725	634	610	169	6,328
Bathygobius soporator	.	.	.	.	.	.	2	90	4	18	15	2	131
Brevoortia spp.	13	75	876	25	98	13	12	45	36	18	8	.	1,219
Calamus arctifrons	.	.	1	.	.	.	1	3	2	.	.	.	7
Callinectes sapidus	95	68	108	120	28	63	171	29	100	97	206	79	1,164
Callinectes similis	.	.	.	.	.	.	.	.	.	.	1	.	1
Caranx hippos	.	.	.	.	49	.	.	4	21	1	.	.	75
Carcharhinus limbatus	.	.	.	.	.	.	.	1	.	.	.	.	1
Centropristis striata	.	7	.	5	11	1	9	15	9	7	2	5	71
Chaetodipterus faber	2	.	.	3	9	6	13	24	61	4	3	4	129

Appendix CK05-01. (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
Chasmodes saburrae	.	.	.	.	.	.	.	.	.	.	.	1	1
Chilomycterus schoepfii	15	15	10	16	15	5	7	2	8	2	3	4	102
Chloroscombrus chrysurus	.	.	.	.	.	.	1	1	24	284	2	1	313
Citharichthys macrops	11	2	13	22	14	9	2	1	5	4	1	2	86
Ctenogobius boleosoma	.	.	.	3	12	9	25	3	16	27	36	1	132
Cynoscion arenarius	8	.	.	8	130	695	171	229	370	89	12	1	1,713
Cynoscion nebulosus	12	7	4	10	4	25	18	34	29	54	78	17	292
Cyprinodon variegatus	.	.	3	.	.	1	.	.	.	.	1	1	6
Dasyatis americana	.	.	.	.	2	.	.	.	.	2	.	.	4
Dasyatis sabina	54	443	105	123	182	90	159	142	111	126	92	37	1,664
Dasyatis say	.	.	4	1	8	2	9	20	7	3	.	1	55
Diapterus auratus	.	.	.	.	.	.	.	.	1	.	.	.	1
Diplectrum formosum	.	.	.	1	1	1	1	1	5	1	1	1	13
Diplodus holbrookii	2	.	.	1	.	.	.	.	1	.	.	.	4
Dorosoma cepedianum	1	.	.	1	.	1	2	2	.	2	.	.	9
Dorosoma petenense	.	1	.	72	45	31	67	64	23	64	.	.	367
Echeneis neucratoides	.	.	.	.	4	6	1	2	3	9	1	.	26
Elops saurus	4	.	.	2	2	5	28	33	34	68	533	2	711
Etropus crossotus	22	45	137	77	12	.	32	72	61	134	30	66	688
Eucinostomus gula	295	40	1	2	1	.	1	15	30	91	91	186	753
Eucinostomus harengulus	25	15	4	2	.	19	30	90	76	62	9	12	344
Eucinostomus spp.	.	2	.	.	.	11	218	49	211	60	51	2	604
Farfantepenaeus duorarum	19	8	35	97	20	15	23	25	97	103	23	83	548
Fundulus grandis	3	5	11	2	.	5	1	14	30	10	34	12	127
Fundulus seminolis	.	3	.	.	.	1	3	40	10	.	.	21	78
Fundulus similis	10	9	93	34	26	38	4	4	14	2	20	3	257

Appendix CK05-01. (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
Gambusia holbrooki	.	.	1	.	10	.	6	12	28	37	7	100	201
Gobiesox strumosus	.	.	1	.	.	2	.	.	1	.	.	.	4
Gobionellus oceanicus	.	.	1	.	.	.	3	.	.	.	.	.	4
Gobiosoma bosc	1	.	.	.	.	.	6	16	5	1	1	1	31
Gobiosoma spp.	.	.	.	.	1	.	3	1	3	2	2	2	14
Gymnura micrura	.	.	4	8	1	7	1	10	3	1	.	.	35
Haemulon plumierii	.	.	.	.	.	.	.	7	.	.	.	.	7
Halichoeres bivittatus	.	.	.	.	.	.	.	2	.	.	.	.	2
Harengula jaguana	.	.	.	5	4	78	313	240	183	916	6	.	1,745
Hemicaranx amblyrhynchus	.	.	.	.	.	.	2	.	.	1	.	.	3
Hippocampus erectus	.	1	.	1	.	1	.	.	.	.	.	1	4
Hypleurochilus caudovittatus	.	.	.	.	.	2	1	5	.	.	.	.	8
Hyporhamphus meeki	.	.	.	.	.	6	1	.	1	3	.	.	11
Hypsoblennius hentz	.	.	.	.	1	.	.	.	.	.	1	2	4
Ictalurus punctatus	.	1	7	8	21	2	7	7	47	.	.	1	101
Labidesthes sicculus	.	.	.	.	.	.	4	.	.	.	.	7	11
Lagodon rhomboides	794	1,252	1,009	1,116	472	914	657	996	686	430	183	46	8,555
Leiostomus xanthurus	1,059	2,162	438	377	566	505	217	575	235	431	24	6	6,595
Lepisosteus osseus	.	.	.	1	2	3	14	6	22	13	.	.	61
Lepisosteus platyrhincus	.	.	1	.	1	.	.	.	1	.	.	.	3
Lepomis auritus	.	.	.	.	.	4	.	.	.	.	.	.	4
Lepomis macrochirus	.	.	.	.	3	2	14	1	.	.	.	.	20
Lepomis microlophus	.	.	.	.	2	2	.	1	.	.	.	.	5
Lepomis punctatus	.	.	.	.	1	.	2	3	.	4	.	.	10
Lepomis spp.	.	.	.	.	.	2	3	1	3	1	.	1	11
Limulus polyphemus	.	1	10	12	3	.	1	.	4	8	.	1	40

Appendix CK05-01. (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
Lucania goodei	.	.	.	.	3	.	.	.	.	.	.	1	4
Lucania parva	.	1	.	1	.	.	.	.	.	.	.	.	2
Lutjanus griseus	2	.	.	.	.	.	2	1	4	14	5	2	30
Lutjanus synagris	.	.	.	.	.	.	1	.	3	8	.	2	14
Malaclemys terrapin	.	.	.	10	3	1	1	.	.	4	.	.	19
Megalops atlanticus	.	.	.	.	1	.	.	.	.	.	.	.	1
Membras martinica	.	.	.	2	86	716	398	272	37	327	.	2	1,840
Menidia spp.	400	61	283	129	69	161	498	320	236	338	62	122	2,679
Menippe spp.	4	4	7	10	12	27	7	21	35	2	24	4	157
Menticirrhus americanus	3	5	18	39	62	258	111	224	176	105	59	49	1,109
Menticirrhus saxatilis	.	.	.	1	16	31	.	.	.	1	.	1	50
Microgobius gulosus	.	.	.	2	1	1	1	1	.	.	1	1	8
Microgobius thalassinus	.	.	.	.	.	.	1	2	4	.	3	.	10
Micropogonias undulatus	1	.	14	10	19	5	45	54	66	8	2	.	224
Micropterus salmoides	.	.	1	.	1	8	1	1	1	1	1	.	15
Monacanthus ciliatus	.	.	.	.	.	1	.	.	1	.	.	.	2
Mugil cephalus	253	217	320	135	208	766	78	159	59	12	482	212	2,901
Mugil curema	2	51	18	1	4	25	9	2	29	14	53	3	211
Mugil gyrans	.	1	5	1	3	.	5	.	.	6	.	7	28
Mycteroperca microlepis	.	.	.	.	.	.	.	.	3	.	.	.	3
Myrophis punctatus	1	.	.	2	.	.	1	.	.	.	.	.	4
Notropis petersoni	.	.	.	.	12	25	417	68	7	.	.	.	529
Ogcocephalus cubifrons	40	63	15	64	46	24	11	9	13	10	59	96	450
Oligoplites saurus	.	.	.	.	1	2	62	43	35	61	7	.	211
Opisthonema oglinum	2	.	.	.	9	10	1	134	316	615	.	.	1,087
Opsanus beta	2	.	1	2	1	.	1	.	.	1	.	.	8

Appendix CK05-01. (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
Orthopristis chrysoptera	55	3	20	80	336	177	41	85	104	77	24	45	1,047
Parablennius marmoreus	.	.	.	.	.	.	1	.	.	.	.	.	1
Paralichthys albigutta	15	13	28	31	24	17	17	16	28	20	12	7	228
Paralichthys lethostigma	.	2	2	1	2	9	5	3	1	2	.	.	27
Peprilus burti	.	.	1	2	.	.	12	1	.	.	.	.	16
Peprilus paru	.	25	1	7	2	.	61	3	.	1	.	.	100
Poecilia latipinna	.	.	.	.	.	.	.	.	.	.	.	1	1
Pogonias cromis	3	4	17	3	15	9	21	19	25	24	26	5	171
Pomatomus saltatrix	.	.	.	.	.	1	.	.	.	.	.	1	2
Prionotus scitulus	24	16	31	30	11	9	7	3	32	39	87	157	446
Prionotus tribulus	18	61	53	68	10	3	1	3	4	7	4	42	274
Rachycentron canadum	.	.	.	.	.	.	.	1	.	.	.	.	1
Rhinoptera bonasus	1	9	1	2	2	5	4	9	.	1	1	1	36
Rhizoprionodon terraenovae	.	.	.	.	.	.	7	5	.	.	.	.	12
Rimapenaeus constrictus	.	.	.	.	.	.	.	.	.	.	.	41	41
Sardinella aurita	.	.	.	.	.	1	.	.	.	.	.	.	1
Sciaenops ocellatus	44	20	31	38	18	70	37	6	35	38	226	174	737
Scomberomorus maculatus	.	.	.	.	.	4	2	10	3	4	1	.	24
Scorpaena brasiliensis	.	.	.	.	.	.	.	.	1	1	.	.	2
Selene vomer	.	.	.	.	2	5	11	16	10	2	.	.	46
Serraniculus pumilio	.	.	.	.	.	.	.	.	.	5	.	2	7
Serranus subligarius	.	.	.	3	.	.	.	.	.	8	.	.	11
Sphoeroides nephelus	4	3	6	.	13	35	10	1	27	48	29	18	194
Sphyraena barracuda	.	.	.	.	.	.	.	.	.	1	.	.	1
Sphyrna tiburo	.	.	1	.	.	.	1	3	8	3	.	.	16
Stephanolepis hispidus	1	.	.	1	.	7	17	4	5	.	7	2	44

Appendix CK05-01. (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	1	7	3	3	2	10	2	6	1	2	5	7	49
Strongylura notata	.	.	2	.	.	5	4	.	11	.	3	.	25
Strongylura spp.	.	.	.	.	.	21	24	2	4	.	.	.	51
Strongylura timucu	.	.	.	.	.	16	14	1	1	1	.	.	33
Symphurus plagiusa	13	27	74	192	43	2	2	6	10	17	12	12	410
Syngnathus floridae	.	.	.	3	2	1	7	11	6	4	7	1	42
Syngnathus louisianae	.	1	1	5	1	.	7	13	2	7	5	2	44
Syngnathus scovelli	2	.	.	3	1	2	.	.	.	.	1	2	11
Syngnathus springeri	.	.	.	.	.	1	.	.	.	.	.	1	2
Synodus foetens	3	1	8	1	9	32	4	1	8	16	26	4	113
Trachinotus falcatus	.	.	.	.	.	.	6	24	4	112	24	.	170
Trinectes maculatus	8	2	27	81	27	15	21	51	40	7	14	12	305
Urophycis floridana	2	8	11	2	.	.	.	.	.	.	.	1	24
Totals	**6,048**	**5,944**	**5,007**	**3,863**	**3,836**	**14,415**	**10,949**	**13,902**	**10,720**	**19,278**	**8,239**	**4,225**	**106,426**

Appendix CK05-02. Summary by gear, stratum, and zone of species collected during Cedar Key stratified-random sampling, 2005. 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=25	E=119	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Acanthostracion quadricornis	3	.	.	.	1	52	18	38	.	56
Achirus lineatus	.	.	1	.	1	4	2	4	.	6
Acipenser oxyrinchus	.	.	.	.	2	9	3	.	8	11
Adinia xenica	.	.	.	6	.	.	6	.	.	6
Aetobatus narinari	.	.	.	.	1	.	.	1	.	1
Aluterus schoepfii	3	3	2	.	.	7	2	13	.	15
Ameiurus catus	.	.	.	1	3	215	3	.	216	219
Ameiurus serracanthus	.	.	.	.	.	1	.	.	1	1
Anchoa hepsetus	33	387	3,941	111	1	87	585	3,969	6	4,560
Anchoa mitchilli	1,235	6,267	8,281	27,361	1	3,958	34,918	6,448	5,737	47,103
Ancylopsetta quadrocellata	.	.	.	.	12	15	1	26	.	27
Archosargus probatocephalus	.	.	1	3	98	2	89	13	2	104
Ariopsis felis	3	1,000	373	4	424	253	357	1,697	3	2,057
Astroscopus y-graecum	.	.	2	.	1	.	.	3	.	3
Bagre marinus	.	60	7	.	268	48	150	233	.	383
Bairdiella chrysoura	76	158	163	215	4,874	842	2,682	3,589	57	6,328
Bathygobius soporator	.	.	.	131	.	.	116	.	15	131
Brevoortia spp.	3	19	162	911	124	.	1,109	91	19	1,219
Calamus arctifrons	2	.	.	.	.	5	1	6	.	7
Callinectes sapidus	3	105	100	410	196	350	596	277	291	1,164
Callinectes similis	.	.	.	.	.	1	.	1	.	1
Caranx hippos	.	.	.	.	75	.	14	61	.	75
Carcharhinus limbatus	.	.	.	.	1	.	.	1	.	1
Centropristis striata	27	.	.	.	.	44	6	65	.	71
Chaetodipterus faber	.	5	10	.	75	39	46	83	.	129
Chasmodes saburrae	.	.	1	.	.	.	.	1	.	1

Appendix CK05-02. (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=25	E=119	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Chilomycterus schoepfii	7	3	1	.	18	73	38	64	.	102
Chloroscombrus chrysurus	2	6	7	226	53	19	286	23	4	313
Citharichthys macrops	.	1	.	.	.	85	37	49	.	86
Ctenogobius boleosoma	.	13	19	98	.	2	107	10	15	132
Cynoscion arenarius	.	90	335	756	23	509	1,328	224	161	1,713
Cynoscion nebulosus	18	4	29	85	150	6	175	112	5	292
Cyprinodon variegatus	.	1	3	1	1	.	1	5	.	6
Dasyatis americana	.	.	.	.	3	1	.	4	.	4
Dasyatis sabina	2	19	26	.	1,488	129	612	1,049	3	1,664
Dasyatis say	1	.	.	.	47	7	3	52	.	55
Diapterus auratus	.	.	.	.	1	.	.	1	.	1
Diplectrum formosum	3	.	.	.	.	10	1	12	.	13
Diplodus holbrookii	.	.	.	.	3	1	1	3	.	4
Dorosoma cepedianum	.	.	.	.	9	.	4	5	.	9
Dorosoma petenense	.	.	.	34	333	.	115	252	.	367
Echeneis neucratoides	.	.	.	.	25	1	7	19	.	26
Elops saurus	.	.	1	1	709	.	171	540	.	711
Etropus crossotus	2	14	4	.	242	426	329	359	.	688
Eucinostomus gula	26	7	75	42	547	56	261	485	7	753
Eucinostomus harengulus	6	7	85	46	186	14	173	144	27	344
Eucinostomus spp.	105	6	333	157	.	3	170	396	38	604
Farfantepenaeus duorarum	22	44	89	78	45	270	327	191	30	548
Fundulus grandis	.	.	20	91	16	.	87	20	20	127
Fundulus seminolis	.	.	.	78	.	.	.	.	78	78
Fundulus similis	.	1	59	34	163	.	40	217	.	257
Gambusia holbrooki	.	.	.	201	.	.	61	.	140	201
Gobiesox strumosus	.	1	.	.	.	3	4	.	.	4
Gobionellus oceanicus	.	.	1	2	.	1	3	1	.	4
Gobiosoma bosc	.	1	5	24	.	1	24	1	6	31
Gobiosoma spp.	.	1	2	11	.	.	6	2	6	14
Gymnura micrura	.	2	.	.	25	8	5	30	.	35
Haemulon plumierii	7	.	.	.	.	.	.	7	.	7

Appendix CK05-02. (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=25	E=119	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Halichoeres bivittatus	2	.	.	.	.	.	.	2	.	2
Harengula jaguana	25	58	31	728	891	12	851	894	.	1,745
Hemicaranx amblyrhynchus	.	.	2	.	1	.	3	.	.	3
Hippocampus erectus	.	.	.	.	.	4	2	2	.	4
Hypleurochilus caudovittatus	.	.	.	.	.	8	2	6	.	8
Hyporhamphus meeki	2	.	5	.	4	.	.	11	.	11
Hypsoblennius hentz	1	1	1	.	.	1	.	4	.	4
Ictalurus punctatus	.	.	.	.	1	100	2	.	99	101
Labidesthes sicculus	.	.	.	11	.	.	.	.	11	11
Lagodon rhomboides	240	77	371	277	7,212	378	2,397	6,152	6	8,555
Leiostomus xanthurus	164	1,312	946	1,386	2,647	140	3,556	2,940	99	6,595
Lepisosteus osseus	.	.	.	5	55	1	56	1	4	61
Lepisosteus platyrhincus	.	.	.	3	.	.	2	.	1	3
Lepomis auritus	.	.	.	4	.	.	.	.	4	4
Lepomis macrochirus	.	.	.	19	.	1	.	.	20	20
Lepomis microlophus	.	.	.	5	.	.	.	.	5	5
Lepomis punctatus	.	.	.	8	.	2	.	.	10	10
Lepomis spp.	.	.	.	10	.	1	.	.	11	11
Limulus polyphemus	.	1	1	.	33	5	18	22	.	40
Lucania goodei	.	.	.	4	.	.	.	.	4	4
Lucania parva	.	.	.	2	.	.	2	.	.	2
Lutjanus griseus	.	.	4	14	7	5	19	2	9	30
Lutjanus synagris	.	.	.	.	1	13	9	5	.	14
Malaclemys terrapin	.	.	.	.	19	.	5	14	.	19
Megalops atlanticus	.	.	.	.	1	.	1	.	.	1
Membras martinica	14	191	835	800	.	.	1,499	334	7	1,840
Menidia spp.	41	179	711	1,747	1	.	2,170	317	192	2,679
Menippe spp.	.	.	.	.	.	157	55	102	.	157
Menticirrhus americanus	3	279	214	48	124	441	779	329	1	1,109
Menticirrhus saxatilis	1	32	5	.	11	1	37	13	.	50
Microgobius gulosus	.	3	4	1	.	.	4	4	.	8
Microgobius thalassinus	.	8	2	.	.	.	1	9	.	10

Appendix CK05-02. (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=25	E=119	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Micropogonias undulatus	.	14	7	.	179	24	61	148	15	224
Micropterus salmoides	.	.	.	15	.	.	1	.	14	15
Monacanthus ciliatus	1	.	.	.	.	1	1	1	.	2
Mugil cephalus	.	5	87	52	2,757	.	1,303	1,597	1	2,901
Mugil curema	.	.	15	1	195	.	118	93	.	211
Mugil gyrans	.	.	4	.	24	.	14	14	.	28
Mycteroperca microlepis	.	.	.	.	3	.	.	3	.	3
Myrophis punctatus	.	.	.	1	.	3	.	.	4	4
Notropis petersoni	.	.	.	527	.	2	29	.	500	529
Ogcocephalus cubifrons	3	2	.	.	354	91	22	428	.	450
Oligoplites saurus	2	27	97	69	16	.	119	81	11	211
Opisthonema oglinum	.	48	10	100	927	2	146	937	4	1,087
Opsanus beta	1	.	.	1	2	4	4	4	.	8
Orthopristis chrysoptera	365	12	144	.	292	234	138	909	.	1,047
Parablennius marmoreus	.	.	.	.	.	1	1	.	.	1
Paralichthys albigutta	8	6	9	4	141	60	65	162	1	228
Paralichthys lethostigma	.	.	.	6	12	9	14	2	11	27
Peprilus burti	.	.	.	.	13	3	3	13	.	16
Peprilus paru	.	3	.	.	95	2	48	52	.	100
Poecilia latipinna	.	.	.	1	.	.	1	.	.	1
Pogonias cromis	.	2	11	1	157	.	94	77	.	171
Pomatomus saltatrix	.	.	1	.	1	.	1	1	.	2
Prionotus scitulus	4	.	2	.	6	434	108	338	.	446
Prionotus tribulus	.	9	9	4	108	144	86	188	.	274
Rachycentron canadum	.	.	.	.	1	.	.	1	.	1
Rhinoptera bonasus	.	2	.	.	32	2	9	27	.	36
Rhizoprionodon terraenovae	.	.	.	.	12	.	.	12	.	12
Rimapenaeus constrictus	.	.	.	.	.	41	18	23	.	41
Sardinella aurita	.	.	.	.	1	.	1	.	.	1
Sciaenops ocellatus	.	15	200	117	377	28	631	53	53	737
Scomberomorus maculatus	.	.	2	3	19	.	5	19	.	24
Scorpaena brasiliensis	.	.	.	.	.	2	.	2	.	2

Appendix CK05-02. (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=25	E=119	E=108	E=168	E=192	E=180	E=384	E=288	E=120	E=792
Selene vomer	2	.	4	.	40	.	11	35	.	46
Serraniculus pumilio	.	.	.	.	.	7	3	4	.	7
Serranus subligarius	.	.	.	.	.	11	8	3	.	11
Sphoeroides nephelus	28	14	54	23	46	29	74	120	.	194
Sphyraena barracuda	.	.	.	.	1	.	.	1	.	1
Sphyrna tiburo	.	.	.	.	13	3	1	15	.	16
Stephanolepis hispidus	12	13	3	.	.	16	10	34	.	44
Strongylura marina	.	5	9	.	35	.	32	17	.	49
Strongylura notata	.	.	12	.	13	.	4	21	.	25
Strongylura spp.	1	1	32	17	.	.	18	32	1	51
Strongylura timucu	.	5	22	6	.	.	15	18	.	33
Symphurus plagiusa	.	10	11	3	8	378	200	209	1	410
Syngnathus floridae	32	2	1	.	.	7	4	38	.	42
Syngnathus louisianae	21	1	.	.	.	22	5	39	.	44
Syngnathus scovelli	5	2	1	.	.	3	2	9	.	11
Syngnathus springeri	.	.	.	.	.	2	1	1	.	2
Synodus foetens	11	22	16	3	5	56	67	46	.	113
Trachinotus falcatus	.	.	32	.	138	.	23	147	.	170
Trinectes maculatus	.	9	.	128	4	164	69	65	171	305
Urophycis floridana	.	1	.	.	.	23	14	10	.	24
Totals	**2,578**	**10,596**	**18,065**	**37,272**	**27,280**	**10,635**	**60,152**	**38,109**	**8,165**	**106,426**

Apalachicola Bay

Apalachicola Bay is a shallow, semi-enclosed estuary, bounded by a barrier island complex that includes St. Vincent Island, Little St. George Island, St. George Island, and Dog Island. The portion of the bay inshore of St. Vincent Island is known as St. Vincent Sound, and the portion inshore of St. George and Dog Islands is known as St. George Sound. The bay is connected to the Gulf of Mexico through Sikes Cut, a man-made pass on St. George Island, and three naturally occurring passes: Indian Pass, West Pass, and East Pass. East of Dog Island, St. George Sound is open to the Gulf (Figure AP05-01).

The Apalachicola Bay system is one of the least developed estuaries in Florida, surrounded by approximately 48,000 acres of state and federal reserves (Florida Department of Environmental Protection 1998). The towns of Apalachicola, East Point, and Carrabelle, the only substantial areas of development on the Bay, support a combined population of approximately 12,000 people. Apalachicola Bay drains an area of approximately 50,660 km^2 and receives the majority of its freshwater from the Apalachicola River, which has the highest average flow rate (665 m^3/s at Blountstown, Florida) (Livingston 1983), and the largest forested flood plain (453 km^2) (Light et al. 1998) of any river in Florida.

The Fisheries-Independent Monitoring (FIM) program sampling universe for the Apalachicola Bay system is divided into three geographic zones: A, B, and C (Figure AP05-01). Zone A, consisting of St. Vincent Sound, Apalachicola Bay, and East Bay, is an estuarine habitat that is greatly influenced by freshwater input from the Apalachicola River. The bottom substrate in Zone A is composed of oyster bars, mud, sand, and to a lesser extent, seagrass beds. Zone B consists of St. George Sound and is a stable marine environment which receives limited freshwater inflow from the Carrabelle River. The bottom substrate is primarily sand with some oyster bars and mud areas. Seagrass meadows of *Halodule wrightii*, *Thalassia testudinum*, and *Syringodium filiforme* cover the shallow areas of Zone B near the mainland and barrier islands. Zone C consists of the lower Apalachicola River and its distributaries the St. Marks, Little St. Marks, and East rivers. Shoreline habitats of the rivers in Zone C include saltwater marsh grasses, freshwater marsh grasses, and hardwood swamps. Submerged aquatic vegetation in Zone C includes *Vallisneria americana*, *Ruppia maritima*, and *Potamogeton* spp.

Stratified-random sampling (SRS) was conducted in all three geographic zones. Zones A and B were sampled monthly using a 21.3-m bay seine, a 6.1-m otter trawl, and a 183-m haul seine. Zone C was sampled monthly using a 21.3-m river seine and a 6.1-m otter trawl. Sampling methods are described in the Methods section of this report. This section summarizes the FIM program data collected in Apalachicola Bay during 2005.

Stratified-Random Sampling

A total of 146,435 fish and selected invertebrates were collected in 840 samples during 2005 Apalachicola Bay SRS (Table AP05-01). Seventy-one families were comprised of 175 taxa of fish, and 13 select invertebrate taxa (Appendices AP05-01 and -02). Five fish and three invertebrate species were new to Apalachicola SRS collections: brown darter (*Etheostoma edwini*), violet goby (*Gobioides broussonetii*), bigeye searobin (*Prionotus longispinosus*), blackwing searobin (*Prionotus rubio*), flathead catfish (*Pylodictis olivaris*), brown rock shrimp (*Sicyonia brevirostris*), lesser rock shrimp (*Sicyonia dorsalis*), and kinglet rock shrimp (*Sicyonia typica*). The most abundant taxon collected in Apalachicola Bay SRS collections was *Brevoortia* spp. (n=27,381), accounting for 18.7% of the total catch. More than 20,000 of those *Brevoortia* spp. were collected in the month of September. Other commonly captured taxa included *Anchoa mitchilli* (n=20,460), *Leiostomus xanthurus* (n=19,541), *Lagodon rhomboides* (n=13,744), *Micropogonias undulatus* (n=9,171), and *Mugil cephalus* (n=6,934). Together with *Brevoortia* spp., these species represented 66.4% of the total catch.

Thirty-one Selected Taxa (n=49,775) were collected, accounting for 34.0% of the total catch (Appendix AP05-01). The most abundant Selected Taxa were *L. xanthurus* (n=19,541), *M. undulatus* (n=9,171), *M. cephalus* (n=6,934), and *Cynoscion arenarius* (n=3,299). Other commonly collected Selected Taxa included *Litopenaeus setiferus* (n=2,916), the *Farfantepenaeus* spp. complex (*F. aztecus,* and *F. duorarum*) (n=1,666), *Callinectes sapidus* (n=1,603), *Menticirrhus americanus* (n=1,026) and *Mugil curema* (n=892).

Bay Sampling

21.3-m Bay Seines. A total of 45,541 animals were collected in 240 21.3-m bay seine samples, accounting for 31.1% of the 2005 SRS collections (Tables AP05-01 and -02). The mean density estimate of animals captured in the 21.3-m bay seine was 136 animals/100 m^2. The five most abundant taxa collected in bay seine samples were *L. xanthurus* (n=10,003), *Brevoortia* spp*.* (n=6,603), *M. cephalus* (n=5,415), *A. mitchilli* (n=4,897), and *L. rhomboides* (n=4,591). These taxa accounted for 69.2% of the total catch with this gear. The 10 most abundant taxa represented 84.6% of the total 21.3-m bay seine catch. There were 11,650 animals collected in 67 offshore-vegetated samples, accounting for 25.6% of the total bay seine catch. There were 8,049 animals collected in 65 offshore-unvegetated samples, accounting for 17.7% of the total bay seine catch. There were 25,842 animals collected in 108 shoreline samples, accounting for 56.7% of the total bay seine catch (Appendix AP05-02).

A total of 19,422 animals from 25 Selected Taxa were collected with the 21.3-m bay seine (Table AP05-03). Selected Taxa represented 42.6% of the total catch with this gear. The most abundant Selected Taxa collected in bay seine samples were *L. xanthurus* (n=10,003) and *M. cephalus* (n=5,415).

183-m Haul Seines. A total of 49,345 animals were collected in 216 183-m haul seine samples, accounting for 33.7% of the 2005 SRS collections (Tables AP05-01 and -04). The mean catch-per-unit-effort of animals captured in the 183-m haul seine was 228 animals/set. The four most abundant taxa in haul seine samples were *Brevoortia* spp. (n=20,333), *L. rhomboides* (n=8,677), *L. xanthurus* (n=5,108), and *Harengula jaguana* (n=3,075). These taxa accounted for 75.4% of the total catch with this gear. The 10 most abundant taxa represented 91.3% of the total 183-m haul seine catch.

A total of 13,193 animals from 29 Selected Taxa were collected with the 183-m haul seine (Table AP05-05). Selected Taxa represented 26.7% of the total catch with this gear. The most abundant Selected Taxa collected in haul seine samples were *L. xanthurus* (n=5,108), *M. undulatus* (n=1,811), *L. setiferus* (n=1,559), and *M. cephalus* (n=1,506).

6.1-m Bay Otter Trawls. A total of 21,852 animals were collected in 144 6.1-m bay otter trawl samples, accounting for 14.9% of the 2005 SRS collections (Tables

AP05-01 and -06). The mean density estimate of animals captured in the 6.1-m bay otter trawl was 10 animals/100 m^2. The three most abundant taxa collected in otter trawl samples were *A. mitchilli* (n=5,208), *L. xanthurus* (n=3,708), and *M. undulatus* (n=3,431). These taxa accounted for 56.5% of the total catch with this gear. The 10 most abundant taxa represented 82.3% of the total 6.1-m bay otter trawl catch.

A total of 11,003 animals from 21 Selected Taxa were collected with the 6.1-m bay otter trawl (Table AP05-07). Selected Taxa represented 50.4% of the total catch with this gear. The most abundant Selected Taxa collected in otter trawl samples were *L. xanthurus* (n=3,708), *M. undulatus* (n=3,431), and *C. arenarius* (n=1,965).

River Sampling

21.3-m River Seines. A total of 15,492 animals were collected in 156 21.3-m river seine samples, accounting for 10.6% of the 2005 SRS collections (Tables AP05-01 and -08). The mean density estimate of animals captured in the 21.3-m river seine samples was 146 animals/100 m^2. The two most abundant taxa were *A. mitchilli* (n=3,729) and *Notropis petersoni* (n=2,920). These species accounted for 42.9% of the total catch with this gear in the river. The 10 most abundant taxa represented 81.8% of the total 21.3-m river seine catch.

A total of 606 animals from 14 Selected Taxa were collected with the 21.3-m river seine (Table AP05-09). Selected Taxa represented 3.9% of the total catch with this gear in the river. The most abundant Selected Taxa collected in river seine samples were *C. sapidus* (n=328) and *L. xanthurus* (n=179).

6.1-m River Otter Trawls. A total of 14,205 animals were collected in 84 6.1-m river otter trawl samples, accounting for 9.7% of the 2005 SRS collections (Tables AP05-01 and -10). The mean density estimate of animals captured in the 6.1-m river otter trawl samples was 23 animals/100 m^2. The most abundant taxon was *A. mitchilli* (n=6,626). This species accounted for 46.6% of the total catch with this gear in the river. The 10 most abundant taxa represented 96.6% of the total 6.1-m river otter trawl catch.

A total of 5,551 animals from 15 Selected Taxa were collected with the 6.1-m river otter trawl (Table AP05-11). Selected Taxa represented 39.1% of the total catch with this gear in the river. The most abundant Selected Taxa were *M. undulatus* (n=3,666), *C. arenarius* (n=685), *L. xanthurus* (n=543), *L. setiferus* (n=286), and *C. sapidus* (n=241).

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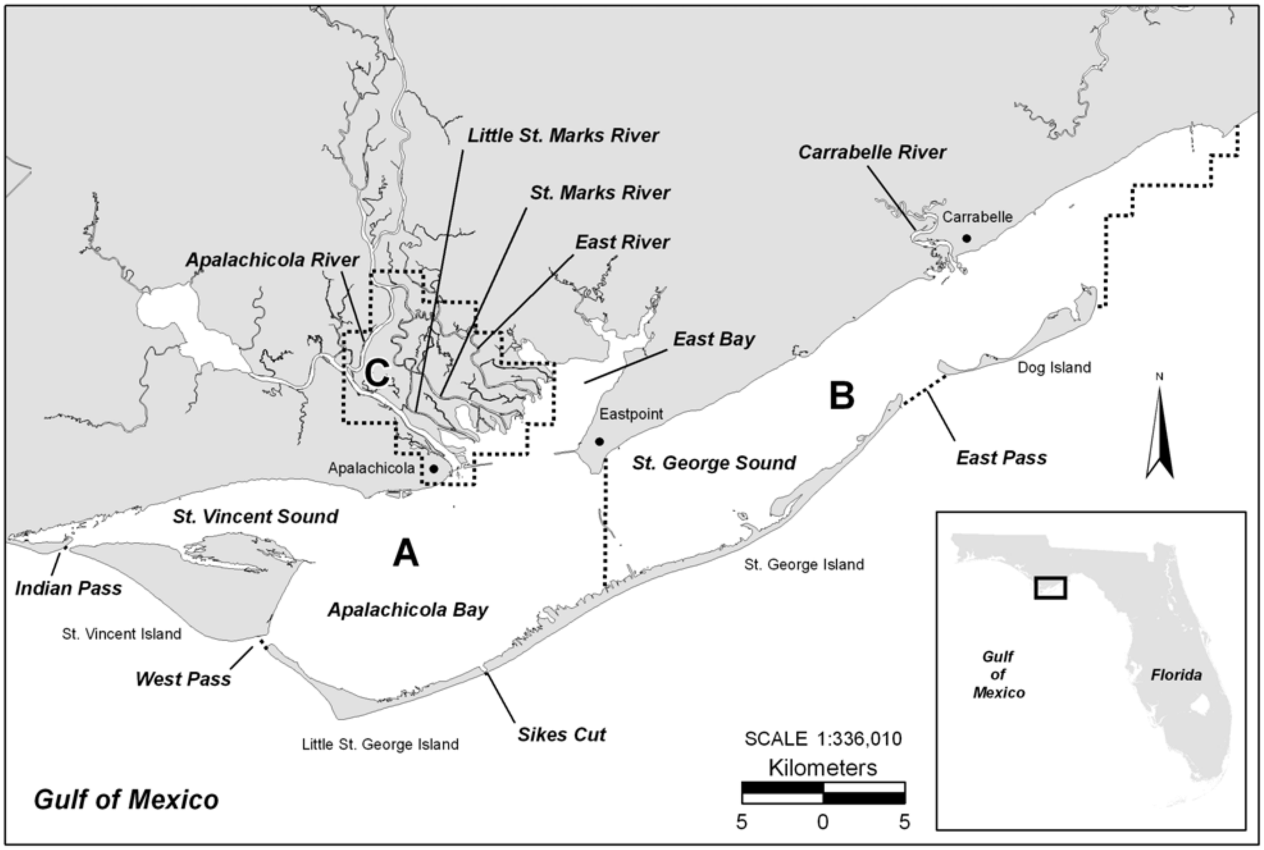

Figure AP05-01. Map of the Apalachicola Field Lab sampling universe. Zones are labeled A-C.

Table AP05-01. Summary of catch and effort data for Apalachicola Bay stratified-random sampling, 2005.

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	32,852	120	.	.	35,099	108	14,728	72	82,679	300
B	12,689	120	.	.	14,246	108	7,124	72	34,059	300
C	.	.	15,492	156	.	.	14,205	84	29,697	240
Totals	**45,541**	**240**	**15,492**	**156**	**49,345**	**216**	**36,057**	**228**	**146,435**	**840**

Table AP05-02. Catch statistics for 10 dominant taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2005. 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	10,003	22.0	48.3	29.77	6.14	319.43	731.43	25	0.11	10	179
Brevoortia spp.	6,603	14.5	15.4	19.65	8.71	686.83	1,387.86	48	0.39	19	153
Mugil cephalus	5,415	11.9	22.1	16.12	9.55	918.37	2,250.71	24	0.13	16	385
Anchoa mitchilli	4,897	10.8	25.8	14.57	3.45	366.70	418.57	31	0.10	14	59
Lagodon rhomboides	4,591	10.1	49.6	13.66	3.65	413.93	760.00	37	0.29	12	148
Menidia spp.	1,685	3.7	27.1	5.01	2.20	681.07	473.57	57	0.36	19	104
Orthopristis chrysoptera	1,570	3.4	17.9	4.67	2.41	798.54	566.43	41	0.34	11	155
Anchoa hepsetus	1,421	3.1	15.4	4.23	2.39	874.55	489.29	33	0.19	22	74
Ctenogobius boleosoma	1,173	2.6	37.1	3.49	0.85	378.57	153.57	26	0.13	14	51
Bairdiella chrysoura	1,126	2.5	12.9	3.35	1.10	506.57	165.71	50	0.82	13	156
Subtotal	38,484	84.6	.	.	.	.	.	.	.	10	385
Totals	**45,541**	**100.0**	**.**	**135.54**	**17.16**	**196.12**	**2,261.43**	**.**	**.**	**2**	**470**

Table AP05-03. Catch statistics for Selected Taxa collected in 240 21.3-m bay seine samples during Apalachicola Bay stratified-random sampling, 2005. 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	10,003	22.0	48.3	29.77	6.14	319.43	731.43	25	0.11	10	179
Mugil cephalus	5,415	11.9	22.1	16.12	9.55	918.37	2,250.71	24	0.13	16	385
Farfantepenaeus spp.	967	2.1	30.8	2.88	0.63	338.52	97.86	10	0.09	2	18
Litopenaeus setiferus	663	1.5	14.2	1.97	1.02	803.46	235.00	11	0.23	3	36
Callinectes sapidus	544	1.2	45.8	1.62	0.29	276.34	41.43	15	0.82	4	162
Menticirrhus americanus	393	0.9	13.8	1.17	0.54	721.68	122.14	42	0.84	14	114
Cynoscion arenarius	390	0.9	10.8	1.16	0.43	570.19	74.29	27	0.57	10	97
Micropogonias undulatus	258	0.6	8.3	0.77	0.33	660.81	63.57	27	1.49	11	195
Sciaenops ocellatus	198	0.4	13.3	0.59	0.22	582.98	37.86	42	3.47	12	470
Cynoscion nebulosus	185	0.4	12.5	0.55	0.16	442.80	22.14	46	2.48	16	337
Paralichthys albigutta	109	0.2	18.3	0.32	0.06	293.79	7.86	40	3.77	9	191
Lutjanus synagris	60	0.1	4.2	0.18	0.11	988.30	26.43	29	1.06	15	51
Mugil curema	54	0.1	6.7	0.16	0.06	551.38	10.71	55	3.48	23	115
Menticirrhus saxatilis	47	0.1	4.6	0.14	0.05	596.19	7.86	40	2.63	10	76
Farfantepenaeus duorarum	46	0.1	7.9	0.14	0.04	478.69	5.71	18	0.36	15	25
Trachinotus carolinus	30	0.1	1.7	0.09	0.07	1,178.04	15.71	49	1.55	22	69
Lutjanus griseus	19	0.0	4.2	0.06	0.02	563.10	2.86	30	4.32	14	75

Table AP05-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Paralichthys squamilentus	10	0.0	2.1	0.03	0.01	753.90	2.14	22	1.83	14	34
Paralichthys lethostigma	6	0.0	2.1	0.02	0.01	724.93	1.43	119	40.91	36	293
Menticirrhus littoralis	6	0.0	0.8	0.02	0.02	1,315.50	3.57	43	9.66	21	86
Trachinotus falcatus	5	0.0	1.7	0.01	0.01	815.33	1.43	57	10.05	36	94
Archosargus probatocephalus	5	0.0	1.7	0.01	0.01	815.33	1.43	26	3.47	16	36
Elops saurus	4	0.0	1.7	0.01	0.01	769.72	0.71	112	34.12	36	197
Farfantepenaeus aztecus	2	0.0	0.8	0.01	0.00	1,093.15	0.71	21	0.50	20	21
Pomatomus saltatrix	2	0.0	0.8	0.01	0.00	1,093.15	0.71	95	9.50	85	104
Pogonias cromis	1	0.0	0.4	0.00	0.00	1,549.19	0.71	210	.	210	210
Totals	**19,422**	**42.7**	**90.8**	**57.80**	**11.51**	**308.53**	**2,254.29**	**.**	**.**	**2**	**470**

Table AP05-04. Catch statistics for 10 dominant taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2005. 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
Brevoortia spp.	20,333	41.2	9.7	94.13	70.89	1,106.82	14,688.00	102	0.22	50	230
Lagodon rhomboides	8,677	17.6	69.4	40.17	5.99	219.21	636.00	97	0.29	23	221
Leiostomus xanthurus	5,108	10.4	47.7	23.65	13.95	867.25	2,976.00	112	0.42	32	220
Harengula jaguana	3,075	6.2	15.7	14.24	7.77	802.09	1,563.00	98	0.16	63	134
Micropogonias undulatus	1,811	3.7	22.2	8.38	4.50	788.33	944.00	152	0.65	45	250
Litopenaeus setiferus	1,559	3.2	12.0	7.22	4.08	831.59	816.00	28	0.17	12	40
Mugil cephalus	1,506	3.1	68.5	6.97	1.01	212.50	137.00	221	2.43	79	427
Bairdiella chrysoura	1,233	2.5	24.1	5.71	1.59	409.55	238.00	138	0.45	45	205
Dasyatis sabina	843	1.7	44.4	3.90	0.84	317.57	121.00	241	1.36	106	450
Mugil curema	837	1.7	27.3	3.88	2.30	871.34	481.00	130	0.91	82	281
Subtotal	44,982	91.3	.	.	.	.	.	.	.	12	450
Totals	**49,345**	**100.0**	**.**	**228.45**	**95.01**	**611.23**	**19,909.00**	**.**	**.**	**10**	**835**

Table AP05-05. Catch statistics for Selected Taxa collected in 216 183-m haul seine samples during Apalachicola Bay stratified-random sampling, 2005. 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
Leiostomus xanthurus	5,108	10.4	47.7	23.65	13.95	867.25	2,976.00	112	0.42	32	220
Micropogonias undulatus	1,811	3.7	22.2	8.38	4.50	788.33	944.00	152	0.65	45	250
Litopenaeus setiferus	1,559	3.2	12.0	7.22	4.08	831.59	816.00	28	0.17	12	40
Mugil cephalus	1,506	3.1	68.5	6.97	1.01	212.50	137.00	221	2.43	79	427
Mugil curema	837	1.7	27.3	3.88	2.30	871.34	481.00	130	0.91	82	281
Sciaenops ocellatus	340	0.7	45.4	1.57	0.20	183.35	23.00	318	7.43	47	630
Cynoscion arenarius	257	0.5	0.9	1.19	1.19	1,463.96	256.00	135	1.37	96	179
Elops saurus	246	0.5	17.6	1.14	0.31	402.59	41.00	247	2.99	92	460
Callinectes sapidus	223	0.5	28.2	1.03	0.19	266.76	23.00	108	2.72	25	176
Cynoscion nebulosus	198	0.4	20.4	0.92	0.26	409.97	33.00	267	9.58	63	551
Trachinotus falcatus	196	0.4	8.8	0.91	0.36	577.31	49.00	63	1.13	20	135
Paralichthys albigutta	177	0.4	29.2	0.82	0.16	281.98	20.00	123	5.07	32	389
Archosargus probatocephalus	158	0.3	23.6	0.73	0.16	315.96	21.00	283	7.38	43	442
Menticirrhus americanus	151	0.3	6.5	0.70	0.53	1,106.98	112.00	118	3.15	73	255
Pogonias cromis	132	0.3	15.7	0.61	0.24	585.16	47.00	178	5.07	97	520
Paralichthys lethostigma	113	0.2	12.0	0.52	0.27	758.34	56.00	139	8.42	51	403
Farfantepenaeus duorarum	36	0.1	5.1	0.17	0.06	548.99	9.00	21	0.58	16	30

Table AP05-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus carolinus	35	0.1	4.2	0.16	0.09	804.47	17.00	101	3.32	73	164
Farfantepenaeus aztecus	28	0.1	5.1	0.13	0.05	532.31	6.00	24	0.66	18	30
Menticirrhus littoralis	27	0.1	4.2	0.13	0.05	606.63	8.00	155	12.27	84	318
Pomatomus saltatrix	27	0.1	4.2	0.13	0.06	689.32	11.00	119	3.46	90	170
Mycteroperca microlepis	9	0.0	1.9	0.04	0.02	844.57	4.00	170	16.29	71	255
Lutjanus griseus	5	0.0	1.9	0.02	0.01	773.02	2.00	105	14.17	71	155
Paralichthys squamilentus	5	0.0	0.9	0.02	0.02	1,210.61	4.00	57	1.66	51	60
Farfantepenaeus spp.	3	0.0	1.4	0.01	0.01	844.57	1.00	13	1.33	10	14
Scomberomorus maculatus	2	0.0	0.9	0.01	0.01	1,036.81	1.00	397	35.50	361	432
Menippe sp.	1	0.0	0.5	0.00	0.00	1,469.69	1.00	40	.	40	40
Megalops atlanticus	1	0.0	0.5	0.00	0.00	1,469.69	1.00	783	.	783	783
Lutjanus synagris	1	0.0	0.5	0.00	0.00	1,469.69	1.00	73	.	73	73
Menticirrhus saxatilis	1	0.0	0.5	0.00	0.00	1,469.69	1.00	151	.	151	151
Totals	**13,193**	**26.7**	**97.7**	**61.08**	**24.10**	**580.00**	**5,155.00**	**.**	**.**	**10**	**783**

Table AP05-06. Catch statistics for 10 dominant taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2005. 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	5,208	23.8	36.8	2.44	0.73	361.28	60.58	40	0.22	14	85
Leiostomus xanthurus	3,708	17.0	51.4	1.76	0.97	663.46	137.14	30	0.48	9	170
Micropogonias undulatus	3,431	15.7	45.1	1.61	0.44	329.49	49.99	40	0.48	10	210
Cynoscion arenarius	1,965	9.0	29.9	0.92	0.27	353.79	24.76	38	0.50	5	160
Rimapenaeus constrictus	1,015	4.6	45.8	0.49	0.17	427.70	22.44	7	0.10	3	19
Etropus crossotus	718	3.3	59.7	0.34	0.06	225.75	6.27	57	0.61	19	123
Ariopsis felis	712	3.3	24.3	0.34	0.16	575.13	19.09	79	1.28	43	305
Menticirrhus americanus	461	2.1	32.6	0.22	0.06	347.69	7.76	47	1.19	6	275
Lagodon rhomboides	389	1.8	29.9	0.18	0.06	391.17	6.21	90	1.03	13	133
Orthopristis chrysoptera	378	1.7	21.5	0.18	0.06	439.41	8.50	97	1.84	13	162
Subtotal	17,985	82.3	.	.	.	.	.	.	.	3	305
Totals	**21,852**	**100.0**	**.**	**10.28**	**1.49**	**174.51**	**159.40**	**.**	**.**	**3**	**887**

Table AP05-07. Catch statistics for Selected Taxa collected in 144 6.1-m bay otter trawl samples during Apalachicola Bay stratified-random sampling, 2005. 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	3,708	17.0	51.4	1.76	0.97	663.46	137.14	30	0.48	9	170
Micropogonias undulatus	3,431	15.7	45.1	1.61	0.44	329.49	49.99	40	0.48	10	210
Cynoscion arenarius	1,965	9.0	29.9	0.92	0.27	353.79	24.76	38	0.50	5	160
Menticirrhus americanus	461	2.1	32.6	0.22	0.06	347.69	7.76	47	1.19	6	275
Litopenaeus setiferus	364	1.7	32.6	0.17	0.04	291.40	4.05	22	0.50	4	45
Callinectes sapidus	267	1.2	48.6	0.13	0.03	275.99	3.71	62	2.88	6	191
Farfantepenaeus duorarum	250	1.1	46.5	0.12	0.02	155.74	0.81	23	0.39	14	42
Farfantepenaeus aztecus	178	0.8	16.0	0.08	0.03	373.34	2.36	23	0.38	12	36
Farfantepenaeus spp.	134	0.6	25.0	0.06	0.02	315.71	1.89	11	0.27	3	18
Lutjanus synagris	99	0.5	13.2	0.05	0.02	529.02	2.70	37	2.21	14	150
Menippe spp.	64	0.3	16.0	0.03	0.01	295.48	0.74	23	2.05	6	93
Paralichthys albigutta	48	0.2	20.8	0.02	0.00	248.84	0.34	139	6.25	34	253
Cynoscion nothus	12	0.1	0.7	0.01	0.01	1,200.00	0.81	21	1.08	17	27
Paralichthys lethostigma	10	0.0	5.6	0.00	0.00	440.11	0.14	233	34.82	96	455
Lutjanus griseus	3	0.0	2.1	0.00	0.00	687.96	0.07	28	15.86	11	60
Scomberomorus maculatus	2	0.0	1.4	0.00	0.00	845.56	0.07	56	9.00	47	65
Archosargus probatocephalus	2	0.0	0.7	0.00	0.00	1,200.00	0.13	98	12.50	85	110

Table AP05-07. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Pomatomus saltatrix	1	0.0	0.7	0.00	0.00	1,200.00	0.07	108	.	108	108
Rachycentron canadum	1	0.0	0.7	0.00	0.00	1,200.00	0.07	445	.	445	445
Cynoscion nebulosus	1	0.0	0.7	0.00	0.00	1,200.00	0.07	122	.	122	122
Menticirrhus littoralis	1	0.0	0.7	0.00	0.00	1,200.00	0.07	23	.	23	23
Menticirrhus saxatilis	1	0.0	0.7	0.00	0.00	1,200.00	0.07	150	.	150	150
Totals	**11,003**	**50.4**	**95.1**	**5.18**	**1.24**	**286.46**	**158.26**	**.**	**.**	**3**	**455**

Table AP05-08. Catch statistics for 10 dominant taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2005. 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	3,729	24.1	28.8	35.15	15.07	535.43	2,194.12	26	0.06	18	48
Notropis petersoni	2,920	18.8	59.6	27.53	4.89	221.73	414.71	32	0.14	15	60
Trinectes maculatus	1,554	10.0	71.8	14.65	3.05	260.04	277.94	18	0.23	7	95
Gambusia holbrooki	1,345	8.7	21.8	12.68	8.63	850.34	1,336.76	22	0.12	11	36
Ctenogobius boleosoma	758	4.9	41.7	7.15	1.51	263.97	138.24	25	0.19	13	52
Lucania parva	643	4.2	25.6	6.06	2.29	471.95	288.24	22	0.17	14	34
Menidia spp.	549	3.5	21.2	5.18	2.12	510.58	279.41	46	0.39	25	87
Brevoortia spp.	403	2.6	11.5	3.80	2.15	707.92	272.06	28	0.21	19	59
Lepomis macrochirus	400	2.6	34.0	3.77	0.83	273.99	72.06	63	1.74	20	182
Labidesthes sicculus	367	2.4	19.9	3.46	2.02	730.53	310.29	43	0.45	18	62
Subtotal	12,668	81.8	.	.	.	.	.	.	.	7	182
Totals	**15,492**	**100.0**	**.**	**146.04**	**19.72**	**168.66**	**2,266.18**	**.**	**.**	**3**	**680**

Table AP05-09. Catch statistics for Selected Taxa collected in 156 21.3-m river seine samples during Apalachicola Bay stratified-random sampling, 2005. 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	328	2.1	51.3	3.09	0.45	182.35	29.41	20	1.20	5	152
Leiostomus xanthurus	179	1.2	5.1	1.69	1.17	865.29	176.47	17	0.24	13	33
Litopenaeus setiferus	44	0.3	3.2	0.41	0.25	744.57	30.88	8	0.38	4	19
Paralichthys lethostigma	19	0.1	10.9	0.18	0.04	299.95	2.94	172	20.27	42	402
Mugil cephalus	13	0.1	3.8	0.12	0.06	608.97	7.35	48	22.91	21	323
Micropogonias undulatus	5	0.0	2.6	0.05	0.02	655.40	2.94	18	1.39	15	23
Farfantepenaeus spp.	5	0.0	1.3	0.05	0.04	1,028.39	5.88	8	2.04	3	13
Archosargus probatocephalus	3	0.0	1.9	0.03	0.02	716.44	1.47	139	3.71	132	144
Lutjanus griseus	3	0.0	1.3	0.03	0.02	928.54	2.94	37	11.10	16	54
Cynoscion arenarius	2	0.0	1.3	0.02	0.01	880.32	1.47	28	1.50	26	29
Farfantepenaeus aztecus	1	0.0	0.6	0.01	0.01	1,249.00	1.47	17	.	17	17
Farfantepenaeus duorarum	1	0.0	0.6	0.01	0.01	1,249.00	1.47	16	.	16	16
Elops saurus	1	0.0	0.6	0.01	0.01	1,249.00	1.47	37	.	37	37
Sciaenops ocellatus	1	0.0	0.6	0.01	0.01	1,249.00	1.47	27	.	27	27
Paralichthys albigutta	1	0.0	0.6	0.01	0.01	1,249.00	1.47	22	.	22	22
Totals	**606**	**3.9**	**60.3**	**5.71**	**1.33**	**291.67**	**182.35**	**.**	**.**	**3**	**402**

Table AP05-10. Catch statistics for 10 dominant taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2005. 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	6,626	46.6	29.8	10.64	4.34	373.56	249.33	29	0.10	18	66
Micropogonias undulatus	3,666	25.8	19.0	5.89	5.52	859.61	464.11	22	0.15	12	230
Trinectes maculatus	778	5.5	59.5	1.26	0.46	335.89	34.67	21	0.46	8	85
Cynoscion arenarius	685	4.8	15.5	1.10	0.78	652.80	62.20	51	0.61	19	91
Ictalurus punctatus	584	4.1	46.4	0.94	0.28	269.33	13.90	62	1.09	15	235
Leiostomus xanthurus	543	3.8	20.2	0.87	0.61	645.19	51.13	26	1.32	12	196
Litopenaeus setiferus	286	2.0	14.3	0.46	0.23	467.38	12.82	14	0.33	4	24
Callinectes sapidus	241	1.7	53.6	0.39	0.08	184.44	4.45	46	3.20	4	191
Ctenogobius boleosoma	210	1.5	25.0	0.34	0.13	358.88	9.85	22	0.31	12	41
Ictalurus furcatus	97	0.7	17.9	0.16	0.07	414.65	5.40	94	3.62	19	200
Subtotal	13,716	96.6	.	.	.	.	.	.	.	4	235
Totals	**14,205**	**100.0**	**.**	**22.84**	**7.89**	**316.48**	**518.89**	**.**	**.**	**4**	**509**

Table AP05-11. Catch statistics for Selected Taxa collected in 84 6.1-m river otter trawl samples during Apalachicola Bay stratified-random sampling, 2005. 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	3,666	25.8	19.0	5.89	5.52	859.61	464.11	22	0.15	12	230
Cynoscion arenarius	685	4.8	15.5	1.10	0.78	652.80	62.20	51	0.61	19	91
Leiostomus xanthurus	543	3.8	20.2	0.87	0.61	645.19	51.13	26	1.32	12	196
Litopenaeus setiferus	286	2.0	14.3	0.46	0.23	467.38	12.82	14	0.33	4	24
Callinectes sapidus	241	1.7	53.6	0.39	0.08	184.44	4.45	46	3.20	4	191
Sciaenops ocellatus	24	0.2	9.5	0.04	0.02	522.74	1.75	70	23.24	10	509
Menticirrhus americanus	21	0.1	2.4	0.03	0.03	702.15	2.02	48	2.31	25	61
Archosargus probatocephalus	20	0.1	16.7	0.03	0.01	264.24	0.54	178	23.93	66	400
Cynoscion nebulosus	16	0.1	6.0	0.03	0.01	457.22	0.81	53	5.54	20	96
Paralichthys lethostigma	13	0.1	8.3	0.02	0.01	368.45	0.40	109	17.26	17	183
Lutjanus griseus	10	0.1	6.0	0.02	0.01	440.35	0.40	62	6.27	15	85
Farfantepenaeus duorarum	8	0.1	2.4	0.01	0.01	664.46	0.67	18	0.60	16	20
Farfantepenaeus spp.	7	0.0	3.6	0.01	0.01	565.26	0.40	12	1.31	7	15
Paralichthys albigutta	7	0.0	3.6	0.01	0.01	595.16	0.54	28	4.67	11	40
Pogonias cromis	3	0.0	2.4	0.00	0.00	679.83	0.27	158	15.50	142	189
Mugil curema	1	0.0	1.2	0.00	0.00	916.52	0.13	160	.	160	160
Totals	**5,551**	**39.1**	**66.7**	**8.92**	**6.18**	**635.36**	**516.46**	**.**	**.**	**4**	**509**

Appendix AP05-01. Monthly summary of species collected during Apalachicola Bay stratified-random sampling, 2005. 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	2	.	1	1	.	2	7	2	5	.	.	.	20
Achirus lineatus	.	.	.	.	.	.	.	2	.	.	.	.	2
Adinia xenica	9	.	.	.	.	.	.	.	.	.	.	.	9
Alosa alabamae	.	5	.	.	3	2	5	.	.	.	.	.	15
Alosa chrysochloris	.	.	.	.	.	4	1	2	.	.	.	.	7
Alosa spp.	.	.	.	8	4	.	.	.	.	.	.	.	12
Aluterus schoepfii	.	.	.	.	.	.	1	.	.	.	.	1	2
Ameiurus catus	1	1	.	1	6	27	1	1	11	.	.	2	51
Amia calva	4	.	.	1	.	.	.	.	.	.	.	.	5
Anchoa cubana	.	.	.	.	.	.	14	.	.	.	.	.	14
Anchoa hepsetus	2	.	3	.	721	628	105	89	23	3	2	.	1,576
Anchoa lyolepis	1	.	.	.	.	.	6	.	1	.	.	.	8
Anchoa mitchilli	9	213	247	515	351	4,884	6,275	2,228	1,449	195	4,021	73	20,460
Ancylopsetta quadrocellata	4	2	9	12	6	3	3	3	2	2	.	1	47
Aphredoderus sayanus	.	.	1	.	1	.	.	.	.	.	.	.	2
Archosargus probatocephalus	3	8	4	40	6	46	14	23	8	13	16	7	188
Ariopsis felis	283	133	2	37	43	131	145	719	313	16	12	3	1,837
Astroscopus y-graecum	3	9	1	1	1	.	.	.	.	.	.	1	16
Bagre marinus	.	2	.	.	.	.	10	11	15	.	.	.	38
Bairdiella chrysoura	20	146	147	54	28	416	762	275	360	394	5	12	2,619
Brevoortia spp.	27	2,260	538	1,574	615	100	28	29	20,870	1,304	2	34	27,381
Calamus arctifrons	.	.	2	.	.	.	.	.	1	.	.	.	3
Callinectes sapidus	199	188	159	83	123	139	114	77	123	171	167	60	1,603
Callinectes similis	2	2	1	4	3	2	22	3	10	29	52	29	159
Caranx hippos	.	.	.	23	.	.	8	7	21	1	1	.	61
Caranx latus	.	.	.	.	.	.	.	2	3	.	.	.	5

Appendix AP05-01. (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
Catostomidae spp.	.	.	.	.	.	19	.	.	.	.	.	.	19
Centrarchus macropterus	.	.	.	7	.	.	.	.	.	.	.	.	7
Centropristis philadelphica	.	.	.	.	1	.	6	.	.	.	.	.	7
Centropristis striata	4	4	1	2	2	5	7	8	5	.	.	.	38
Chaetodipterus faber	.	.	.	.	4	.	21	19	17	1	.	.	62
Chasmodes saburrae	.	1	1	.	.	.	1	3	4	.	.	.	10
Chilomycterus schoepfii	3	6	8	3	6	7	.	6	20	8	10	13	90
Chloroscombrus chrysurus	.	.	.	1	5	4	1	9	5	12	7	2	46
Citharichthys macrops	5	11	20	5	5	.	18	9	1	16	5	2	97
Citharichthys spilopterus	5	.	4	9	32	57	30	21	12	7	5	.	182
Citharichthys sp.	1	.	.	.	.	.	.	.	.	.	.	.	1
Ctenogobius boleosoma	172	81	107	52	103	37	75	114	136	394	851	113	2,235
Cynoscion arenarius	.	1	.	3	86	241	967	1,470	513	7	11	.	3,299
Cynoscion nebulosus	33	10	13	5	3	12	66	64	77	84	22	11	400
Cynoscion nothus	.	.	.	.	.	.	12	.	.	.	.	.	12
Cyprinella venusta	.	.	.	3	11	.	.	1	.	23	9	27	74
Cyprinodon variegatus	.	3	9	.	.	.	.	.	.	.	.	9	21
Cyprinus carpio	.	.	.	.	.	1	.	.	.	.	.	.	1
Dasyatis sabina	6	165	60	120	54	214	77	39	156	10	36	3	940
Dasyatis say	.	.	.	.	.	4	3	1	3	.	.	.	11
Diplectrum bivittatum	.	.	.	.	.	.	1	.	.	.	1	2	4
Diplectrum formosum	.	.	.	.	1	1	2	.	.	.	1	.	5
Diplodus holbrookii	.	.	.	.	.	.	.	2	1	.	.	.	3
Dorosoma cepedianum	.	.	.	22	.	14	3	5	.	2	.	.	46
Dorosoma petenense	.	.	.	6	2	10	42	59	8	.	.	.	127
Echeneis neucratoides	.	.	.	1	.	.	.	.	.	.	.	.	1
Elassoma zonatum	.	.	.	.	1	.	.	.	.	.	.	.	1

Appendix AP05-01. (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
Eleotris amblyopsis	1	.	.	.	.	1	.	.	.	.	.	.	2
Elops saurus	.	.	.	2	3	5	35	33	136	23	14	.	251
Enneacanthus gloriosus	5	1	19	2	12	1	8	1	3	.	1	.	53
Erimyzon sucetta	.	.	.	1	.	11	2	.	.	.	.	.	14
Erotelis smaragdus	.	.	.	.	.	.	1	.	.	.	.	.	1
Esox niger	.	.	.	5	1	1	.	.	.	.	.	.	7
Etheostoma edwini	.	.	.	.	.	.	.	1	.	.	.	.	1
Etheostoma fusiforme	.	1	1	1	1	.	.	.	.	.	.	.	4
Etropus crossotus	30	13	62	63	37	37	152	246	70	58	8	6	782
Eucinostomus argenteus	.	.	.	.	.	.	.	.	1	.	.	.	1
Eucinostomus gula	30	.	11	.	.	1	20	27	24	16	22	1	152
Eucinostomus harengulus	3	.	2	.	.	.	9	30	44	18	61	17	184
Eucinostomus spp.	.	.	.	.	.	2	195	59	27	5	1	2	291
Farfantepenaeus aztecus	.	.	.	1	1	135	38	25	3	4	1	1	209
Farfantepenaeus duorarum	12	9	27	54	30	9	33	29	8	38	59	33	341
Farfantepenaeus spp.	178	12	2	41	45	18	101	75	163	228	247	6	1,116
Fundulus chrysotus	4	9	4	5	.	.	.	.	.	.	.	.	22
Fundulus grandis	8	1	3	.	.	.	3	1	.	.	6	7	29
Fundulus similis	2	8	30	39	7	1	27	2	13	.	.	26	155
Gambusia holbrooki	56	27	92	2	6	.	.	.	57	142	960	3	1,345
Gobiesox strumosus	.	.	1	2	.	.	1	.	4	.	.	.	8
Gobiidae sp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Gobioides broussonetii	.	.	.	.	.	.	.	.	1	.	.	.	1
Gobionellus oceanicus	.	2	9	2	.	4	1	3	3	43	3	1	71
Gobiosoma bosc	23	4	14	8	3	4	1	8	19	50	6	1	141
Gobiosoma robustum	5	9	3	.	3	.	.	.	.	.	1	.	21
Gobiosoma spp.	6	1	.	.	.	.	1	4	18	5	5	3	43

Appendix AP05-01. (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
Graptemys barbouri	.	1	.	.	.	.	.	.	.	1	.	.	2
Gymnura micrura	.	1	.	.	1	2	1	2	1	1	.	.	9
Haemulon plumierii	.	.	.	1	.	.	.	.	.	.	.	.	1
Halichoeres bivittatus	.	.	.	.	.	.	.	2	1	.	.	.	3
Harengula jaguana	.	2	20	9	906	1,617	82	79	268	50	129	.	3,162
Heterandria formosa	19	1	94	18	19	.	.	2	3	35	4	.	195
Hippocampus erectus	2	.	2	.	.	.	1	.	.	.	.	1	6
Hyporhamphus meeki	.	.	.	.	.	1	1	25	13	23	2	.	65
Hypsoblennius hentz	.	.	1	.	.	.	2	.	4	.	.	.	7
Hypsoblennius ionthas	.	1	.	.	.	.	.	.	.	.	.	.	1
Ictalurus furcatus	.	.	.	17	.	11	3	46	20	.	.	.	97
Ictalurus punctatus	6	1	7	10	2	8	5	105	61	275	81	28	589
Labidesthes sicculus	12	.	.	2	6	4	.	.	14	67	18	244	367
Lactophrys triqueter	.	.	.	.	.	.	.	.	1	.	.	.	1
Lagodon rhomboides	625	1,458	1,332	669	1,261	1,841	1,386	852	1,762	1,223	827	508	13,744
Larimus fasciatus	.	.	.	1	3	.	2	3	.	2	.	.	11
Leiostomus xanthurus	5,102	5,292	1,355	1,765	865	614	477	117	3,289	402	71	192	19,541
Lepisosteus oculatus	1	.	1	1	2	7	1	2	1	1	1	.	18
Lepisosteus osseus	.	.	1	1	.	.	.	5	4	2	.	.	13
Lepisosteus sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
Lepomis auritus	.	.	.	1	2	2	.	8	.	4	.	.	17
Lepomis gulosus	.	.	.	1	.	.	1	1	.	.	.	.	3
Lepomis macrochirus	30	.	57	86	94	54	34	7	14	26	13	12	427
Lepomis microlophus	26	23	19	16	11	8	12	4	35	55	28	21	258
Lepomis punctatus	26	11	8	5	3	2	.	.	6	52	88	10	211
Lepomis spp.	1	1	1	.	6	48	5	16	54	82	34	44	292
Limulus polyphemus	1	1	13	1	.	.	.	.	.	.	.	.	16

Appendix AP05-01. (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	10	153	41	56	30	88	96	638	1,123	153	528	.	2,916
Lobotes surinamensis	.	.	.	.	.	.	.	.	1	.	.	.	1
Lucania goodei	.	.	10	3	4	.	.	6	.	3	4	1	31
Lucania parva	273	89	33	6	33	496	11	4	55	19	122	42	1,183
Lutjanus griseus	.	.	.	.	.	.	3	8	7	12	10	.	40
Lutjanus synagris	.	.	.	.	.	1	102	39	9	8	1	.	160
Macrochelys temminckii	.	.	.	.	.	.	.	.	.	.	1	.	1
Megalops atlanticus	.	.	.	.	.	.	.	.	.	.	1	.	1
Membras martinica	.	.	.	8	18	19	8	13	68	.	1	.	135
Menidia spp.	22	78	87	49	25	123	60	387	80	276	1,042	25	2,254
Menippe spp.	6	2	10	11	7	1	3	5	6	5	3	6	65
Menticirrhus americanus	1	.	.	.	19	94	128	388	174	155	66	1	1,026
Menticirrhus littoralis	.	.	.	.	5	7	.	6	6	1	9	.	34
Menticirrhus saxatilis	.	.	.	15	25	.	7	.	.	2	.	.	49
Microgobius gulosus	2	.	2	9	8	13	34	9	8	9	5	.	99
Microgobius thalassinus	1	1	2	9	3	5	31	7	7	1	.	.	67
Micropogonias undulatus	4,248	737	157	1,163	772	307	347	109	1,231	13	2	85	9,171
Micropterus salmoides	6	5	1	12	136	130	30	.	5	17	14	6	362
Minytrema melanops	1	.	.	.	2	1	.	.	1	.	.	.	5
Monacanthus ciliatus	.	.	2	.	.	1	.	.	1	.	.	.	4
Morone chrysops x saxatilis	.	1	.	.	.	.	.	.	.	.	.	.	1
Morone saxatilis	.	.	.	3	.	.	1	.	.	.	.	2	6
Mugil cephalus	220	689	712	332	64	200	77	86	149	120	50	4,235	6,934
Mugil curema	16	.	3	14	13	43	13	33	193	490	12	62	892
Mycteroperca microlepis	.	.	.	.	.	1	.	3	4	1	.	.	9
Myrophis punctatus	15	.	.	4	.	.	.	1	.	.	.	.	20
Notemigonus crysoleucas	8	.	1	2	7	135	2	61	6	2	5	.	229

Appendix AP05-01. (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
Notropis maculatus	.	.	.	.	.	.	1	1	17	2	.	.	21
Notropis petersoni	131	22	48	79	190	475	46	104	587	305	408	578	2,973
Notropis texanus	.	.	.	.	.	.	.	.	.	.	7	20	27
Ogcocephalus pantostictus	.	1	1	1	.	.	1	.	.	.	.	.	4
Oligoplites saurus	.	.	.	.	.	4	19	43	67	11	4	.	148
Ophidion holbrookii	.	1	.	1	.	.	.	.	.	.	.	.	2
Opisthonema oglinum	.	.	.	.	.	.	1	2	3	.	10	.	16
Opsanus beta	.	1	1	.	1	.	8	3	2	.	1	1	18
Opsopoeodus emiliae	.	.	.	.	.	.	.	.	2	.	.	.	2
Orthopristis chrysoptera	.	.	22	40	268	1,157	373	261	288	3	.	4	2,416
Paralichthys albigutta	22	62	85	32	23	33	21	12	22	15	10	5	342
Paralichthys lethostigma	1	6	6	5	8	64	15	28	7	12	4	5	161
Paralichthys squamilentus	.	10	3	2	.	.	.	.	.	.	.	.	15
Peprilus burti	.	.	.	4	1	.	.	.	6	.	.	.	11
Peprilus paru	.	.	1	.	2	6	18	.	.	1	.	.	28
Peprilus sp.	.	.	.	.	.	.	1	.	.	.	.	.	1
Poecilia latipinna	.	1	.	1	4	4	.	.	1	19	7	.	37
Pogonias cromis	22	.	2	9	.	4	2	3	9	65	11	9	136
Pomatomus saltatrix	.	.	1	17	12	.	.	.	.	.	.	.	30
Pomoxis nigromaculatus	.	.	.	7	1	6	2	.	.	.	.	.	16
Porichthys plectrodon	.	.	.	2	.	17	2	.	.	.	.	.	21
Prionotus longispinosus	.	.	.	2	10	1	1	.	.	.	.	.	14
Prionotus rubio	.	.	.	.	.	.	2	.	.	1	.	4	7
Prionotus scitulus	19	10	15	9	11	5	37	20	12	6	14	14	172
Prionotus tribulus	14	12	9	18	7	5	7	36	6	4	11	3	132
Pseudemys nelsoni	1	1	.	1	.	.	.	1	.	.	1	.	5
Pseudemys suwanniensis	.	.	.	.	.	.	.	.	.	.	1	.	1

Appendix AP05-01. (Continued)

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
	Month												
	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
Rachycentron canadum	.	.	.	.	.	.	1	.	.	.	.	.	1
Rhinoptera bonasus	.	2	12	5	.	2	.	1	.	.	.	.	22
Rhizoprionodon terraenovae	.	.	.	.	.	1	.	.	.	.	.	.	1
Rimapenaeus constrictus	20	4	13	9	2	3	27	31	448	132	253	80	1,022
Sardinella aurita	.	.	.	.	.	.	48	.	.	.	.	.	48
Sciaenops ocellatus	34	25	19	78	17	41	50	24	18	86	132	39	563
Scomberomorus maculatus	.	.	.	.	.	3	.	1	.	.	.	.	4
Scorpaena brasiliensis	.	.	.	.	.	.	1	.	2	.	.	.	3
Selene setapinnis	.	.	.	.	.	.	2	.	.	.	.	.	2
Selene vomer	.	.	.	.	.	.	2	3	1	.	.	.	6
Serraniculus pumilio	2	.	2	.	.	.	.	.	.	.	2	4	10
Serranus subligarius	5	.	.	.	.	.	1	3	1	.	.	.	10
Sicyonia brevirostris	.	.	2	.	.	.	.	.	.	.	.	1	3
Sicyonia dorsalis	.	.	.	.	.	.	.	.	.	1	3	.	4
Sicyonia spp.	.	.	.	.	8	.	.	.	.	.	.	.	8
Sicyonia typica	.	.	.	.	.	.	.	.	.	.	1	4	5
Sphoeroides nephelus	1	.	5	3	36	27	9	13	16	6	7	14	137
Sphoeroides parvus	1	.	.	1	1	22	3	2	2	12	9	.	53
Sphoeroides spp.	.	.	.	.	2	3	.	.	.	.	1	.	6
Sphyraena barracuda	.	.	.	.	.	.	.	.	1	2	.	.	3
Sphyraena guachancho	.	.	.	.	.	4	.	2	.	.	.	.	6
Sphyrna tiburo	.	.	.	.	1	.	.	.	1	.	.	.	2
Stellifer lanceolatus	.	.	.	.	.	.	3	.	33	.	.	.	36
Stenotomus caprinus	.	.	.	.	8	2	6	.	.	.	13	.	29
Stephanolepis hispidus	2	.	.	.	1	19	46	4	.	2	.	.	74
Stomolophus meleagris	.	.	.	.	.	.	.	.	1	.	.	.	1

Appendix AP05-01. (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
Strongylura marina	7	10	15	3	1	6	14	24	7	4	7	22	120
Strongylura notata	.	.	2	.	.	.	4	1	1	.	.	.	8
Strongylura spp.	.	.	.	.	1	20	.	1	.	.	1	.	23
Symphurus civitatium	2	.	.	.	.	.	2	.	.	.	.	.	4
Symphurus plagiusa	10	16	17	43	12	9	38	34	35	8	10	1	233
Syngnathus floridae	2	.	.	.	.	.	.	5	1	.	.	.	8
Syngnathus louisianae	5	.	.	2	.	14	24	3	2	2	1	1	54
Syngnathus scovelli	15	16	7	3	13	23	27	25	22	2	1	1	155
Synodus foetens	3	1	4	4	74	98	76	28	18	32	39	6	383
Trachinotus carolinus	.	.	.	.	.	1	15	26	23	.	.	.	65
Trachinotus falcatus	.	.	.	.	.	.	.	4	52	12	131	2	201
Trichiurus lepturus	.	.	.	1	3	.	.	.	.	.	.	.	4
Trinectes maculatus	290	40	85	133	85	46	37	168	358	725	215	268	2,450
Tylosurus crocodilus	.	.	.	.	.	.	.	2	2	.	.	.	4
Urophycis floridana	6	6	8	7	1	.	.	.	.	.	.	.	28
Urophycis regia	.	.	.	1	.	.	.	.	.	.	.	.	1
Xiphopenaeus kroyeri	.	.	.	.	.	.	.	.	.	2	.	.	2
Totals	**12,456**	**12,143**	**5,975**	**7,645**	**7,532**	**15,249**	**13,441**	**9,845**	**35,526**	**8,382**	**11,118**	**7,123**	**146,435**

Appendix AP05-02. Summary by gear, stratum, and zone of species collected during Apalachicola Bay stratified-random sampling, 2005. 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=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Acanthostracion quadricornis	1	.	.	.	2	17	.	20	.	20
Achirus lineatus	.	.	1	.	.	1	1	1	.	2
Adinia xenica	.	.	9	.	.	.	9	.	.	9
Alosa alabamae	.	.	.	3	5	7	5	.	10	15
Alosa chrysochloris	.	.	.	4	3	.	3	.	4	7
Alosa spp.	.	.	.	11	1	.	1	.	11	12
Aluterus schoepfii	.	.	.	.	1	1	1	1	.	2
Ameiurus catus	.	.	.	22	.	29	.	.	51	51
Amia calva	.	.	.	4	.	1	.	.	5	5
Anchoa cubana	.	.	.	.	.	14	.	14	.	14
Anchoa hepsetus	1,243	42	136	35	4	116	571	970	35	1,576
Anchoa lyolepis	1	.	1	.	.	6	1	7	.	8
Anchoa mitchilli	1,260	1,425	2,212	3,729	.	11,834	8,320	1,785	10,355	20,460
Ancylopsetta quadrocellata	2	.	.	.	3	42	7	40	.	47
Aphredoderus sayanus	.	.	.	2	.	.	.	.	2	2
Archosargus probatocephalus	3	1	1	3	158	22	77	88	23	188
Ariopsis felis	13	442	328	.	330	724	1,231	594	12	1,837
Astroscopus y-graecum	.	1	3	.	7	5	9	7	.	16
Bagre marinus	.	.	2	.	14	22	15	23	.	38
Bairdiella chrysoura	919	150	57	.	1,233	260	1,756	844	19	2,619
Brevoortia spp.	2	2,000	4,601	403	20,333	42	26,791	157	433	27,381
Calamus arctifrons	.	.	.	.	.	3	.	3	.	3
Callinectes sapidus	47	210	287	328	223	508	776	258	569	1,603
Callinectes similis	.	1	5	.	2	151	120	39	.	159
Caranx hippos	.	3	2	.	56	.	29	32	.	61
Caranx latus	.	1	.	.	4	.	2	3	.	5
Catostomidae spp.	.	.	.	19	.	.	.	.	19	19
Centrarchus macropterus	.	.	.	7	.	.	.	.	7	7

Appendix AP05-02. (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=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Centropristis philadelphica	.	.	.	.	.	7	1	6	.	7
Centropristis striata	6	.	.	.	11	21	5	33	.	38
Chaetodipterus faber	4	.	1	.	33	24	26	36	.	62
Chasmodes saburrae	3	.	4	.	2	1	2	8	.	10
Chilomycterus schoepfii	7	1	.	.	45	37	9	81	.	90
Chloroscombrus chrysurus	1	1	.	.	9	35	30	16	.	46
Citharichthys macrops	1	4	2	.	16	74	10	87	.	97
Citharichthys spilopterus	.	1	11	9	72	89	142	13	27	182
Citharichthys sp.	.	.	.	.	.	1	1	.	.	1
Ctenogobius boleosoma	307	145	721	758	.	304	1,171	96	968	2,235
Cynoscion arenarius	3	51	336	2	257	2,650	1,617	995	687	3,299
Cynoscion nebulosus	90	18	77	.	198	17	193	191	16	400
Cynoscion nothus	.	.	.	.	.	12	.	12	.	12
Cyprinella venusta	.	.	.	71	.	3	.	.	74	74
Cyprinodon variegatus	1	.	17	.	3	.	3	18	.	21
Cyprinus carpio	.	.	.	.	.	1	.	.	1	1
Dasyatis sabina	5	4	9	.	843	79	468	453	19	940
Dasyatis say	.	1	.	.	10	.	2	9	.	11
Diplectrum bivittatum	.	.	.	.	.	4	3	1	.	4
Diplectrum formosum	.	.	.	.	1	4	3	2	.	5
Diplodus holbrookii	.	.	.	.	3	.	.	3	.	3
Dorosoma cepedianum	.	.	.	.	46	.	25	21	.	46
Dorosoma petenense	9	3	43	38	26	8	82	6	39	127
Echeneis neucratoides	.	.	.	.	1	.	1	.	.	1
Elassoma zonatum	.	.	.	1	.	.	.	.	1	1
Eleotris amblyopsis	.	.	.	2	.	.	.	.	2	2
Elops saurus	.	2	2	1	246	.	155	95	1	251
Enneacanthus gloriosus	.	.	.	52	.	1	.	.	53	53
Erimyzon sucetta	.	.	.	14	.	.	.	.	14	14
Erotelis smaragdus	.	.	.	.	.	1	1	.	.	1
Esox niger	.	.	.	7	.	.	.	.	7	7
Etheostoma edwini	.	.	.	1	.	.	.	.	1	1
Etheostoma fusiforme	.	.	.	3	.	1	.	.	4	4
Etropus crossotus	2	9	5	.	48	718	289	493	.	782

Appendix AP05-02. (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	A	B	C	
	Veg	Unveg	Shore							
	E=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Eucinostomus argenteus	.	.	.	.	.	1	.	1	.	1
Eucinostomus gula	5	9	19	.	107	12	31	121	.	152
Eucinostomus harengulus	.	22	25	18	100	19	97	53	34	184
Eucinostomus spp.	128	23	94	23	.	23	72	189	30	291
Farfantepenaeus aztecus	.	1	1	1	28	178	174	34	1	209
Farfantepenaeus duorarum	24	7	15	1	36	258	183	149	9	341
Farfantepenaeus spp.	374	69	524	5	3	141	670	434	12	1,116
Fundulus chrysotus	.	.	.	22	.	.	.	.	22	22
Fundulus grandis	.	1	21	1	6	.	17	11	1	29
Fundulus similis	1	.	48	.	106	.	29	126	.	155
Gambusia holbrooki	.	.	.	1,345	.	.	.	.	1,345	1,345
Gobiesox strumosus	1	.	1	.	.	6	2	6	.	8
Gobiidae sp.	.	.	.	.	.	1	1	.	.	1
Gobioides broussonetii	.	.	.	1	.	.	.	.	1	1
Gobionellus oceanicus	.	5	1	45	.	20	20	4	47	71
Gobiosoma bosc	2	5	15	103	.	16	17	10	114	141
Gobiosoma robustum	15	.	5	.	.	1	13	8	.	21
Gobiosoma spp.	.	6	4	23	.	10	9	3	31	43
Graptemys barbouri	.	.	.	1	.	1	.	.	2	2
Gymnura micrura	.	.	.	.	3	6	2	7	.	9
Haemulon plumierii	.	.	.	.	1	.	.	1	.	1
Halichoeres bivittatus	3	.	.	.	.	.	.	3	.	3
Harengula jaguana	34	7	42	.	3,075	4	624	2,538	.	3,162
Heterandria formosa	.	.	.	195	.	.	.	.	195	195
Hippocampus erectus	.	.	1	.	.	5	.	6	.	6
Hyporhamphus meeki	14	25	.	.	26	.	1	64	.	65
Hypsoblennius hentz	2	.	4	.	.	1	.	7	.	7
Hypsoblennius ionthas	.	.	.	.	.	1	1	.	.	1
Ictalurus furcatus	.	.	.	.	.	97	.	.	97	97
Ictalurus punctatus	.	.	.	4	1	584	1	.	588	589
Labidesthes sicculus	.	.	.	367	.	.	.	.	367	367
Lactophrys triqueter	1	.	.	.	.	.	.	1	.	1
Lagodon rhomboides	3,024	386	1,181	83	8,677	393	4,900	8,757	87	13,744
Larimus fasciatus	.	.	.	.	.	11	2	9	.	11

Appendix AP05-02. (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=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Leiostomus xanthurus	1,995	1,983	6,025	179	5,108	4,251	12,632	6,187	722	19,541
Lepisosteus oculatus	.	.	.	12	6	.	5	1	12	18
Lepisosteus osseus	.	.	.	6	2	5	1	2	10	13
Lepisosteus sp.	.	.	.	1	.	.	.	.	1	1
Lepomis auritus	.	.	.	14	2	1	2	.	15	17
Lepomis gulosus	.	.	1	2	.	.	1	.	2	3
Lepomis macrochirus	7	.	.	400	3	17	10	1	416	427
Lepomis microlophus	5	.	.	204	2	47	7	.	251	258
Lepomis punctatus	.	.	.	210	.	1	.	.	211	211
Lepomis spp.	.	.	5	286	.	1	5	.	287	292
Limulus polyphemus	.	.	.	.	12	4	.	16	.	16
Litopenaeus setiferus	69	54	540	44	1,559	650	2,499	87	330	2,916
Lobotes surinamensis	.	.	.	.	1	.	1	.	.	1
Lucania goodei	.	.	.	31	.	.	.	.	31	31
Lucania parva	44	3	486	643	.	7	522	11	650	1,183
Lutjanus griseus	10	.	9	3	5	13	16	11	13	40
Lutjanus synagris	53	3	4	.	1	99	16	144	.	160
Macrochelys temminckii	.	.	.	1	.	.	.	.	1	1
Megalops atlanticus	.	.	.	.	1	.	.	1	.	1
Membras martinica	31	19	85	.	.	.	107	28	.	135
Menidia spp.	84	69	1,532	549	8	12	1,497	208	549	2,254
Menippe spp.	.	.	.	.	1	64	5	60	.	65
Menticirrhus americanus	7	20	366	.	151	482	535	470	21	1,026
Menticirrhus littoralis	5	.	1	.	27	1	.	34	.	34
Menticirrhus saxatilis	3	10	34	.	1	1	7	42	.	49
Microgobius gulosus	11	34	15	36	.	3	58	2	39	99
Microgobius thalassinus	.	9	.	.	.	58	43	24	.	67
Micropogonias undulatus	.	80	178	5	1,811	7,097	4,232	1,268	3,671	9,171
Micropterus salmoides	22	.	18	308	.	14	40	.	322	362
Minytrema melanops	.	.	.	3	.	2	.	.	5	5
Monacanthus ciliatus	1	.	.	.	.	3	1	3	.	4
Morone chrysops x saxatilis	.	.	.	.	.	1	.	.	1	1
Morone saxatilis	.	.	.	2	4	.	4	.	2	6
Mugil cephalus	9	480	4,926	13	1,506	.	6,220	701	13	6,934

Appendix AP05-02. (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	A	B	C	
	Veg	Unveg	Shore							
	E=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Mugil curema	3	3	48	.	837	1	579	312	1	892
Mycteroperca microlepis	.	.	.	.	9	.	.	9	.	9
Myrophis punctatus	.	.	2	6	.	12	13	1	6	20
Notemigonus crysoleucas	4	.	67	158	.	.	71	.	158	229
Notropis maculatus	.	.	.	21	.	.	.	.	21	21
Notropis petersoni	8	.	.	2,920	.	45	8	.	2,965	2,973
Notropis texanus	.	.	.	20	.	7	.	.	27	27
Ogcocephalus pantostictus	.	.	.	.	1	3	.	4	.	4
Oligoplites saurus	8	18	49	1	72	.	69	78	1	148
Ophidion holbrookii	.	.	.	.	.	2	1	1	.	2
Opisthonema oglinum	1	.	.	.	9	6	8	8	.	16
Opsanus beta	.	.	.	.	8	10	7	11	.	18
Opsopoeodus emiliae	.	.	.	2	.	.	.	.	2	2
Orthopristis chrysoptera	1,410	51	109	.	468	378	296	2,120	.	2,416
Paralichthys albigutta	26	43	40	1	177	55	106	228	8	342
Paralichthys lethostigma	1	1	4	19	113	23	115	14	32	161
Paralichthys squamilentus	.	1	9	.	5	.	7	8	.	15
Peprilus burti	.	.	.	.	6	5	6	5	.	11
Peprilus paru	.	.	.	.	24	4	5	23	.	28
Peprilus sp.	.	.	.	.	.	1	1	.	.	1
Poecilia latipinna	.	.	5	32	.	.	4	1	32	37
Pogonias cromis	.	.	1	.	132	3	97	36	3	136
Pomatomus saltatrix	1	.	1	.	27	1	18	12	.	30
Pomoxis nigromaculatus	.	.	.	15	.	1	.	.	16	16
Porichthys plectrodon	.	.	.	.	.	21	11	10	.	21
Prionotus longispinosus	.	.	1	.	.	13	11	3	.	14
Prionotus rubio	.	.	.	.	.	7	1	6	.	7
Prionotus scitulus	2	3	2	.	4	161	31	141	.	172
Prionotus tribulus	1	1	10	.	20	100	43	89	.	132
Pseudemys nelsoni	.	.	.	.	1	4	1	.	4	5
Pseudemys suwanniensis	.	.	.	.	.	1	.	.	1	1
Rachycentron canadum	.	.	.	.	.	1	.	1	.	1
Rhinoptera bonasus	.	.	.	.	22	.	2	20	.	22
Rhizoprionodon terraenovae	.	.	.	.	.	1	1	.	.	1

Appendix AP05-02. (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=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Rimapenaeus constrictus	3	2	2	.	.	1,015	787	235	.	1,022
Sardinella aurita	.	.	.	.	.	48	.	48	.	48
Sciaenops ocellatus	4	8	186	1	340	24	374	164	25	563
Scomberomorus maculatus	.	.	.	.	2	2	3	1	.	4
Scorpaena brasiliensis	.	.	.	.	.	3	.	3	.	3
Selene setapinnis	.	.	.	.	.	2	1	1	.	2
Selene vomer	.	.	.	.	3	3	3	3	.	6
Serraniculus pumilio	.	.	.	.	.	10	2	8	.	10
Serranus subligarius	.	.	.	.	.	10	.	10	.	10
Sicyonia brevirostris	.	.	.	.	.	3	.	3	.	3
Sicyonia dorsalis	.	.	.	.	.	4	3	1	.	4
Sicyonia spp.	.	.	.	.	.	8	.	8	.	8
Sicyonia typica	.	.	4	.	.	1	4	1	.	5
Sphoeroides nephelus	46	2	28	.	27	34	31	106	.	137
Sphoeroides parvus	10	1	7	.	5	30	28	25	.	53
Sphoeroides spp.	.	1	2	.	.	3	3	2	1	6
Sphyraena barracuda	.	.	.	.	3	.	1	2	.	3
Sphyraena guachancho	4	.	.	.	.	2	2	4	.	6
Sphyrna tiburo	.	.	.	.	2	.	.	2	.	2
Stellifer lanceolatus	.	.	.	.	32	4	34	2	.	36
Stenotomus caprinus	.	.	.	.	.	29	16	13	.	29
Stephanolepis hispidus	7	2	6	.	4	55	39	35	.	74
Stomolophus meleagris	.	.	.	.	1	.	.	1	.	1
Strongylura marina	4	2	1	6	107	.	49	65	6	120
Strongylura notata	.	.	4	.	4	.	2	6	.	8
Strongylura spp.	.	10	9	3	1	.	3	17	3	23
Symphurus civitatium	.	.	.	.	.	4	2	2	.	4
Symphurus plagiusa	14	26	28	1	.	164	131	96	6	233
Syngnathus floridae	6	.	.	.	.	2	1	7	.	8
Syngnathus louisianae	14	.	6	.	.	34	14	40	.	54
Syngnathus scovelli	111	1	17	13	.	13	43	92	20	155
Synodus foetens	43	21	56	.	12	251	151	232	.	383
Trachinotus carolinus	.	.	30	.	35	.	10	55	.	65
Trachinotus falcatus	.	.	5	.	196	.	73	128	.	201

Appendix AP05-02. (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=67	E=65	E=108	E=156	E=216	E=228	E=300	E=300	E=240	E=840
Trichiurus lepturus	.	.	.	.	.	4	4	.	.	4
Trinectes maculatus	1	5	4	1,554	2	884	46	72	2,332	2,450
Tylosurus crocodilus	.	.	.	.	4	.	.	4	.	4
Urophycis floridana	4	1	.	.	1	22	9	19	.	28
Urophycis regia	.	.	.	.	.	1	.	1	.	1
Xiphopenaeus kroyeri	.	.	.	.	.	2	2	.	.	2
Totals	**11,650**	**8,049**	**25,842**	**15,492**	**49,345**	**36,057**	**82,679**	**34,059**	**29,697**	**146,435**

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Southern Indian River Lagoon

The sampling area identified as the southern Indian River Lagoon (IRL) system is a narrow estuary which extends from Vero Beach south to the Jupiter Inlet. The Intra-Coastal Waterway runs the entire length of the IRL, and has an average approximate depth of 1.5 m with maximum depths occurring in dredged channels and harbors. Riverine systems that flow into the southern IRL include the St. Lucie and Loxahatchee rivers. This system also has three ocean inlets: Ft. Pierce, St. Lucie, and Jupiter.

The sampling universe for the southern IRL is divided into three geographic zones: I, J, and T (Figure TQ05-01). Zone I is an estuarine zone that stretches from Vero Beach south to Ankona. Zone J is another estuarine zone that extends from Ankona south to just north of Jupiter Inlet. Zone T is a riverine zone, which encompasses the St. Lucie River.

The Fisheries-Independent Monitoring (FIM) program has conducted monthly stratified-random sampling (SRS) in the southern Indian River Lagoon system since January 1997 (Florida Marine Research Institute 1998) using the 183-m haul seine. In April 1998, because of an increase in the incidence of lesioned fish, the FIM program expanded sampling to include the St. Lucie River (eight samples/month; Zone T). Sampling sites were randomly selected regardless of habitat type and post-stratified. In 2005, four samples were collected monthly in Zones I and J throughout the year, except in October when only two hauls were pulled in Zone J. Hurricane Wilma threatened and impacted the IRL region during October, prohibiting sampling for a short time. All sampling methods were the same as those described in the Methods section of this report.

Stratified-Random Sampling

183-m Haul Seines. A total of 13,000 fishes and selected invertebrates were collected in 190 samples, representing 86 fish taxa and 7 invertebrate taxa (Table TQ05-01, Appendices TQ05-01 and -02). Samples from Zones I and J (n=48 hauls in Zone I and n=46 hauls in Zone J) contained 4,849 and 4,127 specimens, respectively. In Zone T, 4,024 specimens were collected from 96 samples. The overall number of specimens collected in this system has dropped substantially from the previous two years (2004: n=27,945 and 2003: n=32,089), punctuated by a 53.5% decrease in overall catch totals from 2004 to 2005 (Florida Fish and Wildlife Conservation

Commission, Fish and Wildlife Research Institute 2005). This could be due to cumulative effects of back to back active hurricane seasons in southeastern Florida (2004: Hurricane Frances 9/5/2004 – category 2 and Hurricane Jeanne 9/26/04 – category 3; 2005: Hurricane Katrina 8/25/05 – category 1 and Hurricane Wilma 10/23/2005 – category 2). Monthly catch totals (all species) ranged from 591 animals in October to 2,083 animals in August. As noted, only 14 samples were taken in October. There were three species new to the SRS collections in 2005. These species were *Anguilla rostrata* (American eel), *Kyphosus incisor* (yellow chub), and *Symphurus urospilus* (spottail tonguefish).

The 10 most dominant taxa (n=10,435) accounted for 80.2% of the total number of animals collected in the 183-m haul seines during monthly stratified-random sampling in 2005 (Table TQ05-02). *Diapterus auratus* (n=2,788) was the most abundant species collected, accounting for 21.4% of the total catch and occurring in 66.3% of the samples. Other abundant species included *Lagodon rhomboides* (n=1,824), *Mugil curema* (n=1,225), and *Mugil cephalus* (n=1,154).

The 29 Selected Taxa (n=4,877) accounted for 37.5% of the overall 183-m haul seine catch (Table TQ05-03). Four species, *M. curema* (n=1,225), *M. cephalus* (n=1,154), *Archosargus probatocephalus* (n=833), and *Centropomus undecimalis* (n=623), accounted for 78.6% of the Selected Taxa collected. All of these species occurred in $\geq$50% of the hauls. Other abundant Selected Taxa in the 183-m haul seine samples included *Micropogonias undulatus* (n=308), *Elops saurus* (n=268), and *Callinectes sapidus* (n=134).

References

Florida Marine Research Institute. 1998. Fisheries-Independent Monitoring Program 1997 Annual Data Report. St. Petersburg, FL.

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute. 2005. Fisheries-Independent Monitoring Program 2004 Annual Data Summary Report. St. Petersburg, Florida.

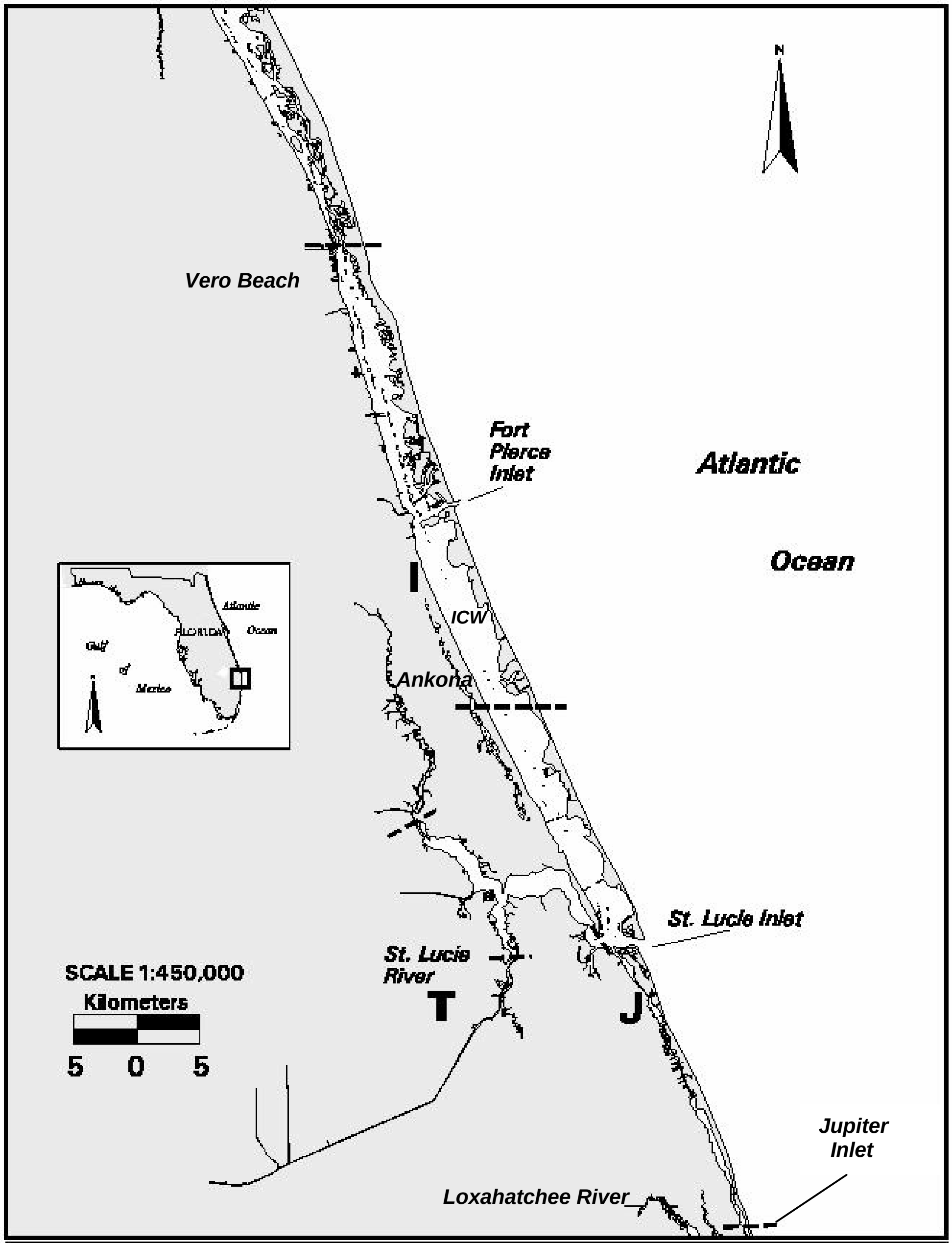

Figure TQ05-01. Map of southern Indian River Lagoon sampling area.
Zones are I, J, and T.

Table TQ05-01. Summary of catch and effort data for southern Indian River Lagoon stratified-random sampling, 2005.

Zone	Totals	
	Animals	Hauls
I	4,849	48
J	4,127	46
T	4,024	96
Totals	**13,000**	**190**

Table TQ05-02. Catch statistics for 10 dominant taxa collected in 190 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2005. 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**
Diapterus auratus	2,788	21.4	66.3	14.67	2.26	212.50	265.00	156	0.87	53	336
Lagodon rhomboides	1,824	14.0	24.7	9.60	3.55	510.05	500.00	102	0.70	60	230
Mugil curema	1,225	9.4	49.5	6.45	1.83	392.06	307.00	193	1.38	56	395
Mugil cephalus	1,154	8.9	57.4	6.07	1.45	328.84	229.00	291	1.53	100	484
Archosargus probatocephalus	833	6.4	77.9	4.38	0.45	142.27	36.00	255	1.99	56	410
Centropomus undecimalis	623	4.8	63.7	3.28	0.39	164.91	31.00	423	6.18	137	992
Ariopsis felis	578	4.4	52.6	3.04	0.61	274.59	72.00	294	2.21	110	422
Selene vomer	572	4.4	38.4	3.01	0.47	216.22	43.00	175	1.40	41	274
Dasyatis sabina	530	4.1	52.6	2.79	0.82	405.15	150.00	241	1.71	111	384
Micropogonias undulatus	308	2.4	34.2	1.62	0.23	198.79	20.00	195	3.73	93	360
Subtotal	10,435	80.2	.	.	.	.	.	.	.	41	992
Totals	**13,000**	**100.0**	**.**	**68.42**	**5.80**	**116.81**	**595.00**	**.**	**.**	**27**	**1500**

Table TQ05-03. Catch statistics for Selected Taxa collected in 190 183-m haul seine samples during southern Indian River Lagoon stratified-random sampling, 2005. 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	1,225	9.4	49.5	6.45	1.83	392.06	307.00	193	1.38	56	395
Mugil cephalus	1,154	8.9	57.4	6.07	1.45	328.84	229.00	291	1.53	100	484
Archosargus probatocephalus	833	6.4	77.9	4.38	0.45	142.27	36.00	255	1.99	56	410
Centropomus undecimalis	623	4.8	63.7	3.28	0.39	164.91	31.00	423	6.18	137	992
Micropogonias undulatus	308	2.4	34.2	1.62	0.23	198.79	20.00	195	3.73	93	360
Elops saurus	268	2.1	30.5	1.41	0.47	458.88	80.00	329	4.84	120	495
Callinectes sapidus	134	1.0	27.4	0.71	0.14	267.26	19.00	125	2.89	40	181
Lutjanus griseus	99	0.8	23.2	0.52	0.12	323.02	18.00	169	4.17	85	290
Lutjanus analis	52	0.4	11.1	0.27	0.07	377.53	10.00	151	6.74	59	228
Sciaenops ocellatus	27	0.2	11.6	0.14	0.03	303.53	3.00	308	21.78	119	550
Leiostomus xanthurus	25	0.2	5.8	0.13	0.05	523.61	7.00	120	9.21	72	249
Pogonias cromis	22	0.2	8.4	0.12	0.03	374.05	3.00	241	13.66	154	458
Paralichthys lethostigma	15	0.1	5.8	0.08	0.03	449.64	3.00	360	21.50	286	560
Pomatomus saltatrix	14	0.1	5.8	0.07	0.02	452.04	3.00	408	14.23	333	510
Cynoscion nebulosus	13	0.1	5.8	0.07	0.02	426.71	2.00	377	45.76	70	614

Table TQ05-03. (Continued)

Species	Number No.	Number %	% Occur	Catch-per-unit-effort (animals/set) Mean	Stderr	CV	Max	Standard Length (mm) Mean	Stderr	Min	Max
Lutjanus synagris	13	0.1	3.2	0.07	0.03	620.90	4.00	118	9.32	89	219
Mycteroperca microlepis	8	0.1	2.6	0.04	0.02	638.57	2.00	188	17.01	118	239
Paralichthys albigutta	8	0.1	3.2	0.04	0.02	638.57	3.00	214	18.20	126	310
Farfantepenaeus duorarum	7	0.1	2.6	0.04	0.02	704.77	3.00	38	3.14	29	49
Trachinotus carolinus	6	0.0	2.1	0.03	0.02	721.47	2.00	302	16.18	253	366
Scomberomorus maculatus	6	0.0	2.1	0.03	0.02	721.47	2.00	328	37.38	250	495
Litopenaeus setiferus	6	0.0	0.5	0.03	0.03	1,378.40	6.00	48	1.68	42	52
Menippe spp.	2	0.0	1.1	0.01	0.01	972.10	1.00	118	17.50	100	135
Menticirrhus americanus	2	0.0	1.1	0.01	0.01	972.10	1.00	272	37.50	234	309
Megalops atlanticus	2	0.0	0.5	0.01	0.01	1,378.40	2.00	417	24.50	392	441
Panulirus argus	1	0.0	0.5	0.01	0.01	1,378.40	1.00	52	.	52	52
Albula vulpes	1	0.0	0.5	0.01	0.01	1,378.40	1.00	181	.	181	181
Trachinotus falcatus	1	0.0	0.5	0.01	0.01	1,378.40	1.00	271	.	271	271
Cynoscion sp.	1	0.0	0.5	0.01	0.01	1,378.40	1.00	300	.	300	300
Scomberomorus regalis	1	0.0	0.5	0.01	0.01	1,378.40	1.00	135	.	135	135
Totals	**4,877**	**37.5**	**98.9**	**25.67**	**2.59**	**138.87**	**338.00**	**.**	**.**	**29**	**992**

Appendix TQ05-01. Monthly summary of species collected during southern Indian River Lagoon stratified-random sampling, 2005. 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=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=14	E=16	E=16	E=190
Acanthostracion quadricornis	1	.	.	.	.	.	.	.	.	.	.	.	1
Achirus lineatus	.	.	.	.	.	.	1	.	.	.	.	.	1
Aetobatus narinari	.	1	.	1	.	.	.	1	.	.	.	.	3
Albula vulpes	.	.	.	.	1	.	.	.	.	.	.	.	1
Anguilla rostrata	.	.	.	.	.	.	.	.	.	.	1	.	1
Archosargus probatocephalus	106	107	71	78	52	67	91	99	35	22	46	59	833
Archosargus rhomboidalis	.	2	21	.	25	17	11	4	2	1	8	7	98
Ariopsis felis	7	10	59	36	97	104	68	92	35	16	32	22	578
Bagre marinus	.	.	.	.	.	4	.	2	.	.	2	.	8
Bairdiella chrysoura	.	.	.	.	.	.	1	4	1	.	2	2	10
Brevoortia spp.	.	1	17	.	5	218	8	.	6	3	.	.	258
Callinectes sapidus	1	2	5	18	18	28	19	13	22	5	3	.	134
Callinectes similis	.	.	.	.	1	.	.	.	.	.	.	.	1
Caranx crysos	.	.	.	1	.	.	.	.	.	.	.	.	1
Caranx hippos	4	.	15	29	5	5	7	5	2	11	10	1	94
Caranx latus	.	.	.	.	.	.	.	.	.	.	1	1	2
Carcharhinus leucas	.	.	.	.	.	.	1	.	.	.	.	.	1
Centropomus ensiferus	.	.	.	.	.	.	1	.	.	.	.	.	1
Centropomus parallelus	.	.	.	1	.	1	1	.	1	.	1	2	7
Centropomus pectinatus	.	.	.	.	.	.	.	.	.	.	1	.	1

Appendix TQ05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=14	E=16	E=16	E=190
Centropomus spp.	.	.	.	.	.	.	.	.	.	.	2	.	2
Centropomus undecimalis	31	28	66	56	64	52	41	56	55	19	104	51	623
Chaetodipterus faber	1	1	.	.	4	.	2	4	4	.	.	.	16
Chelonia mydas	.	.	1	.	.	.	.	.	.	.	.	.	1
Chilomycterus schoepfii	10	4	12	13	14	2	9	9	10	15	10	4	112
Citharichthys spilopterus	2	.	.	.	.	2	.	5	5	.	1	.	15
Cynoscion nebulosus	.	2	1	2	.	.	1	1	2	.	3	1	13
Cynoscion sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Dasyatis sabina	16	8	20	34	51	52	57	200	15	11	48	18	530
Dasyatis say	2	3	1	8	43	7	11	4	6	.	1	3	89
Diapterus auratus	63	115	369	177	621	338	247	405	78	124	188	63	2,788
Diplodus holbrookii	2	.	2	.	.	.	.	.	.	.	.	.	4
Dorosoma cepedianum	.	1	.	.	.	1	1	.	.	.	9	.	12
Dorosoma petenense	.	1	.	.	.	.	.	.	.	1	1	.	3
Dorosoma sp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Elops saurus	5	81	28	17	31	10	32	13	13	17	11	10	268
Eucinostomus gula	2	35	53	17	18	.	2	.	1	8	.	9	145
Eucinostomus jonesi	.	.	.	.	.	.	8	.	.	.	.	.	8
Eucinostomus melanopterus	1	.	.	.	.	.	.	.	.	.	.	.	1
Eugerres plumieri	.	.	1	9	22	55	11	6	1	8	13	4	130

Appendix TQ05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=14	E=16	E=16	E=190
Farfantepenaeus duorarum	.	.	.	.	.	.	.	6	.	1	.	.	7
Gerres cinereus	.	1	5	1	9	5	5	.	1	3	.	5	35
Gymnura micrura	.	1	.	.	.	.	4	1	.	1	.	1	8
Haemulon aurolineatum	.	.	.	.	.	.	.	.	.	3	.	.	3
Haemulon parra	.	1	.	.	.	.	.	.	.	2	1	.	4
Harengula jaguana	1	1	19	3	.	.	.	.	3	6	.	13	46
Hemiramphus brasiliensis	.	.	.	.	2	.	.	.	1	.	.	.	3
Kyphosus incisor	.	.	.	.	5	.	.	.	.	.	.	.	5
Lactophrys trigonus	.	.	.	.	.	.	.	.	.	.	.	2	2
Lagodon rhomboides	32	233	34	16	17	35	219	885	132	129	44	48	1,824
Leiostomus xanthurus	.	1	3	6	7	.	.	5	1	1	1	.	25
Lepisosteus osseus	.	.	.	.	.	.	1	.	1	.	.	1	3
Lepomis macrochirus	1	.	.	.	.	.	.	.	.	.	.	.	1
Limulus polyphemus	.	.	.	.	.	.	.	.	.	.	1	.	1
Litopenaeus setiferus	.	.	.	.	.	.	.	.	.	6	.	.	6
Lobotes surinamensis	.	.	.	.	.	.	.	.	1	1	.	.	2
Lutjanus analis	1	5	3	11	5	2	5	6	.	2	8	4	52
Lutjanus griseus	4	18	.	3	9	21	5	14	7	3	9	6	99
Lutjanus synagris	.	2	.	2	1	3	.	5	.	.	.	.	13
Megalops atlanticus	.	.	.	.	.	.	.	2	.	.	.	.	2

Appendix TQ05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=16	E=14	E=16	E=16	E=190
Menippe spp.	.	.	.	.	.	.	.	1	.	.	1	.	2
Menticirrhus americanus	.	.	.	.	.	2	.	.	.	.	.	.	2
Micropogonias undulatus	5	1	4	17	20	79	49	52	17	9	32	23	308
Mugil cephalus	163	187	50	109	105	59	36	14	79	55	18	279	1,154
Mugil curema	163	456	135	152	55	38	8	6	19	32	133	28	1,225
Mycteroperca microlepis	.	.	.	.	.	.	1	2	.	2	1	2	8
Nicholsina usta	2	.	.	1	.	.	.	.	.	.	.	.	3
Oligoplites saurus	.	1	.	2	.	1	.	.	.	1	.	.	5
Opisthonema oglinum	.	3	124	.	.	.	.	.	.	.	.	.	127
Opsanus tau	1	.	1	.	1	.	.	1	.	.	.	.	4
Orthopristis chrysoptera	.	4	.	.	.	1	6	67	20	7	2	2	109
Panulirus argus	.	.	1	.	.	.	.	.	.	.	.	.	1
Paralichthys albigutta	1	.	.	1	.	.	1	.	3	1	.	1	8
Paralichthys lethostigma	.	.	.	2	1	4	4	4	.	.	.	.	15
Pogonias cromis	2	.	3	7	1	1	.	1	.	2	5	.	22
Pomatomus saltatrix	2	5	.	1	.	4	.	1	.	.	.	1	14
Pomoxis nigromaculatus	.	.	.	.	.	.	1	.	.	.	.	.	1
Prionotus scitulus	.	1	.	.	2	1	.	.	.	.	.	.	4
Pterygoplichthys spp.	.	.	.	.	1	.	1	1	.	.	1	.	4
Rhinoptera bonasus	1	.	.	.	.	.	.	.	.	.	.	.	1

Appendix TQ05-01. (Continued)

Species	Month												Totals
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	E=16	**E=16**	**E=16**	**E=16**	**E=16**	**E=16**	**E=16**	**E=16**	**E=16**	**E=14**	**E=16**	**E=16**	**E=190**
Sciaenops ocellatus	4	2	2	4	3	1	1	2	1	1	4	2	27
Scomberomorus maculatus	.	.	2	.	.	.	1	.	.	.	1	2	6
Scomberomorus regalis	.	.	.	.	.	.	.	1	.	.	.	.	1
Scorpaena grandicornis	1	.	.	.	.	.	.	.	.	.	.	.	1
Scorpaena plumieri	.	.	.	.	.	.	.	1	.	.	1	.	2
Selene vomer	72	8	86	67	55	29	59	47	34	33	15	67	572
Sphoeroides nephelus	2	1	.	1	1	1	4	3	11	10	22	2	58
Sphoeroides spengleri	3	1	2	4	.	.	.	.	.	.	1	.	11
Sphoeroides testudineus	28	26	54	6	4	4	15	13	3	9	11	3	176
Sphyraena barracuda	9	2	4	1	.	1	.	5	1	7	5	19	54
Strongylura marina	1	.	.	1	.	.	.	.	1	.	.	.	3
Strongylura notata	.	8	6	1	.	.	2	2	.	.	1	7	27
Symphurus urospilus	.	.	1	.	.	.	.	.	.	.	.	.	1
Synodus foetens	1	.	.	.	.	.	1	.	1	1	.	.	4
Trachinotus carolinus	.	.	3	1	.	.	.	2	.	.	.	.	6
Trachinotus falcatus	.	.	.	.	.	.	.	.	1	.	.	.	1
Trinectes maculatus	.	1	.	1	.	7	14	10	1	2	35	25	96
Totals	**754**	**1,372**	**1,284**	**918**	**1,376**	**1,262**	**1,074**	**2,083**	**634**	**591**	**852**	**800**	**13,000**

Appendix TQ05-02. Summary by gear, stratum, and zone of species collected during southern Indian River Lagoon stratified-random sampling, 2005. 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 Lagoon, 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=120	E=70	E=48	E=46	E=96	E=190
Acanthostracion quadricornis	.	1	.	1	.	1
Achirus lineatus	1	.	.	1	.	1
Aetobatus narinari	2	1	.	2	1	3
Albula vulpes	1	.	.	1	.	1
Anguilla rostrata	1	.	.	.	1	1
Archosargus probatocephalus	510	323	168	258	407	833
Archosargus rhomboidalis	83	15	24	74	.	98
Ariopsis felis	462	116	235	89	254	578
Bagre marinus	5	3	.	1	7	8
Bairdiella chrysoura	8	2	3	4	3	10
Brevoortia spp.	144	114	13	5	240	258
Callinectes sapidus	89	45	61	23	50	134
Callinectes similis	.	1	.	.	1	1
Caranx crysos	1	.	1	.	.	1
Caranx hippos	68	26	41	38	15	94
Caranx latus	2	.	.	2	.	2
Carcharhinus leucas	.	1	.	.	1	1
Centropomus ensiferus	.	1	.	.	1	1
Centropomus parallelus	2	5	.	.	7	7
Centropomus pectinatus	1	.	.	.	1	1
Centropomus spp.	2	.	.	.	2	2
Centropomus undecimalis	432	191	255	161	207	623
Chaetodipterus faber	15	1	2	11	3	16
Chelonia mydas	1	.	.	1	.	1
Chilomycterus schoepfii	67	45	51	61	.	112
Citharichthys spilopterus	12	3	8	4	3	15
Cynoscion nebulosus	10	3	6	7	.	13
Cynoscion sp.	1	.	.	1	.	1
Dasyatis sabina	419	111	100	257	173	530
Dasyatis say	78	11	28	59	2	89

Appendix TQ05-02. (Continued)

Species	Gear and Strata 183-m haul seine Over	Nonover	Zone I	J	T	Totals
	E=120	E=70	E=48	E=46	E=96	E=190
Diapterus auratus	2,264	524	515	1,405	868	2,788
Diplodus holbrookii	.	4	.	4	.	4
Dorosoma cepedianum	11	1	.	.	12	12
Dorosoma petenense	1	2	.	.	3	3
Dorosoma sp.	1	.	.	.	1	1
Elops saurus	223	45	44	172	52	268
Eucinostomus gula	112	33	118	25	2	145
Eucinostomus jonesi	8	.	8	.	.	8
Eucinostomus melanopterus		1	.	1	.	1
Eugerres plumieri	60	70	2	42	86	130
Farfantepenaeus duorarum	6	1	1	1	5	7
Gerres cinereus	27	8	6	22	7	35
Gymnura micrura	4	4	5	3	.	8
Haemulon aurolineatum	3	.	3	.	.	3
Haemulon parra	4	.	3	1	.	4
Harengula jaguana	25	21	23	14	9	46
Hemiramphus brasiliensis	2	1	3	.	.	3
Kyphosus incisor	5	.	.	5	.	5
Lactophrys trigonus	2	.	.	2	.	2
Lagodon rhomboides	1,654	170	1,548	276	.	1,824
Leiostomus xanthurus	20	5	19	5	1	25
Lepisosteus osseus	1	2	.	1	2	3
Lepomis macrochirus	1	.	.	.	1	1
Limulus polyphemus	1	.	1	.	.	1
Litopenaeus setiferus	.	6	.	.	6	6
Lobotes surinamensis	1	1	1	.	1	2
Lutjanus analis	34	18	20	32	.	52
Lutjanus griseus	85	14	28	47	24	99
Lutjanus synagris	11	2	7	6	.	13
Megalops atlanticus	2	.	.	.	2	2
Menippe spp.	2	.	1	1	.	2
Menticirrhus americanus	2	.	1	.	1	2
Micropogonias undulatus	198	110	16	69	223	308
Mugil cephalus	551	603	481	269	404	1,154

Appendix TQ05-02. (Continued)

Species	Gear and Strata: 183-m haul seine		Zone			Totals
	Over	Nonover	I	J	T	
	E=120	E=70	E=48	E=46	E=96	E=190
Mugil curema	567	658	359	179	687	1,225
Mycteroperca microlepis	7	1	6	2	.	8
Nicholsina usta	.	3	.	3	.	3
Oligoplites saurus	5	.	4	1	.	5
Opisthonema oglinum	126	1	126	.	1	127
Opsanus tau	4	.	3	1	.	4
Orthopristis chrysoptera	85	24	95	14	.	109
Panulirus argus	.	1	.	1	.	1
Paralichthys albigutta	4	4	7	1	.	8
Paralichthys lethostigma	7	8	4	2	9	15
Pogonias cromis	17	5	10	11	1	22
Pomatomus saltatrix	8	6	2	9	3	14
Pomoxis nigromaculatus	.	1	.	.	1	1
Prionotus scitulus	4	.	4	.	.	4
Pterygoplichthys spp.	2	2	.	.	4	4
Rhinoptera bonasus	.	1	.	1	.	1
Sciaenops ocellatus	17	10	18	2	7	27
Scomberomorus maculatus	6	.	2	4	.	6
Scomberomorus regalis	1	.	.	1	.	1
Scorpaena grandicornis	1	.	1	.	.	1
Scorpaena plumieri	2	.	1	1	.	2
Selene vomer	411	161	123	328	121	572
Sphoeroides nephelus	46	12	53	5	.	58
Sphoeroides spengleri	1	10	1	10	.	11
Sphoeroides testudineus	144	32	124	42	10	176
Sphyraena barracuda	39	15	24	30	.	54
Strongylura marina	2	1	.	3	.	3
Strongylura notata	23	4	21	5	1	27
Symphurus urospilus	1	.	1	.	.	1
Synodus foetens	3	1	3	1	.	4
Trachinotus carolinus	4	2	3	2	1	6
Trachinotus falcatus	1	.	.	1	.	1
Trinectes maculatus	36	60	4	3	89	96
Totals	**9,312**	**3,688**	**4,849**	**4,127**	**4,024**	**13,000**

Northeast Florida

Northeast Florida is located in the southern region of the Atlantic Coastal Plain. Within this region lie three distinct waterways sampled by the Fisheries-Independent Monitoring (FIM) program: the lower St. Marys River Basin, the lower Nassau River Basin, and the lower St. Johns River Basin (Figure JX05-01). The lower St. Marys River Basin (4,092 km^2) encompasses the St. Marys River, Cumberland Sound, Amelia River (Intracoastal Waterway), and numerous tributaries. The basin is characterized by an expansive marsh system and remains relatively undeveloped (St. Johns River Water Management District 2000a). The lower Nassau River Basin (1,114 km^2) encompasses the Nassau River, Nassau Sound, Pumpkin Hill Creek, and many smaller tributaries. The basin is similarly characterized by an extensive marsh system and is the least developed of the three waterways sampled by the northeast Florida FIM program (St. Johns River Water Management District 2000b). The lower St. Johns River Basin (7,123 km^2) is the drainage area for two sub-basins: the upper St. Johns River Basin and the Oklawaha River (Durako et al. 1988). While the area is dominated by urban and suburban development, portions are characterized by salt marshes, tidal creeks, hardwood forests, and hardwood swamps (St. Johns River Water Management District, 1993). The lower St. Johns River is also commonly referred to as the St. Johns Estuary, indicating the potential ecological importance of the area to local fish and wildlife species (Florida Marine Research Institute 2001).

The FIM program has conducted stratified-random sampling (SRS) of the fishes and selected invertebrates in the northeast Florida region since May, 2001. The sampling area has been divided into four geographic zones: the lower St. Marys River Basin (Zone A), the lower Nassau River Basin (Zone B), and the lower St. Johns River Basin (Zones C and D; Figure JX05-01). Monthly SRS was conducted year-round using 21.3-m river seines, 183-m haul seines, and 6.1-m otter trawls. A fixed number of samples were collected each month with each gear type in all of the zones, following deployment methods described in the Methods section of this report.

As noted in the Methods section, genetic analysis has recently confirmed that *Cynoscion arenarius*, *Cynoscion regalis*, and hybrid specimens exist in northeast

Florida. The geographic and reproductive ranges of *C. arenarius* and *C. regalis* populations overlap along the Atlantic coast of north and central Florida and an active zone of introgressive hybridization exists, centered in the Nassau and St. Johns rivers. Species affinity within this region can only be determined with certainty by genetic testing (Tringali et al. 2004). Fishes of the genus *Cynoscion* from SRS samples that either were meristically indistinguishable or exhibited morphological traits of hybrids were recorded as *Cynoscion* complex. The following section summarizes the SRS data collected by the FIM program in the northeast Florida region during 2005.

Stratified-Random Sampling

A total of 186,120 fishes and selected invertebrates were collected from 972 samples representing 168 taxa during northeast Florida SRS in 2005 (Table JX05-01; Appendices JX05-01 and -02). *Anchoa mitchilli* (n=58,716) and *Leiostomus xanthurus* (n=28,419) were the most abundant taxa collected, comprising 31.5% and 15.3% of the total 2005 catch, respectively. In addition to *L. xanthurus*, dominant Selected Taxa collected included *Micropogonias undulatus* (n=20,137), *Litopenaeus setiferus* (n=9,998*), and Mugil cephalus* (n=7,455). Other dominant taxa included *Fundulus heteroclitus* (n=12,287), *Brevoortia* spp. (n=8,063), *Menidia menidia* (n=6,383), *Stellifer lanceolatus* (n=4,771), and *Bairdiella chrysoura* (n=2,967). It should be noted that the majority (75.0%, n=9,216) of the *F. heteroclitus* collected came from a single 21.3-m river seine in Zone B during October (Table JX05-02). In 2005, eight species new to northeast Florida FIM were collected: *Elassoma zonatum* (banded pygmy sunfish), *Alosa sapidissima* (American shad), *Symphurus civitatus* (offshore tonguefish), *Pterygoplichthys* spp. (armored catfish), *Lactophrys* sp*.* (trunkfish), *Erotelis smaragdus* (emerald sleeper), *Microphis brachyurus* (opossum pipefish), and *Elassoma okefenokee* (Okefenokee pygmy sunfish).

21.3-m River Seines: A total of 127,172 animals were collected in 384 21.3-m river seine samples, representing 68.3% of the total annual SRS catch (Tables JX05-01 and -02). The mean density estimate for animals captured in this gear was 487 animals/100 m^2. *Anchoa mitchilli* (n=53,396) was the most abundant species collected, accounting for 42.0% of the total 21.3-m river seine catch. *Leiostomus xanthurus* (n=21,851), *F. heteroclitus* (n=12,286), *Brevoortia* spp. (n=7,434), *L. setiferus* (n=6,689), *M. menidia* (n=6,383), and *M. cephalus* (n=5,448) were also collected in large numbers. The ten most abundant taxa accounted for 93.2% of the total catch with this gear.

Selected Taxa (n=37,563; 28 taxa) accounted for 29.5% of the total 21.3-m river seine catch (Table JX05-03). *Leiostomus xanthurus* (n=21,851) was the most abundant Selected Taxon, accounting for 58.2% of the Selected Taxa captured and occurring in 43.0% of 21.3-m river seine samples. *Litopenaeus setiferus* (n=6,689), *M. cephalus* (n=5,448), and *M. undulatus* (n=1,944*)* were the next three most abundant Selected Taxa, accounting for an additional 11.1% of the total 21.3-m river seine catch.

183-m Haul Seines: A total of 14,215 animals were collected in 192 183-m haul seine samples, representing 7.6% of the total annual SRS catch (Tables JX05-01 and -04). The mean catch-per-unit-effort for animals captured in this gear was 74 animals per set. *Mugil cephalus* (n=2,006) was the most abundant species collected, accounting for 14.1% of the total 183-m haul seine catch, followed by *B. chrysoura* (n=1,545), and *L. xanthurus* (n=1,375).

Selected Taxa (n=6,289; 28 taxa) accounted for 44.2% of the total 183-m haul seine catch (Table JX05-05). *Mugil cephalus* (n=2,006) was the most abundant Selected Taxon, occurring in 75.5% of the 183-m haul seines and accounting for 31.9% of the Selected Taxa captured in this gear. *Leiostomus xanthurus* (n=1,375, 48.4% occurrence) and *Mugil curema* (n=896, 38.0% occurrence) were the next two most abundant Selected Taxa.

6.1-m River Otter Trawls: A total of 44,733 animals were collected in 396 6.1-m river otter trawl samples, representing 24.0% of the total annual SRS catch (Tables JX05-01 and -06). The mean density estimate for animals captured in this gear was 15 animals/100 m^2. *Micropogonias undulatus* (n=17,995) was the most abundant species collected, accounting for 40.2% of the total 6.1-m river otter trawl catch and occurring in 61.6% of the 6.1-m river otter trawl samples. *Anchoa mitchilli* (n=5,320), *L. xanthurus* (n=5,193), *S. lanceolatus* (n=4,770), and *L. setiferus* (n=2,899) were also collected in large numbers, accounting for an additional 40.6% of the 6.1-m river otter trawl total catch.

Selected Taxa (n=29,497; 27 taxa) accounted for 65.9% of the total 6.1-m river otter trawl catch (Table JX05-07). *Micropogonius undulatus* (n=17,995) was the most abundant Selected Taxon, accounting for 61.0% of the Selected Taxa collected. *Leiostomus xanthurus* (n=5,193), *L. setiferus* (n=2,899), and *Callinectes sapidus* (n=1,078) were the next three most abundant Selected Taxa, accounting for an additional 20.5% of the 6.1-m river otter trawl total catch.

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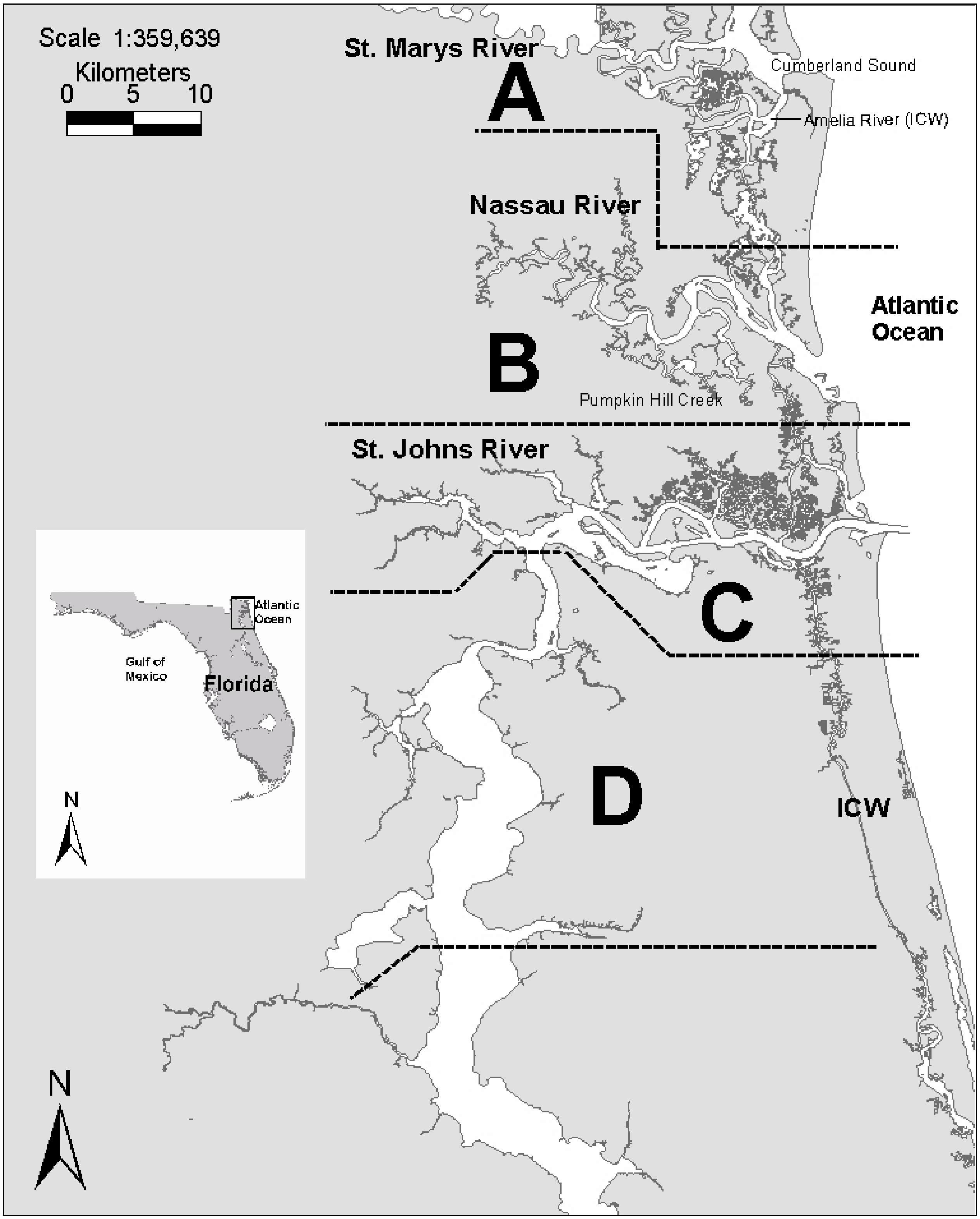

Figure JX05-01. Map of northeast Florida sampling area. Zones are labeled A-D.

Table JX05-01. Summary of catch and effort data for northeast Florida stratified-random sampling, 2005.

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	43,063	84	3,825	36	15,118	84	62,006	204
B	40,084	84	4,124	36	11,807	84	56,015	204
C	30,690	108	3,449	60	8,017	108	42,156	276
D	13,335	108	2,817	60	9,791	120	25,943	288
Totals	**127,172**	**384**	**14,215**	**192**	**44,733**	**396**	**186,120**	**972**

Table JX05-02. Catch statistics for 10 dominant taxa collected in 384 21.3-m river seine samples during northeast Florida stratified-random sampling, 2005. 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	53,396	42.0	55.7	204.49	53.48	512.48	17,600.00	32	0.03	16	68
Leiostomus xanthurus	21,851	17.2	43.0	83.68	16.17	378.64	4,423.53	21	0.07	9	138
Fundulus heteroclitus	12,286	9.7	22.7	47.05	35.46	1,477.01	13,552.94	35	0.07	12	103
Brevoortia spp.	7,434	5.8	16.4	28.47	11.43	786.44	3,177.94	29	0.05	21	100
Litopenaeus setiferus	6,689	5.3	27.6	25.62	7.06	540.00	1,841.18	14	0.05	3	28
Menidia menidia	6,383	5.0	44.3	24.44	4.44	355.83	902.94	44	0.17	16	92
Mugil cephalus	5,448	4.3	31.0	20.86	6.42	602.86	2,066.18	29	0.35	16	344
Micropogonias undulatus	1,944	1.5	27.1	7.44	2.19	575.69	576.47	20	0.33	7	151
Anchoa hepsetus	1,920	1.5	17.7	7.35	2.08	553.90	458.82	40	0.22	20	100
Bairdiella chrysoura	1,149	0.9	16.1	4.40	1.41	628.10	338.24	47	0.70	5	186
Subtotal	118,500	93.2	.	.	.	.	.	.	.	3	344
Totals	**127,172**	**100.0**	**.**	**487.03**	**72.46**	**291.55**	**17,627.94**	**.**	**.**	**3**	**594**

Table JX05-03. Catch statistics for Selected Taxa collected in 384 21.3-m river seine samples during northeast Florida stratified-random sampling, 2005. 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	21,851	17.2	43.0	83.68	16.17	378.64	4,423.53	21	0.07	9	138
Litopenaeus setiferus	6,689	5.3	27.6	25.62	7.06	540.00	1,841.18	14	0.05	3	28
Mugil cephalus	5,448	4.3	31.0	20.86	6.42	602.86	2,066.18	29	0.35	16	344
Micropogonias undulatus	1,944	1.5	27.1	7.44	2.19	575.69	576.47	20	0.33	7	151
Farfantepenaeus spp.	480	0.4	17.4	1.84	0.62	660.05	197.06	10	0.12	5	20
Callinectes sapidus	384	0.3	33.9	1.47	0.22	289.86	44.12	39	1.98	6	188
Cynoscion nebulosus	133	0.1	8.9	0.51	0.19	727.09	61.76	42	2.82	10	228
Paralichthys lethostigma	113	0.1	15.1	0.43	0.08	340.15	14.71	88	8.41	11	351
Farfantepenaeus aztecus	98	0.1	4.9	0.38	0.22	1,159.72	83.82	17	0.18	15	25
Mugil curema	65	0.1	6.8	0.25	0.06	490.48	11.76	68	4.29	20	123
Trachinotus falcatus	58	0.0	2.9	0.22	0.09	784.13	23.53	36	1.53	10	65
Trachinotus carolinus	53	0.0	2.1	0.20	0.11	1,058.64	33.82	39	2.71	11	69
Lutjanus griseus	44	0.0	5.5	0.17	0.04	518.06	8.82	37	6.06	11	194
Sciaenops ocellatus	43	0.0	6.5	0.16	0.04	528.59	13.24	149	17.96	12	594
Menticirrhus americanus	35	0.0	4.2	0.13	0.06	804.26	19.12	47	4.14	17	125
Farfantepenaeus duorarum	28	0.0	2.1	0.11	0.05	858.14	13.24	18	0.36	15	23
Lutjanus synagris	14	0.0	1.8	0.05	0.03	1,062.67	10.29	35	6.44	21	97

Table JX05-03. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Paralichthys albigutta	13	0.0	3.4	0.05	0.01	534.91	1.47	74	12.03	26	159
Archosargus probatocephalus	11	0.0	2.3	0.04	0.01	683.56	2.94	148	26.72	13	265
Centropomus undecimalis	11	0.0	1.3	0.04	0.02	988.10	5.88	81	8.54	56	129
Cynoscion complex	10	0.0	1.6	0.04	0.02	956.02	5.88	42	4.35	21	59
Elops saurus	9	0.0	1.8	0.03	0.01	779.67	2.94	116	42.04	37	342
Menticirrhus littoralis	8	0.0	0.5	0.03	0.03	1,731.42	10.29	82	13.27	51	147
Paralichthys dentatus	6	0.0	0.8	0.02	0.01	1,219.51	4.41	40	5.88	24	56
Scomberomorus maculatus	5	0.0	0.8	0.02	0.01	1,297.68	4.41	42	4.86	27	52
Mycteroperca microlepis	3	0.0	0.8	0.01	0.01	1,128.41	1.47	78	58.36	17	195
Pomatomus saltatrix	3	0.0	0.5	0.01	0.01	1,459.07	2.94	88	16.52	70	121
Menticirrhus saxatilis	2	0.0	0.5	0.01	0.01	1,383.83	1.47	119	74.50	44	193
Pogonias cromis	2	0.0	0.5	0.01	0.01	1,383.83	1.47	237	69.50	167	306
Totals	**37,563**	**29.5**	**86.7**	**143.85**	**20.63**	**281.03**	**4,455.88**	**.**	**.**	**3**	**594**

Table JX05-04. Catch statistics for 10 dominant taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2005. 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	2,006	14.1	75.5	10.45	1.69	224.33	217.00	203	1.44	69	426
Bairdiella chrysoura	1,545	10.9	28.6	8.05	2.88	496.59	455.00	127	0.44	74	190
Leiostomus xanthurus	1,375	9.7	48.4	7.16	1.58	304.91	213.00	122	0.82	52	256
Lagodon rhomboides	958	6.7	36.5	4.99	1.42	395.51	172.00	103	0.82	40	185
Dasyatis sabina	908	6.4	58.9	4.73	0.97	282.98	136.00	223	1.27	91	415
Mugil curema	896	6.3	38.0	4.67	1.16	343.58	162.00	134	1.00	76	309
Dorosoma cepedianum	674	4.7	9.4	3.51	1.91	754.92	297.00	154	1.38	92	390
Brevoortia spp.	599	4.2	18.8	3.12	1.95	866.85	362.00	113	0.79	75	221
Litopenaeus setiferus	410	2.9	18.2	2.14	1.13	736.40	213.00	20	0.17	9	30
Chloroscombrus chrysurus	375	2.6	9.9	1.95	0.95	673.79	172.00	83	0.81	52	162
Subtotal	9,746	68.5	.	.	.	.	.	.	.	9	426
Totals	**14,215**	**100.0**	**.**	**74.04**	**8.18**	**153.06**	**922.00**	**.**	**.**	**9**	**1250**

Table JX05-05. Catch statistics for Selected Taxa collected in 192 183-m haul seine samples during northeast Florida stratified-random sampling, 2005. 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	2,006	14.1	75.5	10.45	1.69	224.33	217.00	203	1.44	69	426
Leiostomus xanthurus	1,375	9.7	48.4	7.16	1.58	304.91	213.00	122	0.82	52	256
Mugil curema	896	6.3	38.0	4.67	1.16	343.58	162.00	134	1.00	76	309
Litopenaeus setiferus	410	2.9	18.2	2.14	1.13	736.40	213.00	20	0.17	9	30
Cynoscion nebulosus	278	2.0	26.0	1.45	0.31	299.49	31.00	252	4.08	96	599
Elops saurus	269	1.9	24.0	1.40	0.54	533.08	93.00	334	4.89	118	579
Callinectes sapidus	200	1.4	36.5	1.04	0.21	277.30	27.00	114	2.83	21	194
Micropogonias undulatus	198	1.4	22.4	1.03	0.28	373.12	43.00	140	2.81	58	251
Sciaenops ocellatus	138	1.0	24.5	0.72	0.17	322.90	23.00	374	8.22	113	640
Archosargus probatocephalus	131	0.9	27.1	0.68	0.12	249.08	13.00	297	5.98	68	450
Paralichthys lethostigma	72	0.5	19.3	0.38	0.07	272.19	9.00	162	8.01	54	310
Pogonias cromis	68	0.5	7.3	0.35	0.15	570.56	21.00	237	11.78	106	462
Scomberomorus maculatus	53	0.4	9.4	0.28	0.09	473.55	15.00	155	4.96	122	331
Pomatomus saltatrix	41	0.3	6.8	0.21	0.12	799.16	23.00	233	7.22	131	342
Menticirrhus americanus	36	0.3	9.9	0.19	0.05	364.57	6.00	186	9.09	105	311
Cynoscion complex	31	0.2	4.7	0.16	0.09	752.56	14.00	226	6.04	119	282
Paralichthys albigutta	16	0.1	5.7	0.08	0.03	448.38	3.00	114	11.29	54	185

Table JX05-05. (Continued)

Species	Number		% Occur	Catch-per-unit-effort (animals/set)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Trachinotus falcatus	15	0.1	3.1	0.08	0.04	739.94	7.00	107	8.27	46	164
Paralichthys dentatus	11	0.1	2.6	0.06	0.03	696.01	4.00	85	6.67	58	125
Lutjanus griseus	9	0.1	2.6	0.05	0.02	665.34	3.00	98	9.77	82	173
Menticirrhus littoralis	9	0.1	2.1	0.05	0.02	733.48	3.00	234	6.89	205	272
Farfantepenaeus spp.	7	0.0	2.1	0.04	0.02	762.09	3.00	13	0.30	12	14
Farfantepenaeus duorarum	5	0.0	2.1	0.03	0.01	728.26	2.00	20	1.21	17	23
Trachinotus carolinus	5	0.0	1.6	0.03	0.02	916.06	3.00	104	25.22	62	197
Rachycentron canadum	4	0.0	2.1	0.02	0.01	687.36	1.00	209	11.46	184	232
Centropomus undecimalis	2	0.0	1.0	0.01	0.01	977.23	1.00	127	8.50	118	135
Farfantepenaeus aztecus	2	0.0	0.5	0.01	0.01	1,385.64	2.00	17	1.50	15	18
Menticirrhus saxatilis	1	0.0	0.5	0.01	0.01	1,385.64	1.00	199	.	199	199
Scomberomorus cavalla	1	0.0	0.5	0.01	0.01	1,385.64	1.00	137	.	137	137
Totals	**6,289**	**44.2**	**95.8**	**32.76**	**3.81**	**161.06**	**374.00**	**.**	**.**	**9**	**640**

Table JX05-06. Catch statistics for 10 dominant taxa collected in 396 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2005. 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	17,995	40.2	61.6	6.17	1.28	414.04	353.75	21	0.13	5	196
Stellifer lanceolatus	4,770	10.7	18.9	1.79	1.37	1,526.41	542.06	33	0.17	11	112
Anchoa mitchilli	5,320	11.9	39.9	1.79	0.36	399.96	86.08	42	0.14	12	76
Leiostomus xanthurus	5,193	11.6	47.5	1.74	0.50	572.73	133.94	27	0.37	9	179
Litopenaeus setiferus	2,899	6.5	50.8	0.96	0.22	464.70	77.02	17	0.13	2	41
Trinectes maculatus	1,512	3.4	36.6	0.50	0.12	467.50	40.97	47	0.56	13	142
Callinectes sapidus	1,078	2.4	63.9	0.36	0.03	179.39	5.40	83	1.45	5	212
Cynoscion complex	884	2.0	30.3	0.29	0.05	319.04	8.59	43	1.01	10	201
Ameiurus catus	768	1.7	26.8	0.27	0.09	686.99	35.53	89	2.06	22	330
Farfantepenaeus spp.	505	1.1	21.7	0.17	0.03	342.70	5.40	11	0.11	4	17
Subtotal	40,924	91.5	.	.	.	.	.	.	.	2	330
Totals	**44,733**	**100.0**	**.**	**15.34**	**2.06**	**266.71**	**546.86**	**.**	**.**	**2**	**722**

Table JX05-07. Catch statistics for Selected Taxa collected in 396 6.1-m river otter trawl samples during northeast Florida stratified-random sampling, 2005. 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	17,995	40.2	61.6	6.17	1.28	414.04	353.75	21	0.13	5	196
Leiostomus xanthurus	5,193	11.6	47.5	1.74	0.50	572.73	133.94	27	0.37	9	179
Litopenaeus setiferus	2,899	6.5	50.8	0.96	0.22	464.70	77.02	17	0.13	2	41
Callinectes sapidus	1,078	2.4	63.9	0.36	0.03	179.39	5.40	83	1.45	5	212
Cynoscion complex	884	2.0	30.3	0.29	0.05	319.04	8.59	43	1.01	10	201
Farfantepenaeus spp.	505	1.1	21.7	0.17	0.03	342.70	5.40	11	0.11	4	17
Menticirrhus americanus	311	0.7	18.7	0.11	0.02	339.32	4.35	37	1.28	9	140
Farfantepenaeus aztecus	218	0.5	8.6	0.07	0.03	714.21	8.23	21	0.29	15	35
Paralichthys lethostigma	153	0.3	22.7	0.05	0.01	256.93	1.35	97	6.53	10	393
Farfantepenaeus duorarum	98	0.2	6.3	0.03	0.01	658.20	2.70	22	0.46	15	32
Elops saurus	49	0.1	4.0	0.02	0.01	823.00	2.16	44	3.70	30	220
Paralichthys dentatus	34	0.1	5.1	0.01	0.00	785.19	1.62	104	8.67	35	233
Archosargus probatocephalus	16	0.0	3.3	0.01	0.00	572.93	0.27	242	32.82	72	410
Penaeidae spp.	13	0.0	0.3	0.00	0.00	1,989.97	1.95	7	0.61	3	12
Cynoscion nebulosus	11	0.0	2.3	0.00	0.00	690.42	0.27	145	19.90	16	235
Paralichthys albigutta	10	0.0	1.5	0.00	0.00	1,059.23	0.61	76	12.84	12	158
Lutjanus griseus	7	0.0	1.8	0.00	0.00	751.64	0.17	68	12.20	12	106

Table JX05-07. (Continued)

Species	Number		% Occur	Density Estimate (animals/100m^2)				Standard Length (mm)			
	No.	%		Mean	Stderr	CV	Max	Mean	Stderr	Min	Max
Cynoscion nothus	5	0.0	0.5	0.00	0.00	1,640.00	0.49	96	5.94	80	114
Lutjanus synagris	3	0.0	0.8	0.00	0.00	1,156.77	0.17	30	7.17	22	44
Pogonias cromis	3	0.0	0.8	0.00	0.00	1,147.47	0.15	155	4.63	147	163
Sciaenops ocellatus	3	0.0	0.5	0.00	0.00	1,461.86	0.27	42	17.48	10	70
Menippe spp.	2	0.0	0.5	0.00	0.00	1,412.39	0.15	58	13.00	45	71
Centropomus undecimalis	1	0.0	0.3	0.00	0.00	1,989.97	0.13	157	.	157	157
Menticirrhus saxatilis	1	0.0	0.3	0.00	0.00	1,989.97	0.13	32	.	32	32
Mugil cephalus	1	0.0	0.3	0.00	0.00	1,989.97	0.13	207	.	207	207
Mugil curema	1	0.0	0.3	0.00	0.00	1,989.97	0.13	110	.	110	110
Farfantepenaeus brasiliensis	1	0.0	0.3	0.00	0.00	1,989.97	0.12	22	.	22	22
Mycteroperca microlepis	1	0.0	0.3	0.00	0.00	1,989.97	0.12	17	.	17	17
Rachycentron canadum	1	0.0	0.3	0.00	0.00	1,989.97	0.12	174	.	174	174
Totals	**29,497**	**65.9**	**96.0**	**10.02**	**1.45**	**288.90**	**366.03**	**.**	**.**	**2**	**410**

Appendix JX05-01. Monthly summary of species collected during northeast Florida stratified-random sampling, 2005. 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=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Acanthostracion sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Achirus lineatus	13	3	4	9	8	3	20	11	14	10	9	7	111
Aetobatus narinari	.	.	.	.	.	.	2	.	.	1	.	.	3
Alosa aestivalis	.	.	.	.	1	.	.	.	.	.	1	4	6
Alosa mediocris	.	1	.	.	.	3	3	4	.	.	4	4	19
Alosa sapidissima	.	.	.	7	.	9	.	.	.	.	.	2	18
Aluterus schoepfii	.	.	.	.	.	1	.	.	.	.	.	.	1
Ameiurus catus	61	44	40	65	24	38	80	252	48	99	95	42	888
Ameiurus nebulosus	.	1	.	.	1	.	.	.	.	.	.	.	2
Amia calva	.	.	.	.	.	.	1	.	.	.	.	.	1
Anchoa hepsetus	1	.	1	14	149	602	353	579	296	24	6	1	2,026
Anchoa lyolepis	.	.	.	.	.	95	.	.	.	.	3	.	98
Anchoa mitchilli	604	908	519	1,043	1,358	3,708	1,574	9,478	8,275	19,111	9,425	2,713	58,716
Ancylopsetta quadrocellata	2	14	38	16	17	.	.	.	.	.	.	.	87
Anguilla rostrata	.	.	.	.	.	.	1	.	.	.	.	.	1
Archosargus probatocephalus	7	10	5	8	20	9	31	7	17	16	14	14	158
Ariopsis felis	.	.	.	11	.	.	1	5	9	4	1	2	33
Astroscopus y-graecum	3	8	5	3	4	2	.	.	.	3	.	.	28
Bagre marinus	.	.	.	1	.	.	8	1	7	.	.	.	17
Bairdiella chrysoura	106	25	270	150	99	442	238	424	238	504	374	97	2,967
Bathygobius soporator	.	.	2	.	.	.	1	.	3	1	.	4	11
Bothidae spp.	1	.	.	.	.	.	.	.	.	.	.	2	3
Brevoortia spp.	131	2,915	2,316	2,508	7	23	31	30	5	90	1	6	8,063
Callinectes bocourti	.	.	.	.	.	.	.	.	.	1	.	.	1
Callinectes sapidus	153	79	106	148	73	113	197	219	140	120	189	125	1,662
Callinectes similis	.	.	.	3	17	70	82	29	24	28	9	.	262

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Callinectes sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Caranx hippos	.	.	.	.	.	5	17	26	7	5	10	1	71
Caretta caretta	.	.	.	.	1	.	.	.	.	.	.	.	1
Centropomus undecimalis	.	.	.	.	.	.	.	.	.	4	9	1	14
Centropristis philadelphica	.	1	3	2	.	.	2	2	2	2	3	2	19
Chaetodipterus faber	.	.	.	.	1	2	7	53	196	18	19	2	298
Chasmodes bosquianus	.	.	.	.	.	.	.	.	.	.	.	1	1
Chelydra serpentina osceola	.	.	.	.	.	.	.	.	.	.	1	.	1
Chilomycterus schoepfii	.	.	.	3	.	3	2	2	5	1	.	1	17
Chloroscombrus chrysurus	.	1	.	.	1	10	10	53	130	227	8	1	441
Citharichthys macrops	.	.	.	.	.	2	.	.	.	.	.	.	2
Citharichthys spilopterus	12	8	5	14	66	71	61	64	65	15	16	1	398
Clupeidae sp.	.	.	.	.	.	.	.	.	1	.	.	.	1
Ctenogobius boleosoma	15	13	4	13	26	3	18	49	23	148	13	22	347
Ctenogobius shufeldti	5	3	1	12	10	18	9	21	24	26	93	55	277
Ctenogobius smaragdus	.	4	.	.	.	.	.	4	1	3	1	1	14
Ctenogobius sp.	.	.	.	.	.	.	.	.	.	.	1	.	1
Ctenogobius stigmaticus	.	.	.	.	.	.	.	1	.	.	.	.	1
Cynoscion nebulosus	30	17	57	12	18	23	32	71	35	38	71	18	422
Cynoscion nothus	.	.	.	.	5	.	.	.	.	.	.	.	5
Cynoscion complex	10	10	5	4	110	237	165	261	64	21	19	19	925
Cyprinodon variegatus	.	.	.	.	.	3	.	.	.	.	.	.	3
Dasyatis sabina	277	31	35	58	90	140	94	80	55	62	41	34	997
Dasyatis say	.	.	.	4	2	8	15	3	.	1	.	.	33
Diapterus auratus	.	.	.	.	.	.	5	53	72	60	252	108	550
Dorosoma cepedianum	1	1	.	3	.	.	9	58	279	317	10	16	694
Dorosoma petenense	.	4	1	.	.	1	18	5	4	136	2	4	175

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Elassoma okefenokee	.	.	.	.	.	.	.	.	1	.	.	.	1
Elassoma zonatum	.	.	.	1	.	.	.	.	.	.	.	.	1
Eleotris amblyopsis	.	.	.	1	.	.	.	.	.	.	.	.	1
Elops saurus	1	3	17	19	22	31	14	113	34	29	41	3	327
Erotelis smaragdus	.	.	.	.	.	.	.	.	.	1	.	.	1
Etropus crossotus	33	16	10	6	.	17	29	30	46	32	65	26	310
Eucinostomus gula	.	.	.	.	.	.	.	341	11	4	1	3	360
Eucinostomus harengulus	.	.	.	.	.	.	30	134	82	56	32	49	383
Eucinostomus spp.	1	.	.	.	5	49	19	121	111	136	107	14	563
Evorthodus lyricus	.	.	.	.	.	1	.	.	.	.	.	.	1
Farfantepenaeus aztecus	.	.	.	.	10	153	134	20	1	.	.	.	318
Farfantepenaeus brasiliensis	.	.	.	1	.	.	.	.	.	.	.	.	1
Farfantepenaeus duorarum	2	.	1	9	25	88	1	4	.	1	.	.	131
Farfantepenaeus spp.	5	1	2	3	392	210	150	90	50	62	14	13	992
Fundulus heteroclitus	438	65	267	19	138	72	166	510	686	9,251	36	639	12,287
Fundulus majalis	38	6	.	4	2	29	3	.	1	2	5	1	91
Fundulus seminolis	6	.	8	4	.	58	1	14	2	8	70	2	173
Fundulus sp.	.	.	.	.	.	1	.	.	.	.	.	.	1
Gambusia holbrooki	.	.	46	8	25	170	11	1	14	111	92	5	483
Gobiesox strumosus	.	3	.	1	1	.	.	.	.	.	.	.	5
Gobioides broussonetii	.	.	.	5	.	2	4	3	.	.	2	.	16
Gobionellus oceanicus	1	2	.	.	.	2	3	2	8	6	2	4	30
Gobiosoma bosc	3	7	.	3	6	1	2	2	2	1	6	11	44
Gobiosoma robustum	.	4	.	1	.	.	.	.	.	.	7	.	12
Gobiosoma spp.	3	.	.	1	.	2	2	2	17	2	7	4	40
Gymnura micrura	.	.	.	.	1	3	2	11	1	1	.	1	20
Harengula jaguana	.	.	.	4	.	.	2	13	1	34	6	.	60

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Hemiramphus brasiliensis	.	.	.	.	.	.	.	.	.	1	.	.	1
Heterandria formosa	.	.	.	.	.	.	.	.	4	.	.	.	4
Hyporhamphus meeki	.	.	.	.	.	2	.	.	.	.	.	.	2
Ictalurus punctatus	2	6	7	7	8	15	20	4	8	36	39	26	178
Labidesthes sicculus	3	.	8	5	.	2	4	4	.	.	14	.	40
Lagodon rhomboides	31	212	19	61	121	78	106	110	383	90	302	20	1,533
Larimus fasciatus	.	.	.	.	.	.	.	.	.	.	.	5	5
Leiostomus xanthurus	3,345	16,226	4,446	1,373	1,130	619	145	363	333	49	253	137	28,419
Lepisosteus osseus	.	1	7	10	5	2	1	14	8	4	4	1	57
Lepisosteus platyrhincus	.	.	.	.	3	.	1	1	2	.	2	.	9
Lepomis auritus	11	2	10	13	6	1	5	5	3	20	73	12	161
Lepomis gulosus	.	.	.	.	6	.	.	.	.	.	1	.	7
Lepomis macrochirus	51	4	62	17	21	7	23	37	13	31	186	81	533
Lepomis microlophus	31	1	31	30	30	16	9	2	10	13	18	16	207
Lepomis punctatus	.	.	.	.	7	.	1	.	1	1	2	1	13
Lepomis spp.	.	.	.	.	.	.	3	46	20	6	5	3	83
Lepophidium brevibarbe	.	3	.	.	.	.	.	.	.	.	.	.	3
Limulus polyphemus	2	2	3	.	2	.	.	.	2	.	1	.	12
Litopenaeus setiferus	203	211	45	28	41	256	967	2,954	2,309	945	1,858	181	9,998
Lobotes surinamensis	.	.	.	.	.	.	.	1	.	1	.	.	2
Lucania goodei	.	.	.	.	.	.	.	.	.	.	1	.	1
Lucania parva	.	.	26	2	.	149	.	46	.	1	38	1	263
Lutjanus griseus	.	.	.	.	.	.	1	21	11	13	8	6	60
Lutjanus synagris	.	.	.	.	.	.	1	3	2	10	1	.	17
Malaclemys terrapin	.	.	4	10	13	1	6	1	.	5	10	1	51
Membras martinica	.	.	.	.	.	10	26	.	.	1	2	1	40
Menidia menidia	458	360	256	229	81	632	1,319	1,657	719	172	376	124	6,383

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Menidia spp.	21	22	43	29	70	43	100	193	160	52	192	56	981
Menippe spp.	.	.	.	.	.	1	.	.	1	.	.	.	2
Menticirrhus americanus	3	2	.	5	2	91	71	68	83	30	19	8	382
Menticirrhus littoralis	1	.	.	3	.	.	2	7	.	4	.	.	17
Menticirrhus saxatilis	.	1	1	.	2	.	.	.	.	.	.	.	4
Microgobius gulosus	.	1	.	2	3	15	6	8	35	4	23	12	109
Microgobius thalassinus	.	.	.	.	.	3	1	.	1	.	.	.	5
Microphis brachyurus	.	.	.	.	.	.	1	1	.	1	3	.	6
Micropogonias undulatus	3,204	10,369	2,594	705	858	627	301	169	54	230	276	750	20,137
Micropterus salmoides	12	.	9	2	28	29	6	17	2	4	50	1	160
Morone saxatilis	.	.	.	.	.	.	1	1	.	.	.	1	3
Mugil cephalus	264	4,023	276	850	136	476	137	282	152	158	455	246	7,455
Mugil curema	7	8	1	30	71	68	59	35	44	168	269	202	962
Mycteroperca microlepis	.	.	.	.	3	.	.	.	.	1	.	.	4
Myrophis punctatus	1	3	.	.	1	.	.	.	.	.	.	.	5
Negaprion brevirostris	.	.	.	.	.	.	.	1	.	.	.	.	1
Notemigonus crysoleucas	.	.	4	.	.	.	2	11	3	2	13	.	35
Notropis maculatus	.	.	.	1	.	.	.	.	.	.	.	.	1
Ogcocephalus cubifrons	.	.	.	.	1	.	.	.	1	.	.	.	2
Oligoplites saurus	.	.	.	.	1	1	7	16	24	20	6	1	76
Ophidiidae sp.	1	.	.	.	.	.	.	.	.	.	.	.	1
Ophidion holbrookii	.	.	.	.	4	.	.	.	.	.	.	.	4
Ophidion josephi	.	.	.	.	.	.	1	.	.	.	1	.	2
Opisthonema oglinum	.	28	.	235	62	63	113	153	55	15	7	1	732
Opsanus tau	1	1	3	3	5	.	1	1	1	1	.	.	17
Orthopristis chrysoptera	.	.	.	.	70	37	15	12	26	2	.	.	162
Paralichthys albigutta	1	2	3	6	4	8	8	5	.	1	1	.	39

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	
	E=81	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=81**	**E=972**
Paralichthys dentatus	1	1	1	4	34	4	1	3	.	1	1	.	51
Paralichthys lethostigma	21	45	36	35	48	37	34	23	21	12	16	10	338
Penaeidae spp.	.	.	.	13	.	.	.	.	.	.	.	.	13
Peprilus paru	.	.	1	24	8	.	3	.	1	13	4	1	55
Peprilus triacanthus	.	4	.	.	.	.	.	.	.	.	.	1	5
Poecilia latipinna	.	.	2	.	.	128	.	1	.	164	2	3	300
Pogonias cromis	2	15	3	.	10	.	5	.	3	10	22	3	73
Pomatomus saltatrix	.	.	1	1	5	2	.	1	1	2	4	27	44
Pomoxis nigromaculatus	5	5	2	1	4	.	4	2	1	7	6	.	37
Prionotus evolans	.	.	.	.	28	1	1	.	.	.	.	.	30
Prionotus scitulus	3	.	2	3	.	7	1	1	1	.	2	12	32
Prionotus tribulus	22	33	24	22	28	4	4	4	12	2	7	5	167
Pterygoplichthys sp.	.	.	.	1	.	.	.	.	.	.	.	.	1
Rachycentron canadum	.	.	.	.	.	.	.	3	.	2	.	.	5
Rhinoptera bonasus	.	.	.	.	.	.	2	1	.	1	.	.	4
Rimapenaeus constrictus	.	5	.	.	.	39	41	.	9	3	13	6	116
Sciaenops ocellatus	12	9	28	25	15	8	3	11	31	13	14	15	184
Scomberomorus cavalla	.	.	.	.	.	.	.	.	.	.	1	.	1
Scomberomorus maculatus	.	.	.	.	.	6	1	20	5	10	14	2	58
Scophthalmus aquosus	.	.	1	2	.	.	.	.	.	.	.	.	3
Selene setapinnis	.	.	.	.	.	.	.	.	.	1	1	.	2
Selene vomer	.	.	.	.	.	4	10	3	4	21	31	6	79
Sphoeroides nephelus	5	.	3	1	8	11	7	9	4	1	1	2	52
Sphoeroides spengleri	.	.	.	.	.	1	.	.	.	.	.	.	1
Sphyraena borealis	.	.	.	.	.	1	.	.	.	.	.	.	1
Sphyrna tiburo	.	.	.	.	2	.	.	2	.	.	.	.	4
Stellifer lanceolatus	16	63	12	13	211	32	111	251	3,839	122	63	38	4,771

Appendix JX05-01. (Continued)

Species	Month												Totals
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=81	E=972
Stephanolepis hispidus	.	.	.	.	7	5	.	2	6	17	2	1	40
Stomolophus meleagris	.	.	4	.	.	.	.	.	.	9	98	.	111
Strongylura marina	11	.	16	1	1	11	17	5	19	7	15	25	128
Strongylura notata	.	.	.	.	.	.	.	2	.	.	.	.	2
Strongylura spp.	.	.	.	1	9	8	6	1	.	.	.	.	25
Symphurus civitatium	.	.	.	1	2	2	.	.	.	.	.	1	6
Symphurus plagiusa	38	17	43	28	11	20	61	65	93	52	46	21	495
Syngnathus fuscus	.	.	.	.	.	.	.	.	1	.	.	.	1
Syngnathus louisianae	.	.	1	2	8	5	4	.	6	1	3	.	30
Syngnathus scovelli	.	.	1	2	3	5	6	17	.	.	4	.	38
Synodus foetens	.	.	.	.	11	22	22	9	7	1	3	2	77
Tilapia spp.	.	.	.	.	.	.	.	7	.	.	.	.	7
Trachemys spp.	.	.	.	.	.	.	4	.	1	1	.	.	6
Trachinotus carolinus	.	.	.	.	1	16	11	24	4	1	1	.	58
Trachinotus falcatus	.	.	.	.	.	7	6	26	22	1	4	7	73
Trichiurus lepturus	.	1	3	1	1	.	1	.	.	.	1	.	8
Trinectes maculatus	98	55	455	41	33	48	120	245	55	189	140	111	1,590
Tylosurus crocodilus	.	.	.	.	.	.	.	.	.	1	.	.	1
Urophycis floridana	.	20	2	1	.	.	.	.	.	.	.	.	23
Urophycis regia	.	34	10	.	.	.	.	.	.	.	.	.	44
Totals	**9,850**	**36,003**	**12,277**	**8,080**	**6,018**	**10,220**	**7,616**	**20,243**	**19,723**	**33,590**	**16,222**	**6,278**	**186,120**

Appendix JX05-02. Summary by gear, stratum, and zone of species collected during northeast Florida stratified-random sampling, 2005. 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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Acanthostracion sp.	.	.	1	1	.	.	.	1
Achirus lineatus	13	23	75	36	14	44	17	111
Aetobatus narinari	.	3	.	.	3	.	.	3
Alosa aestivalis	2	3	1	1	.	3	2	6
Alosa mediocris	8	9	2	1	.	9	9	19
Alosa sapidissima	18	.	.	.	.	.	18	18
Aluterus schoepfii	.	.	1	.	.	1	.	1
Ameiurus catus	52	68	768	377	136	49	326	888
Ameiurus nebulosus	.	1	1	.	.	.	2	2
Amia calva	1	.	.	.	1	.	.	1
Anchoa hepsetus	1,920	.	106	165	1,033	768	60	2,026
Anchoa lyolepis	98	.	.	.	93	5	.	98
Anchoa mitchilli	53,396	.	5,320	30,938	12,838	9,019	5,921	58,716
Ancylopsetta quadrocellata	2	29	56	35	26	26	.	87
Anguilla rostrata	1	.	.	.	.	.	1	1
Archosargus probatocephalus	11	131	16	13	63	64	18	158
Ariopsis felis	.	14	19	3	11	9	10	33
Astroscopus y-graecum	5	4	19	7	11	10	.	28
Bagre marinus	.	11	6	8	9	.	.	17
Bairdiella chrysoura	1,149	1,545	273	1,239	903	561	264	2,967
Bathygobius soporator	7	.	4	3	.	7	1	11
Bothidae spp.	.	.	3	2	.	1	.	3
Brevoortia spp.	7,434	599	30	852	1,643	5,297	271	8,063
Callinectes bocourti	.	1	.	1	.	.	.	1
Callinectes sapidus	384	200	1,078	500	374	404	384	1,662
Callinectes similis	156	3	103	184	65	13	.	262
Callinectes sp.	1	.	.	.	.	1	.	1
Caranx hippos	16	55	.	28	12	14	17	71
Caretta caretta	.	.	1	1	.	.	.	1
Centropomus undecimalis	11	2	1	.	10	1	3	14
Centropristis philadelphica	.	2	17	12	1	6	.	19
Chaetodipterus faber	2	59	237	117	157	24	.	298
Chasmodes bosquianus	1	.	.	1	.	.	.	1

Appendix JX05-02. (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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Chelydra serpentina osceola	.	1	.	.	.	.	1	1
Chilomycterus schoepfii	6	9	2	7	3	7	.	17
Chloroscombrus chrysurus	35	375	31	212	64	163	2	441
Citharichthys macrops	.	.	2	.	.	2	.	2
Citharichthys spilopterus	154	82	162	71	123	150	54	398
Clupeidae sp.	1	.	.	.	.	.	1	1
Ctenogobius boleosoma	301	.	46	93	115	75	64	347
Ctenogobius shufeldti	190	.	87	15	10	62	190	277
Ctenogobius smaragdus	12	.	2	3	3	8	.	14
Ctenogobius sp.	.	.	1	1	.	.	.	1
Ctenogobius stigmaticus	.	.	1	.	1	.	.	1
Cynoscion nebulosus	133	278	11	119	129	171	3	422
Cynoscion nothus	.	.	5	4	1	.	.	5
Cynoscion complex	10	31	884	429	211	190	95	925
Cyprinodon variegatus	3	.	.	.	.	.	3	3
Dasyatis sabina	24	908	65	380	298	218	101	997
Dasyatis say	.	29	4	6	23	4	.	33
Diapterus auratus	138	355	57	36	98	240	176	550
Dorosoma cepedianum	19	674	1	.	.	156	538	694
Dorosoma petenense	75	98	2	5	6	14	150	175
Elassoma okefenokee	1	.	.	.	.	.	1	1
Elassoma zonatum	1	.	.	.	1	.	.	1
Eleotris amblyopsis	1	.	.	1	.	.	.	1
Elops saurus	9	269	49	31	61	190	45	327
Erotelis smaragdus	.	.	1	.	.	1	.	1
Etropus crossotus	39	89	182	172	78	60	.	310
Eucinostomus gula	34	326	.	10	315	32	3	360
Eucinostomus harengulus	290	51	42	39	97	167	80	383
Eucinostomus spp.	552	.	11	80	274	157	52	563
Evorthodus lyricus	1	.	.	.	.	.	1	1
Farfantepenaeus aztecus	98	2	218	190	33	86	9	318
Farfantepenaeus brasiliensis	.	.	1	1	.	.	.	1
Farfantepenaeus duorarum	28	5	98	60	15	36	20	131
Farfantepenaeus spp.	480	7	505	148	309	382	153	992

Appendix JX05-02. (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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Fundulus heteroclitus	12,286	.	1	1,699	10,493	90	5	12,287
Fundulus majalis	91	.	.	12	17	62	.	91
Fundulus seminolis	169	4	.	.	.	.	173	173
Fundulus sp.	1	.	.	.	.	.	1	1
Gambusia holbrooki	483	.	.	47	217	30	189	483
Gobiesox strumosus	.	.	5	4	.	1	.	5
Gobioides broussonetii	.	.	16	.	1	1	14	16
Gobionellus oceanicus	11	.	19	.	3	19	8	30
Gobiosoma bosc	39	.	5	10	5	16	13	44
Gobiosoma robustum	11	.	1	1	.	4	7	12
Gobiosoma spp.	37	.	3	10	3	3	24	40
Gymnura micrura	.	15	5	10	9	1	.	20
Harengula jaguana	35	25	.	32	27	1	.	60
Hemiramphus brasiliensis	1	.	.	1	.	.	.	1
Heterandria formosa	4	.	.	.	.	.	4	4
Hyporhamphus meeki	2	.	.	2	.	.	.	2
Ictalurus punctatus	5	61	112	6	.	.	172	178
Labidesthes sicculus	40	.	.	13	3	.	24	40
Lagodon rhomboides	514	958	61	83	244	890	316	1,533
Larimus fasciatus	.	.	5	5	.	.	.	5
Leiostomus xanthurus	21,851	1,375	5,193	6,432	6,820	11,709	3,458	28,419
Lepisosteus osseus	3	51	3	11	19	.	27	57
Lepisosteus platyrhincus	4	5	.	.	3	.	6	9
Lepomis auritus	102	59	.	.	.	.	161	161
Lepomis gulosus	.	6	1	.	.	.	7	7
Lepomis macrochirus	360	154	19	1	7	.	525	533
Lepomis microlophus	62	137	8	.	1	.	206	207
Lepomis punctatus	6	7	.	.	.	.	13	13
Lepomis spp.	75	.	8	.	.	.	83	83
Lepophidium brevibarbe	.	.	3	3	.	.	.	3
Limulus polyphemus	.	2	10	9	3	.	.	12
Litopenaeus setiferus	6,689	410	2,899	3,123	2,449	3,690	736	9,998
Lobotes surinamensis	.	2	.	1	1	.	.	2
Lucania goodei	1	.	.	.	.	.	1	1

Appendix JX05-02. (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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Lucania parva	263	.	.	.	.	.	263	263
Lutjanus griseus	44	9	7	24	15	17	4	60
Lutjanus synagris	14	.	3	11	3	3	.	17
Malaclemys terrapin	4	46	1	19	20	11	1	51
Membras martinica	40	.	.	38	1	1	.	40
Menidia menidia	6,383	.	.	3,280	1,650	1,441	12	6,383
Menidia spp.	981	.	.	92	255	240	394	981
Menippe spp.	.	.	2	2	.	.	.	2
Menticirrhus americanus	35	36	311	194	107	80	1	382
Menticirrhus littoralis	8	9	.	1	9	7	.	17
Menticirrhus saxatilis	2	1	1	2	1	.	1	4
Microgobius gulosus	81	.	28	.	.	4	105	109
Microgobius thalassinus	2	.	3	1	.	1	3	5
Microphis brachyurus	6	.	.	1	.	3	2	6
Micropogonias undulatus	1,944	198	17,995	6,690	5,081	2,027	6,339	20,137
Micropterus salmoides	65	93	2	.	.	.	160	160
Morone saxatilis	2	1	.	2	.	.	1	3
Mugil cephalus	5,448	2,006	1	1,239	2,948	1,369	1,899	7,455
Mugil curema	65	896	1	167	260	483	52	962
Mycteroperca microlepis	3	.	1	1	.	3	.	4
Myrophis punctatus	1	.	4	1	2	1	1	5
Negaprion brevirostris	.	1	.	1	.	.	.	1
Notemigonus crysoleucas	17	18	.	.	.	3	32	35
Notropis maculatus	1	.	.	.	.	.	1	1
Ogcocephalus cubifrons	.	2	.	1	1	.	.	2
Oligoplites saurus	56	19	1	15	27	28	6	76
Ophidiidae sp.	.	.	1	1	.	.	.	1
Ophidion holbrookii	.	.	4	2	.	2	.	4
Ophidion josephi	.	.	2	1	1	.	.	2
Opisthonema oglinum	370	362	.	122	409	191	10	732
Opsanus tau	1	2	14	4	3	8	2	17
Orthopristis chrysoptera	114	26	22	19	94	48	1	162
Paralichthys albigutta	13	16	10	15	13	9	2	39
Paralichthys dentatus	6	11	34	13	26	11	1	51

Appendix JX05-02. (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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Paralichthys lethostigma	113	72	153	66	93	92	87	338
Penaeidae spp.	.	.	13	.	13	.	.	13
Peprilus paru	.	50	5	16	33	5	1	55
Peprilus triacanthus	.	1	4	2	.	3	.	5
Poecilia latipinna	300	.	.	3	164	4	129	300
Pogonias cromis	2	68	3	3	41	27	2	73
Pomatomus saltatrix	3	41	.	11	29	4	.	44
Pomoxis nigromaculatus	2	23	12	.	1	1	35	37
Prionotus evolans	.	1	29	11	19	.	.	30
Prionotus scitulus	1	.	31	19	9	4	.	32
Prionotus tribulus	26	21	120	58	55	53	1	167
Pterygoplichthys sp.	.	1	.	.	.	.	1	1
Rachycentron canadum	.	4	1	2	1	2	.	5
Rhinoptera bonasus	.	4	.	1	2	1	.	4
Rimapenaeus constrictus	2	.	114	102	2	12	.	116
Sciaenops ocellatus	43	138	3	8	53	80	43	184
Scomberomorus cavalla	.	1	.	1	.	.	.	1
Scomberomorus maculatus	5	53	.	32	16	8	2	58
Scophthalmus aquosus	.	.	3	2	.	1	.	3
Selene setapinnis	.	1	1	.	.	2	.	2
Selene vomer	3	70	6	27	32	18	2	79
Sphoeroides nephelus	18	16	18	13	15	24	.	52
Sphoeroides spengleri	1	.	.	.	.	1	.	1
Sphyraena borealis	1	.	.	1	.	.	.	1
Sphyrna tiburo	.	4	.	2	2	.	.	4
Stellifer lanceolatus	.	1	4,770	436	3,893	34	408	4,771
Stephanolepis hispidus	35	.	5	26	7	7	.	40
Stomolophus meleagris	.	107	4	98	6	7	.	111
Strongylura marina	29	99	.	21	6	77	24	128
Strongylura notata	.	2	.	.	.	2	.	2
Strongylura spp.	25	.	.	5	2	5	13	25
Symphurus civitatium	.	.	6	1	.	3	2	6
Symphurus plagiusa	143	2	350	139	231	72	53	495
Syngnathus fuscus	1	.	.	.	1	.	.	1

Appendix JX05-02. (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=384	E=192	E=396	E=204	E=204	E=276	E=288	E=972
Syngnathus louisianae	21	.	9	9	16	5	.	30
Syngnathus scovelli	34	.	4	17	7	4	10	38
Synodus foetens	26	2	49	18	38	21	.	77
Tilapia spp.	7	.	.	.	.	.	7	7
Trachemys spp.	1	5	.	.	.	.	6	6
Trachinotus carolinus	53	5	.	23	11	24	.	58
Trachinotus falcatus	58	15	.	30	6	37	.	73
Trichiurus lepturus	.	.	8	4	3	1	.	8
Trinectes maculatus	45	33	1,512	637	271	97	585	1,590
Tylosurus crocodilus	.	1	.	.	.	1	.	1
Urophycis floridana	.	.	23	20	3	.	.	23
Urophycis regia	.	.	44	30	12	2	.	44
Totals	**127,172**	**14,215**	**44,733**	**62,006**	**56,015**	**42,156**	**25,943**	**186,120**

Directed Sampling

Introduction

The Fisheries-Independent Monitoring (FIM) program conducted seasonal directed sampling for striped mullet (*Mugil cephalus*) in Tampa Bay and Charlotte Harbor. Data obtained from directed sampling were used cooperatively by a number of Fish and Wildlife Research Institute (FWRI) research groups (i.e., Fisheries Assessment and Fish Biology) to provide stock assessments on this species. The objectives of this directed sampling research were to determine the size, age, and sex composition of localized populations of striped mullet in select Florida estuaries. This report summarizes data collected from January 1 – March 14, 2005 and from September 15 – December 31, 2005. For analyses, striped mullet data collected during spring 2005 were combined with data from fall of the previous year to form the 2004/2005 mullet season. Fall 2005 striped mullet data are presented separately.

Methods

Tampa Bay. Directed sampling for striped mullet during 2005 was conducted in Tampa Bay using a 366-m monofilament trammel net with 308-mm stretch outer mesh and 71-mm stretch inner mesh. The net was set on visually-detected schools of striped mullet in water <3 m deep. The sampling was divided into six 4-week sampling periods (September 15 – October 14, October 15 – November 14, November 15 – December 14, December 15 – January 14, January 15 – February 14, and February 15 – March 14), with at least two days of sampling conducted within each period. Sampling continued until the three criteria stated in the proposal were achieved (i.e., the date was later than February 15, at least 1,600 striped mullet were collected, or the number of sampling trips were greater or equal to six).

The study universe was divided up into six sampling areas (Figure DR05-01). During each sampling period, two primary and two secondary sampling areas were assigned (one primary and one secondary area on the east and west sides of the bay) from the six possible sampling areas. Primary sampling areas were searched for a maximum of two hours or until at least 200 striped mullet had been measured and 50 fish were culled (returned to the laboratory for age and sex determination). Secondary areas were sampled only if the minimum number of striped mullet were not collected in the primary areas. Additional sampling days were added as necessary to procure the required amount of culled (100 fish) and measured (400 fish) striped mullet per sampling window. To increase the probability of successful collections, primary areas were non-randomly selected because striped mullet were generally found in the northern reaches of estuaries prior to the spawning season and moved south to the mouth of the bay as the spawning season progressed. Therefore, sampling was directed toward northern areas of Tampa Bay early in the season and shifted to southern Tampa Bay later in the season.

Charlotte Harbor. A similar sampling design and collection method was used in Charlotte Harbor. The sampling was divided into four 4-week sampling periods (October 15 – November 14, November 15 – December 14, December 15 – January 14, and January 15 – February 14).

The study universe was divided into four sampling areas (Figure DR05-02). During each sampling window, two primary and two secondary sampling areas were assigned (one primary and one secondary area on the north and south sides of the harbor) from the four possible sampling areas. Additional sampling days were added as necessary to procure the required amount of culled (160 fish) and measured (400 fish) striped mullet per sampling period.

Results and Discussion

Tampa Bay. A total of 4,063 striped mullet were collected during 18 sampling trips (59 hauls) in 2005 (Table DR05-01). For the fall 2005 season (September – December), a total of 1,854 striped mullet were collected from 9 trips and 36 hauls. The greatest number of striped mullet (n=538, 29.0%) were collected in the West/North zone, and the fewest striped mullet (n=42, 2.0%) were collected in the West/Mid zone (Table DR05-02). Striped mullet lengths during the fall 2005 season ranged from 215 to 539 mm fork length (FL; Figure DR05-03).

Charlotte Harbor. A total of 2,123 striped mullet were collected during 15 sampling trips (41 hauls) in 2005 (Table DR05-01). For the fall 2005 season (October –

December), a total of 1,279 striped mullet were collected from 11 trips and 35 hauls. The greatest number of striped mullet (n=580, 45.3%) were collected in the South/East zone and the fewest striped mullet (n=0, 0%) were collected in the South/West zone (Table DR05-02). Striped mullet lengths during the fall 2005 season ranged from 228 to 513 mm fork length (FL; Figure DR05-03). No sampling events occurred January 1 – 14 because sampling was complete for the December 15 – January 14 sampling period prior to January 1, 2005.

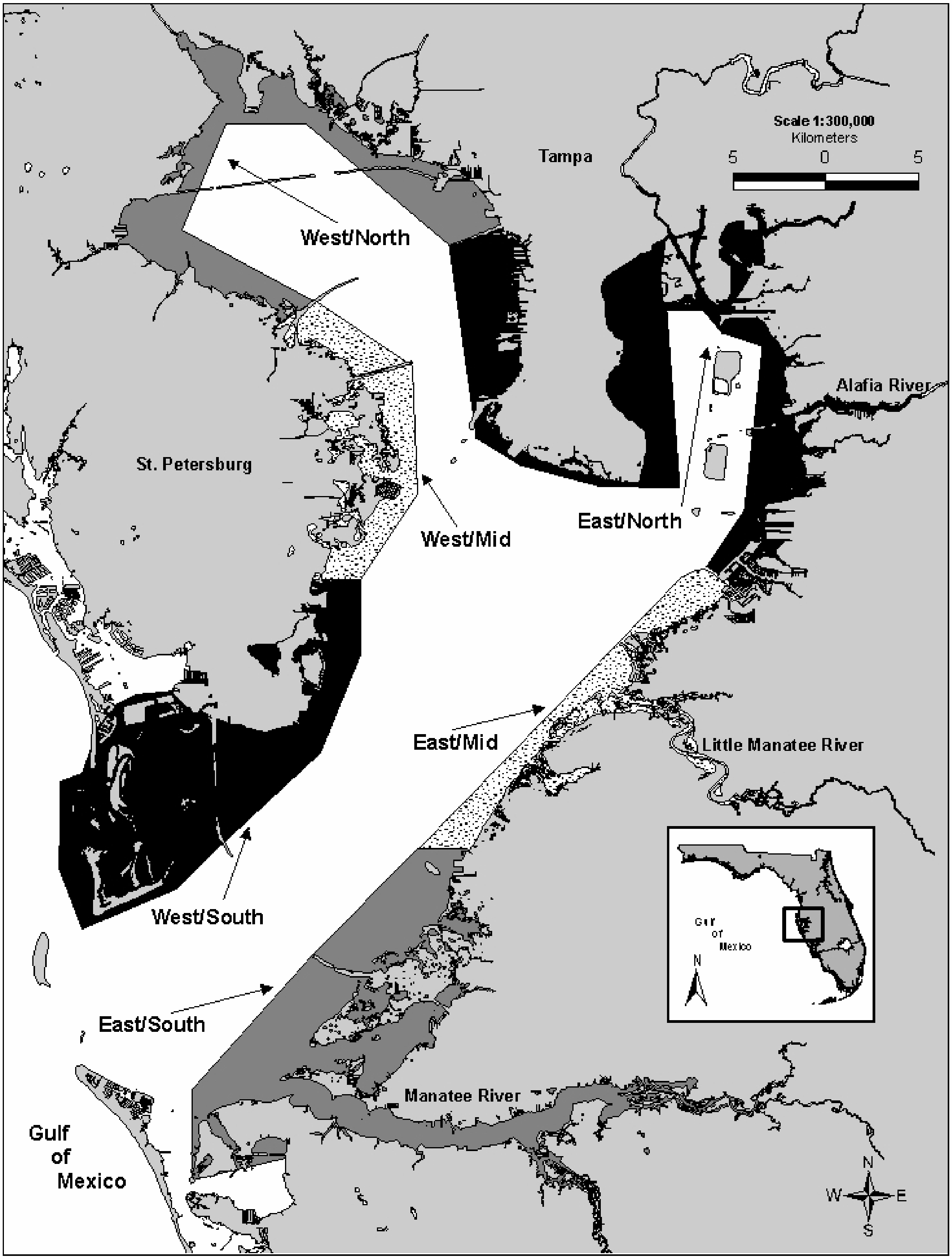

Figure DR05-01. Map of the 6 striped mullet sampling areas in Tampa Bay.

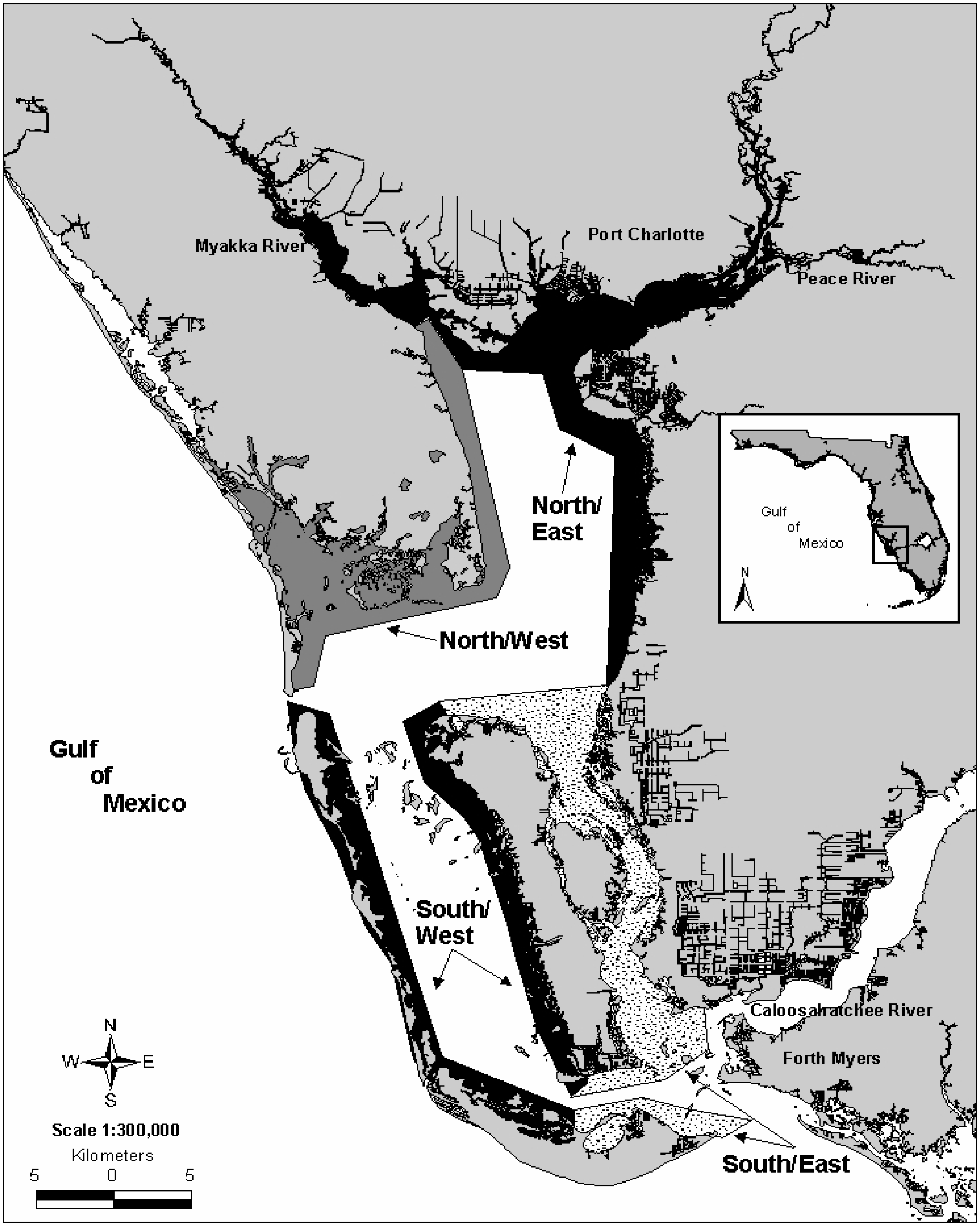

Figure DR05-02. Map of the 4 striped mullet sampling areas in Charlotte Harbor.

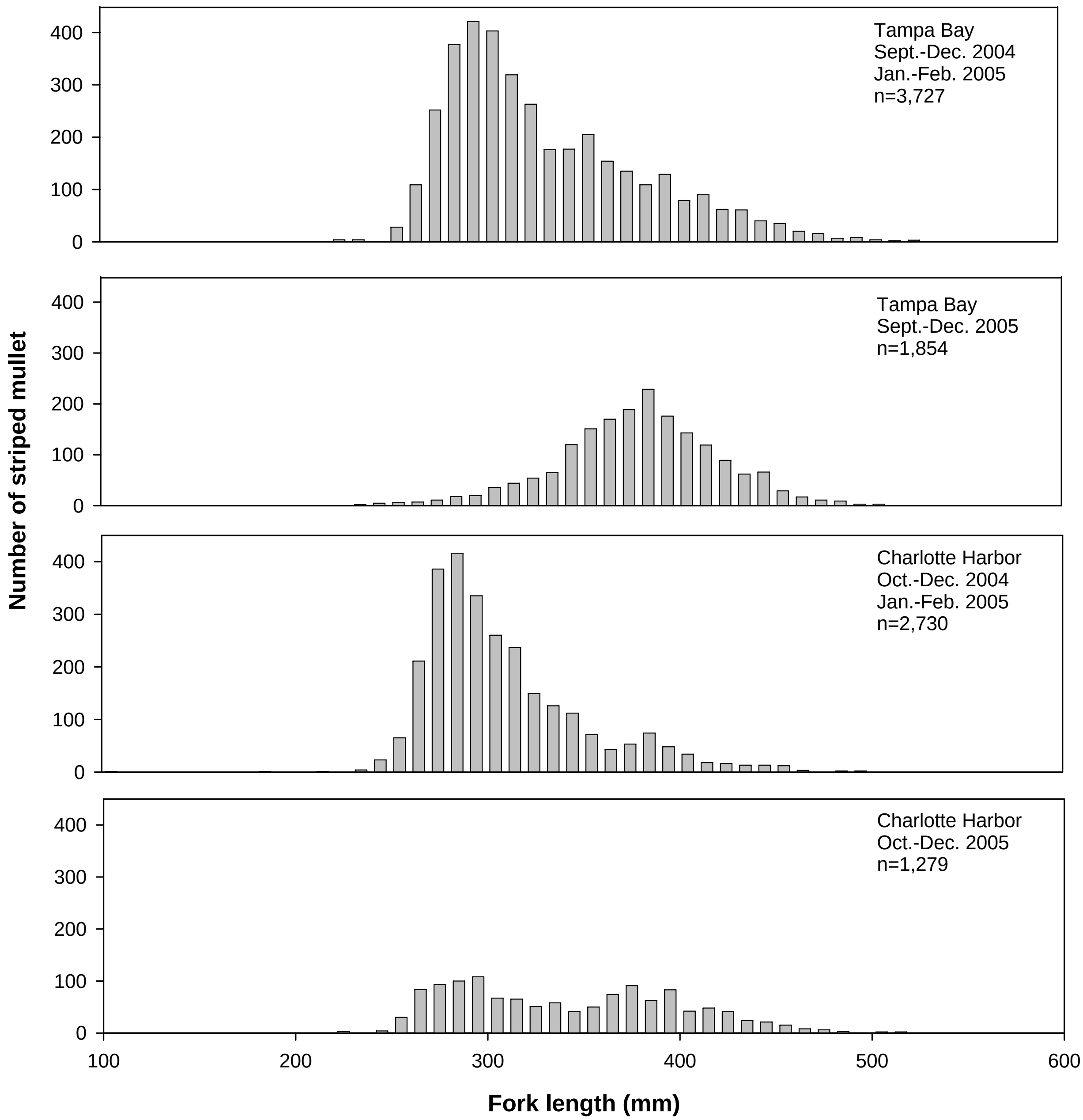

Figure DR05-03. Size distributions of striped mullet collected during trammel net surveys in Tampa Bay and Charlotte Harbor, 2004 – 2005. The Tampa Bay 2004/05 graph represents striped mullet collected from September 2004 – February 2005. The Charlotte Harbor 2004/05 graph represents striped mullet collected from October 2004 – February 2005. The 2005 graphs represent striped mullet collected from September 2005 – December 2005 for Tampa Bay, and October 2005 – December 2005 for Charlotte Harbor.

Table DR05-01. Summary of effort and catch data for directed striped mullet sampling in Tampa Bay and Charlotte Harbor, 2005 calendar year. Number of Trips denotes the number of sampling events that occurred in the sampling period.

Sampling Period	Tampa Bay			Charlotte Harbor		
	No. of Trips	**No. of Hauls**	**No. of Mullet**	**No. of Trips**	**No. of Hauls**	**No. of Mullet**
January 1 – 14*	3	8	729	-	-	-
January 15 – February 14*	6	15	1,480	4	6	844
February 15-March 14*	-	-	-	-	-	-
September 15 – October 14	2	9	556	-	-	-
October 15 – November 14	2	7	478	4	12	459
November 15 – December 14	3	10	397	3	14	404
December 15 – 31	2	10	423	4	9	416
Sub-Total (January – February)	**9**	**23**	**2,209**	**4**	**6**	**844**
Sub-Total (September – December)	**9**	**36**	**1,854**	**11**	**35**	**1,279**
Grand Total (2005 Calendar Year)	**18**	**59**	**4,063**	**15**	**41**	**2,123**

* Fish collected in January – March, 2005 were treated as part of the 2004/2005 sampling season.

Table DR05-02. Striped mullet sampling and capture locations in Tampa Bay and Charlotte Harbor, fall 2005. The six sampling areas in Tampa Bay and the four in Charlotte Harbor are defined below. Number of Trips denotes the number of times the sampling areas were visited. In one case two sampling areas were visited in one trip (noted by *).

Bay	Sampling Area	No. of Trips	No. of Hauls	No. of Striped Mullet
Tampa Bay	West/North: Old Tampa Bay south to Howard Franklin Bridge	2	6	538
	West/Mid: Howard Franklin Bridge south to St. Pete Pier	1	3	42
	West/South: St. Pete Pier south to Mullet Key	2	9	371
	East/North: Hillsborough Bay south to Apollo Beach	2	10	496
	East/Mid: Apollo Beach south to Piney Point	1	5	194
	East/South: Piney Point south to Manatee River	1	3	213
Charlotte Harbor	North/East: Myakka River south to Burnt Store	3	7	151
	North/West: Bull Bay/Turtle Bay	5	15	548
	South/East: Burnt Store south to Matlacha Pass	3	12	580
	South/West: South of Boca Grande Pass, including Pine Island Sound to York Island	1*	1	0

* Charlotte Harbor- One sampling trip visited both the South/West and North/West sampling areas.

Fish Health Monitoring

Introduction

The long-term multi-gear and multi-habitat sampling approach of the fisheries-independent monitoring program (FIM) not only provides fish population information to fisheries managers, but also helps document changes and evaluates the effects of natural and anthropogenic disturbances to ecosystems. 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. Therefore, the use of a long-term, multi-gear, stratified-random sampling (SRS) approach within the FIM program helps document changes in fish populations through time and evaluates the effects of natural and anthropogenic disturbances to ecosystems (Wolfe et al. 1987).

In April 1998, the Fish and Wildlife Research Institute's (FWRI) FIM program began to document GEAs (including parasites) visually observed on fish and select invertebrates in Florida's estuaries. 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 ($\geq$75 mm SL) fish and select macro-invertebrates collected during routine SRS in select Florida estuaries from January through December 2005.

Methods

Fish health monitoring was conducted in all Florida estuarine areas sampled by the FIM program. All specimens ≥ 75 mm SL were visually examined for GEAs. Fish <75 mm SL that were opportunistically observed with abnormalities 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 group (FWH) 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. After evaluating each specimen, the FWH assigned a Health Code to each specimen and provided these data to the FIM program for input into a database. Health codes assigned by the fish pathologists in the FWH 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) the health codes were not changed. Eight health codes were used:

B	Red or bloody areas (no scale loss)
E	Scale loss or erosion (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	Raised area (tumor, cyst)
U	Ulcer or lesion (muscle tissue affected)
P	Parasitic infestation
O	Other (i.e., emaciated fish, healing wound, eye discoloration, missing parts, and mechanical damage)

Results and Discussion

Of the 227,811 fish (≥ 75 mm SL) and select macro-invertebrates that were collected during 2005 FIM SRS sampling, 204 (36 taxa, 0.09%) were observed to have a GEA. Charlotte Harbor had the highest GEA incidence (0.25%), while the Cedar Key region had the lowest incidence (0.03%; Table FH05-01). Gross external abnormalities occurred most frequently in June and least frequently in December (Figure FH05-01). Four taxa of recreational or commercial importance (i.e., Selected Taxa) were among the top 10 taxa observed with a GEA (Table FH05-02). *Callinectes sapidus* was the most prevalent species to have a GEA (n=92), the majority of which (97%) were identified as *Loxothylacus texanus* parasites. *Mugil cephalus* (n=19) was the most prevalent finfish to have a GEA. Over half of the *M. cephalus* with GEAs (68%) had bloody or ulcerated areas.

Statewide, all eight types of GEAs were observed. The most often identified GEA was parasitic infestation (n=114, 56%), followed by ulcers (n=30, 15%) and 'other' (n=21, 10%). Bloody areas, fin rot, scale loss, skeletal abnormalities, and tumors represented 19% of the total GEAs observed (n=40; Table FH05-02).

Incidence by Lab

Apalachicola Bay: Apalachicola Bay staff examined 51,986 specimens for GEAs. Twenty-five individuals (0.05%) from 12 taxa, three of which were Selected Taxa, had a GEA (Table FH05-03). The most prevalent species to have a GEA were *M. cephalus* and *Leiostomus xanthurus* (n=6 for both). Each of these two Selected Taxa were afflicted with no fewer than four different GEAs. Additionally, four *Ictalurus punctatus* had a GEA, coded as 'other' in all four cases.

Cedar Key: Cedar Key staff examined 30,083 specimens for GEAs. Eight individuals (0.03%) from five taxa, one of which (*Archosargus probatocephalus*) was a Selected Taxon, had a GEA (Table FH05-04). This was the lowest incidence of GEAs in the state. Four of the eight afflicted specimens were *Ictalurus punctatus*. Two *I. punctatus* had fin rot, one had parasites, and the fourth had ulcers.

Charlotte Harbor: Charlotte Harbor staff examined 36,711 specimens for GEAs. Ninety-two individuals (0.25%) from six taxa, two of which were Selected Taxa, had a GEA (Table FH05-05). This was the highest incidence of GEAs in the state. The most prevalent species to have a GEA was *C. sapidus* (n=87). Eighty-five of the 87 afflicted *C. sapidus* were parasitized. The parasite in all cases was *L. texanus*. One *Centropomus undecimalis* was observed to have a GEA, identified as a skeletal deformation.

Northern Indian River Lagoon: Northern Indian River Lagoon staff examined 42,116 specimens for GEAs. Seventeen individuals (0.04%) from 10 taxa, four of which were Selected Taxa, had a GEA (Table FH05-06). The most prevalent species to have a GEA were *Ariopsis felis* and *Chilomycterus schoepfii* (n=3 for both). The most prevalent Selected Taxa to have a GEA were *M*. *cephalus* and *Mugil curema* (n=2 for both). Two of these four mullet had bloody areas, one had ulcers, and the fourth had a tumor.

Northeast Florida: Northeast Florida staff examined 18,413 specimens for GEAs Nineteen individuals (0.10%) from nine taxa, five of which were Selected Taxa, had a GEA (Table FH05-07). The most prevalent species to have a GEA was *M*. *cephalus* (n=5). All five affected *M*. *cephalus* had ulcers. In total, twelve of the 19 GEAs observed were identified as ulcers. One *Brevoortia* spp. specimen was observed to have two GEAs: bloody areas and ulcers.

Tampa Bay: Tampa Bay staff examined 36,096 specimens for GEAs. Thirty-one individuals (0.09%) from 14 taxa, six of which were Selected Taxa, had a GEA (Table FH05-08). The most prevalent species to have a GEA was *Lepisosteus osseus* (n=10). All 10 *L*. *osseus* were parasitized. The most prevalent Selected Taxa to have a GEA was *C*. *sapidus* (n=4). All four *C*. *sapidus* were parasitized. In total, 20 of the 31 GEAs observed were identified as parasitic infection.

Southern Indian River Lagoon: Southern Indian River Lagoon staff examined 12,406 specimens for GEAs. Twelve individuals (0.10%) from six taxa, four of which were Selected Taxa, had a GEA (Table FH05-09). The most prevalent species to have a GEA were *M*. *cephalus* (n=5) and *M*. *curema* (n=3). Four of these eight mullet had bloody areas, three had ulcers, and one was assigned a health code of ‘other’.

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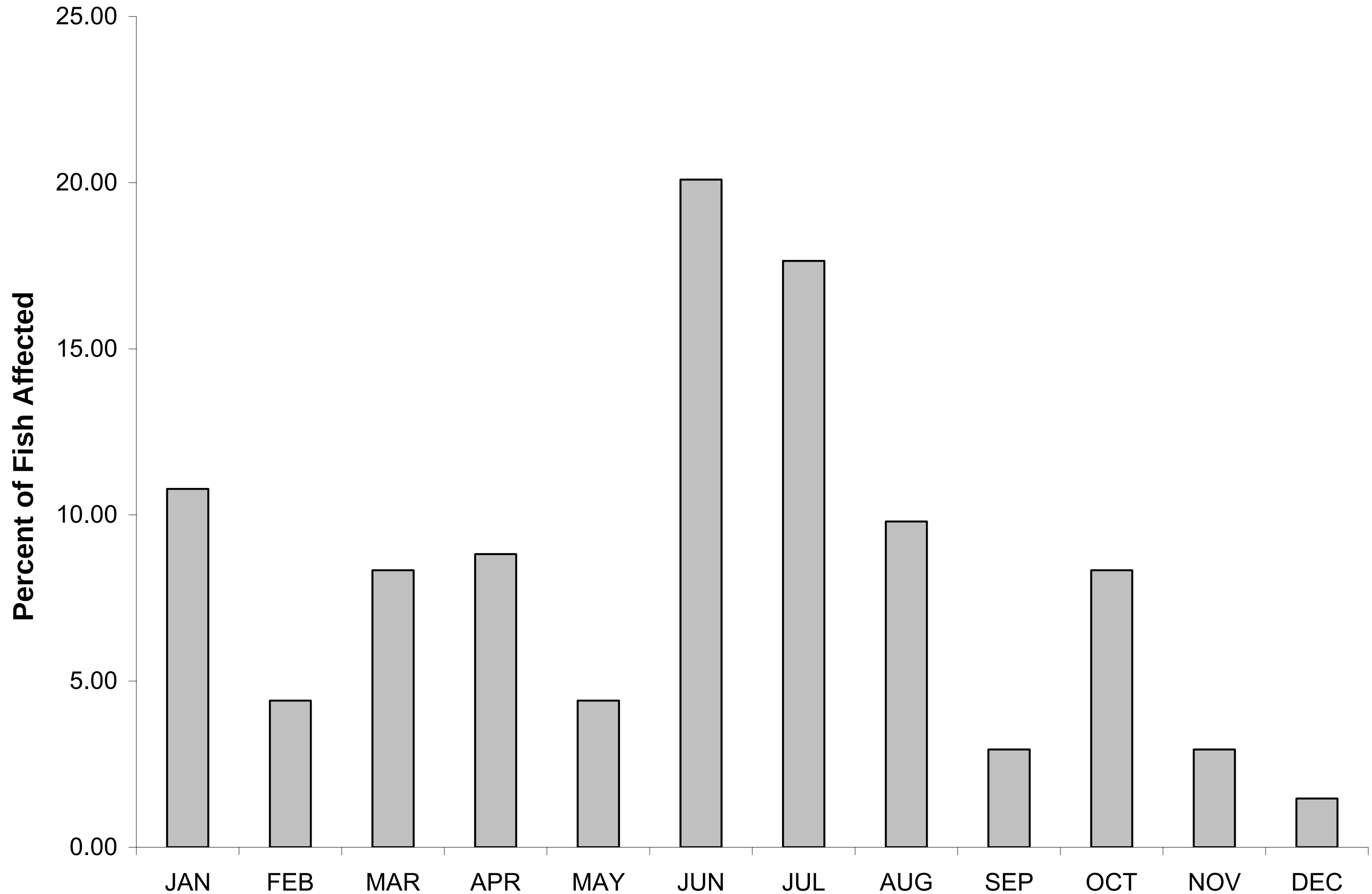

Figure FH05-01. Monthly percentage of fish and selected macro-invertebrates with gross external abnormalities for all estuaries combined in 2005.

Table FH05-01. Incidence of external abnormalities in fish and selected invertebrates collected during stratified-random sampling at each FIM field lab during 2005. 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	51,986	25	0.05
Cedar key	30,083	8	0.03
Charlotte Harbor	36,711	92	0.25
N. Indian River Lagoon	42,116	17	0.04
Northeast Florida	18,413	20	0.11
Tampa Bay	36,096	31	0.09
S. Indian River Lagoon	12,406	12	0.10
Totals	**227,811**	**204**	**0.09**

Table FH05-02. Top 10 taxa having gross external abnormalities collected from all estuaries sampled by the Fisheries-Independent Monitoring program during stratified-random sampling, 2005. 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								Percent Affected
			P	B	F	U	E	S	T	O	
Callinectes sapidus	2,650	92	89	.	2	.	.	.	.	1	8.99
Mugil cephalus	9,076	19	3	7	.	6	1	.	.	2	1.24
Lepisosteus osseus	49	10	10	.	.	.	.	.	.	.	20.41
Ictalurus punctatus	408	9	2	.	2	1	.	.	.	4	11.82
Ariopsis felis	4,406	7	1	1	.	1	.	.	.	4	0.65
Lagodon rhomboides	29,950	6	3	1	.	2	.	.	.	.	0.05
Leiostomus xanthurus	5,385	6	1	1	.	2	1	1	.	.	0.11
Chilomycterus schoepfii	1,128	5	.	2	.	1	.	.	.	2	1.93
Mugil curema	6,054	5	.	.	.	3	.	.	1	1	0.28
Brevoortia spp.	745	3	1	1	.	2	.	.	.	.	1.27
All others	154,705	42	4	3	4	12	4	4	4	7	0.03
Totals (all fish)	**227,811**	**204**	**114**	**16**	**8**	**30**	**6**	**5**	**5**	**21**	**0.09**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-03. Alphabetical list of taxa having gross external abnormalities collected in Apalachicola Bay during stratified-random sampling, 2005. 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	Percent Affected
Ariopsis felis	924	1	1	.	.	.	.	.	.	.	0.11
Bairdiella chrysoura	1,595	1	1	.	.	.	.	.	.	.	0.06
Caranx hippos	53	1	.	.	.	.	.	.	.	1	1.89
Cynoscion nebulosus	225	1	.	1	.	.	.	.	.	.	0.44
Etropus crossotus	117	1	.	.	.	1	.	.	.	.	0.85
Ictalurus punctatus	140	4	.	.	.	.	.	.	.	4	2.86
Lagodon rhomboides	7,056	1	1	.	.	.	.	.	.	.	0.01
Leiostomus xanthurus	5,385	6	1	1	.	2	1	1	.	.	0.11
Lepomis microlophus	131	1	.	.	.	.	1	.	.	.	0.76
Micropterus salmoides	66	1	.	.	.	1	.	.	.	.	1.52
Mugil cephalus	1,477	6	2	1	.	.	1	.	.	2	0.41
Notemigonus crysoleucas	22	1	.	.	.	.	1	.	.	.	4.55
Totals (all fish)	**51,986**	**25**	**6**	**3**	**.**	**4**	**4**	**1**	**.**	**7**	**0.05**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-04. Alphabetical list of taxa having gross external abnormalities collected in Cedar Key during stratified-random sampling, 2005. 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	Percent Affected
Ameiurus catus	125	1	.	.	1	.	.	.	.	.	0.80
Archosargus probatocephalus	103	1	.	.	.	1	.	.	.	.	0.97
Brevoortia spp.	126	1	.	.	.	1	.	.	.	.	0.79
Dorosoma petenense	339	1	.	.	1	.	.	.	.	.	0.29
Ictalurus punctatus	47	4	1	.	2	1	.	.	.	.	8.51
Totals (all fish)	**30,083**	**8**	**1**	**.**	**4**	**3**	**.**	**.**	**.**	**.**	**0.03**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-05. Alphabetical list of taxa having gross external abnormalities collected in Charlotte Harbor during stratified-random sampling, 2005. 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	Percent Affected
Bairdiella chrysoura	875	1	.	.	.	1	.	.	.	.	0.11
Callinectes sapidus	1,032	87	85	.	2	.	.	.	.	.	8.43
Centropomus undecimalis	898	1	.	.	.	.	.	1	.	.	0.11
Chilomycterus schoepfii	681	1	.	1	.	.	.	.	.	.	0.15
Epinephelus itajara	8	1	.	.	.	.	.	.	1	.	12.50
Oreochromis aureus	4	1	.	.	.	1	.	.	.	.	25.00
Totals (all fish)	**36,711**	**92**	**85**	**1**	**2**	**2**	**.**	**1**	**1**	**.**	**0.25**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-06. Alphabetical list of taxa having gross external abnormalities collected in the northern Indian River Lagoon during stratified-random sampling, 2005. 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	Percent Affected
Ariopsis felis	1,995	3	.	.	.	.	.	.	.	3	0.15
Callinectes sapidus	619	1	.	.	.	.	.	.	.	1	0.16
Chilomycterus schoepfii	225	3	.	1	.	1	.	.	.	1	1.33
Lagodon rhomboides	9,786	2	.	1	.	1	.	.	.	.	0.02
Mugil cephalus	3,229	2	.	2	.	.	.	.	.	.	0.06
Mugil curema	4,823	2	.	.	.	1	.	.	1	.	0.04
Sciaenops ocellatus	445	1	.	.	.	1	.	.	.	.	0.22
Sphoeroides testudineus	203	1	.	.	.	.	.	.	.	1	0.49
Strongylura notata	456	1	.	.	.	.	.	.	1	.	0.22
Trinectes maculatus	2	1	.	.	.	.	1	.	.	.	50.00
Totals (all fish)	**42,116**	**17**	**.**	**4**	**.**	**4**	**1**	**.**	**2**	**6**	**0.04**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-07. Alphabetical list of taxa having gross external abnormalities collected in northeast Florida during stratified-random sampling, 2005. 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	Percent Affected
Brevoortia spp.	619	2[a]	1	1	.	1	.	.	.	.	0.32
Elops saurus	279	3	.	.	.	.	.	.	.	3	1.08
Ictalurus punctatus	221	1	1	.	.	.	.	.	.	.	0.45
Lepomis macrochirus	314	2	.	.	.	2	.	.	.	.	0.64
Micropterus salmoides	141	2	.	.	.	2	.	.	.	.	1.42
Mugil cephalus	2,194	5	.	.	.	5	.	.	.	.	0.23
Paralichthys lethostigma	213	2	.	.	.	1	.	.	.	1	0.94
Pogonias cromis	68	1	.	.	.	1	.	.	.	.	1.47
Trachinotus carolinus	1	1	.	.	.	.	.	.	1	.	100.00
Totals (all fish)	**18,413**	**19**	**2**	**1**	**.**	**12**	**.**	**.**	**1**	**4**	**0.10**

* 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 or cyst; O = other. Bold species are Selected Taxa.

[a] Number affected does not equal number of health codes because one Brevoortia spp. was diagnosed with bloody and ulcerated areas.

Table FH05-08. Alphabetical list of taxa having gross external abnormalities collected in Tampa Bay during stratified-random sampling, 2005. 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	Percent Affected
Ariopsis felis	912	2	.	.	.	1	.	.	.	1	0.22
Callinectes sapidus	999	4	4	.	.	.	.	.	.	.	0.40
Centropomus undecimalis	1,221	2	1	.	.	.	.	1	.	.	0.16
Chaetodipterus faber	281	1	.	1	.	.	.	.	.	.	0.36
Chilomycterus schoepfii	222	1	.	.	.	.	.	.	.	1	0.45
Cynoscion nebulosus	108	1	.	.	1	.	.	.	.	.	0.93
Eucinostomus gula	2,125	1	.	.	.	.	1	.	.	.	0.05
Lagodon rhomboides	13,108	3	2	.	.	1	.	.	.	.	0.02
Lepisosteus osseus	49	10	10	.	.	.	.	.	.	.	20.41
Menticirrhus americanus	276	1	1	.	.	.	.	.	.	.	0.36
Mugil cephalus	1,043	1	1	.	.	.	.	.	.	.	0.10
Sarotherodon melanotheron	29	1	.	.	1	.	.	.	.	.	3.45
Sciaenops ocellatus	344	1	1	.	.	.	.	.	.	.	0.29
Strongylura notata	1,010	2	.	.	.	.	.	2	.	.	0.20
Totals (all fish)	**36,096**	**31**	**20**	**1**	**2**	**2**	**1**	**3**	**.**	**2**	**0.09**

* 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 or cyst; O = other. Bold species are Selected Taxa.

Table FH05-09. Alphabetical list of taxa having gross external abnormalities collected in southern Indian River Lagoon during stratified-random sampling, 2005. 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	Percent Affected
Archosargus probatocephalus	818	1	.	1	.	.	.	.	.	.	0.12
Ariopsis felis	575	1	.	1	.	.	.	.	.	.	0.17
Caranx hippos	94	1	.	.	.	.	.	.	1	.	1.06
Elops saurus	266	1	.	.	.	.	.	.	.	1	0.38
Mugil cephalus	1,133	5	.	4	.	1	.	.	.	.	0.44
Mugil curema	1,231	3	.	.	.	2	.	.	.	1	0.24
Totals (all fish)	**12,406**	**12**	**.**	**6**	**.**	**3**	**.**	**.**	**1**	**2**	**0.10**

* 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 or cyst; O = other. Bold species are Selected Taxa.

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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-recruiting or young-of-the-year (YOY) fish and may be used to describe recruitment processes and forecast population trends. When combined with data on adult fish, a comprehensive picture of the relative condition of a fish population can be constructed. This section provides profiles of species that are routinely collected in FIM program sampling and are of recreational or commercial importance in Florida (i.e., 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 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 typically omitted from the YOY analyses because they were considered to be sub-adult or adult. Such fish were analyzed separately from YOY's for select species.

The YOY IOAs represented annual recruitment and were computed using an Analysis of Covariance (ANCOVA) (Sokal and Rohlf 1981; Hilborn and Walters 1992) to reduce spatial and temporal variability between sets. Location, time, and environmental variables were treated as either classification variables (zone, year, month, gear, deployment technique, sediment type, and presence / absence of bottom vegetation) or covariates (water temperature, salinity, and percent cover of bottom vegetation) in the

ANCOVA analyses. The GLM procedure (SAS Institute Inc. 1989) was used to complete all ANCOVA analyses. In order to normalize the data, water temperature, salinity, percent bottom vegetation, and number of animals per haul were natural log transformed [ln (X+1)] prior to analysis. With the exception of year, all variables that were not significant ($P>0.05$) were dropped and the analysis was repeated. With the ANCOVA analyses, least squares adjusted means and standard errors were calculated for each year.

Relative abundance was calculated as the median annual number of fish per haul. 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-1). The process was repeated 500 times for each year to create a sampling distribution of back-transformed means. Summary statistics (10, 25, 75, and 90 percentiles) were then calculated (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 both 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). The most recent status of Florida's red drum populations is uncertain as fishing mortality estimates have steadily increased since the early 1990s, and model predictions for age-specific indices have spanned the 30% escapement threshold prescribed by current management (Murphy 2002).

In Florida, adult red drum spawn from mid-August through late November (Yokel 1966). Spawning occurs primarily near bay mouths or inlets and 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). Data collected by the Fisheries-Independent Monitoring (FIM) program indicated that settlement of juvenile red drum less than 33 mm standard length (SL) typically occurred in the middle or upper reaches of the estuary away from ocean inlets or passes, and was strongly influenced by the availability of low to moderate salinity habitats (FDEP-FMRI 1996). 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 slot limit (457-686 mm total length [TL]) includes primarily age-1 and age-2 fish. Red drum greater than 700 mm SL are uncommon in FIM samples from west Florida estuaries, but are occasionally collected on the east coast in the northern Indian River Lagoon (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 indices of juvenile red drum recruitment for selected Florida estuaries. Abundance data for juvenile red drum that were less than or equal to 40 mm SL and that were 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, Cedar Key, Apalachicola Bay, and northeast Florida. These juvenile red drum recruited to habitats sampled with our 21.3-m seines in these estuaries primarily from September – December, although some recruitment continued into January in Charlotte Harbor, Cedar Key, and northeast Florida and into February in Tampa Bay and the northern Indian River Lagoon. These months were used to define the respective recruitment seasons for each estuary in subsequent analyses. Indices of abundance (IOAs) for juvenile red drum were not calculated for the southern Indian River Lagoon where 21.3-m seines are not included as a sampling gear. The FIM program also monitors the abundance of large juvenile and subadult red drum 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 that fall within the legal 18-27 inch total length slot limit for the fishery (457-686 mm TL; 374-565 mm SL from Murphy and Taylor [1990]). These annual indices were derived by including all legal size red drum collected between January and December from 1996 – 2005.

On Florida's southwest coast, trends in the relative abundances of juvenile red drum were very similar between Tampa Bay and Charlotte Harbor (Figure SP05-01A). Between 1989 and 2005, relative abundance estimates generally exhibited only small fluctuations, although there were pronounced increases in both of these systems in 1995 and 2002 and relatively large declines in 1996 and 2005. The fact that similar patterns have been observed over the past 15 years in these disjunct estuarine systems suggests that red drum recruitment along this section of Florida's Gulf of Mexico coast may be influenced by factors which operate over regional scales. Estimates of relative abundance for legal-size fish in Tampa Bay and Charlotte Harbor also followed similar patterns to each other, with each system exhibiting increased abundances in 1998, 2003, and 2005.

On Florida's northwest coast, the relative abundance of juvenile red drum in Apalachicola Bay, peaked in 1998 and 2002, but varied little between 1999 and 2005 (Figure SP05-01B). In Cedar Key, juvenile abundances peaked in 1997, declined in 1998, and fluctuated at lower levels through 2005. The abundances of legal-size red drum in Apalachicola Bay have remained relatively consistent since 1998, with a temporary increase during 2003. The abundances of legal-size red drum at Cedar Key were relatively high from 1998 – 2001, but have since displayed a trend towards decline through 2005.

In northeast Florida estuaries (lower St. Johns, lower Nassau, and lower St. Marys rivers), relative abundance estimates for juvenile red drum remained fairly steady between 2001 and 2003, but have decreased sharply each year through 2005. The relative abundances of legal-size red drum reached a peak in 2004, but declined slightly in 2005 (Figure SP05-01C).

In the northern Indian River Lagoon (IRL) on Florida's east coast, estimates for juvenile red drum abundance remained relatively stable between 1990 and 1997 (Figure SP05-01C). In 1998, the sampling area was expanded to include some of the more productive juvenile red drum nursery habitats located in the vicinity of the St. Sebastian River. Since that time, recruitment of juvenile red drum increased steadily through 2003, followed by a very strong year class in 2004, and a sharp decline in 2005. Estimates of abundance for legal-size red drum in the northern IRL have fluctuated without trend since 1997. Peak abundances were observed in 2000 followed by a period of general decline through 2004. In the southern IRL, legal-size red drum abundances exhibited cyclic peaks that occurred at three-year intervals (1997, 2000, and 2003). However, since 1997, there has been a slow trend towards decline of legal-size red drum in this portion of the IRL.

There is not a clear relationship between the recruitment levels of juvenile red drum and future abundances of legal-size red drum. Correlation tests comparing juvenile abundances with legal-size red drum abundances observed during the following year were not statistically significant for any of the estuarine systems examined (Spearman rank correlation, α =0.05), and this may be partially due to the presence of multiple age-classes (age-1 and age-2) within the legal slot limit. However, in some instances, large increases in juvenile abundances were followed by peaks in legal size fish during the following year (e.g., Tampa Bay and Charlotte Harbor, 2002; Apalachicola, 2002; Cedar Key, 1997; and northern IRL, 2004). Also, declines in juvenile abundance were followed by declines in the legal-size fish for some years in Charlotte Harbor (1998 and 2003) and Apalachicola Bay (2003). While a strict relationship was not consistent or apparent in all bay systems, these data do suggest there is potential with more refined analyses to answer questions about future year class strength of legal-sized fish based on the relative recruitment abundances of juvenile red drum.

In Tampa Bay, the natural recruitment of red drum juveniles is supplemented with the release of hatchery-reared juveniles as part of Project Tampa Bay – a program designed to develop methodologies and assess the effectiveness of stock enhancement efforts. The plan was implemented in March 2000 and continued through December 2004 with the stocking of various sized hatchery-reared red drum into low-salinity tributaries of Tampa Bay. Since 2000, over 4.2 million fish tagged with genetic markers and/or coded wire tags have been released into the Alafia River and Little Manatee River – two important juvenile red drum recruitment habitats in the Tampa Bay estuarine system (Peters and McMichael 1987). The Alafia River received 1,638,749 hatchery-reared red drum representing three size treatments: phase-1 (~35 mm SL) with 1,340,098 released, phase-2 (~75 mm SL) with 218,825 released, and phase-3 (~ 150 mm SL) with 79,826 released. All red drum released into the Alafia River were released along suitable shoreline habitats (i.e. mangroves, marsh grass) and in synchronous (in-sync) timing with their natural recruitment sizes (i.e. phase-1 in fall; phase-2 in spring; and phase-3 in summer). The Little Manatee River was the site of an experiment testing the effect of releasing hatchery-reared red drum out-of-sync with the wild red drum population. Four in-sync (August – October 2000, 2001, 2002, and 2003) and two out-of-sync (May – June 2002 and 2003) releases were conducted with a total of 2,529,021 hatchery-reared red drum released. All red drum released into the Little Manatee River were also released along suitable shoreline habitats.

The FIM program monitors the recruitment of hatchery-released fish in these tributaries of Tampa Bay by using a variety of gear methods deployed in a stratified-random sampling design, including directed monitoring of hatchery-reared red drum in the Alafia River. All red drum collected since 2000 in Tampa Bay fisheries-independent and fisheries-dependent sampling programs have been classified based on their origin (wild or hatchery). Fish origins were determined by the presence of coded-wire tags, genetic analysis, or exclusionary assumptions related to the data (e.g. all young-of-the-year [YOY] red drum collected prior to the first hatchery release in 2000 were assigned a “wild” origin, etc.). To date, all red drum identified to be of hatchery origin were collected from the Alafia River with 21.3-m and 61-m seines. Therefore, YOY red drum (less than 150 mm SL) from the Alafia River that were collected as part of stratified-random, hatchery-release, or river monitoring projects between 2000 and 2005 were analyzed to assess the relative contribution of wild and hatchery red drum to Tampa Bay red drum recruitment. Length-frequency distributions determined that the recruitment window for red drum up to 150 mm SL extended from October through May of the following year (i.e. October 2003 through May 2004). The GLM methods used to calculate adjusted means and generate the annual indices of abundance described earlier in this section were not suitable for comparing wild vs. hatchery vs. total red drum in the Tampa Bay estuary. Therefore, arithmetic means (number of fish per set) were used to estimate abundance in the comparisons of wild and hatchery-reared fish.

In the Alafia River, the total abundance of juvenile red drum collected in 21.3-m seines increased from a mean of 1.6 fish per set in 2000 to 35.1 fish per set in 2004 (Figure SP05-02A). This increase coincides with both the release of hatchery-reared fish as well as an increase in wild fish recruitment during that same time period. The trend in annual abundance for hatchery red drum (mean number of fish per set) closely followed the trend for total hatchery release abundances, which demonstrates the effective capability of the 21.3-m seine for tracking juvenile red drum in the months following release events in these habitats. In the 61-m seines, the total abundance of juvenile red drum also increased from 2000 (2.3 fish per set) to 2002 (~15.2 fish per set), and remained at this elevated abundance level through 2005 (Figure SP05-02B). The abundances of both wild and hatchery juvenile red drum in 61-m seines increased steadily between 2000 and 2003, and the strong 2004 year class of wild fish that was observed in the 21.3-m seines was also seen in the 61-m seine collections. In contrast, hatchery fish were entirely absent from 61-m seines in 2004. Although the 2004 data does not contain the entire recruitment period which extends to May 2005, the fact that wild fish were collected with the 61-m seine in 2004 indicates the population was susceptible to capture with the gear, and suggests that hatchery fish were not available in the system at that time. An explanation for the absence of hatchery-reared fish is differential size and growth during the period observed (October – December 2004). Wild fish recruiting in August and September would likely grow enough in subsequent months to be large enough for capture with the 61-m seine in November and December. However, hatchery-reared red drum were not released until late November and early December, making these fish too small for capture with this net. These hatchery-reared fish would not grow into this gear until the spring of 2005.

In a separate examination, the abundances of all juvenile red drum (wild and hatchery origin) collected throughout Tampa Bay in 21.3-m seines followed the pattern seen previously in GLM indices for YOY individuals less than 0 – 40 mm SL, with peaks occurring in 1991, 1995, and 2002 (Figure SP05-03). Between 2000 and 2004, hatchery fish were less abundant than wild fish; however, both populations followed the same trend, increasing through 2003 and declining sharply into 2005. The number of hatchery fish released each year was independent of wild population levels, so this apparent relationship between wild and hatchery fish abundances may be coincidental.

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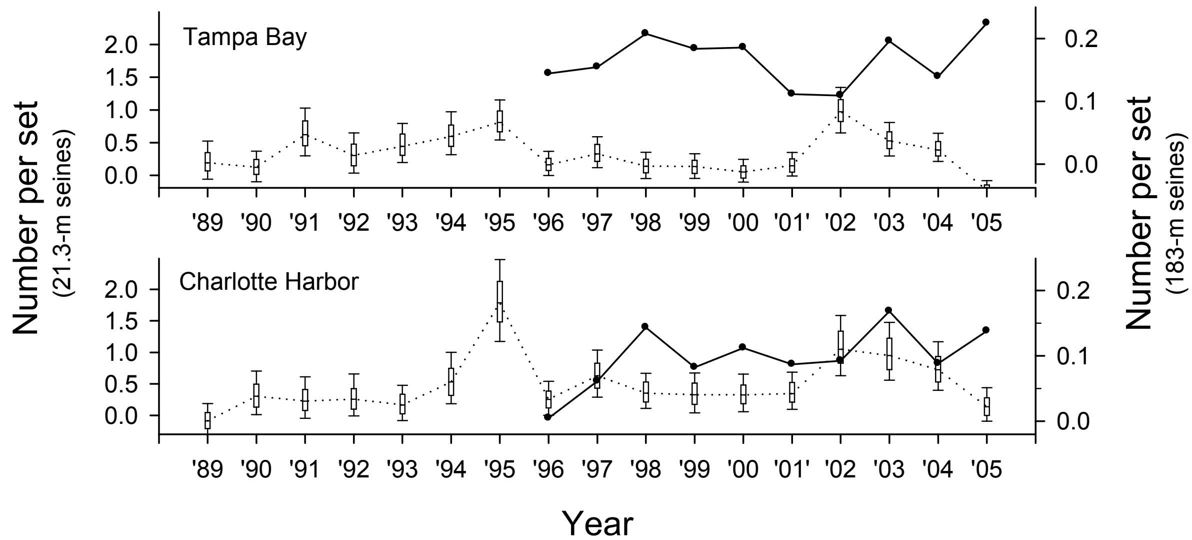
A) Southwest Coast (Gulf of Mexico)



B) Northwest Coast (Gulf of Mexico)

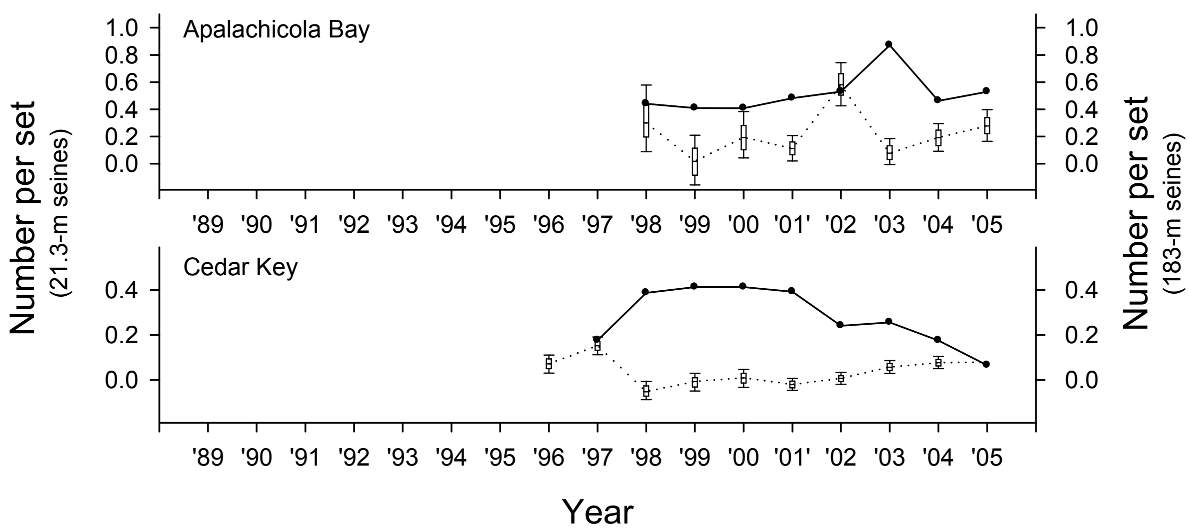


Figure SP05-01. Relative abundance of juvenile red drum (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2005 (dotted line) and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1997 and 2005 (solid line) during stratified-random sampling from six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the 25^{th} – 75^{th} percentiles, the vertical line extends from the 10^{th} – 90^{th} percentiles, and the horizontal line within each box indicates the median estimate. The broken line between 1997 and 1998 for Indian River Lagoon represents a change in the 21.3-m seine sampling universe in this estuary. Note different scales in some cases for estimates from 21.3-m and 183-m seines. (The 21.3-m seine was not utilized in the southern Indian River Lagoon).

C) East Coast (Atlantic Ocean)

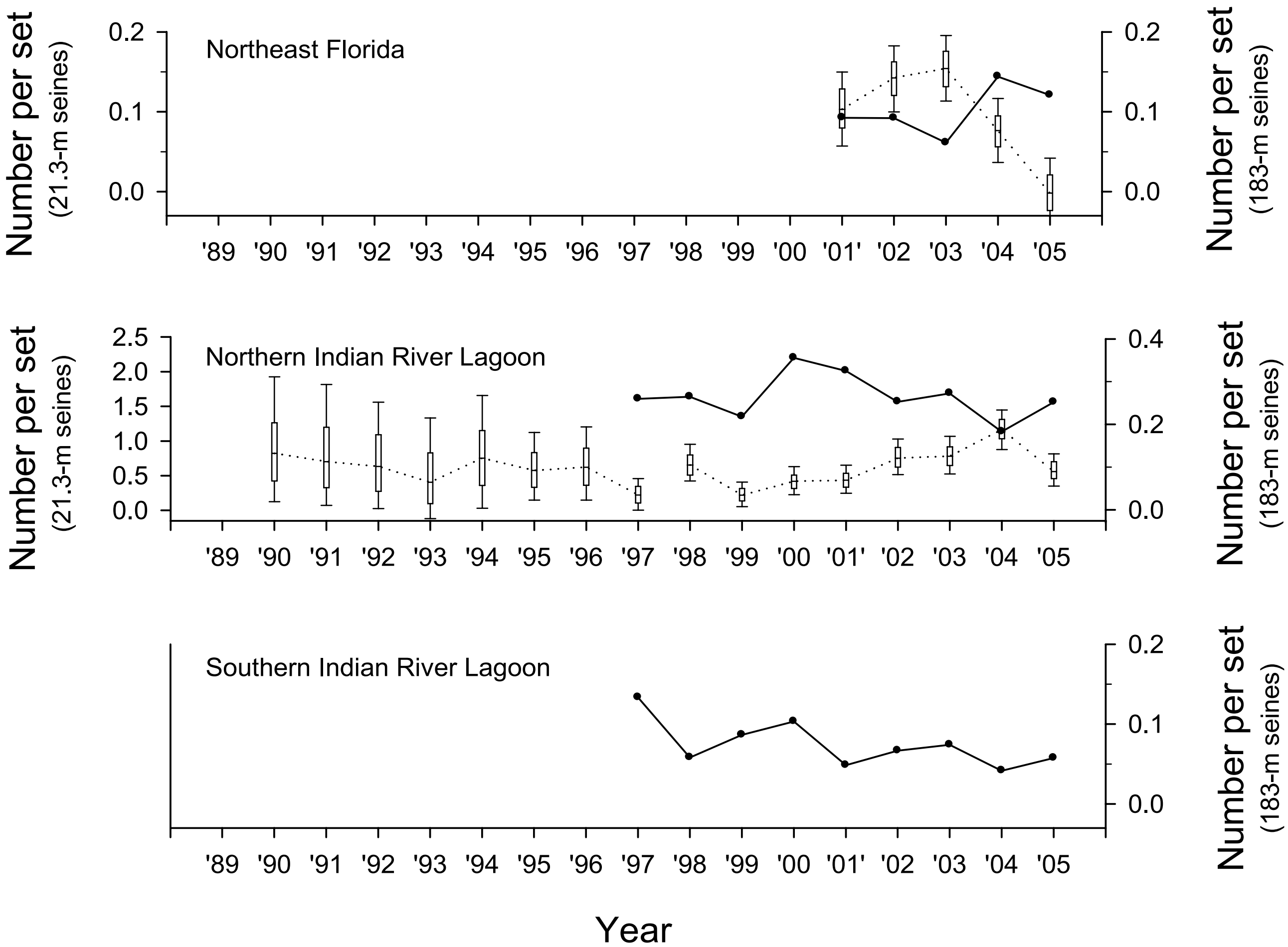


Figure SP05-01. (continued) Relative abundance of juvenile red drum (≤ 40 mm SL) collected in 21.3-m seines between 1989 and 2005 (dotted line) and of legal-size red drum (374-565 mm SL) collected in 183-m haul seines between 1997 and 2005 (solid line) during stratified-random sampling from six Florida estuarine systems located on Florida's **(A)** Southwest Coast, **(B)** Northwest Coast, and **(C)** East Coast. Box Plots represent the 25^{th} – 75^{th} percentiles, the vertical line extends from the 10^{th} – 90^{th} percentiles, and the horizontal line within each box indicates the median estimate. The broken line between 1997 and 1998 for Indian River Lagoon represents a change in the 21.3-m seine sampling universe in this estuary. Note different scales in some cases for estimates from 21.3-m and 183-m seines. (The 21.3-m seine was not utilized in the southern Indian River Lagoon).

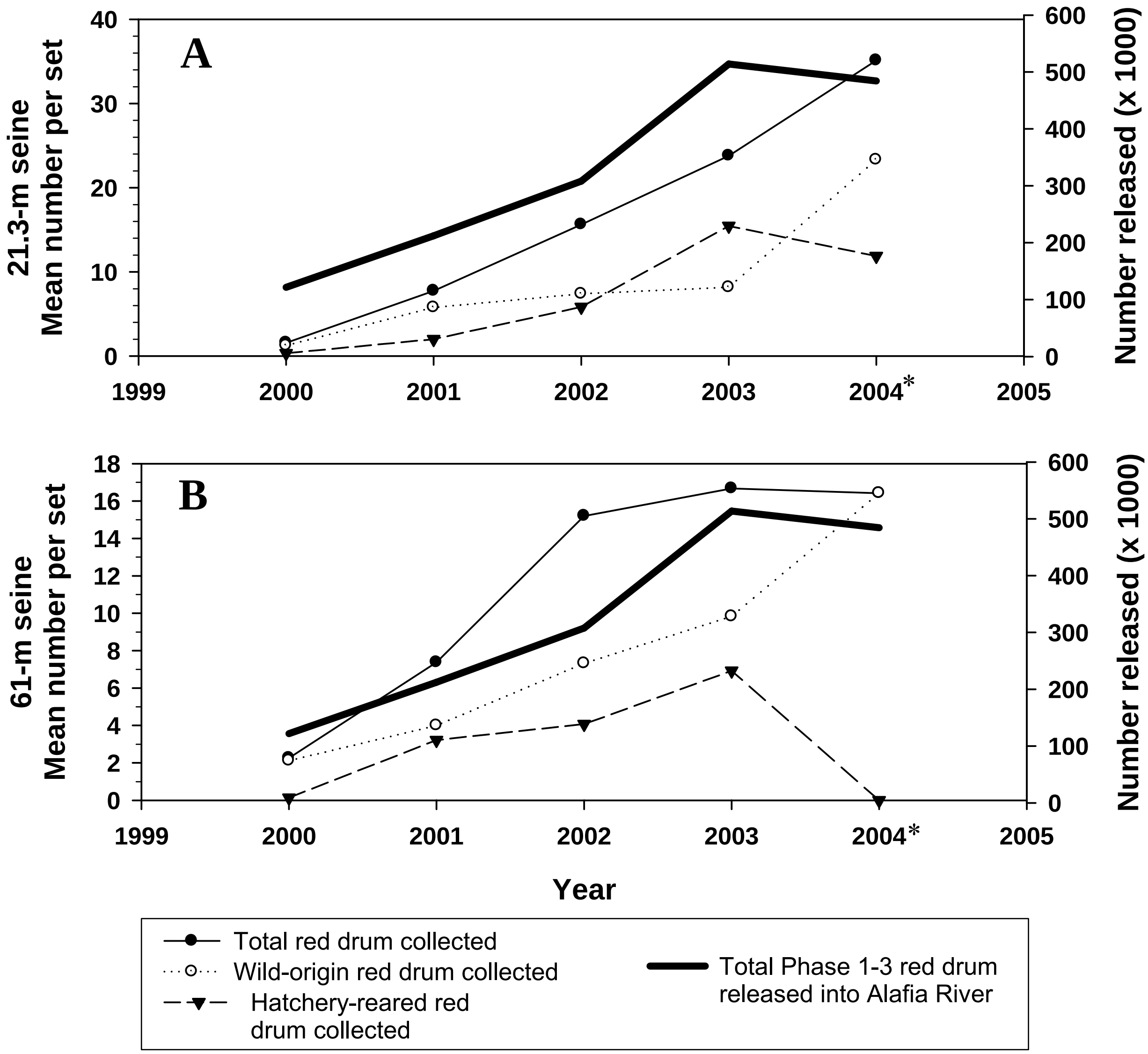


Figure SP05-02. Relative contributions of wild-origin and hatchery-origin red drum collected from the Alafia River in Tampa Bay. Graphs represent the annual abundances of juvenile red drum (≤ 150 mm SL) collected in 21.3-m seines (Figure A) and 61-m seines (Figure B) from 2000 – 2004. The thick solid line represents the total number of hatchery red drum released into the Alafia River each year. * Incomplete year, 2005 data not available – see text.

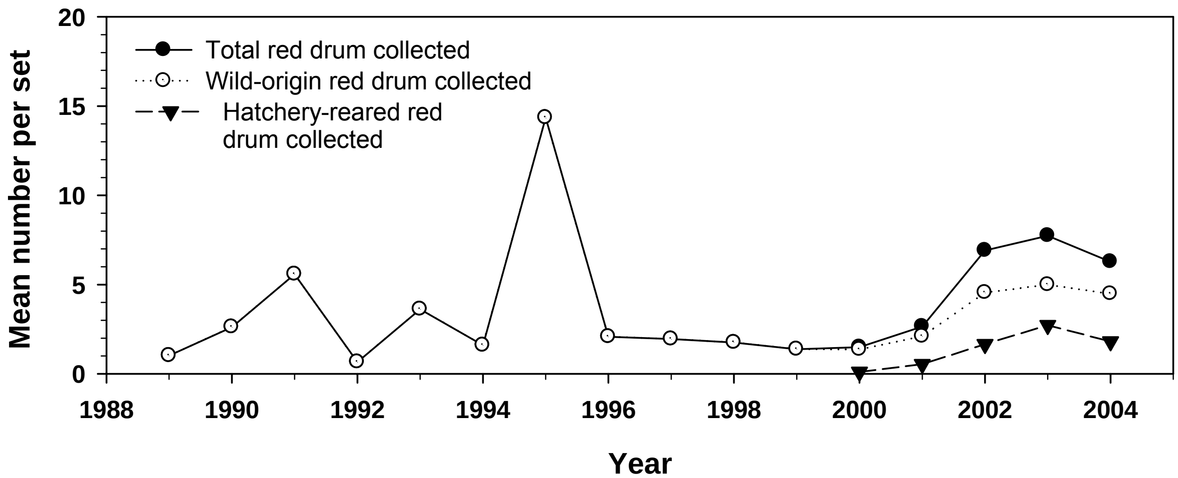


Figure SP05-03. Abundances of wild-origin, hatchery-reared, and total juvenile red drum (≤ 150 mm SL) collected in 21.3-m seines from 1989 – 2004 during stratified-random, seasonal, hatchery, and river sampling throughout Tampa Bay. Hatchery fish were first released into Tampa Bay during 2000.

Spotted Seatrout, *Cynoscion nebulosus*

Spotted seatrout, *Cynoscion nebulosus*, occur in temperate to tropical estuarine waters on the Atlantic and Gulf of Mexico (Gulf) coasts of the United States (Bortone 2002). In Florida, spotted seatrout have historically supported economically important recreational and commercial fisheries. Since the mid-1990's 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 (>95% by weight) recreational fishery (Murphy et al. 2003). Average commercial landings from 1996 – 2002 were only 7.5% of those from 1990 – 1994, and only 4.5% of those from 1986 – 1989. In 2002 only 266 commercial fishers reported landings of *C. nebulosus*, compared to 2,151 in 1994 (Murphy 2003). Recreational landings (by weight) have fluctuated since the inception of the 1995 fishing regulations. Total landings had increased steadily since 1996 to a peak catch of 2.95 million pounds in 2000, before falling to 2.32 million pounds in 2001. Total recreational catch per trip has declined throughout the state since at least 1999 (1997 in some regions; Murphy 2003).

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 estuarine areas (i.e., northern Indian River Lagoon: Tabb 1961, Crabtree and Adams 1998; Cedar Key: Moody 1950; and Apalachicola Bay: Devries et al. 2002). 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 saline estuarine areas with water temperature >21°C (Tabb 1966; Helser et al. 1993). Estuarine water temperatures below 20°C reduce hatching success for spotted seatrout (Gray et al. 1991). Recruitment of juveniles into estuarine areas is evident from April – October in Tampa Bay and Charlotte Harbor, and later at higher latitudes, lasting from May through November in the northern Indian River Lagoon and Cedar Key. In the Apalachicola Bay region, young-of-the-year (YOY) spotted seatrout recruitment does not begin until June and continues through October (Devries et al. 1997).

The Fish and Wildlife Research Institute's Fisheries-Independent Monitoring (FIM) program's data were used to generate indices of relative abundance (IOA) for YOY and adult spotted seatrout in selected Florida estuaries. These data allow monitoring of relative year-class strength, improve the ability to predict future adult spotted seatrout abundances, and correlate juvenile abundances with subsequent abundance of adult spotted seatrout. Data from stratified-random 21.3-m seine sampling were used to assess the recruitment of juvenile spotted seatrout ($\leq$100 mm standard length [SL]) from Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, and Apalachicola Bay. The "recruitment windows" used to examine YOY spotted seatrout occurrence or movement into an estuarine area varied depending upon latitude (April – October in Tampa Bay and Charlotte Harbor; May – November in the northern Indian River Lagoon and Cedar Key; and June – October in Apalachicola Bay). These time periods coincided with other known recruitment windows for YOY spotted seatrout (Moody 1950; Nelson and Leffler 2001; FWC-FWRI unpublished data).

Overall, annual YOY relative abundance estimates from all estuarine systems showed no clear trends over the past 5 years (Figure SP05-04). There was a slight increase in Tampa Bay from 2002 – 2004 (~0.92 fish per set), followed by a decline in 2005 (~0.38 fish per set). A minor peak in YOY relative abundance of spotted seatrout in Cedar Key was apparent in 1998 (~0.69 fish per set), followed by a decrease to 0.24 – 0.43 fish per set from 1999 – 2005. Inter-annual fluctuations of YOY relative abundance in all Florida estuarine systems have been unpredictable since monitoring began in each of these areas. Young-of-the-year spotted seatrout abundance was consistently lower in the two most northerly systems (Apalachicola Bay and Cedar Key) compared with other systems (Tampa Bay, Charlotte Harbor, and the northern Indian River Lagoon).

Monthly stratified-random sampling (SRS) with 183-m haul seines (< 2.5-m water depths) was established in estuarine sampling areas by the FIM program beginning in 1996 and 1997. The haul seine was deployed along shallow-water shoreline areas within a wide variety of habitat types. Data collected from 183-m haul seines (January –

December) were used to assess the relative abundance of the larger spotted seatrout (>100 mm SL) from Apalachicola Bay, Cedar Key, Tampa Bay, Charlotte Harbor, and the northern Indian River Lagoon (Figure SP05-04). Collections from the southern Indian River Lagoon were not analyzed due to very low numbers of spotted seatrout and the lack of 21.3-m seine sampling for YOY comparisons. Collections from northeast Florida were not analyzed due to lack of a long-term dataset (sampling began in 2001).

In all sampling areas except Cedar Key, fewer large spotted seatrout were caught per 183-m seine set than YOY individuals per 21.3-m seine set. In Cedar Key, an unusually strong peak was observed in 1998 (0.79 fish per set), with levels beginning to decline and stabilize (0.02 to 0.48 fish per set) during subsequent years. The upward trend in adult abundance observed in the northern Indian River Lagoon since 2002 peaked in 2004 (0.48 fish per set) and returned to lower levels in 2005 (0.24 fish per set; Figure SP05-04). There was a decline in relative abundance estimates for larger spotted seatrout from 2004 to 2005 in Charlotte Harbor, northern Indian River Lagoon, and Tampa Bay. Preliminary analyses suggest few clear correlations exist between large and YOY spotted seatrout relative abundances in Florida estuaries; however, abundances of both large and YOY spotted seatrout followed similar trends in Tampa Bay during the past 4 years.

Length-frequency data collected with 183-m haul seines suggest that this gear provides valuable information on adult and larger sub-adult spotted seatrout (Figure SP05-05). Two main size groups of spotted seatrout were collected by 183-m haul seines in the Gulf coast estuaries of Apalachicola Bay, Cedar Key, Tampa Bay and Charlotte Harbor. The smaller size class primarily consisted of sub-adults below 200 to 250 mm SL. The larger size class primarily consisted of adults within the recreational harvest limits (15 – 20” TL or approx. 254.5 – 365.8 mm SL). The size distributions of spotted seatrout collected by 183-m haul seines in the Atlantic coast estuaries of northern Indian River Lagoon and northeast Florida were more unimodal. The majority of fish collected in these Atlantic coast estuarine systems ranged from approximately 100 to 400 mm SL. No linear trends in mean length of spotted seatrout collected by 183-m seines in Florida are apparent over recent years.

Knowledge and understanding of the abundance and size of adult spotted seatrout populations in Florida estuaries have increased since the inception of monthly stratified-random sampling in 1996 using the 183-m haul seines. Stronger management regulations in recent years have limited both recreational and commercial harvesting of spotted seatrout. These regulations should directly benefit the fishery; however, many other biological and environmental factors influence the health of the entire spotted seatrout population. The FIM program will continue to monitor spotted seatrout as well as many other species found in Florida estuarine waters.

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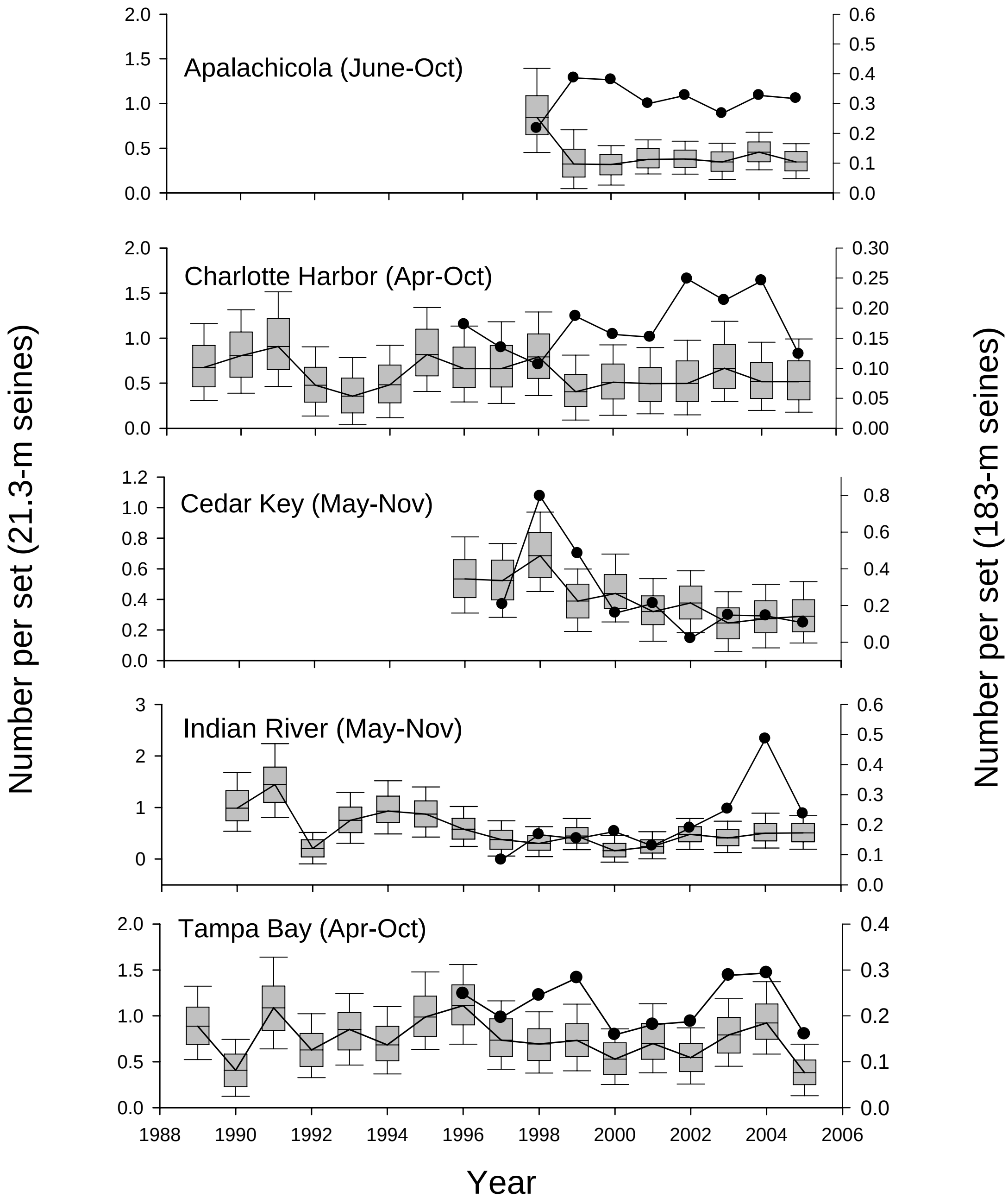

Figure SP05-04. Relative abundance of juvenile spotted seatrout (≤100 mm SL) collected during 1989 2005 using 21.3-m seines. The box represents the 25th and 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line indicates the median estimate. The line and scatter plot (•) represents median relative abundance of adult spotted seatrout (>100 mm SL) collected using 183-m haul seines. Note different scales.

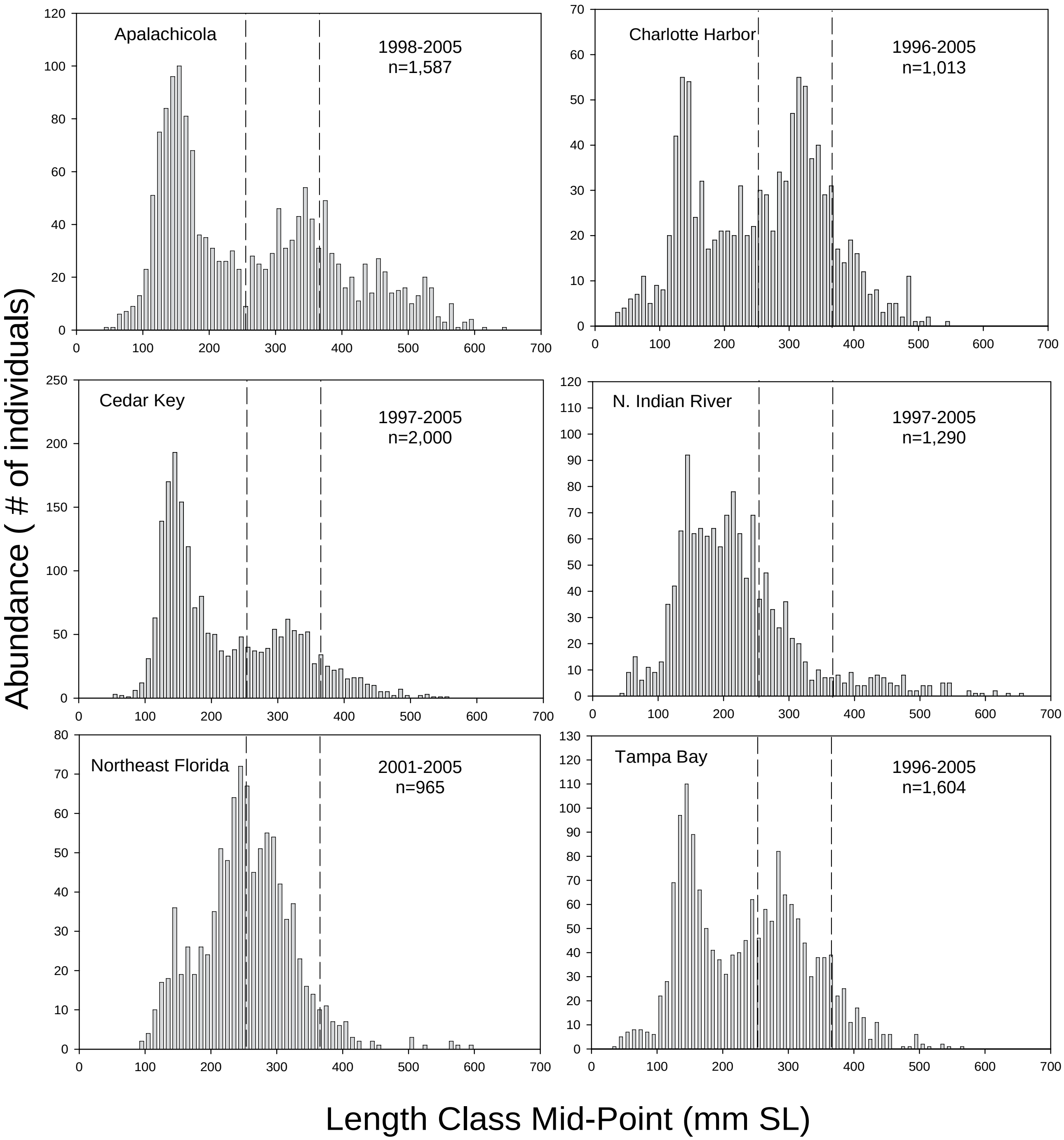

Figure SP05-05. Length frequency diagrams of spotted seatrout collected using 183-m haul seines ( ). Area between dashed lines (- - -) indicates permitted recreational harvest size range. All lengths are standard length (SL). Note different scales.

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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 harvesting almost 90% of the total pounds landed in recent years (Munyandorero et al. 2006). Sheepshead in Florida waters are currently regulated by size (12" fork length, 268-mm standard length) and bag (15 fish/day) limits. 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 ("fine tune") coast-specific catch-at-age models (Munyandorero et al. 2006). This stock assessment determined that for both the Atlantic and Gulf coasts, sheepshead stocks 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 at approximately 0.32-mm per day (McMichael 2000) and typically reach 40 mm standard length (SL) by June and 130 mm SL by April of the following year (age 1). 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). Based on Louisiana data, sheepshead reach sexual maturity at approximately two years of age (Render and Wilson 1992), which is sooner than they would typically recruit to the fishery in Florida waters.

Catch data from the FIM program's stratified-random sampling (SRS) surveys were examined to assess sheepshead relative abundances during four life history stages (early YOY, late YOY, pre-fishery, and fully recruited); gear types and months examined varied for each life history stage (Table SP05-01). In each estuary, sheepshead ≤ 40-mm SL represented early YOY (Figure SP05-06), while sheepshead between 50 and 95-mm SL represented late YOY (Figure SP05-07). Analyses were conducted separately for sheepshead that had not yet entered the fishery (131 – 267-mm SL) and for those that were fully recruited to the fishery (≥ 268-mm SL; Figure SP05-07). Annual estimates of relative abundance were not calculated for early or late YOY sheepshead in Apalachicola, Cedar Key or northeast Florida due to relatively small sample sizes (Figure SP05-06). Annual IOAs for early YOY sheepshead were not available for the southern Indian River because sampling with 21.3-m seines is not conducted in this area.

Estimates of abundance for early YOY sheepshead during the study period were highest in the northern Indian River (0.32 fish per set; 1998 – 2005) and lowest in Charlotte Harbor (0.06 fish per set; 1989 – 2005). In the northern Indian River, annual abundance estimates were variable from 1998 – 2005 with highest estimates occurring in 2000, 2004, and 2005 (Figure SP05-08). Patterns in annual abundance estimates for Tampa Bay and Charlotte Harbor were similar between 1989 and 1996, with periods of high abundance spaced three years apart (1991 and 1994). From 1996 – 2005, annual abundance estimates in Charlotte Harbor remained relatively constant with slight peaks in abundance occurring in 2001 and 2004. Between 1996 and 2001, the three-year pattern in annual abundance continued for Tampa Bay, with higher than average abundance in 1997 (0.29 fish per set) and 2000 (0.43 fish per set). Abundance estimates for Tampa Bay remained relatively constant from 2001 – 2005 (0.10 to 0.24 fish per set).

Late YOY sheepshead relative abundances differed between the Gulf and Atlantic coasts, but were similar within estuaries on the same coast (Figure SP05-08). Tampa Bay and Charlotte Harbor had fairly constant abundance estimates between 1996 and 2001. After 2001, each estuary had peaks in abundance during 2003 and 2005. On the Atlantic Coast, both the northern and southern Indian River had peaks in abundance during 2000 and 2004 with fairly similar abundance during other years. The higher abundance estimates for YOY sheepshead on the Atlantic Coast in 2000 and 2004 can also be seen for early YOY sheepshead in the northern Indian River.

Pre-fishery sheepshead were most abundant in the southern (1.23 fish per set) and northern (0.61 fish per set) Indian River and least abundant in Cedar Key (0.09 fish per set) during this study period. Patterns in annual abundance were estuary specific. Pre-fishery sheepshead in Apalachicola, Cedar Key, Tampa Bay, and northeast Florida have had relatively stable abundance estimates, while Charlotte Harbor has had a slight increasing trend in annual abundance estimates between 1996 and 2005 (Figure SP05-09). A period of higher than average abundance in the northern Indian River (2000 – 2002) was mirrored by a period of lower than average abundance in the southern Indian River.

As with the pre-fishery size class, annual abundance estimates for fully recruited sheepshead varied between estuaries. Slight increasing trends were demonstrated by Apalachicola and northeast Florida (Figure SP05-09), while Cedar Key has had a slight decreasing trend since 1997. Abundance estimates in Tampa Bay were higher from 2002 – 2005 than in previous years; however, no long-term trend could be discerned. Annual abundance estimates for fully-recruited sheepshead in the northern and southern Indian rivers fluctuated without trend from 1997 – 2005.

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Table SP05-01. Size ranges, gear types, and months examined when calculating annual indices of abundance for each life history stage of sheepshead. Italicized letter is used to designate life history stages in length-frequency figures.

Life History Stage	Size Range (mm SL)	Gear types	Months	
Early YOY	≤ 40	21.3-m seines (bay and river sets)	April - June	*a*
Late YOY	50 – 95	183-m haul seines	August - March	*b*
Pre-fishery	131 – 267	183-m haul seines	April - March	*c*
Fully Recruited	≥ 268	183-m haul seines	April - March	*d*

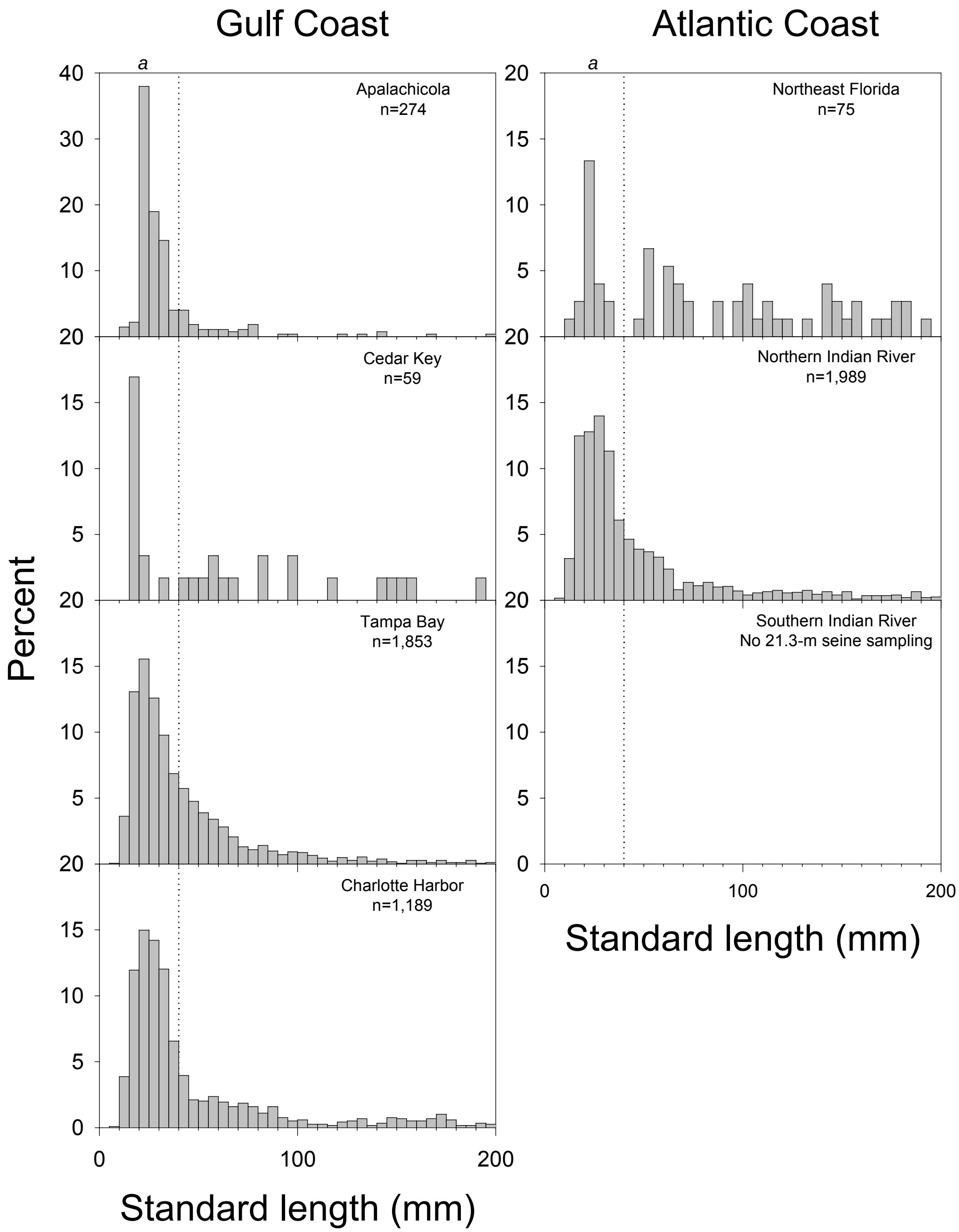

Figure SP05-06. Length frequency distribution of sheepshead collected during 21.3-m seine stratified-random sampling in each of the estuaries surveyed by the Fisheries-Independent Monitoring program. Charlotte Harbor and Tampa Bay were surveyed from 1989 – 2005; the northern Indian River Lagoon was surveyed from 1990 – 2005; Cedar Key was surveyed from 1996 – 2005; Apalachicola was surveyed from 1998 – 2005; and northeast Florida was surveyed from 2001 – 2005. The southern Indian River lagoon was not surveyed with 21.3-m seines. The vertical dotted line and letter (a) denotes the early young-of-year size class. n=number of fish.

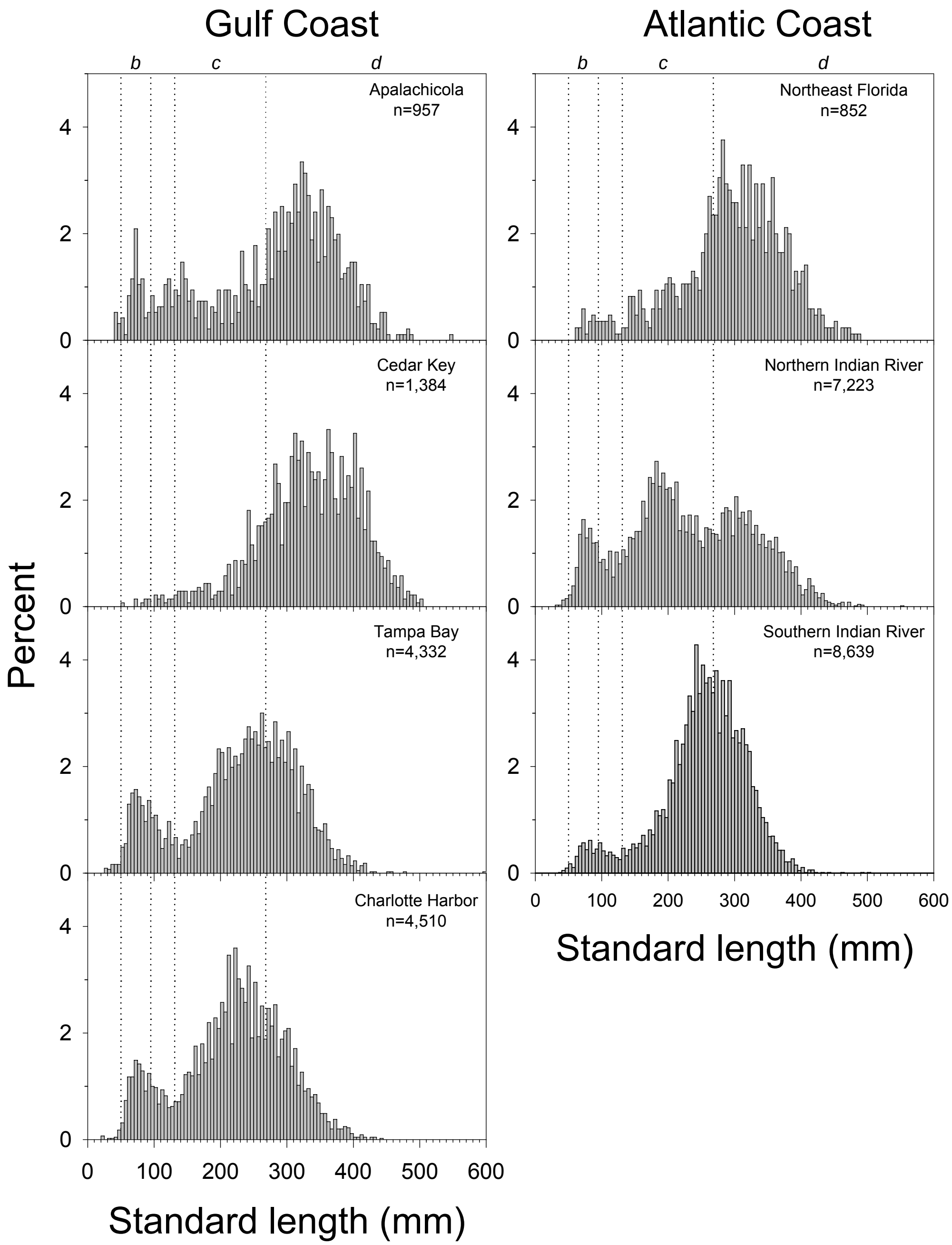

Figure SP05-07. Length frequency distribution of sheepshead collected during 183-m haul seine stratified-random sampling surveys in each of the estuaries surveyed by the Fisheries-Independent Monitoring program. Charlotte Harbor and Tampa Bay were surveyed from 1996 – 2005; southern and northern Indian River Lagoon, and Cedar Key were surveyed from 1997 – 2005; Apalachicola Bay was surveyed from 1998 – 2005; and northeast Florida was surveyed from 2001 – 2005. The dotted vertical lines and letters designate three of the life history stages analyzed: b) late young-of-year, c) pre-fishery, and d) fully recruited. n = number of fish.

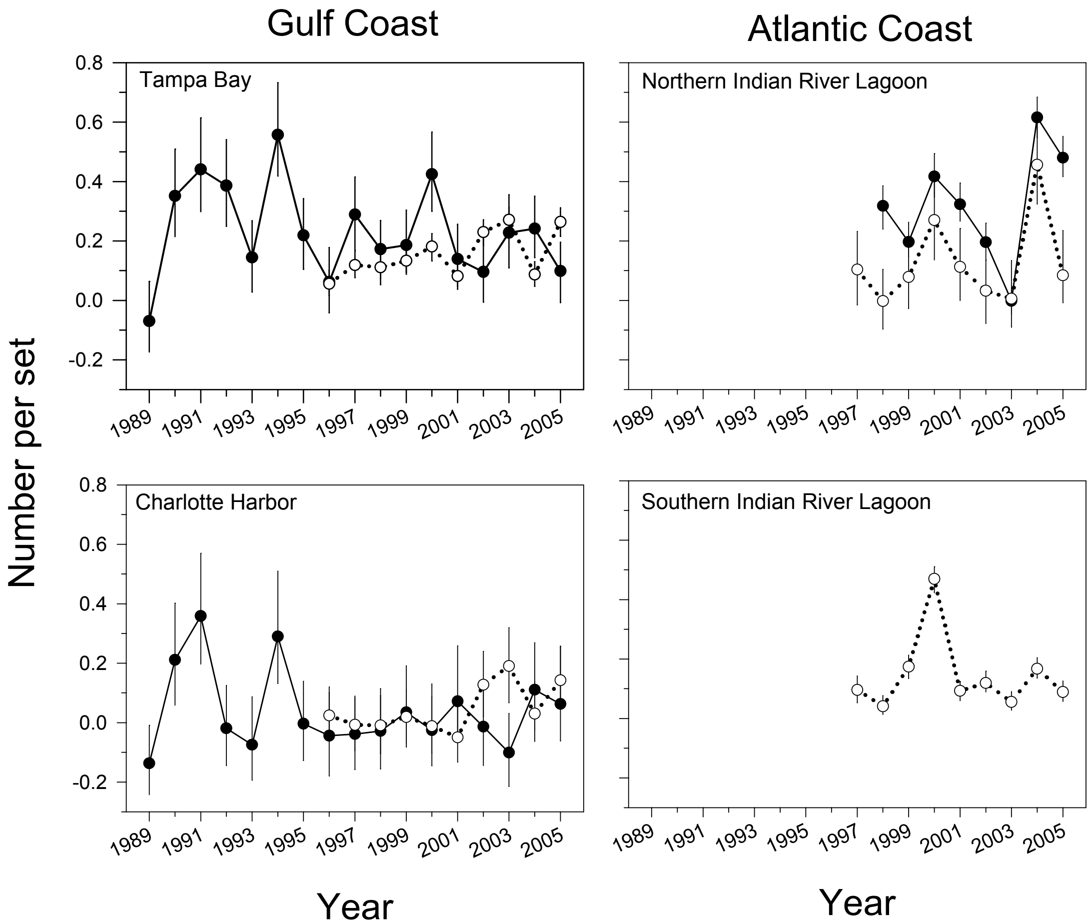

Figure SP05-08. Annual relative abundance estimates for young-of-the-year sheepshead collected during stratified-random sampling surveys in estuaries along the Gulf and Atlantic Coasts of Florida. Early YOY sheepshead (≤ 40 mm SL, collected in 21.3-m seines between April and July) are represented by filled circles. Open circles represent late YOY sheepshead (50 to 95 mm SL) collected in 183-m haul seines between August and December. Symbols (opened and filled circles) represent median values and vertical lines represent interquartile ranges.

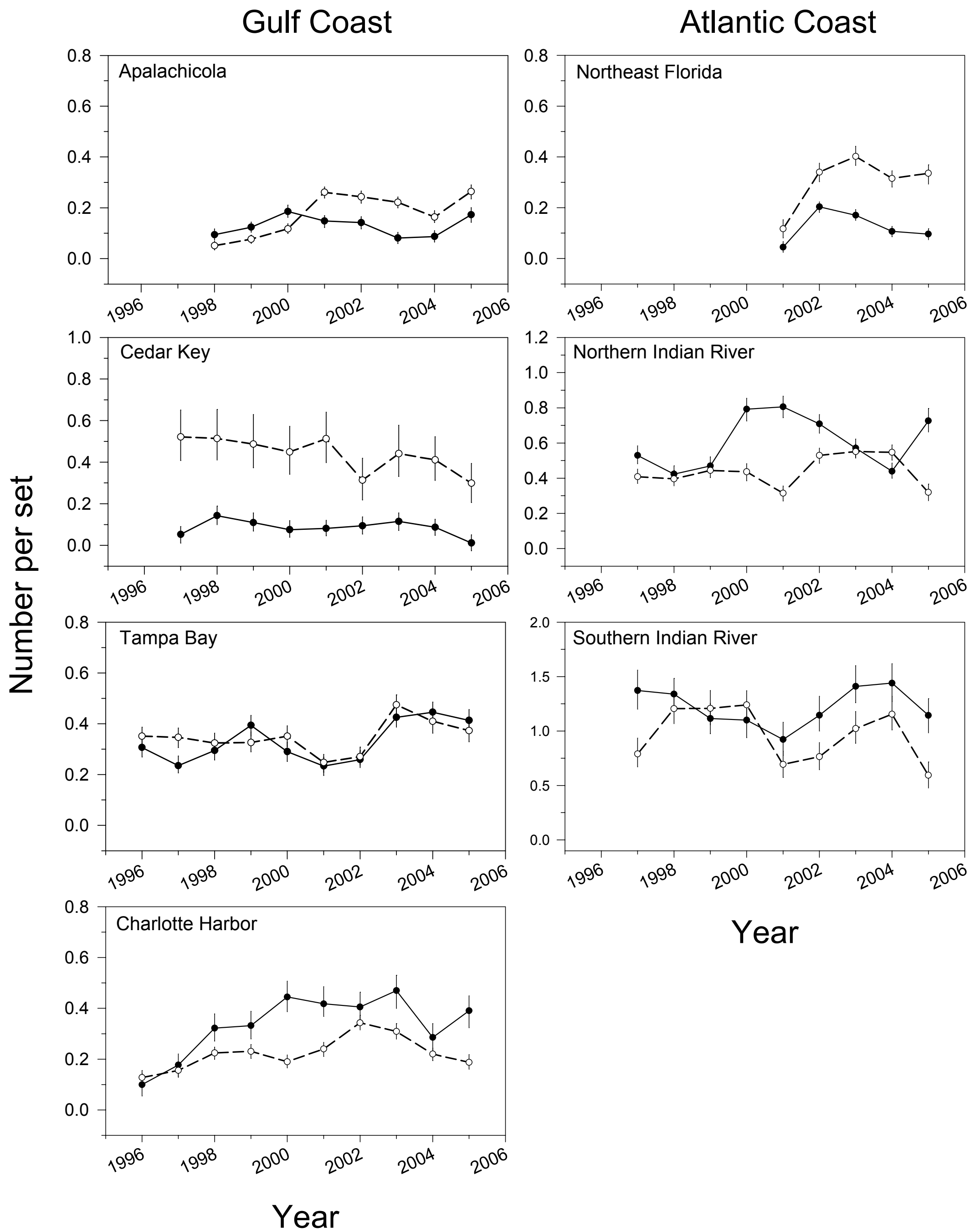

Figure SP05-09. Annual relative abundance estimates for pre-fishery (131 to 267 mm SL) and fully-recruited (≥ 268 mm SL) sheepshead collected during stratified-random sampling surveys in estuaries along the Gulf and Atlantic Coasts of Florida. Pre-fishery sheepshead are represented by filled circles, while open circles represent sheepshead that have recruited into the fishery. Year represents a biological year (April – March); abundance estimates for 2005, therefore, are based on a partial year since January – March 2006 data were not available for analysis. Symbols (opened and filled circles) represent median values and vertical lines represent interquartile ranges.

Striped Mullet, *Mugil cephalus*

Striped mullet, *Mugil cephalus*, is 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 in landings were documented from 1991 – 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 (80%; Mahmoudi 1997). Since an initial decline in fishing effort and landings following the net limitation in 1995, both fishing effort and landings have gradually increased (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 and Futch). Recruitment usually begins in January and continues through April, with peaks in abundance during February and March; however, length-frequency data indicate that recruitment can occur in Florida's estuaries as early as the end of December.

Recruitment indices for YOY striped mullet collected in select Florida estuaries were developed to assess long-term trends in the YOY abundance and to predict potential future stock fluctuations in the adult population. Analyses were limited to the occurrence of YOY

(< 35 mm SL) striped mullet collected in 21.3-m bay and river seines during stratified-random sampling (SRS) since 1989. Analyses were also limited to samples collected during months when striped mullet typically recruit into estuaries in Florida (January to April; FWC-FMRI unpublished data). Prior to 1996, sampling was conducted seasonally, so from 1989 – 1995, samples were only available for the months of March and April. To ensure comparability between recently-collected data and data collected prior to the net limitation in 1995, only data collected during March and April were included to calculate indices of recruitment for YOY striped mullet in Apalachicola Bay (1998 – 2005), Cedar Key (1997 – 2005), Tampa Bay (1989 – 2005), Charlotte Harbor (1989 – 2005), northeast Florida (2001 - 2005), and the northern Indian River Lagoon (1990 – 2005) (Figure SP05-10). For Apalachicola Bay, 21.3-m river seines were excluded due to a lack of samples prior to 2000. For Charlotte Harbor, data from zones D, E, G and H were excluded because they were not sampled throughout the period of interest. For the northern Indian River Lagoon, data from all zones other than C and D were excluded from these analyses due to incomplete spring sampling.

Abundance estimates for YOY striped mullet in Apalachicola Bay fluctuated from 1998 to 2005, with an increasing trend from 1998 – 2002 followed by a sharp decline in 2003 (Figure SP05-10). Abundances have remained stable since the 2003 decline. In Cedar Key, striped mullet abundances have generally fluctuated without trend, with peaks in abundance occurring in 2002 and 2004. In Tampa Bay, YOY striped mullet abundances were relatively stable from 1990 – 1997, with a sharp peak in 1998 followed by a general decline through 2005. Abundances of YOY striped mullet in Charlotte Harbor varied from 1989 – 2004, with a three-year cycle of strong recruitment evident in 1995, 1998, 2001 and 2004. In northeast Florida, YOY striped mullet abundances fluctuated without trend, with a peak in recruitment in 2004. In the northern Indian River Lagoon, abundances of YOY striped mullet generally increased from 1990 – 1998 with strong peaks in 1996 and 1998 followed by a sharp decline in 1999. Young-of-the-year striped mullet abundances declined from 1999 – 2004 with the exception of a peak in 2001, but rebounded strongly in 2005.

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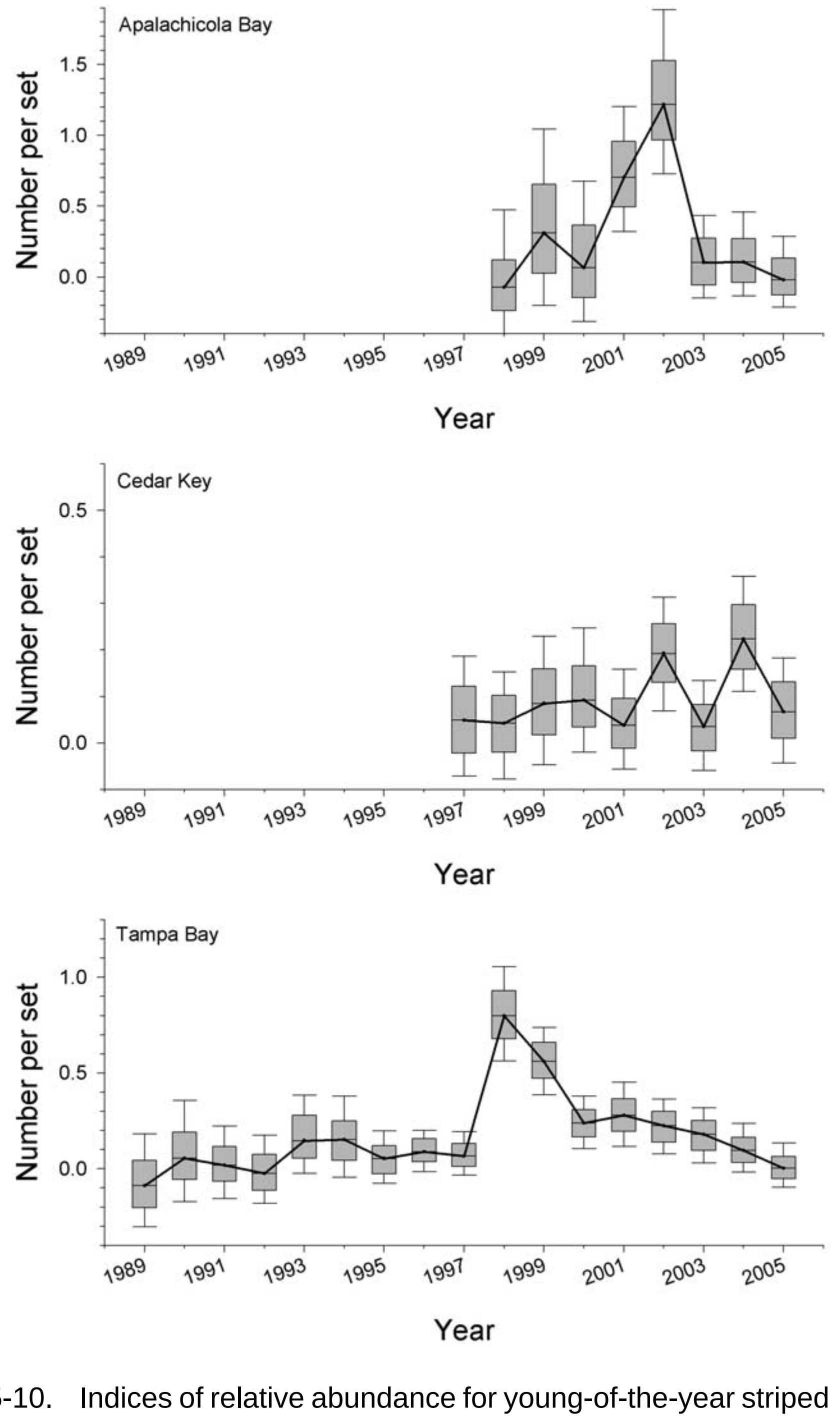

Figure SP05-10. Indices of relative abundance for young-of-the-year striped mullet (<35 mm SL) collected using 21.3-m bay and river seines during stratified-random sampling surveys (March and April) in Apalachicola (21.3-m river seines excluded), Cedar Key, and Tampa Bay. The box represents the 25th – 75th percentiles, the vertical line represents the 10th – 90th percentiles, and the horizontal line represents the median estimate. Note the different abundance scales for each system.

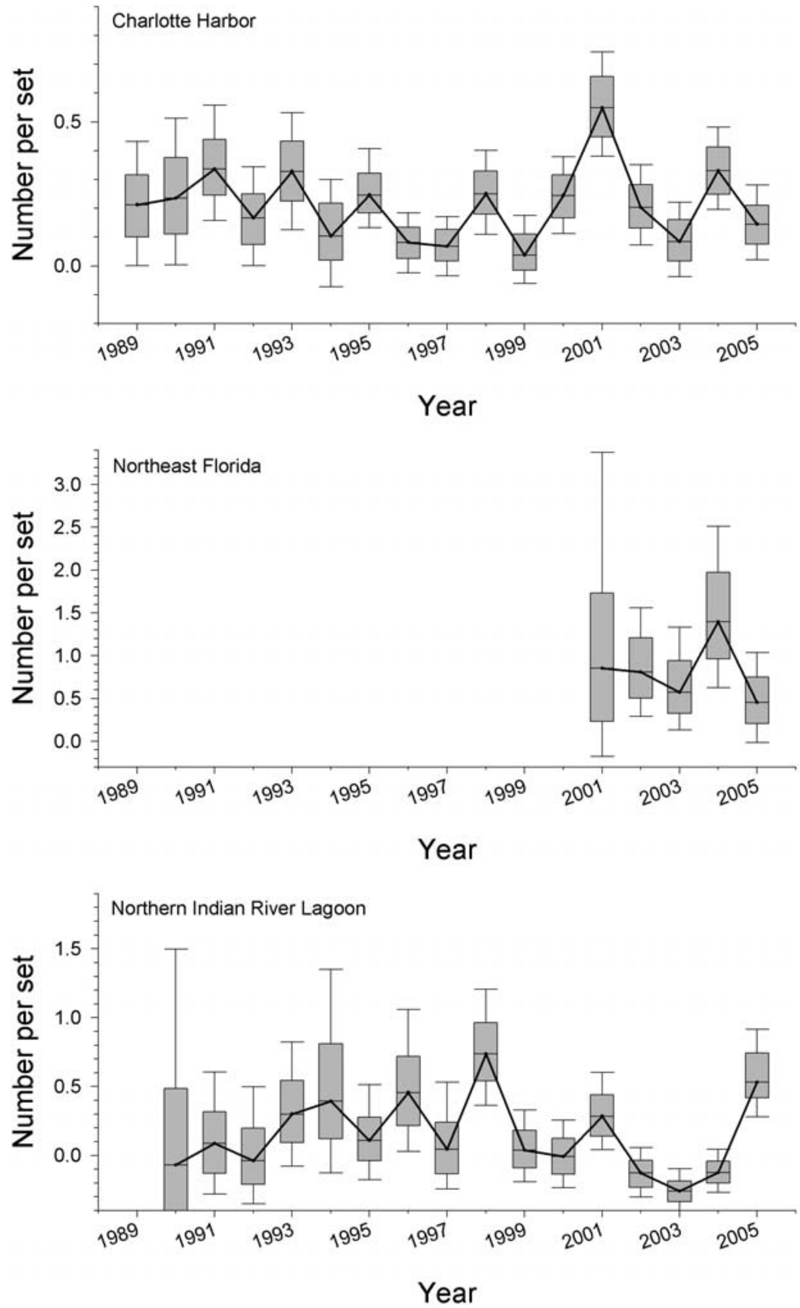

Figure SP05-10. (Continued). Indices of relative abundance for young-of-the-year striped mullet (<35 mm SL) collected using 21.3-m bay and river seines during stratified-random sampling surveys (March and April) in Charlotte Harbor, northeast Florida, and the northern Indian River Lagoon. The box represents the 25th – 75th percentiles, the vertical line represents the 10th – 90th percentiles, and the horizontal line represents the median estimate. Note the different abundance scales for each system.

Pinfish, *Lagodon rhomboides*

The pinfish, *Lagodon rhomboides*, is an ecologically and recreationally important sparid found in marine and estuarine waters from Cape Cod, Massachusetts, to Texas (Bigelow and Schroeder 1953; Caldwell 1957). It is one of the most abundant species residing in estuaries of the northeastern Gulf of Mexico (Hoese and Jones 1963; Hansen 1970; Ogren and Brusher 1977). Densities of pinfish are 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 macrobenthic 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 also 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*), snook (*Centropomus undecimalis*), and gag grouper (*Mycteroperca microlepis*).

To understand the mechanisms influencing recruitment of young-of-the-year (YOY) pinfish into select Florida estuaries, annual indices of abundance (IOAs) were generated to determine if trends in YOY densities were evident in Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, Cedar Key, Apalachicola Bay, and northeast Florida. In these analyses, stratified-random sampling (SRS) data from 21.3-m seines deployed between January and June (1996 – 2005) were used. This period covered peak YOY recruitment into the estuaries (Nelson 1998). Only individuals measuring less than 80 mm SL were used in the analyses. This length represents the average maximum size that individuals of YOY cohorts generally attain through June (Nelson 1998). Due to historical changes in sampling design, only certain consistently sampled zones in each estuary were included to generate annual IOAs (Apalachicola Bay, northeast Florida, and Cedar Key = all zones; Tampa Bay = zones: A, B, C, D, E, K, L, and M; Charlotte Harbor = zones: A, B, C, M, and P; northern Indian River Lagoon = zones: C, D, F, and H). In addition, annual IOAs were generated for juvenile and adult pinfish (>100 mm SL) collected between July and December (1996 – 2005) in the 183-m haul seine. Sampling at a seventh estuary, southern Indian River Lagoon, was conducted exclusively with the 183-m haul seine, so it was possible to produce IOAs for juvenile and adult pinfish from that area as well, although no YOY IOAs were generated.

Trends of YOY pinfish relative abundance varied among and within most estuaries. Along the Gulf coast, Apalachicola Bay IOAs showed that YOY pinfish abundance was low from 1998 through 2000, before peaking in 2001 and subsequently declining through 2005 (Figure SP05-11). Young-of-the-year pinfish in Cedar Key had fairly constant abundance estimates between 1996 and 1999, before peaking in 2000 and subsequently declining through 2005. Patterns in annual abundance estimates for Tampa Bay and Charlotte Harbor were similar between 1996 and 2005, with years of highest abundance occurring in 2001 and 2004. In Charlotte Harbor, relative abundance values were consistently much higher than at any other area sampled. Relative abundance values of YOY pinfish were lower along the Atlantic coast than the Gulf coast. In northeast Florida, relative abundance of YOY pinfish was lowest in 2002 and remained relatively constant from 2003 through 2005. In the northern Indian River Lagoon, relative abundance of YOY pinfish declined from 1996 through 1999 and remained at a consistently low level between 1999 and 2002. An increase in abundance occurred in 2003 before returning to low levels in 2005.

Trends in abundance of larger juvenile and adult pinfish (>100 mm SL) also differed between and within estuaries. Along the Gulf coast, annual abundance estimates in Apalachicola Bay remained relatively constant with highest abundances occurring from 2001 through 2004 (Figure SP05-12). Relative abundance in Cedar Key peaked in 1998 before declining to lower constant levels from 1999 through 2005. In Tampa Bay there appeared to be a slight consistent decline in annual abundance from 1996 through 2005. Charlotte Harbor IOAs peaked in 2000 and then returned to constant levels through 2005. As with YOY pinfish, relative abundances of larger juveniles and adults were generally lower along the Atlantic coast than the Gulf coast. In northeast Florida relative abundance was consistently low and remained as such from 2001 through 2005. Relative abundance in the northern Indian River Lagoon peaked in

2003. In the southern Indian River Lagoon, a peak in abundance in 1997 was followed by lower, constant abundances in subsequent years.

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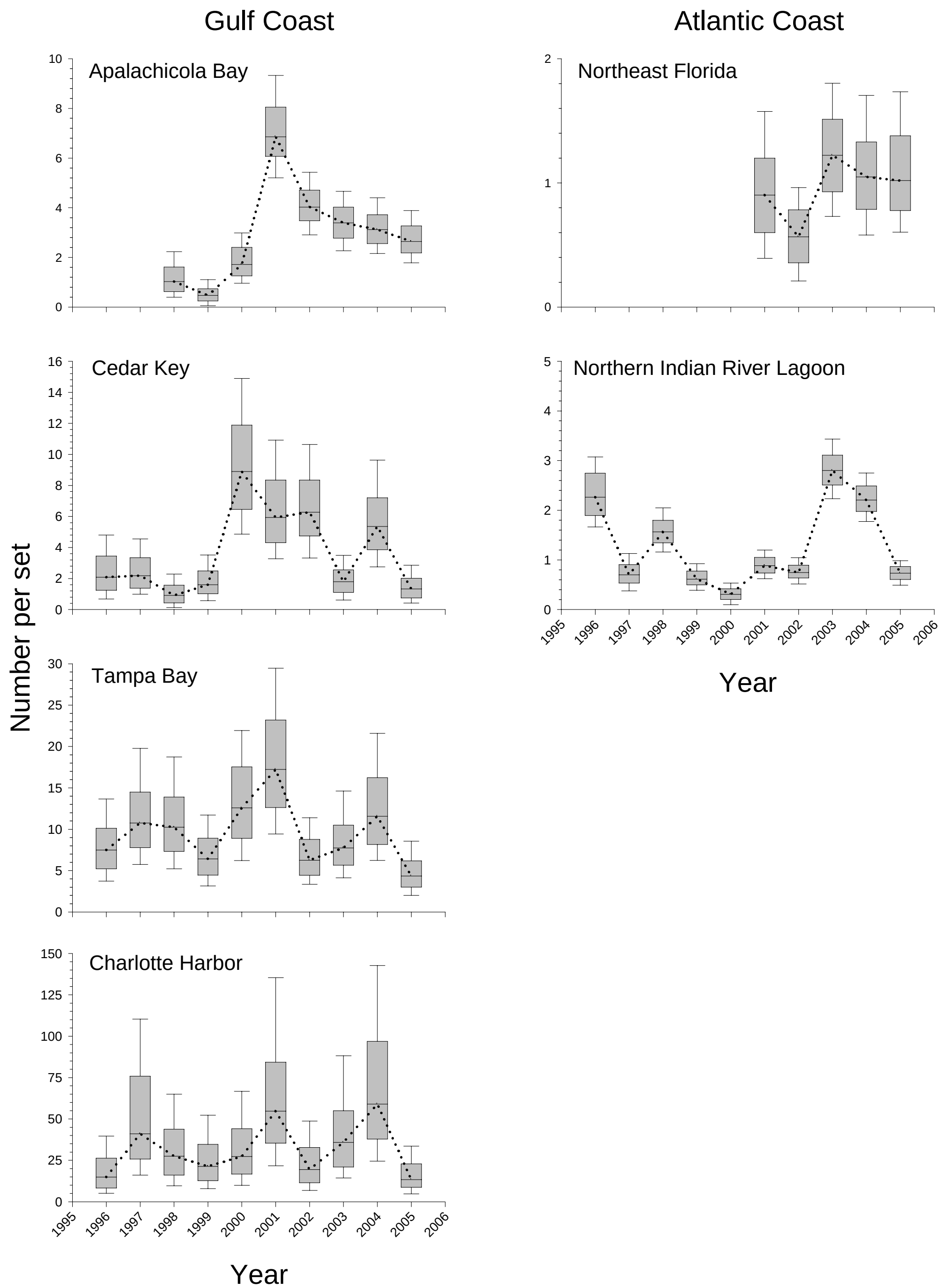

Figure SP05-11. Annual relative abundance of YOY pinfish (<80 mm SL) collected in 21.3-m bay and river seines from January – June stratified-random sampling in Apalachicola Bay, Cedar Key, Charlotte Harbor, Tampa Bay, northeast Florida and the northern Indian River Lagoon, 1996 – 2005. The box plots represents the 25th – 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line indicates the median fish per set estimate.

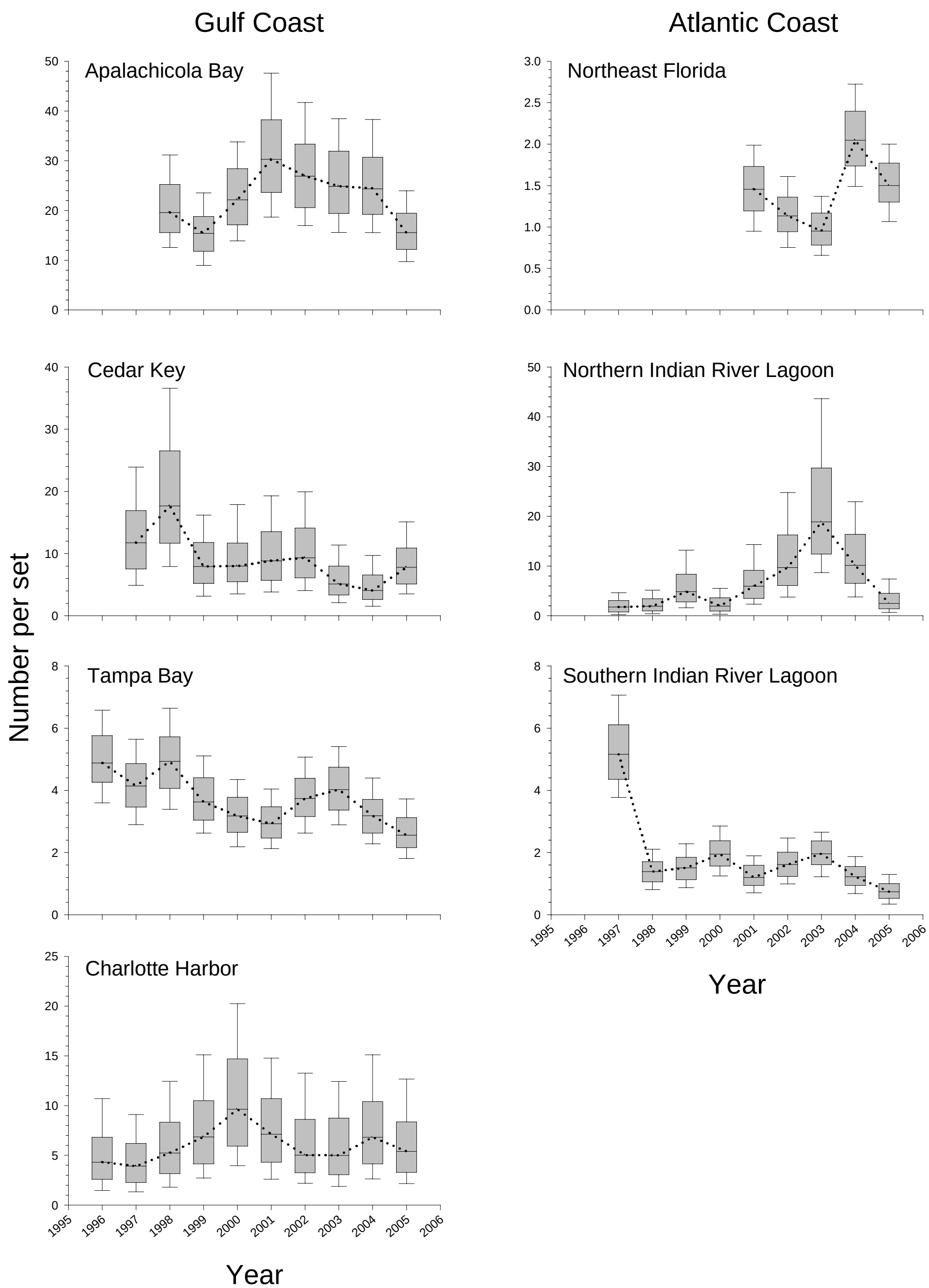

Figure SP05-12. Annual relative abundance estimates of juvenile and adult pinfish (> 100 mm SL) collected in the 183-m haul seine from July – December stratified-random sampling in Apalachicola Bay, Cedar Key, Charlotte Harbor, Tampa Bay, northeast Florida, and northern and southern Indian River Lagoon, 1996 – 2005. The box plots represent the 25th – 75th percentiles, the vertical lines extend from the 10th – 90th percentiles, and the horizontal line represents the median fish per set estimate.

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 (Gilmore et al. 1983; Rivas 1986). 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 snook harvest on both 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 Florida, common snook populations from the Atlantic and Gulf coasts have been genetically identified as separate stocks and are therefore managed separately (Taylor et al. 1993; Tringali and Bert 1996). 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). The reproductive season for common snook on both coasts of Florida extends over at least six months on the Gulf coast from April – September and on the Atlantic coast from April – October (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 Fisheries-Independent Monitoring (FIM) program develops annual young-of-the-year (YOY) relative abundance indices for juvenile common snook (≤ 50 mm SL) in selected Florida estuaries. Data from stratified-random 21.3-m river seine samples were examined to assess the recruitment of juvenile common snook in estuaries representative of the Florida Atlantic and Gulf coasts: northern Indian River Lagoon (1999 – 2005) and Tampa Bay (1989 – 2005). The majority of juvenile common snook (≤ 50 mm SL) were captured in riverine habitats from July to February in the northern Indian River Lagoon and from August – November in Tampa Bay. Data from this habitat type and these specific time periods were used in developing relative abundance indices for juvenile common snook. Indices were not calculated for estuaries where 21.3-m seines were not deployed, where limited data were available, or from estuaries to the north of the typical range of common snook.

The FIM program also monitors the abundance of large juvenile (≥ 100 mm SL) and adult common snook in Florida estuarine systems within the range of this species, including Tampa Bay, Charlotte Harbor, northern Indian River Lagoon, and southern Indian River Lagoon. Data from stratified-random 183-m haul seines collected between 1996 and 2005 were used to develop relative abundance indices for these large juvenile and adult fish.

On Florida's Gulf coast between 1989 and 2005, relative abundance estimates for juvenile common snook (≤ 50 mm SL) in Tampa Bay were relatively stable, with a pronounced increase in 1999 (Figure SP05-13). After 1999, these estimates of relative abundance returned to levels similar to those observed from 1989 – 1995. On Florida's Atlantic coast, relative abundance estimates for juvenile common snook in the northern Indian River Lagoon have generally varied without trend from 1999 – 2005, except for one pronounced decrease in 2004.

For large juvenile (≥ 100 mm SL) and adult common snook on Florida's Gulf coast, estimates of relative abundance from Tampa Bay generally increased since 1996 and suggest a slow but steady increase in abundances with some variation from 2002 – 2005 (Figure SP05-14). Relative abundance estimates for large juveniles and adults from Charlotte Harbor increased from 1996 – 2001, decreased from 2001 – 2003, and increased slightly in 2004 and 2005 relative to the 2003 level. In the northern Indian River Lagoon relative abundance estimates for large juvenile and adult common snook have generally varied without trend from 1997 – 2005. In the southern Indian River Lagoon, relative abundance estimates displayed an overall declining trend.

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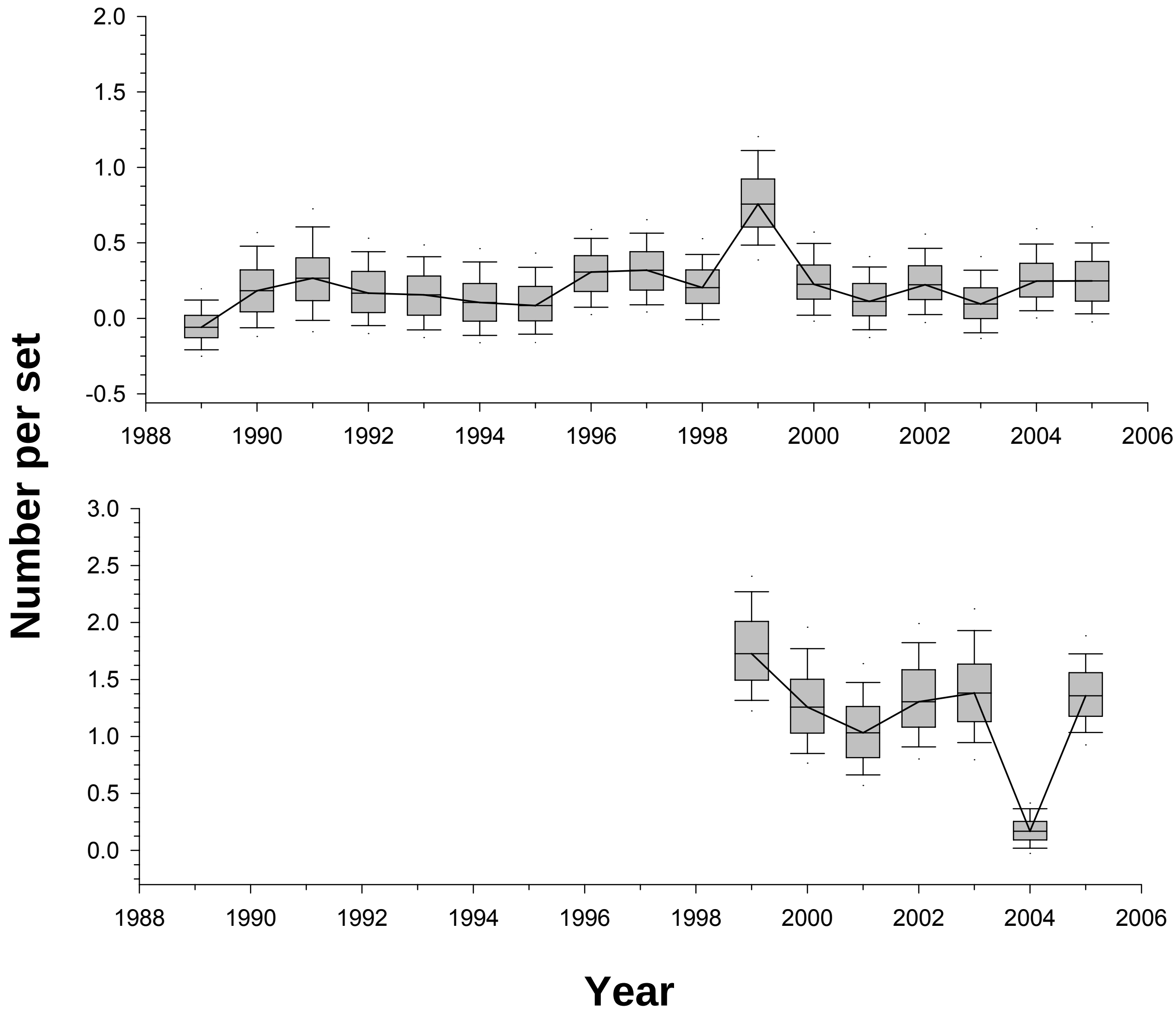

Figure SP05-13. Relative abundance of juvenile common snook (≤ 50 mm SL) collected in 21.3-m seines from Tampa Bay (1989 – 2005) and northern Indian River Lagoon (1999 – 2005) during stratified-random sampling. The box represents the 25th – 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales for each system.

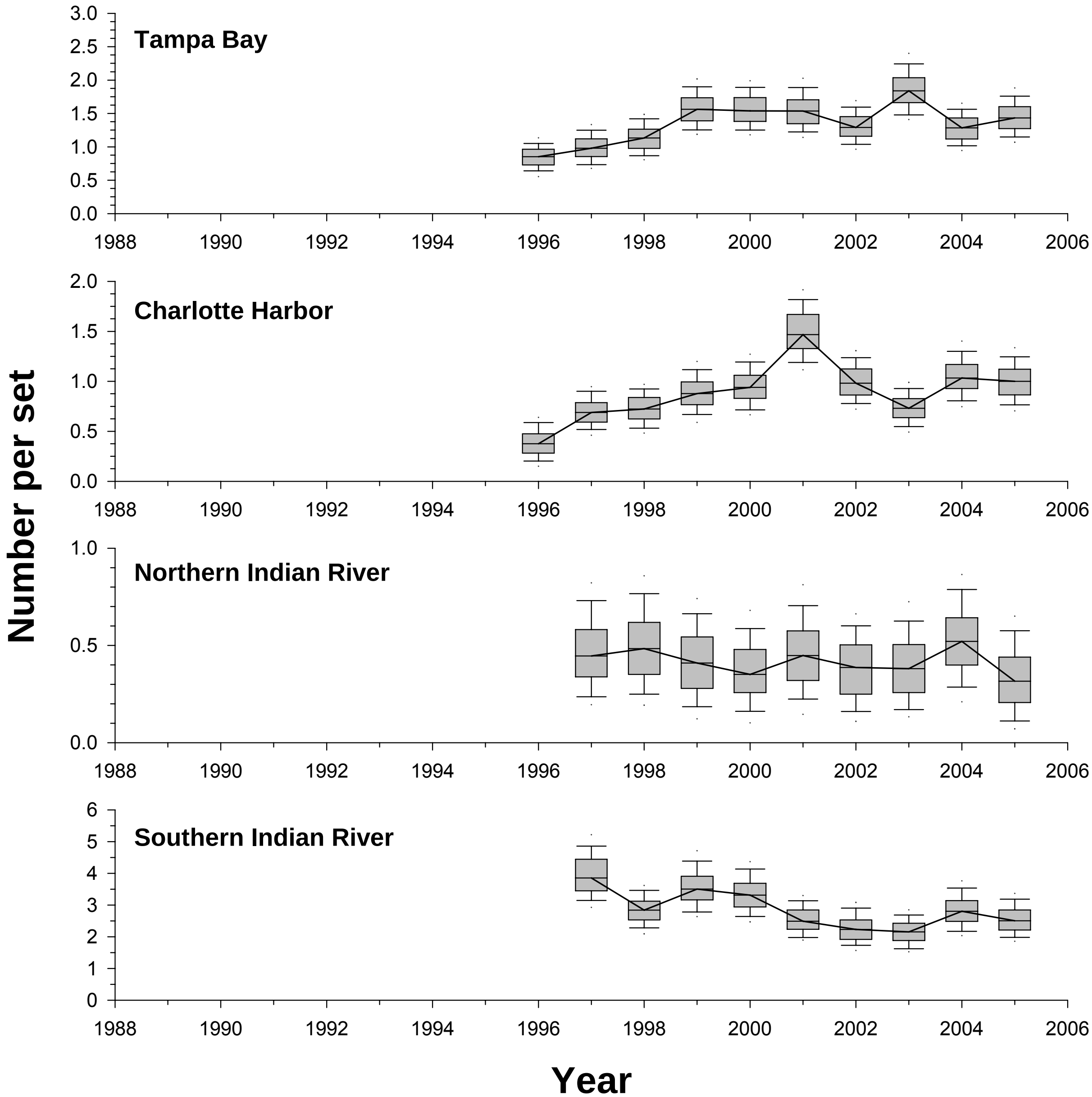

Figure SP05-14. Relative abundance of large juvenile and adult common snook (≥ 100 mm SL) collected in 183-m haul seines between 1996 and 2005 during stratified-random sampling from four Florida estuarine systems. The box represents the 25th – 75th percentiles, the vertical line extends from the 10th – 90th percentiles, and the horizontal line within each box indicates the median estimate. Note different scales for each system.

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Blue Crab, *Callinectes sapidus*

Valuable commercial and recreational fisheries exist for blue crabs (*Callinectes sapidus*) along the Atlantic and Gulf of Mexico (Gulf) coasts of the United States. Florida's Gulf coast commercial landings from 1990 through 2001 averaged 8.4 million pounds per year and were worth an estimated 5.3 million dollars (NMFS 2002). Gulf landings peaked in the late 1990’s at almost 13 million pounds, but have since declined. In 1995, Florida legislation banned entanglement nets, raising concern that blue crab populations might experience increased fishing pressure from former net fishers. Although fishing effort for blue crabs has been limited in recent years by restricted species permits, there have been no quotas for blue crab landings. Recreational harvest of blue crabs is unknown and not surveyed, so yearly catch may be much higher than the recorded commercial landings.

Blue crabs are an integral part of the estuarine ecosystem. Blue crabs scavenge carrion and prey on juvenile fishes, mollusks, and crustaceans. They also 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 crabs also serve as prey for important gamefish species such as black drum (Simmons and Breuer 1962), red drum (Gunter 1945; Scharf and Schlicht 2000), snook (Blewett et al. 2006), and cobia (Meyer and Franks 1996). In addition to predation and harvest by humans, populations of blue crabs are affected by a myriad of other factors such as fresh water inflows (Wilber 1994), pesticides, disease, and habitat alteration.

Juvenile blue crabs (≤ 80-mm carapace width [CW]) collected in 21.3-m bay and river seines were used to assess indices of abundance (IOAs). Data was collected during fisheries-independent monitoring (FIM), stratified-random sampling (SRS) from August through March in Apalachicola Bay, Cedar Key, Charlotte Harbor, Tampa Bay, northern Indian River Lagoon, and northeast Florida. The recruitment window of August through March was chosen because recently-settled blue crabs are more abundant in monthly 21.3-m seine catches during this time period. Spawning in Florida waters occurs mostly from March through September or October with some spawning in the winter (Steele and Bert 1994). Winter spawning is less common, yet supports the fact that recruits are found year-round. Data 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. This method produced a 2004 IOA that included data from both 2004 and 2005. The IOA value for 2005 does not include 2006 data (January – March), which were not yet available. Prior to 1996, sampling in Charlotte Harbor, Tampa Bay, and northern Indian River Lagoon did not include all recruitment months due to changes in sampling. One note of caution should be mentioned when considering these interannual comparisons of abundance data. Although the general linear model used to create the IOAs took effort into account, changes to spatial and gear effort allocations have occurred in all regions, and could confound the interpretation of interannual differences (Kupschus 2004).

The IOAs for juvenile blue crabs showed no consistent increasing or decreasing long-term trend for most regions. Instead, short-term increases and decreases in abundance were apparent (Figure SP05-15). With only five years of data, no well-defined trend is apparent for the northeast Florida region, although there was a slight peak in juvenile abundance in 2003. Overall, one trend that held for most regions was that relative abundances were high in 1998 and 1999 and then declined through 2002. For Apalachicola, Charlotte Harbor, and Tampa Bay the indices increased again from 2002 through 2003 and then began to decline through 2005 in Charlotte Harbor and Tampa Bay. This pattern approximately matched the annual rainfall amounts for Florida, with higher abundances observed during a year of high rainfall or immediately following such a year. The year 1998, an El Nino year, was followed by a prolonged drought through 2002. The drought ended during 2002 and 2003 with another El Nino event. Overall, Apalachicola Bay and Cedar Key had the highest juvenile catch rates in the state.

Data collected from 183-m haul seine nets were used to assess the abundance of larger blue crabs (>80 mm CW; Figure SP05-15). Data from January through December stratified-random sampling were used to calculate IOAs for these larger crabs. Sampling with the 183-m haul seine in all estuaries except Cedar Key and northern Indian River Lagoon did not begin until after January in the first year the gear was used. The IOAs for all areas excluding northern Indian River Lagoon and northeast Florida were highest in 1998. In general, the IOAs for the large blue crabs showed a decreasing trend from 1998 to 2002, followed by an increase in 2003 through 2005. The highest overall adult abundance estimates occurred in Charlotte Harbor, while the lowest occurred in Cedar Key.

Due to the time lag in the calculation of juvenile IOAs (August – March), the large crabs from a given year were most likely the parents of the juveniles in that year's IOA. This pattern was further supported by the way the two separate indices track each other relatively well in some estuaries.

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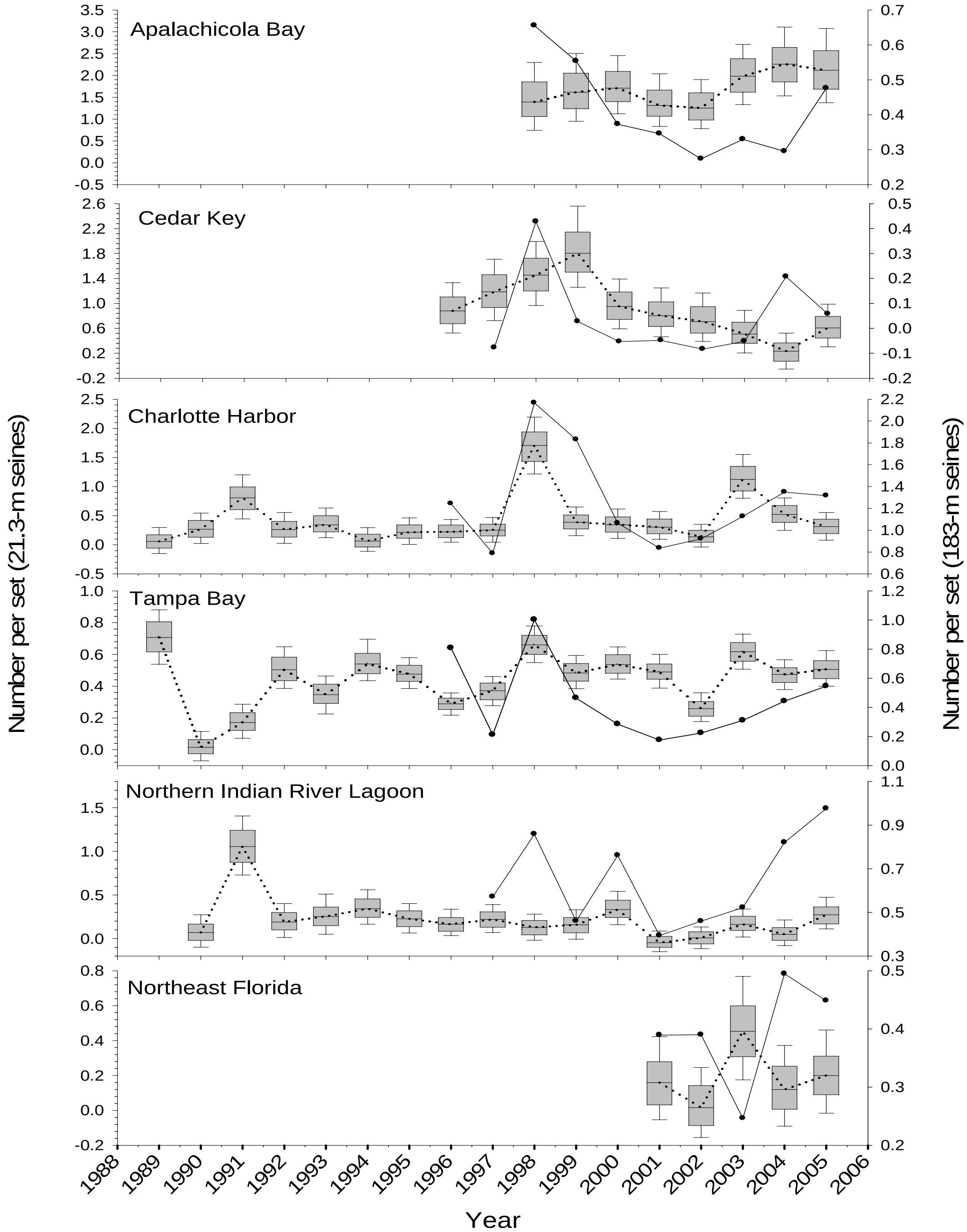

Figure SP05-15. Index of abundance of juvenile blue crab (≤ 80 mm CW) collected in 21.3-m bay and river seines from August – March SRS, 1989 – 2005. The box represents the 25^{th} – 75^{th} percentiles, the vertical line extends from the 10^{th} – 90^{th} percentiles, and the horizontal line represents the median value. The line and scatter plot (●) represents median relative abundance of larger blue crabs (> 80mm CW) collected in all months using 183-m haul seines. Please note the change of scale on all of the graphs.

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